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10-Q
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FORM 10Q

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

QUARTERLY REPORT UNDER SECTION 13 OR 15(D)
OF THE SECURITIES EXCHANGE ACT OF 1934

For Quarter Ended June 30, 1998
Commission File Number 1-12584

SHEFFIELD PHARMACEUTICALS, INC.
(EXACT NAME OF REGISTRANT IN ITS CHARTER)

DELAWARE	13-3808303
(State of Incorporation)	(IRS Employer Identification No.)

425 SOUTH WOODSMILL ROAD, SUITE 270	
ST. LOUIS, MISSOURI	63017-3441
(Address of Principal Executive Offices)	(Zip Code)

Registrant's telephone number, including area code: (314) 579-9899

Indicate by check whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes /X/ No / /

The number of shares outstanding of the issuer's Common Stock is 26,853,537 shares of Common Stock as of June 30, 1998.

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES
(A DEVELOPMENT STAGE ENTERPRISE)

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(A DEVELOPMENT STAGE ENTERPRISE)
CONSOLIDATED BALANCE SHEETS

June 30,
1998 December 31,
(Unaudited) 1997

ASSETS

Current assets:

Cash and cash equivalents	\$ 5,421,662	\$ 393,608
Marketable securities	350,000	--
Loan receivable - former officer	65,000	80,000
Prepaid expenses and other current assets	33,451	47,378
Total current assets	5,870,113	520,986

Property and equipment:

Laboratory equipment	185,853	185,852
Office equipment	111,598	142,562
	297,451	328,414
Less accumulated depreciation and amortization	211,578	185,201
Net property and equipment	85,872	143,213

Other assets	5,680	25,738
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Total assets	\$ 5,961,665	\$ 689,937
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LIABILITIES AND STOCKHOLDERS' EQUITY (NET CAPITAL DEFICIENCY)

Current liabilities:

Accounts payable and accrued liabilities	\$ 716,505	\$ 887,782
Sponsored research payable	470,180	470,768
Total current liabilities	1,186,685	1,358,550

6% convertible subordinated debenture	--	1,551,000
Interest payable on debenture	--	28,875

Preferred stock, \$.01 par value, authorized 3,000,000 shares:

Series A cumulative convertible redeemable preferred stock; 0 and 10,000 shares issued and outstanding at June 30, 1998 and December 31, 1997, respectively	--	2,468,263
Series B cumulative convertible redeemable preferred stock; 1,250 and 0 shares issued and outstanding at June 30, 1998 and December 31, 1997, respectively	1,250,000	--

Commitments and contingencies

Stockholders' equity (net capital deficiency):

Series C convertible preferred stock, 11,500 and 0 shares issued and outstanding at June 30, 1998 and December 31, 1997, respectively	115	--
Common stock, \$.01 par value. Authorized, 50,000,000 shares; issued and outstanding, 26,853,537 and 12,649,539 shares at June 30, 1998 and December 31, 1997, respectively	268,534	126,495
Notes receivable in connection with sale of stock	(25,400)	(72,600)
Additional paid-in capital	55,029,090	31,386,644
Deficit accumulated during development stage	(51,747,359)	(36,157,290)
	3,524,980	(4,716,751)
Total liabilities and stockholders' equity (net capital deficiency)	\$ 5,961,665	\$ 689,937

See accompanying notes to unaudited consolidated financial statements

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES
(A DEVELOPMENT STAGE ENTERPRISE)

CONSOLIDATED STATEMENTS OF OPERATIONS
FOR THE THREE AND SIX MONTHS ENDED JUNE 30, 1998 AND 1997 AND FOR THE PERIOD
FROM OCTOBER 17, 1986 (INCEPTION) TO JUNE 30, 1998
(UNAUDITED)

	Three months ended		October 17, 1986 Six months ended (inception) to		
	June 30,		June 30, June 30,		
	1998	1997	1998	1997	1998
Revenues:					
Sub-license revenue	\$ 350,000	\$ --	\$ 350,000	\$ --	1,360,000
Interest income	2,562	21,747	3,515	39,972	457,342
Total revenue	352,562	21,747	353,515	39,972	1,817,342
Expenses:					
Acquisition of R & D in-process					
— technology	12,500,000	1,650,000	12,500,000	1,650,000	14,150,000
Research and development	187,063	786,165	1,796,104	2,724,202	21,048,494
General and administrative	882,409	1,004,893	1,494,899	1,750,489	18,017,158
Interest	86,211	2,089	128,681	4,768	288,436
Total expenses	13,655,683	3,443,147	15,919,684	6,129,459	53,504,088
Loss before extraordinary item	(13,303,121)	(3,421,400)	(15,566,169)	(6,089,487)	(51,686,746)
Extraordinary item	--	--	--	--	42,787
Net loss	\$(13,303,121)	\$(3,421,400)	\$(15,566,169)	\$(6,089,487)	(51,643,959)
Accretion of mandatorily redeemable					
preferred stock	--	--	(23,900)	--	(103,400)
Net loss - attributable to common shares	\$(13,303,121)	\$(3,421,400)	\$(15,590,069)	\$(6,089,487)	(51,747,359)
Loss per share of common stock - basic and diluted:					
Loss before extraordinary item	\$ (0.67)	\$ (0.29)	\$ (0.93)	\$ (0.52)	\$ (9.50)
Extraordinary item	--	--	--	--	0.01
Basic and diluted net loss per share	\$ (0.67)	\$ (0.29)	\$ (0.93)	\$ (0.52)	(9.49)
Weighted average common shares					
outstanding - basic and diluted:	19,950,354	11,823,439	16,820,359	11,607,059	5,448,993

See accompanying notes to unaudited consolidated financial statements

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES
(A DEVELOPMENT STAGE ENTERPRISE)
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE THREE AND SIX MONTHS ENDED JUNE 30, 1998 AND 1997 AND FOR THE PERIOD
FROM OCTOBER 17, 1986 (INCEPTION) TO JUNE 30, 1998
(UNAUDITED)

	Three months ended		Six months ended		October 17, 1986
	June 30,		June 30,		(inception) to
	1998	1997	1998	1997	June 30,
	-----	-----	-----	-----	-----
Cash outflows from development stage activities and extraordinary gain:					
Loss before extraordinary item	\$(13,303,121)	\$(3,421,400)	\$(15,566,169)	\$(6,089,487)	\$(51,686,746)
Extraordinary gain on extinguishment of debt					42,787
Net loss	(13,303,121)	(3,421,400)	(15,566,169)	(6,089,487)	(51,643,959)
Adjustments to reconcile net loss to net cash used by development stage activities:					
Issuance of common stock, stock options/warrants					
for fees/services		25,000	16,389	25,000	1,938,448
Non-cash interest expense	4,793		46,174		125,049
Non-cash acquisition of R&D in process technology			1,650,000		1,650,000
Securities acquired under sub-license agreement	(350,000)		(350,000)		(850,000)
Issuance of common stock for intellectual property rights					866,250
Amortization of organizational and debt issuance costs					77,834
Depreciation and amortization	12,895	18,243	26,377	36,017	272,968
Increase in debt issuance and organizational costs					(77,834)
Loss realized on sale of marketable securities					324,915
Decrease (increase) in prepaid expenses and other					
current assets	6,878	(75,451)	13,927	(60,445)	(92,492)
Decrease (increase) in other assets		6,188		20,057	600
Increase (decrease) in accounts payable;					
accrued liabilities	(1,892,651)	172,305	(171,277)	57,905	144,651
Increase (decrease) in sponsored research payable		(840,676)	(588)	(248,523)	1,047,250
Net cash used by development stage activities	(15,515,018)	(2,471,979)	(15,965,110)	(4,628,933)	(46,163,560)
Cash flows from investing activities:					
Proceeds on sale of marketable securities					175,085
Acquisition of laboratory and office equipment	(2,596)	(2,087)	(2,596)	(2,087)	(319,948)
Disposition of office equipment			33,560		33,560
Increase in notes receivable in connection with					
sale of stock					(240,000)
Decrease (increase) in loan receivable - former					
officer	7,500		15,000		(65,000)
Payments on notes receivable	23,900		47,200		214,600
Purchase of Camelot Pharmacal L.L.C., net of					
cash acquired		(8,259)		(8,259)	(46,687)
Net cash provided (used) by investing activities	28,804	(10,346)	93,164	(10,346)	(248,390)

Cash flows from financing activities:					
—Principal payments under capital lease	--	(5,891)	--	(13,441)	(72,453)
—Conversion of convertible, subordinated notes	--	--	--	--	749,976
—Proceeds from issuance of convertible debenture	--	--	--	--	2,300,000
—Proceeds from issuance of common stock	8,150,000	--	8,150,000	--	21,418,035
—Proceeds from issuance of preferred stock	12,750,000	--	12,750,000	3,212,136	16,034,812
—Proceeds from exercise of stock options	--	--	--	--	1,337,677
—Proceeds from exercise of warrants	--	--	--	--	10,064,481
—Net cash provided (used) by financing activities	20,900,000	(5,891)	20,900,000	3,198,695	51,832,528

—Net increase (decrease) in cash and cash equivalents	5,413,786	(2,488,216)	5,028,054	(1,440,584)	5,420,578
—Cash and cash equivalents at beginning of period	7,876	3,027,503	393,608	1,979,871	1,084
=====					
—Cash and cash equivalents at end of period	\$ 5,421,662	\$ 539,287	\$ 5,421,662	\$ 539,287	\$ 5,421,662
=====					
Noncash investing and financing activities:					
—Common stock, stock options and warrants issued					
—for services	\$	\$ 25,000	\$	\$ 25,000	\$ 1,937,648
—Acquisition of R&D in-process technology	--	1,650,000	--	1,650,000	1,655,216
—Common stock issued for intellectual property rights	--	--	--	--	866,250
—Common stock issued to retire debt	--	--	--	--	600,000
—Common stock issued to redeem convertible securities	1,882,479	--	4,019,263	--	5,353,368
—Securities acquired under sub-license agreement	350,000	--	350,000	--	850,000
—Unrealized (realized) depreciation of investments	--	20,178	--	261,361	--
—Equipment acquired under capital lease	--	--	--	--	72,453
—Notes payable converted to common stock	--	--	--	--	749,976
—Stock dividends	77,914	--	182,195	--	364,547
=====					
Supplemental disclosure of cash flow information:					
—Interest paid	\$	6,330	\$	2,089	\$ 7,419
					\$ 4,768
					\$ 138,299
=====					

See accompanying notes to unaudited consolidated financial statements

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES
(A DEVELOPMENT STAGE ENTERPRISE)
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (NET CAPITAL DEFICIENCY)
FOR THE PERIOD FROM OCTOBER 17, 1986 (INCEPTION) TO JUNE 30, 1998
(UNAUDITED)

	Notes	Unrealized	Deficit	Total
	receivable	gain (loss)	accumulated	stockholders'
	in connection	Additional	on	equity
Common	Preferred	with sale	paid-in	marketable
stock	stock	of stock	capital	securities
				stage
				development
				(Net capital
				deficiency)

Balance at October 17, 1986						
Common stock issued	\$ 11,288,329		\$ 254,864		11,543,193	
Common stock options issued			75,000		75,000	
Net loss			(12,192,046)		(12,192,046)	
Balance at December 31, 1994	11,288,329		329,864		(12,192,046)	(573,853)
Reincorporation in Delaware						
—at \$.01 par value	(11,220,369)		11,220,369			
Common stock issued	27,656		9,726,277		9,753,933	
Net loss			(7,387,717)		(7,387,717)	
Balance at December 31, 1995	95,616		21,276,510		(19,579,763)	1,792,363
Common stock issued	18,267		7,043,328		7,061,595	
Common stock subscribed			(110,000)		(110,000)	
Unrealized loss on marketable						
—securities			(39,232)		(39,232)	
Net loss			(7,008,889)		(7,008,889)	
Balance at December 31, 1996	113,883	(110,000)	28,319,838	(39,232)	(26,588,652)	1,695,837
Issuance of common stock in						
—connection with						
—acquisition of Camelot						
—Pharmaca, L.L.C.	6,000		1,644,000		1,650,000	
Common stock issued	6,612	37,400	1,041,750		1,085,762	
Common stock options and						
—warrants issued			165,868		165,868	
Common stock options extended			215,188		215,188	
Accretion of issuance costs for						
—cumulative convertible						
—redeemable preferred stock					(79,500)	(79,500)
Unrealized gain on marketable						
—securities			39,232		39,232	
Net loss			(9,489,138)		(9,489,138)	
Balance at December 31, 1997	126,495	(72,600)	31,386,644		(36,157,290)	(4,716,751)
Common stock issued	30,933	23,300	2,216,397		2,270,630	
Accretion of issuance costs for						
—cumulative convertible redeemable						
—preferred stock					(23,900)	(23,900)
Net loss			(2,263,048)		(2,263,048)	
Balance at March 31, 1998	157,428	(49,300)	33,603,041		(38,444,238)	(4,733,069)
Common stock issued	111,106	23,900	9,926,164		10,061,170	
Preferred stock issued	115		11,499,885		11,500,000	
Net loss					(13,303,121)	(13,303,121)
Balance at June 30, 1998	268,534	115	(25,400)	55,029,090	(51,747,359)	3,524,980

See accompanying notes to unaudited consolidated financial statements

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

JUNE 30, 1998

(UNAUDITED)

1. CONSOLIDATED FINANCIAL STATEMENTS

The accompanying consolidated balance sheets as of June 30, 1998 and December 31, 1997 and the accompanying consolidated statements of operations and cash flows for the three and six months ended June 30, 1998 and 1997 and for the period from October 17, 1986 (inception) to June 30, 1998, have been prepared by Sheffield Pharmaceuticals, Inc. (the "Company") without audit. In the opinion of management, all adjustments (consisting only of normal recurring accruals) necessary to present fairly the financial position, results of operations, and cash flows at June 30, 1998 and for all periods presented have been made.

Certain information and footnote disclosures normally included in financial statements prepared in accordance with generally accepted accounting principles have been condensed or omitted. It is suggested that these consolidated financial statements be read in conjunction with the financial statements and notes thereto included in the Company's annual report on Form 10-K, as amended, for the year ended December 31, 1997. The results of operations for the three and six months ended June 30, 1998 and 1997 are not necessarily indicative of the operating results for the full years.

Sheffield Medical Technologies Inc. ("Sheffield") was incorporated on October 17, 1986. The Company's wholly-owned subsidiary, U-Tech Medical Corporation ("U-Tech") was incorporated on January 13, 1992 and was liquidated on June 30, 1997. On January 26, 1995, the Company's shareholders approved the proposal to reincorporate Sheffield in Delaware, which was effected on June 13, 1995. On January 10, 1996, Ion Pharmaceuticals, Inc. ("Ion"), was formed as a wholly-owned subsidiary of the Company. At that time, Ion acquired the Company's rights to certain early-stage biomedical technologies. On April 17, 1997, CP Pharmaceuticals, Inc. ("CP") was formed for the purpose of acquiring Camelot Pharmacal, L.L.C., a privately held pharmaceutical development company, which acquisition was consummated on April 25, 1997. On June 26, 1997, the Company's shareholders approved the proposal to change Sheffield's name from Sheffield Medical Technologies Inc. to Sheffield Pharmaceuticals, Inc. As part of an agreement with Elan Corporation, plc, on June 30, 1998, Systemic Pulmonary Delivery, Ltd. ("SPD") was formed as a wholly-owned subsidiary of the Company. At that time, SPD acquired the Company's rights to the systemic applications of the Metered Solution Inhaler ("MSI") and acquired Elan's rights to certain pulmonary delivery technologies. Unless the context requires otherwise, Sheffield, U-Tech, Ion, CP and SPD are referred herein to as "the Company." All significant intercompany transactions are eliminated in consolidation.

The Company is in the development stage and to date has been principally engaged in research, development and licensing efforts. The Company has generated minimal operating revenue and requires additional capital that the Company intends to obtain through out-licensing as well as through equity and debt offerings to continue to operate its business. The Company's ability to meet its obligations as they become due and to continue as a going concern must be considered in light of

the expenses, difficulties and delays frequently encountered in developing a new business, particularly since the Company will focus on product development that may require a lengthy period of time and substantial expenditures to complete. Even if the Company is able to successfully develop new products, there can be no assurance that the Company will generate sufficient revenues from the sale or licensing of such products to be profitable. Management believes that the Company has the ability to meet its obligations as they become due and to continue as a going concern through December 1998.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
JUNE 30, 1998
(UNAUDITED)

2. LOSS PER COMMON SHARE

In 1997, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 128, Earnings Per Share. SFAS No. 128 replaced the previously reported primary and fully diluted earnings per share with basic and diluted earnings per share. Unlike primary earnings per share, basic earnings per share excludes any dilutive effects of options, warrants and convertible securities. Diluted earnings per share is very similar to the previously reported fully diluted earnings per share. Basic net loss per share is based upon the weighted average Common Stock outstanding during each year. Options, warrants and convertible securities are not included as their effect is antidilutive. The effect of adoption of SFAS No. 128 had no financial impact, and accordingly, no restatement of loss per share for prior periods was necessary.

3. IMPACT OF RECENTLY ISSUED ACCOUNTING STANDARDS

On January 1, 1998 the Company adopted SFAS No. 130, "Reporting Comprehensive Income" ("SFAS No. 130"). SFAS No. 130 establishes standards for the reporting and display of comprehensive income and its components and is applied to all enterprises. The adoption of SFAS No. 130 had no impact on the Company's consolidated results of operations, financial position or cash flows.

In June 1997, the FASB issued SFAS No. 131, "Disclosures about Segments of an Enterprise and Related Information" ("SFAS No. 131"). SFAS No. 131 establishes standards for the way that public business enterprises report information about operating segments in annual financial statements and requires that those enterprises report selected information about operating segments in interim financial reports issued to stockholders. It also establishes standards for related disclosures about products and services, geographic areas, and major customers. SFAS No. 131 is effective for financial statements for fiscal years beginning after December 15, 1997. The Company will adopt the new requirements in conjunction with its 1998 Form 10-K. The adoption of SFAS No. 131 will have no significant impact on the Company's financial reporting.

4. RESEARCH AND DEVELOPMENT

On June 15, 1998, the Company entered into an agreement with Zambon Group SpA ("Zambon") of Milan, Italy for a sublicense to the Company's proprietary MSI drug delivery system. Zambon received an exclusive world-wide marketing and development sub-license for respiratory products to be delivered by the metered solution inhaler ("MSI") including four drugs previously under development by Sheffield. Sheffield will maintain certain co-promotion rights in the U.S. for respiratory drugs as well as the world-wide marketing and development rights for all applications of the MSI delivery system outside the respiratory therapeutic area. As part of this transaction, Zambon agreed to fund all remaining development costs relating to these respiratory products, paid the Company an up-front fee in the form of an equity investment as well as will pay the Company milestone payments upon marketing approval for each of the four products and royalties upon commercialization. In addition, Zambon will provide Sheffield with an interest free line of credit upon the achievement of certain early milestones. Relative to the agreement, on April 15, 1998, the Company issued 800,000 shares of Common Stock, for the sum of \$650,000 in cash, pursuant to an option agreement and on June 15, 1998, the Company entered into the definitive agreement which resulted in the issuance of an additional 1,846,153 shares of Common Stock for \$1,500,000.

On June 30, 1998, the Company issued 5,571,428 shares of Common Stock and 11,500 shares of Series C Cumulative Convertible Preferred Stock, convertible into shares of Common Stock of the Company or of its wholly-owned subsidiary, SPD, for \$17.5 million pursuant to a definitive agreement with an affiliate of Elan Corporation, plc, Elan International Services ("Elan"). Elan also received warrants to purchase 990,000 shares of Common Stock of the Company with an exercise price of \$2.00 per share. Under the terms of the agreement, the Company, through SPD, acquired certain pulmonary delivery technologies for the sum of \$12.5 million in cash.

The Company is responsible for the development of these technologies. All of the outstanding common stock of SPD is pledged to Elan during the term of the agreement, and Elan agreed to make available to the Company an additional \$2 million in funding in the form of a convertible note, at the option of the Company.

5. CAPITAL TRANSACTIONS

On April 15, 1998, the Company issued 1,250 shares of its Series B Cumulative Convertible Redeemable Preferred Stock in a private placement for an aggregate purchase price of \$1,250,000. As of June 30, 1998, all of the Series B Preferred Stock remained to be redeemed or available for conversion. On July 31, 1998, all of the Series B Preferred Stock was redeemed by the Company.

On April 15, 1998, the Company made the DM 2.0 million payment to Siemens, A.G. that was originally due in January 1998 under the terms of its license agreement with Siemens, A.G. concerning the MSI technology. This payment was made with the proceeds of the Series B Preferred Stock offering.

For the period January 1, 1998 through April 15, 1998, a total of 4,075,797 shares of common stock were issued as a result of conversion of the Company's Series A Preferred Stock. As of April 15, 1998, all outstanding shares of the Series A Preferred Stock had been converted. For the period January 1, 1998 through June 3, 1998, a total of 2,925,941 shares of common stock were issued as a result of conversion and interest payments made on the Company's 6% subordinated convertible debentures. As of June 3, 1998, all principal had been converted into shares of common stock.

6. SUBSEQUENT EVENTS

On July 15, 1998, the Company, through SPD, acquired from Aeroquip Corporation a new generation metered dose inhaler (MDI) system called the Aerosol Drug Delivery System ("ADDS") in a cash transaction. SPD holds the rights to all systemic disease applications of the ADDS technology. Sheffield retains the rights to develop respiratory disease applications of this ADDS technology. In connection with the ADDS acquisition, the three member technology team at Aeroquip that developed the ADDS system have joined Sheffield.

On July 15, 1998, in connection with an annual Meeting of Stockholders, stockholders approved certain amendments to the Company's 1993 Stock Option Plan, increasing the number of shares of Common Stock available for issuance thereunder from 3,000,000 shares to 4,000,000 shares.

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES (A DEVELOPMENT STAGE ENTERPRISE)

ITEM 2:

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

THIS REPORT CONTAINS CERTAIN FORWARD-LOOKING STATEMENTS WITHIN THE MEANING OF SECTION 27A OF THE SECURITIES ACT OF 1933, AS AMENDED, AND SECTION 21E OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED, WHICH ARE INTENDED TO BE COVERED BY THE SAFE HARBORS CREATED HEREBY. ALL FORWARD-LOOKING STATEMENTS INVOLVE RISKS AND UNCERTAINTY, INCLUDING WITHOUT LIMITATION, THE SUCCESSFUL DEVELOPMENT AND LICENSING OF THE COMPANY'S TECHNOLOGIES AND THE SUCCESSFUL COMPLETION OF PLANNED FINANCINGS. ALTHOUGH THE COMPANY BELIEVES THAT THE ASSUMPTIONS UNDERLYING THE FORWARD-LOOKING STATEMENTS CONTAINED HEREIN ARE REASONABLE, ANY OF THE ASSUMPTIONS COULD BE INACCURATE, AND THEREFORE, THERE CAN BE NO ASSURANCE THAT THE FORWARD-LOOKING STATEMENTS INCLUDED IN THIS REPORT WILL PROVE TO BE ACCURATE. IN LIGHT OF THE SIGNIFICANT UNCERTAINTIES INHERENT IN THE FORWARD-LOOKING STATEMENTS INCLUDED HEREIN, THE INCLUSION OF SUCH INFORMATION SHOULD NOT BE REGARDED AS A REPRESENTATION BY THE COMPANY OR ANY OTHER PERSON THAT THE OBJECTIVES AND PLANS OF THE COMPANY WILL BE ACHIEVED.

OVERVIEW

The Company is a specialty pharmaceutical company focused on the development and commercialization of later stage, lower risk pharmaceutical opportunities, particularly those utilizing unique pulmonary delivery technologies over a range

of therapeutic areas. The Company is focusing its resources on the development and commercialization of pharmaceutical products whose utility and commercial potential can be exploited or enhanced by delivery in one of the Company's proprietary pulmonary delivery systems. The Company has established strategic alliances with Siemens AG, Zambon Group Spa, and Elan Corporation, plc. for the development of these systems. The Company through its wholly-owned subsidiary, Systemic Pulmonary Delivery, Ltd. ("SPD") has expanded its portfolio of proprietary pulmonary delivery technologies with the recent acquisitions of the UPDAS(TM) and Enhancing Technology from Elan Corporation, plc and the ADDS system from Aeroquip Corporation. The Company will seek to acquire additional novel platform drug delivery systems and technologies.

FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The Company, a development stage enterprise, has incurred a net loss in each of the fiscal years since its inception and has had to rely on outside sources of funds to maintain its liquidity. Additional operating losses are expected to be incurred for the next few years as the Company expends its resources for product acquisition, research and development and preclinical and clinical testing.

As a development stage company without significant revenues, the Company has financed its development activities and operations primarily through public and private offerings of securities, from which it has raised an aggregate of approximately \$51.9 million through June 30, 1998.

The Company continues to conduct scientific research, clinical trials, development, and intellectual property protection. During the three months ended June 30, 1998, the Company funded \$47,729 for direct research and development costs on its projects. The Company continues to seek appropriate sub-licensing partners for its remaining early-stage technologies.

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES (A DEVELOPMENT STAGE ENTERPRISE)

REVENUES AND EXPENSES

Revenues:

From inception through the period ended June 30, 1998, the Company has earned sub-license revenue of \$1,360,000 relative to various early-stage technologies. The Company earned sub-license revenue of \$350,000 for the quarter ended June 30, 1998.

From inception through the period ended June 30, 1998, the Company has earned interest income of \$457,342 and an extraordinary item from gain on early extinguishment of debt of \$42,787. The Company's ability to generate material revenues is contingent on the successful commercialization of its technologies and other technologies and products that it may acquire, followed by the successful marketing and commercialization of such technologies through licenses, joint ventures or other arrangements.

Interest income for the three months ended June 30, 1998 was \$2,562 compared to \$21,747 for the same period ended June 30, 1997. The decrease in interest earned is attributable to a decrease of cash invested in short-term investments. Except for the sub-license revenue mentioned above, interest income represented all of

the Company's income in each of the prior periods.

Operating Expenses:

From inception through the period ended June 30, 1998, the Company incurred \$55,768,089 of operating expenses. Of the total operating expenses for that period, \$21,048,494 were costs of research and development for the Company's technologies and \$14,150,000 for the acquisition of R & D in-process technology. The remainder of expenses for the same period were incurred principally as consulting costs, costs of management, legal and other professional fees and expenses relating to the Company's technologies, and for the cost of completing its financings. Research and development costs are expected to remain high as the Company develops its current technologies and acquires additional technologies. Such costs will continue to be expensed for financial reporting purposes.

Operating expenses for the three months ended June 30, 1998, were \$13,655,683 compared to \$3,443,147 for the same period ended June 30, 1997. During the quarter ended June 30, 1998, the Company recognized a \$12.5 million expense related to the acquisition of R&D in-process technology under its agreement with Elan Corporation, plc, as discussed below. During the quarter ended June 30, 1997, the Company recognized a \$1.65 million expense related to the acquisition of R&D in-process technology pursuant to the merger with Camelot Pharmacal, L.L.C.

The Company's direct research and development expenses were \$12,547,729 and \$31,208,038 for the three months ended June 30, 1998 and from the Company's inception to June 30, 1998, respectively. The Company's committed direct research and development funding after June 30, 1998 is currently \$2.0 million and relates primarily to the development of certain pulmonary delivery technologies by SPD (i.e., systemic applications of the MSI, UPDAS(TM), Enhancing Technology, ADDS). The Company anticipates funding the development costs associated with the respiratory applications of the UPDAS(TM) and ADDS technologies, the anticipated costs of which have not been determined at the time of this filing. The Company continues to out-license the early-stage technologies remaining in its portfolio, seeking organizations having the interest and resources to continue development accordingly.

LIQUIDITY AND CAPITAL RESOURCES

The Company's cash available for funding its operations as of June 30, 1998 was \$5,421,662. As of such date, the Company had trade payables of \$716,505 and current research obligations of \$470,180. As a result of its development and growth plans, the Company will need to obtain additional funds for its business through operations or equity or debt financings, collaborative arrangements with corporate partners or from other resources. No assurance can be given that these funds will be available for the Company to finance its development on acceptable terms, if at all. If adequate funds are not available from operations or additional sources of funding, the Company's business will suffer a material adverse effect.

The Company's operations to date have consumed substantial and increasing amounts of cash. The negative cash flow from operations is expected to continue in the foreseeable future. The Company has not yet begun to generate revenues from the sale of products. The Company's products will require significant

additional development, clinical testing and investment prior to commercialization. The Company does not expect regulatory approval for commercial sales of any of its products in the immediate future. There can be no assurance that such products will be successfully developed, proven to be safe and efficacious in clinical trials, able to meet applicable regulatory standards, able to obtain required regulatory approvals, or produced in commercial quantities at reasonable costs or be successfully commercialized and marketed.

The owners and licensors of the technology rights acquired by the Company are entitled to receive a certain percentage of all royalties and payments in lieu of royalties received by the Company from commercialization, if any, of products in respect of which the Company holds licenses. Accordingly, in addition to its substantial investment in product development, the Company will be required to make substantial payments to others in connection with revenues derived from commercialization of products, if any, developed under licenses the Company holds. Consequently, the Company will not receive the full amount of any revenues that may be derived from commercialization of products to fund ongoing operations.

Under the terms of existing agreements, the Company is obligated to make certain payments to its licensors. In the event that the Company defaults on the payment of an installment under the terms of an existing licensing agreement, its rights thereunder could be forfeited. As a consequence, the Company could lose all rights under a license agreement to the related licensed technology, notwithstanding the total investment made through the date of the default. There can be no assurance that unforeseen obligations or contingencies will not deplete the Company's financial resources and, accordingly, sufficient resources may not be available to fulfill the Company's commitments.

On April 15, 1998, the Company issued 800,000 shares of Common Stock, for \$650,000 pursuant to an option agreement with an affiliate of the Zambon Corporation, Inpharzam International, S.A., relative to certain MSI respiratory applications. On June 15, 1998, the Company entered into the definitive agreement with Inpharzam, which resulted in the issuance of an additional 1,846,153 shares of Common Stock for \$1,500,000. Under the terms of the agreement, Inpharzam will fund all development costs associated with the subject MSI respiratory applications.

On April 15, 1998, the Company issued 1,250 shares of its Series B Cumulative Convertible Redeemable Preferred Stock in a private placement for an aggregate purchase price of \$1,250,000, plus warrants to purchase 300,000 shares of Common Stock with an exercise price of \$1.00 per share. As of June 30, 1998, all of the Series B Preferred Stock remained to be redeemed or available for conversion. On July 31, 1998, all of the Series B Preferred Stock was redeemed by the Company.

On June 30, 1998, the Company issued 5,571,428 shares of Common Stock and 11,500 shares of Series C Cumulative Convertible Preferred Stock, convertible into shares of Common Stock of the Company or of its wholly-owned subsidiary, SPD, for \$17.5 million pursuant to a definitive agreement with an affiliate of Elan Corporation, plc, Elan International Services ("Elan"). Elan also received warrants to purchase 990,000 shares of Common Stock of the Company with an exercise price of \$2.00 per share. Under the terms of the agreement, the Company, through SPD, acquired certain pulmonary delivery technologies for the sum of \$12.5 million in cash. The Company is responsible for the development of these technologies. All of the outstanding common stock of SPD is pledged to Elan during the term of the agreement, and Elan agreed to make available to the

Company an additional \$2 million in funding in the form of a convertible note, at the option of the Company.

SHEFFIELD PHARMACEUTICALS, INC. AND SUBSIDIARIES
(A DEVELOPMENT STAGE ENTERPRISE)

PART II: OTHER INFORMATION

Item 2. CHANGES IN SECURITIES.

The following unregistered securities were issued by the Company during the quarter ended June 30, 1998:

Date of Sale/Issuance	Description of Securities Issued	Number of Shares Sold/Issued	Options or Warrants	Price per Share (\$)	Offering/Exercise Price	Subject to Purchase of Class
April-June 1998	Common Stock	3,908,512		\$0.5156-\$0.7125		Holders of Preferred Stock and Convertible Debentures
April 1998	Common Stock	800,000		\$0.8125		Investor/Licensor
April 1998	Common Stock Warrants	300,000		\$1.00		Holder of Preferred Stock
May 1998	Common Stock Warrants	52,410		\$1.375-\$1.625		Advisors
May 1998	Common Stock Options	30,000		\$1.375		Issuance to eligible Directors pursuant to the 1996 Directors Stock Option Plan
June 1998	Common Stock	1,846,153		\$0.8125		Investor/Licensor
June 1998	Common Stock	4,571,428		\$1.3125		Investor/Licensor
June 1998	Common Stock Warrants	990,000		\$2.00		Investor/Licensor

The issuance of these securities is claimed to be exempt from registration pursuant to Section 4(2) of the Securities Act of 1933, as amended, as transactions by an issuer not involving a public offering. There were no underwriting discounts or commissions paid in connection with the issuance of any of these securities.

ITEM 6. EXHIBITS AND REPORTS ON FORM 8-K.

(a) EXHIBITS

NO. DESCRIPTION

- 3.1 Certificate of Incorporation, as amended
- 4.1 Certificate of Designations defining the powers, designations, rights, preferences, limitations and restrictions applicable to the Company's Series B Cumulative Convertible Redeemable Preferred Stock.
- 4.2 Certificate of Designations defining the powers, designations, rights, preferences, limitations and restrictions applicable to the Company's Series C Cumulative Convertible Preferred Stock.
- 27 Financial Data Schedule.

(b) REPORTS ON FORM 8-K

The Company filed a Current Report on Form 8-K with the Securities and Exchange Commission on April 17, 1998 relating to (i) the Company's entering into an option agreement to form a strategic arrangement with Zambon Group SpA of Milan, Italy, for the worldwide development and commercialization of drugs to treat respiratory disease in the Company's proprietary MSI system, (ii) the announcement of the Company's financial results for the fourth quarter and year ended December 31, 1997, (iii) the completion of the offering and sale of the Company's Series B Cumulative Convertible Redeemable Preferred Stock for gross proceeds of \$1.25 million, and (iv) certain other matters.

The Company filed a current Report on Form 8-K with the Securities and Exchange Commission on June 22, 1998 relating to the Company's entering into a sublicense and development agreement with Inpharzam International, S.A. of Switzerland (an affiliate of Zambon Group, SpA) for the testing and development of the Company's rights in its MSI technology in respect of therapies for respiratory diseases.

The Company filed a current Report on Form 8-K with the Securities and Exchange Commission on July 16, 1998 relating to the Company's consummation of a license and financing transaction with Elan International Services, Ltd. ("Elan") (an affiliate of Elan Corporation plc, an Irish pharmaceutical company) in accordance with the terms of the binding letter of intent dated June 3, 1998.

In accordance with the requirements of the Exchange Act, the registrant caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

SHEFFIELD PHARMACEUTICALS, INC.

Dated: August 14, 1998 /S/ LOREN G. PETERSON

Loren G. Peterson
President & Chief Executive Officer

Dated: August 14, 1998 /S/ JUDY ROESKE BULLOCK

Judy Roeske Bullock
Vice President & Chief Financial Officer
(Principal Financial and Accounting Officer)

EX-3.1

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CERTIFICATE OF INCORPORATION

CERTIFICATE OF INCORPORATION

OF

SHEFFIELD MERGER CO.

The undersigned, a natural person, for the purpose of organizing a corporation for conducting the business and promoting the purposes hereinafter stated, under the provisions of subject to the requirements of the laws of the State of Delaware (particularly Chapter 1, Title 8 of the Delaware Code and the acts amendatory thereof and supplemental thereto, and known, identified and referred to as the "General Corporation Law of the State of Delaware"), hereby certifies that:

FIRST: The name of the corporation (hereinafter sometimes called the "Corporation") is Sheffield Merger Co.

SECOND: The address, including street, number, city and county of the registered office of the Corporation in the State of Delaware is 32 Loockerman Square, Suite L-100, City of Dover 19901, County of Kent; and the name of the registered agent of the Corporation in the State of Delaware at such address is The Prentice-Hall Corporation System, Inc.

THIRD: The purpose of the Corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware.

FOURTH: The total number of shares of stock which the Corporation shall have the authority to issue is (i) 15,000,000 shares of Common Stock, \$.01 par value ("Common Stock") and (ii) 1,000,000 shares of Preferred Stock, \$.01 par value ("Preferred Stock").

A. COMMON STOCK.

1. GENERAL. The voting, dividend and liquidation rights of the holders of Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board of Directors upon any issuance of the Preferred Stock of any series.

2. VOTING. The holders of Common Stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting.

3. DIVIDENDS. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any

preferential dividend rights of any then outstanding Preferred Stock.

4. LIQUIDATION. Upon the dissolution or liquidation of the Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the Corporation available for distribution to its stockholders after payment of creditors and subject to any preferential and/or participating rights of any then outstanding Preferred Stock.

B. PREFERRED STOCK.

Authority is hereby expressly granted to the Board of Directors from time to time to issue the Preferred Stock in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative, participating, optional or other special rights and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent not or hereafter permitted by the General Corporation Law of Delaware. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of Preferred Stock may provide that such series shall be superior or rank equally or junior to the Preferred Stock of any other series to the extent permitted by law. Except as expressly provided elsewhere in this Article FOURTH, no vote of the holders of the Preferred Stock or Common Stock shall be required in connection with the designation or the issuance of any shares of any series of any Preferred Stock authorized by and complying with the conditions herein, the right to have such being vote being expressly waived by all present and future holders of the capital stock of the Corporation.

FIFTH: The name and the mailing address of the incorporator is as follows:

Gary Weston
Olshan Grundman Frome & Rosenzweig
505 Park Avenue
New York, New York 10022

SIXTH: The Corporation is to have perpetual existence.

SEVENTH: Whenever a compromise or arrangement is proposed between the Corporation and its creditors or any class of them and/or between

the Corporation and its stockholders or any class of them, any court of equitable jurisdiction within the State of Delaware may, on the application in a summary way of the

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Corporation or of any creditor or stockholder thereof or on the application of any receiver or receivers appointed for the Corporation under the provisions of Section 291 of Title 8 of the Delaware Code or on the application of trustees in dissolution or of any receiver or receivers appointed for the Corporation under the provisions of Section 279 of Title 8 of the Delaware Code order a meeting of the creditors or class of creditors, and/or the stockholders or class of stockholders of the Corporation, as the case may be, to be summoned in such manner as the said court directs. If a majority in number representing three fourths in value of the creditors or class of creditors, and/or of the stockholders or class of stockholders of the Corporation, as the case may be, agree to any compromise or arrangement and to any reorganization of the Corporation as consequence of such compromise or arrangement, the said compromise or arrangement and the said reorganization shall, if sanctioned by the court to which the said application has been made, be binding on all the creditors or class of creditors, and/or on all the stockholders or class of stockholders, of the Corporation, as the case may be, and also on the Corporation.

EIGHTH: For the management of the business and for the conduct of the affairs of the Corporation, and in further definition, limitation and regulation of the powers of the Corporation and of its directors and its stockholders or any class thereof, as the case may be, it is further provided:

1. The management of the business and the conduct of the affairs of the Corporation shall be vested in its Board of Directors. The number of directors which shall constitute the whole Board of Directors shall be fixed by, or in the manner provided in, the By-Laws. The phrase "whole Board" and the phrase "total number of directors" shall be deemed to have the same meaning, to wit, the total number of directors which the Corporation would have if there were no vacancies. No election of directors need be by written ballot.

2. After the original or other By-laws of the Corporation have been adopted, amended, or repealed, as the case may be, in accordance with the provisions of Section 109 of the General Corporation Law of the State of Delaware, and, after the Corporation has received any payment for any of its stock, the power to adopt, amend, or repeal the By-laws of the Corporation may be exercised by the Board of Directors of the Corporation; provided, however, that any provision for the classification of directors of the Corporation for staggered terms pursuant to the provisions of subsection (d) of Section 141 of the General Corporation Law of the State of Delaware shall be set forth in an initial By-law or

in a By-law adopted by the stockholders entitled to vote of the Corporation unless provisions for such classification shall be set forth in this Certificate of Incorporation.

3. Whenever the Corporation shall be authorized to issue only one class of stock, each outstanding share shall entitle the holder thereof to notice of, and the right to vote at, any meeting of stockholders. Whenever the Corporation shall be authorized to issue more than one class of stock, no outstanding share of any class of stock which is denied voting power under the provisions of the Certificate of Incorporation shall entitle the holder thereof to the right to vote at any meeting of stockholders except as the provisions of paragraph (2) of subsection (b) of Section 242 of the General Corporation Law of the State of Delaware shall otherwise require; provided, that no share of any such class which is otherwise denied voting power shall entitle the holder thereof to vote upon the increase or decrease in the number of authorized shares of said class.

NINTH: The personal liability of the directors of the Corporation is hereby eliminated to the fullest extent permitted by paragraph (7) of subsection (b) of Section 102 of the General Corporation Law of the State of Delaware, as same may be amended and supplemented.

TENTH: The Corporation shall, to the fullest extent permitted by Section 145 of the General Corporation Law of the State of Delaware, as the same may be amended and supplemented, indemnify any and all persons whom it shall have power to indemnify under said section from and against any and all of the expenses, liabilities or other matters referred to in or covered by said section, and the indemnification provided for herein shall not be deemed exclusive of any other rights to which those indemnified may be entitled under any By-Law, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in his official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

ELEVENTH: From time to time any of the provisions of this Certificate of Incorporation may be amended, altered or repealed, and other provisions authorized by the laws of the State of Delaware at the time in force may be added or inserted in the

manner and at the time prescribed by said laws, and all rights at any time conferred upon the stockholders of the Corporation by this Certificate of Incorporation are granted subject to the provisions of this Article ELEVENTH.

Signed on September 20, 1993

/S/ Gary Weston

Gary Weston, Incorporator

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Certificate of Amendment

of

Certificate of Incorporation

of

SHEFFIELD MERGER CO.

Under Section 242 of the General Corporation Law

It is hereby certified that:

1. The name of the corporation is Sheffield Merger Co. (the "Corporation").

2. The certificate of incorporation of the Corporation is hereby amended by striking out Article FOURTH thereof and by substituting in lieu of said Article the following new Article FOURTH:

"FOURTH: The total number of shares of stock which the Corporation shall have the authority to issue is (i) twenty million (20,000,000) shares of Common Stock, \$.01 par value ("Common Stock") and (ii) 3,000,000 shares of Preferred Stock, \$.01 par value ("Preferred Stock").

COMMON STOCK.

GENERAL. The voting, dividend and liquidation rights of the holders of Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board

of Directors upon any issuance of the Preferred Stock of any series.

VOTING. The holders of Common Stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting.

DIVIDENDS. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any preferential dividend rights of any then outstanding Preferred Stock.

LIQUIDATION. Upon the dissolution or liquidation of the Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the Corporation

available for distribution to its stockholders after payment of creditors and subject to any preferential and/or participating rights of any outstanding Preferred Stock.

PREFERRED STOCK.

Authority is hereby expressly granted to the Board of Directors from time to time to issue the Preferred Stock in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative, participating, option or other special rights and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent now or hereafter permitted by the General Corporation Law of Delaware. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of Preferred Stock may provide that such series shall be superior or rank equally or junior to the Preferred Stock of any other series to the extent permitted by law. Except as expressly provided elsewhere in this Article FOURTH no vote of the holders of the Preferred Stock or Common Stock shall be required in connection with the designation or the issuance of any shares of any series of any Preferred Stock authorized by and complying with the conditions herein, the right to have such vote being expressly waived by all present and future holders of the capital stock of the Corporation."

3. The amendment of the certificate of incorporation herein certified has been duly adopted in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

Signed on January 25, 1995.

SHEFFIELD MERGER CO.

By: /S/ Douglas R. Eger

Douglas R. Eger, Chairman

Attest:

/S/ Harvey L. Kellman

Harvey L. Kellman, Secretary

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CERTIFICATE OF MERGER

OF

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SHEFFIELD MEDICAL TECHNOLOGIES INC.

INTO

SHEFFIELD MERGER CO.

(Under Section 252 of the
General Corporation Law of the State of Delaware)

Sheffield Merger Co., a Delaware corporation, hereby certifies
as follows:

FIRST: The name and state of incorporation of each of the
constituent corporations of the merger is as follows:

NAME	STATE OF INCORPORATION
------	------------------------

Sheffield Medical Technologies Inc.	Wyoming
Sheffield Merger Co.	Delaware

SECOND: An Agreement of Merger has been approved, adopted,
certified, executed and acknowledged by each of the constituent corporations in
accordance with Section 252(c) of the General Corporation Law of the State of
Delaware.

THIRD: The name of the surviving corporation (the "Surviving
Corporation") is Sheffield Merger Co.

FOURTH: The Certificate of Incorporation of the Surviving
Corporation is hereby amended by striking out Article FIRST thereof and by
substituting in lieu of said Article the following new Article FIRST as follows:

FIRST: The name of the corporation (hereinafter sometimes called the "Corporation") is Sheffield Medical Technologies Inc.

FIFTH: An executed copy of the Agreement of Merger is on file at the principal place of business of the Surviving Corporation, 666 Fifth Avenue, New York, New York 10103, and a copy of the Agreement of Merger will be furnished by the Surviving Corporation, on request and without cost, to any stockholder of either of the constituent corporations.

SIXTH: The authorized capital stock of Sheffield Medical Technologies Inc., a Wyoming corporation, consists of

50,000,000 shares of common stock, no par value, and 10,000,000 shares of preferred stock, no par value.

SEVENTH: This Certificate of Merger shall be effective upon filing with the Secretary of State of the State of Delaware.

IN WITNESS WHEREOF, Sheffield Merger Co. has caused this Certificate of Merger to be executed in its corporate name by its Chairman of the Board and attested by its Secretary this 12th day of June, 1995.

SHEFFIELD MERGER CO.

By: /S/ Douglas R. Eger

Douglas R. Eger
Chairman of the Board

[SEAL]

Attest:

By: /S/ Kathleen Rawlinson

Kathleen Rawlinson
Secretary

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CERTIFICATE OF AMENDMENT

of

CERTIFICATE OF INCORPORATION

of

SHEFFIELD MEDICAL TECHNOLOGIES INC.

Under Section 242 of the General Corporation Law

It is hereby certified that:

1. The name of the corporation is Sheffield Medical Technologies Inc. (the "Corporation").

2. The certificate of incorporation of the Corporation is hereby amended to increase the authorized shares of common stock of the Corporation by striking out Article FOURTH thereof and by substituting in lieu of said Article FOURTH the following new Article FOURTH:

"FOURTH: The total number of shares of stock that the Corporation shall have the authority to issue is (i) thirty million (30,000,000) shares of Common Stock, \$.01 par value ("Common Stock"), and (ii) three million (3,000,000) shares of Preferred Stock, \$.01 par value ("Preferred Stock").

COMMON STOCK.

GENERAL. The voting, dividend and liquidation rights of the holders of Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board of Directors upon any issuance of the Preferred Stock of any series.

VOTING. The holders of Common Stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting.

DIVIDENDS. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any preferential dividend rights of any then outstanding Preferred Stock.

LIQUIDATION. Upon the dissolution or liquidation of the Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the Corporation

available for distribution to its stockholders after payment of creditors and subject to any preferential and/or participating rights of any outstanding Preferred Stock.

PREFERRED STOCK.

Authority is hereby expressly granted to the Board of Directors from time to time to issue the Preferred Stock in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting

powers, full or limited, or no voting powers, and such designations, preferences and relative, participating, option or other special rights and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent now or hereafter permitted by the General Corporation Law of Delaware. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of Preferred Stock may provide that such series shall be superior or rank equally or junior to the Preferred Stock of any other series to the extent permitted by law. Except as expressly provided elsewhere in this Article FOURTH no vote of the holders of the Preferred Stock or Common Stock shall be required in connection with the designation or the issuance of any shares of any series of any Preferred Stock authorized by and complying with the conditions herein, the right to have such vote being expressly waived by all present and future holders of the capital stock of the Corporation."

3. The amendment of the certificate of incorporation herein certified has been duly adopted in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

Signed on February 5, 1997

SHEFFIELD MEDICAL TECHNOLOGIES INC.

By: /S/ George Lombardi

George Lombardi
Vice President and Chief
Financial Officer

Attest:

/S/ Jacqueline Bova

Jacqueline Bova
Assistant Secretary

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CERTIFICATE OF DESIGNATION
OF
SERIES A CUMULATIVE CONVERTIBLE REDEEMABLE
PREFERRED STOCK
OF
SHEFFIELD MEDICAL TECHNOLOGIES INC.

(Pursuant to Section 151 of the
General Corporation Law of the State of Delaware)

Sheffield Medical Technologies Inc., a corporation organized
and existing under the General Corporation Law of the State of Delaware (the

"Corporation"), hereby certifies that the following resolution was adopted by the Board of Directors of the Corporation:

RESOLVED, that pursuant to the authority expressly granted to and vested in the Board of Directors of the Corporation (the "Board of Directors") by the provisions of the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), there hereby is created, out of the 3,000,000 shares of preferred stock of the Corporation authorized in Article FOURTH of the Certificate of Incorporation (the "Preferred Stock"), a series of Preferred Stock consisting of 40,800 shares, which series shall have the following powers, designations, preferences and relative, participating, optional or other rights, and the following qualifications, limitations and restrictions (in addition to the powers, designations, preferences and relative, participating, optional or other rights, and the qualifications, limitations and restrictions, set forth in the Certificate of Incorporation which are applicable to the Preferred Stock).

Section 1. DESIGNATION AND AMOUNT. The shares of such series shall be designated as "Series A Cumulative Convertible Redeemable Preferred Stock" (the "Series A Preferred Stock") and the authorized number of shares constituting such series shall be 40,800. The par value of the Series A Preferred Stock shall be \$.01 per share.

Section 2. DIVIDENDS.

Subject to Section 4(d), the holders of shares of the Series A Preferred Stock will be entitled to receive, when, as and if declared by the Board of Directors, cumulative stock dividends on the shares of the Series A Preferred Stock, payable in shares of the Corporation's common stock, \$.01 par value per share ("Common Stock"), at the rate per share of 7.0% per annum of the original \$100.00 purchase price per share of the Series A Preferred

Stock, and no more. Such stock dividends shall be cumulative from the date of the initial issuance of shares of Series A Preferred Stock (the "Closing Date") or the most recent date on which the full amount of accrued stock dividends have been paid, as the case may be, on the Series A Preferred Stock by the Corporation. Subject to, and as provided in, Section 4, the Corporation shall pay all cumulative stock dividends on the shares of Series A Preferred Stock held by a holder on the Conversion Date (as defined below) in respect of such holder's election to convert Series A Preferred Stock. The number of shares of Common Stock to be issued as cumulative stock dividends on any such Conversion Date shall equal the cash value of such cumulative dividends divided by the current market price per share of Common Stock (determined as provided in Section 5) as of such Conversion Date. The cash value of stock dividends payable on shares of Series A Preferred Stock for any full annual dividend period shall be computed by multiplying the original \$100.00 purchase price per share by 7.0%. The cash value of dividends payable on shares of the Series A Preferred Stock for any period less than a full annual dividend period shall be computed on the basis of a 360-day year of twelve 30-day months and the actual number of days elapsed in the period for which payable.

If stock dividends are not paid in full, or declared in full, upon the shares of the Series A Preferred Stock and shares of any other

preferred stock ranking on a parity as to payment of stock dividends with the Series A Preferred Stock, all dividends declared upon shares of the Series A Preferred Stock and any other preferred stock ranking on a parity as to payment of dividends with the Series A Preferred Stock shall be paid or declared PRO RATA so that in all cases the amount of dividends paid or declared per share on the Series A Preferred Stock and such other shares of preferred stock ranking on a parity as to payment of dividends with the Series A Preferred Stock shall bear to each other the same ratio that accumulated stock dividends per share, including dividends accrued or in arrears, if any, on the shares of the Series A Preferred Stock and such other shares of preferred stock bear to each other. Except as provided in the preceding sentence, unless full cumulative stock dividends on the shares of the Series A Preferred Stock have been paid or declared in full, no dividends (other than dividends in shares of Common Stock, or in shares of any other capital stock of the Corporation ranking junior to the Series A Preferred Stock as to payment of dividends and distribution of assets upon liquidation) shall be paid or declared and set aside for payment or other distribution upon the Common Stock or, except as provided above, on any other capital stock of the Corporation ranking junior to or on a parity with the Series A Preferred Stock as to dividends, nor shall any shares of Common Stock or shares of any other capital stock of the Corporation ranking junior to or on a parity with the Series A Preferred Stock as to dividends be redeemed, purchased or otherwise acquired for any consideration (or any payment made to or available for a sinking fund for the redemption of any such shares) by the Corporation or any subsidiary of the Corporation (except by conversion into or exchange for shares of capital stock of the

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Corporation ranking junior to the Series A Preferred Stock as to dividends and distribution of assets upon liquidation). Holders of shares of the Series A Preferred Stock shall not be entitled to any dividends, whether payable in capital stock, cash or property, in excess of full accrued and cumulative stock dividends as herein provided. No interest or sum of money in lieu of interest shall be payable in respect of any stock dividend payment or payments on the shares of the Series A Preferred Stock that may be in arrears; provided, however, that if, on an applicable Conversion Date (as defined herein), stock dividends that would have been payable on such date are not paid solely due to the failure of the Corporation's Board of Directors to declare such dividends, then the rate of conversion of the Series A Preferred Stock to be converted on such Conversion Date shall be adjusted so that the holders would receive the same amount of shares of Common Stock on such Conversion Date as such holder would have received if the Corporation's Board of Directors had timely declared such stock dividends.

The terms "accrued dividends," "dividends accrued" and "dividends in arrears," whenever used herein with reference to shares of preferred stock shall be deemed to mean an amount which shall be equal to dividends thereon at the applicable annual dividend rates per share for the respective series thereof from the date or dates on which such dividends commence to accrue to the applicable payment date less the amount of all dividends paid, or declared in full and sums set aside for the payment thereof, upon such shares of preferred stock.

Section 3. LIQUIDATION RIGHTS.

(a) In the event of any liquidation, dissolution or winding up of the affairs of the Corporation, whether voluntary or otherwise, after payment or provision for payment of the debts and other liabilities of the Corporation, the holders of shares of the Series A Preferred Stock shall be entitled to receive, in cash, out of the remaining net assets of the Corporation (whether from capital or from earnings available for distribution to shareholders), the amount of One Hundred Dollars (\$100.00) for each share of the Series A Preferred Stock, plus the cash value determined in accordance with Section 2 above of all stock dividends accrued and unpaid at the applicable rate on each such share up to the date fixed for distribution, before any distribution shall be made to the holders of shares of Common Stock or any other capital stock of the Corporation ranking (as to any such distribution) junior to the Series A Preferred Stock. If upon any liquidation, dissolution or winding up of the Corporation, the assets distributable among the holders of shares of the Series A Preferred Stock and all other classes and series of preferred stock ranking (as to any such distribution) on a parity with the Series A Preferred Stock are insufficient to permit the payment in full to the holders of all such shares of all preferential amounts payable to all such holders, then the entire assets of the Corporation thus distributable shall be distributed ratably among the holders of the shares of the Series A Preferred Stock and such other classes and

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series of preferred stock ranking (as to any such distribution) on a parity with the Series A Preferred Stock in proportion to the respective amounts that would be payable per share if such assets were sufficient to permit payment in full.

(b) For purposes of this Section 3, a distribution of assets in any dissolution, winding up or liquidation shall not include (i) any consolidation or merger of the Corporation with or into any other corporation or other entity, (ii) any dissolution, liquidation, winding up or reorganization of the Corporation immediately followed by reincorporation of another corporation or other entity or (iii) a sale or other disposition of all or substantially all of the Corporation's assets to another corporation or other entity; PROVIDED, HOWEVER, that, in each case, effective provision is made in the certificate of incorporation of the resulting and surviving corporation or otherwise for the protection of the relative rights of the holders of shares of the Series A Preferred Stock.

(c) After the payment of the full preferential amounts provided for herein to the holders of shares of the Series A Preferred Stock or funds necessary for such payment have been set aside in trust for the holders thereof, such holders shall be entitled to no other or further participation in the distribution of the assets of the Corporation.

Section 4. CONVERSION AND REDEMPTION OF SERIES A PREFERRED STOCK.

(a) Each holder of Series A Preferred Stock shall have the right, exercisable at any time and from time to time during the period commencing on the date that is ninety (90) days after the Closing Date and ending on the date that is two years after the Closing Date (the "Mandatory Conversion Date"), to convert any or all of the Series A Preferred Stock owned by such holder for shares of Common Stock, at a conversion rate determined by

multiplying the number of shares of Series A Preferred Stock to be converted by a fraction, the numerator of which shall equal one hundred (100) and the denominator of which (a "Denominator") shall equal (i) the current market price per share of the Common Stock (determined as provided in Section 5) as of the Closing Date (such current market price being referred to herein as the "Closing Price"), if the applicable Conversion Date (as defined below) occurs on or before the 119th day following the Closing Date, (ii) the lesser of (A) 100% of the Closing Price or (B) the current market price per share of Common Stock (determined as provided in Section 5) as of the applicable Conversion Date, if the applicable Conversion Date occurs on or after the 120th day after the Closing Date and on or before the 179th day after the Closing Date or (iii) the lesser of (A) 100% of the Closing Price and (ii) 85% of the current market price per share of Common Stock (determined as provided in Section 5) as of the applicable Conversion Date for any Conversion Date occurring on or after the 180th day after the Closing Date, subject to adjustment and the conditions described herein.

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(b) (i) Any holder of shares of the Series A Preferred Stock electing to convert shares thereof pursuant to Section 4(a) shall (A) transmit by facsimile, for receipt on the proposed date of conversion, a copy of a fully completed and executed notice of conversion ("Notice of Conversion") to the Corporation at the office of the Corporation or its designated transfer agent (the "Transfer Agent"), in the form attached as Exhibit A hereto, and (B) surrender to a common carrier for delivery to the office of the Corporation or the Transfer Agent, the original certificates representing the Series A Preferred Stock being converted (the "Preferred Stock Certificates"), duly endorsed for cancellation. The Corporation shall, upon the timely written request of a holder of shares of the Series A Preferred Stock, promptly provide in writing to such holder, via facsimile transmission, the appropriate numbers for the Corporation and the Transfer Agent to be used to effect an election in accordance with this subparagraph (i).

(ii) Upon receipt by the Corporation of transmission of a facsimile copy of such Notice of Conversion, the Corporation shall as soon as practicable (but in no event later than 12:00 noon on the next business day after receipt thereof) send, via facsimile, a confirmation of receipt of such Notice of Conversion to such holder, which shall specify that the Notice of Conversion has been received and the name and telephone number of a contact person at the Corporation whom the holder should contact regarding information related to such conversion. Upon receipt by the Corporation or the Transfer Agent of the certificate(s) representing the shares of Series A Preferred Stock to be converted pursuant to such Notice of Conversion (or an indemnification undertaking in form and substance reasonably satisfactory to the Corporation with respect to such shares in the case of their loss, theft or destruction) together with the originally executed and completed Notice of Conversion (such date of the Corporation's receipt of all such documents being referred to herein as the "Final Receipt Date"), the Corporation or Transfer Agent (as applicable) shall, as soon as possible on or after the applicable Final Receipt Date, but in any event within two (2) business days after the applicable Final Receipt Date, issue and surrender to a common carrier

for either overnight delivery (if delivery is to be made inside the United States) or two (2) day delivery (if delivery is to be made outside the United States) to such holder at the address specified in the Notice of Conversion, a certificate for the number of shares of Common Stock to which such holder shall be entitled as in respect of the related conversion. In the event of a partial conversion of shares of Series A Preferred Stock represented by certificate(s) delivered to the Corporation in respect of any conversion, the Corporation will return to the applicable holder a certificate representing such holder's remaining shares of Series A Preferred Stock that were not so converted. In the case of any dispute between the Corporation and such holder as to the calculation of the applicable Conversion

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Price evidenced by a notice to such effect (a "Dispute Notice") delivered to the Corporation by such holder prior to the Final Receipt Date, the Corporation shall promptly issue to such holder the number of shares of Common Stock that is not disputed and shall submit the disputed calculations to its outside accountant within two (2) business days after the Final Receipt Date. The Corporation shall cause such accountant to perform the calculations and notify the Corporation and the holder of the results no later than two (2) business days after the date that such outside accountant is delivered a copy of such holder's Dispute Notice by the Corporation pursuant to the preceding sentence. Such accountant's calculation shall be deemed conclusive and binding on the Corporation and such holder absent manifest error.

(iii) The effective date of a particular conversion (the "Conversion Date") other than pursuant to Section 4(c) shall be deemed to be the date on which the advance copy of the related Notice of Conversion in respect of such conversion is received by either the Corporation or the Transfer Agent by facsimile transmission as provided in paragraph (ii) above, provided that (A) such advance copy of the Notice of Conversion is transmitted by facsimile to and received by the Corporation before 11:59 p.m., New York City time, on such date and (B) the original certificates representing the Series A Preferred Stock to be converted (or an indemnification undertaking in form and substance reasonably satisfactory to the Corporation with respect to such shares in the case of their loss, theft or destruction), together with the originally executed and completed Notice of Conversion, are surrendered by depositing such certificates and Notice of Conversion with a common carrier, as provided above, and received by the Corporation or the Transfer Agent on or before the second (2nd) business day following the date that the related advance copy of the related Notice of Conversion is received by the Corporation or the Transfer Agent. In the event that all such documents are not received within two (2) business days after such date, such Notice of Conversion shall be deemed null and void and no conversion of Series A Preferred Stock shall be effected thereby.

(iv) As of any Conversion Date, the person or persons entitled to receive the shares of the Common Stock issuable upon the related conversion of shares of Series A Preferred Stock pursuant to this Section 4 shall be treated for all purposes as the record holder or holders of the shares of Common Stock issuable in respect of such

conversion on said date. From and after the Conversion Date in respect of such shares of Series A Preferred Stock, all such shares of Series A Preferred Stock shall be deemed to have been converted into shares of Common Stock at the applicable conversion rate, all stock dividends on such shares of the Series A Preferred Stock shall cease to accrue, and all rights of the holders thereof as holders of Series A Preferred Stock, except the right to

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receive all accrued and unpaid stock dividends to such Conversion Date at the applicable rate for such shares of Series A Preferred Stock and the right to receive certificates representing shares of Common Stock issuable upon conversion of such shares (including, without limitation, with respect to such stock dividends), shall cease and terminate, such shares of Series A Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) on the books of the Corporation and such shares shall not be deemed to be outstanding for any purpose whatsoever. The rights of a holder to elect to convert shares of Series A Preferred Stock under this Section 4(a) and 4(b) shall cease and terminate immediately after the Mandatory Conversion Date.

(c) Subject to Section 4(d), to the extent that any shares of Series A Preferred Stock held by a holder thereof have not been converted pursuant to Sections 4(a) and 4(b) as of the Mandatory Conversion Date, such holder shall be deemed to have elected to convert such remaining shares of Series A Preferred Stock as of the Mandatory Conversion Date (without any action required by such holder) and the Corporation shall issue shares of Common Stock to such holder and satisfy its other obligations under Section 4(a) and (b) as if such holder had elected to convert such remaining shares of Series A Preferred Stock pursuant to Sections 4(a) and 4(b) as of the Mandatory Conversion Date.

(d) Notwithstanding anything herein to the contrary, in the event that (i) a holder of Series A Preferred Stock elects (or is deemed to have elected) to convert shares of Series A Preferred Stock pursuant to Sections 4(a) and 4(b) or pursuant to Section 4(c) for which a Denominator that is less than the Closing Price is utilized in the calculation (pursuant to Section 4(a)) of the number of shares of Common Stock to be issued in such conversion and (ii) such conversion would result in such holder receiving, as a result of such conversion, a number of shares of Common Stock that, together with other shares of Common Stock issued to such holder (or any affiliate of such holder) in any prior conversion(s) of Series A Preferred Stock that utilized a Denominator that was less than the Closing Price in the calculation (pursuant to Section 4(a)) of the number of shares of Common Stock to be issued in such conversion, would equal or exceed twenty percent (20%) of the shares of Common Stock of the Corporation outstanding on the Closing Date (the "Threshold Amount"), the Corporation shall (i) issue to such holder the number of shares of Common Stock otherwise required to be issued to such holder as a result of such conversion (including any shares of Common Stock representing cumulative stock dividends accrued to the applicable Conversion Date pursuant to Section 2) LESS the number of shares of Common Stock otherwise issuable to such holder pursuant to such conversion in excess of the Threshold Amount (the "Excess Shares") and (ii) shall remit to such holder, in lieu of the Excess Shares, an amount of cash

equal to the number of Excess Shares multiplied by the current market price per share of Common Stock (determined as provided in Section 5) determined as of such Conversion Date. Upon such issuance of Common Stock and payment of such cash to the holder in lieu of the

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Excess Shares, the Corporation's obligations to such holder arising as a result of such conversion (including the Corporation's obligation to pay cumulative stock dividends through the applicable Conversion Date) shall be deemed fully satisfied.

(e) No fractional shares of Common Stock or scrip representing fractional shares shall be issued upon conversion of shares of the Series A Preferred Stock pursuant to this Section 4. If more than one share of the Series A Preferred Stock shall be surrendered for conversion by the same holder, the number of full shares of Common Stock which shall be issuable upon conversion thereof shall be computed on the basis of the aggregate number of shares of the Series A Preferred Stock so surrendered. Instead of any fractional shares of Common Stock which would otherwise be issuable upon conversion of any shares of the Series A Preferred Stock, the Corporation shall pay a cash adjustment in respect of such fraction in an amount equal to the same fraction of the closing bid price for Common Stock determined as of the last business day preceding the Conversion Date in respect of such shares. The closing bid price for such day shall be the last reported bid price on the American Stock Exchange, or if Common Stock is not listed or admitted to trading on such exchange, on the principal national securities exchange on which Common Stock is listed or admitted to trading or, if not listed or admitted to trading on any national securities exchange, the closing bid price of Common Stock on NASDAQ or any comparable system. If Common Stock is not quoted on NASDAQ or any comparable system, the Board of Directors of the Corporation shall in good faith determine the current market price on such basis as it considers appropriate.

(f) When shares of Series A Preferred Stock are converted (or deemed converted) by a holder pursuant to this Section 4, the Corporation shall pay any documentary, stamp or similar issue or transfer tax due on the issue of Common Stock upon such conversion.

(g) The Corporation shall reserve at all times out of the Corporation's authorized but unissued shares of Common Stock a sufficient number of shares of Common Stock to permit the conversion of the then outstanding shares of the Series A Preferred Stock pursuant to this Section 4 and such reserved shares shall not be used for any other purpose. All shares of Common Stock which may be issued upon conversion of shares of the Series A Preferred Stock pursuant to this Section 4 shall be validly issued, fully paid and nonassessable. In order that shares of Common Stock may be issued upon conversion of shares of the Series A Preferred Stock, the Corporation shall comply with all applicable Federal and State securities laws and use its best efforts to list such shares of Common Stock to be issued upon conversion on each securities exchange on which Common Stock is listed.

(h) The conversion rate (and the components thereof) in effect at any time for conversion of Series A Preferred Stock into Common Stock pursuant to this Section 4 shall be subject to adjustment from time to time as follows:

(i) In the event that the Corporation shall (1) pay a dividend in shares of Common Stock to holders of Common Stock, (2) make a distribution in shares of Common Stock to holders of Common Stock, (3) subdivide the outstanding shares of Common Stock into a greater number of shares of Common Stock, (4) combine the outstanding shares of Common Stock into a smaller number of shares of Common Stock or (5) otherwise increase or decrease the number of outstanding shares of Common Stock through reclassification or any other event similar to the events described in clauses (1) through (4) above, the conversion rate (and the components thereof) in effect pursuant to this Section 4 immediately prior to such action shall be adjusted to the extent required to give effect to the impact of any such event so that the holder of any shares of the Series A Preferred Stock thereafter surrendered for conversion pursuant to this Section 4 shall be entitled to receive the number of shares of Common Stock which he would have owned immediately following such action had such shares of the Series A Preferred Stock been converted immediately prior thereto. Such adjustment shall be made whenever any event listed above shall occur and shall become effective (A) immediately after the record date in the case of a dividend or a distribution or other applicable event for which a record date is used and (B) immediately after the effective date in the case of a subdivision or combination or other applicable event for which a record date is not used.

(ii) In case the Corporation shall distribute to all holders of the Common Stock shares of any class of capital stock other than Common Stock, evidences of indebtedness or other assets (other than non-extraordinary cash dividends out of current or retained earnings), or shall distribute to substantially all holders of Common Stock rights or warrants to subscribe for securities, then in each such case the number of shares of the Common Stock into which each share of the Series A Preferred Stock shall be converted shall be adjusted (and appropriate adjustments shall be made to the component parts of the applicable conversion rate) so that such number shall equal the number determined by multiplying the number of shares of Common Stock into which such share of the Series A Preferred Stock was convertible immediately prior to the date of such distribution by a fraction of which the numerator shall be the current market price of Common Stock (determined as provided in Section 5) on the record date mentioned below, and of which the denominator shall be such current market price of Common Stock, less the then fair market value (as determined in good faith by the Board of Directors of the Corporation, whose determination shall be conclusive evidence of such fair market value) of the portion of the assets so distributed or of such subscription rights or warrants applicable to one share of Common Stock. Such adjustment shall become effective immediately after the record date for the determination of the holders of Common Stock entitled to receive such distribution.

(iii) The Corporation shall provide at least 10 business days advance notice to holders of Series A Preferred Stock of any record date or other applicable date for determining shareholders entitled to participate in any of the events described in this Section 4(h) or other similar events not described in this Section 4(h) which would have a dilutive effect on the Series A Preferred Stock or the Common Stock into which the Series A Preferred Stock is convertible.

(i) No adjustment in the conversion rate (or its component parts) under this Section 4 shall be required until cumulative adjustments result in a concomitant change of 1% or more of the conversion rate as in effect prior to the last adjustment of the conversion rate; PROVIDED, HOWEVER, that any adjustments which by reason of this Section 4(i) are not required to be made shall be carried forward and taken into account in any subsequent adjustment. All calculations under this Section 4 shall be made to the nearest cent or to the nearest one-hundredth of a share, as the case may be. No adjustment to the conversion rate shall be made for non-extraordinary cash dividends.

(j) In the event that, as a result of an adjustment made pursuant to Section 4(h), the holder of any share of the Series A Preferred Stock thereafter surrendered for conversion shall become entitled to receive any shares of capital stock of the Corporation other than shares of Common Stock, thereafter the number of such other shares so receivable upon conversion of any shares of the Series A Preferred Stock shall be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the Common Stock contained in this Section 4.

(k) The Corporation may make such increases in the conversion rate, in addition to those required by Sections 4(h)(i) and (ii), as it considers to be advisable in order that any event treated for Federal income tax purposes as a dividend of stock or stock rights shall not be taxable to the recipients thereof.

(l) Whenever the conversion rate (or any components thereof) is adjusted pursuant to this Section 4, the Corporation shall promptly mail to all holders of record of shares of the Series A Preferred Stock a notice of the adjustment and shall cause to be prepared a certificate signed by the chief financial officer of the Corporation or, if requested in writing by holders of a majority of the shares of Series A Preferred Stock then outstanding, the Corporation's outside accountants or a reputable investment banking firm selected by the Corporation setting forth the adjusted conversion rate (and the component parts thereof) and a brief statement of the facts requiring such adjustment and the computation thereof. Such certificate shall forthwith be filed with each transfer agent for the shares of the Series A Preferred Stock.

(m) If any of the following shall occur: (i) any reclassification or change of outstanding shares of Common Stock

issuable upon conversion of shares of the Series A Preferred Stock (other than a change in par value, or from par value to no par value, or from no par value to par value, or as a result of a subdivision or combination), (ii) any consolidation or merger to which the Corporation is a party other than a merger in which the Corporation is the continuing corporation and which does not result

in any reclassification of, or change (other than a change in name, or par value, or from par value to no par value, or from no par value to par value, or as a result of a subdivision or combination) in, outstanding shares of Common Stock or (iii) any sale or conveyance of all or substantially all of the property or business of the Corporation as an entirety, then the Corporation, or such successor or purchasing corporation, as the case may be, shall, as a condition precedent to such reclassification, change, consolidation, merger, sale or conveyance, provide in its certificate of incorporation or other charter document that each share of the Series A Preferred Stock shall be convertible under this Section 4 into the kind and amount of shares of capital stock and other securities and property (including cash) receivable upon such reclassification, change, consolidation, merger, sale or conveyance by a holder of the number of shares of Common Stock deliverable upon conversion of such share of the Series A Preferred Stock immediately prior to such reclassification, change, consolidation, merger, sale or conveyance. Such certificate of incorporation or other charter document shall provide for adjustments and protection which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Section 4. If, in the case of any such consolidation, merger, sale or conveyance, the stock or other securities and property (including cash) receivable thereupon by a holder of Common Stock includes shares of capital stock or other securities and property of a corporation other than the successor purchasing corporation, as the case may be, in such consolidation, merger, sale or conveyance, then the certificate of incorporation or other charter document of such other corporation shall contain such additional provisions to protect the interests of the holders of shares of the Series A Preferred Stock as the Board of Directors of the Corporation shall reasonably consider necessary by reason of the foregoing. The provision of this Section 4(m) shall similarly apply to successive consolidations, mergers, sales or conveyances.

(n) No sooner than fifteen (15) business days nor later than five (5) business days prior to the consummation of a transaction referred to in clauses (ii) or (iii) of Section 4(m) (a "Major Transaction"), but not prior to the public announcement of such Major Transaction, the Corporation shall deliver written notice (a "Notice of Major Transaction") to each holder of Series A Preferred Stock, which Notice of Major Transaction shall be deemed to have been delivered to the holder one (1) business day after the Corporation's sending of such notice (for overnight delivery) by a common carrier, if such delivery is to be made in the United States, or two (2) business days after the Corporation's sending of such notice (for two (2) day delivery) by common carrier, if such notice is to be delivered outside the United States. Such Notice of Major Transaction shall indicate the amount

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and type(s) of consideration (the "Major Transaction Consideration") the holders of Series A Preferred Stock would receive for their shares of Series A Preferred Stock in the related Major Transaction. Such holder may elect to redeem all or a portion of such holder's shares of Series A Preferred Stock for an amount in cash equal to \$125 per share of Series A Preferred Stock held by such holder to be so redeemed in lieu of the Major Transaction Consideration or other securities and/or property that would otherwise be payable to such holder pursuant to Section 4(m). A holder may exercise such election by delivering written notice of such election to the Corporation, together with certificates for the shares of Series A Preferred Stock to be redeemed in connection with

such election, within five (5) business days of the holder's receipt of the related Notice of Major Transaction, which notice shall be deemed given one (1) business day after the holder sends such notice (together with such certificates) from the United States by common carrier for overnight delivery or two (2) business days after the holder sends such notice (together with such certificates) from outside the United States by common carrier for two (2) day delivery. In the event that such Major Transaction is not completed within fifteen (15) business days after the Corporation is given a holder's related notice of election pursuant to the prior sentence, such election shall be null and void and the Corporation shall promptly return the certificate(s) representing the Series A Preferred Stock delivered by such holder to such holder; provided, that the Corporation will comply with the notice provisions of this Section 4(n) with respect to any later consummation of such Major Transaction. This Section 4(n) shall not apply in respect of any Major Transaction that occurs after the second anniversary of the Closing Date.

(o) (i) After the occurrence of a Change in Control (as defined below), other than in connection with a Major Transaction, each holder of Series A Preferred Stock shall have the right, at such holder's option, to require the Corporation to redeem all or a portion of such holder's Series A Preferred Stock for an amount per share in cash equal to the greater of (A) \$125 and (B) the product of the aggregate number of shares of Common Stock into which a share of Series A Preferred Stock is convertible (assuming such conversion were to occur on the last day preceding the effective date for the Change of Control) multiplied by the current market price per share of Common Stock (determined as provided in Section 5) as of the last date preceding the effective date of such Change of Control. As used in this Section 4(o), a "Change in Control" shall be deemed to have occurred at such time as either Douglas R. Eger or Thomas M. Fitzgerald cease to be either a director or officer of the Corporation. The rights of holders of Series A Preferred Stock under this Section 4(o) shall not apply in respect of any Change of Control that occurs after the first anniversary of the Closing Date.

(ii) The Corporation shall provide each holder of Series A Preferred Stock with written notice of the occurrence of any Change of Control (a "Change of Control Notice") within

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two (2) business days after the occurrence of such Change of Control. Each holder may require the Corporation to redeem all or a portion of such holder's shares of Series A Preferred Stock pursuant to this Section 4(o) by delivering written notice (a "Notice of Redemption at Option of Holder") to the Corporation to such effect within ten (10) business days after receipt of the applicable Change of Control Notice, which Notice of Redemption at Option of Holder shall be deemed to have been delivered one (1) business day after such holder's sending, if such notice is sent within the United States for overnight delivery by a common carrier, or two (2) business days after such holder's sending, if such notice is sent from outside the United States by two (2) day delivery by a common carrier. Each such Notice of Redemption at Option of Holder shall indicate the number of shares of Series A Preferred Stock that have been selected by such holder for redemption.

(iii) Each holder submitting certificate(s) representing shares of Series A Preferred Stock for redemption under this Paragraph 4(o) shall send such holder's Preferred Stock Certificates to be redeemed to the Corporation or its Transfer Agent and the Corporation shall pay the applicable redemption price to that holder within thirty (30) business days after the Corporation's receipt of such holder's Notice of Redemption at Option of Holder; provided that such holder's certificate(s) representing shares of Series A Preferred Stock to be redeemed (or an indemnification undertaking with respect to such shares in the case of their loss, theft or destruction) shall have been so delivered to the Corporation or its Transfer Agent.

(p) As used herein, "business day" means a day of the year on which banks are not required or authorized to close in New York City, New York.

(q) It is understood that the restrictions on any holder's ability to convert such holder's shares of Series A Preferred Stock contained herein may be supplemented by separate written agreement between such holder and the Corporation.

Section 5. CALCULATIONS OF CURRENT MARKET PRICE OF COMMON STOCK. For purposes of calculations relating to the Series A Preferred Stock that refer to the current market price per share of Common Stock, the current market price per share of Common Stock on or as of any day shall be deemed to be the average of the closing bid prices for the ten (10) consecutive trading days ending the last trading day before the day in question. The closing bid price for each day shall be the last reported bid price on the American Stock Exchange, or if Common Stock is not listed or admitted to trading on such exchange, on the principal national securities exchange on which Common Stock is listed or admitted to trading or, if not listed or admitted to trading on any national securities exchange, the closing bid price of Common Stock on NASDAQ or any comparable system, or if Common Stock is not quoted

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on NASDAQ or any comparable system, the closing bid price as furnished by any two members of the National Association of Securities Dealers, Inc. selected from time to time by the Corporation for that purpose. If Common Stock is not so quoted on NASDAQ or any comparable system, the Board of Directors of the Corporation shall reasonably and in good faith determine the current market price on such basis as it considers appropriate. For example, in the event that the current market price per share of Common Stock is to be determined as of a Conversion Date, the current market price per share of Common Stock shall equal the average of the last reported bid price as reported by the American Stock Exchange for the ten (10) consecutive trading days ending the last trading day before such Conversion Date (assuming that the Common Stock is listed and admitted for trading on the American Stock Exchange and a reported bid price for Common Stock is placed on the American Stock Exchange on each such trading day).

Section 6. LIMITATIONS. (a) In addition to any other rights provided by applicable law, so long as any shares of the Series A Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote, or the written consent as provided by law, of the holders of at least two-thirds

(2/3) of the outstanding shares of the Series A Preferred Stock, voting as a separate class,

(i) create, authorize or issue any class or series of capital stock, or rights to subscribe to or acquire, or any security convertible into, any class or series of capital stock ranking as to payment of dividends, distribution of assets upon liquidation or voting rights, prior to the Series A Preferred Stock; or

(ii) amend, alter or appeal, whether by merger, consolidation or otherwise, any of the provisions of the Certificate of Incorporation (including this Certificate of Designation) that would change the preferences, rights or powers with respect to the Series A Preferred Stock so as to affect the Series A Preferred Stock adversely.

(b) In addition to any other rights provided by applicable law, so long as any shares of the Series A Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote, or the written consent as provided by law, of the holders of at least two-thirds (2/3) of the outstanding shares of the Series A Preferred Stock, voting as a separate class, issue or agree to issue any Common Stock or any security convertible or otherwise exchangeable, directly or indirectly, for Common Stock if such shares of Common Stock are to be issued, or such convertible securities are to be converted to or exchanged for shares of Common Stock, at a price per share less than the current market price for the Common Stock (determined as provided in Section 5) as of the day immediately preceding the date of the issuance of such Common Stock or such convertible or exchangeable security (as the case may be); provided, however, that the restrictions contained in this paragraph (b) shall not apply (i) to the issuance of any such

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convertible or exchangeable securities that are convertible or exchangeable at a fixed price (and not a floating price) per share equal to or greater than the current market price for the Common Stock (determined as provided in Section 5) as of the date of issuance of such convertible or exchangeable security, (ii) to the issuance of Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof, (iii) to the issuance of any securities to officers, directors or employees of the Corporation or any of its subsidiaries, (iv) to the issuance of any securities of the Corporation in an underwritten public offering or (v) to any other issuance of securities after the date that is 90 days after the Closing Date if the holders of Series A Preferred Stock are first delivered a written notice (a "Right of First Refusal Notice") from the Corporation offering such holders on a PRO RATA basis the right to purchase all or a portion of the related securities at the same price (and on the same terms and conditions, offered to other proposed investors (which notice shall set forth such price, terms and conditions). In the event that the Corporation delivers a Right of First Refusal Notice to any holder of Series A Preferred Stock, the failure by such holder to commit in writing to purchase such holder's pro rata portion of the securities identified in such Right of First Refusal Notice within five (5) business days of delivery thereof may be deemed by the Corporation to constitute such holder's

determination not to so purchase such securities and the Corporation shall then be permitted to sell such securities to other investors at the price and on the terms and conditions set forth in such notice. The rights of holders of Series A Preferred Stock under this paragraph (b) shall terminate on the first anniversary of the Closing Date.

(c) Notwithstanding the foregoing, except as otherwise required by applicable law, nothing herein contained shall require a vote or consent of the holders of Series A Preferred Stock in connection with any increase in the total number of authorized shares of Common Stock. The holders of Series A Preferred Stock shall not be entitled to vote on any matter except (i) as provided in this Section 6 and (ii) as required by law.

Section 7. LOST OR STOLEN CERTIFICATES. Upon (i) receipt by the Corporation from a holder of evidence satisfactory to the Corporation of the loss, theft, destruction of any certificate(s) representing shares of Series A Preferred Stock and of an indemnification undertaking by the holder to the Corporation that is reasonably satisfactory to the Corporation or (ii) upon surrender and cancellation of certificate(s) representing shares of Series A Preferred Stock that have been mutilated, the Corporation shall execute and deliver to such holder new certificate(s) representing shares of Series A Preferred Stock of like tenor and date. However, the Corporation shall not be obligated to re-issue such lost, stolen, destroyed or mutilated certificate(s) representing shares of Series A Preferred Stock if such holder contemporaneously requests the Corporation to convert such shares

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of Series A Preferred Stock into shares of Common Stock or otherwise redeem such shares pursuant to the terms hereof.

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designation to be signed by Douglas R. Eger, its Chairman and Chief Executive Officer, and attested by George Lombardi, its Secretary, this 28th day of February, 1997.

SHEFFIELD MEDICAL TECHNOLOGIES INC.

By: /S/ Douglas R. Eger

Douglas R. Eger
Chairman and Chief Executive
Officer

Attested:

By: /S/ George Lombardi

George Lombardi

Secretary

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EXHIBIT A
TO CERTIFICATE
OF DESIGNATION

NOTICE OF CONVERSION

(To be completed, executed and delivered upon
conversion of shares of Series A Preferred Stock)

TO: Sheffield Medical Technologies Inc.
Attention: Chief Financial Officer

The undersigned holder of shares of Series A Cumulative Convertible Redeemable Preferred Stock ("Series A Preferred Stock") of Sheffield Medical Technologies Inc. (the "Company") hereby converts _____ shares of Series A Preferred Stock into Common Stock of the Company at the applicable conversion rate on the terms and conditions specified in the Certificate of Designation for the Series A Preferred Stock. The undersigned surrenders herewith certificate(s) representing such number of shares of Series A Preferred Stock to be converted and all right, title and interest therein to the Company and directs that the Common Stock deliverable upon the conversion of such shares of Series A Preferred Stock be registered or placed in the name and at the address specified below and delivered thereto.

[Insert Common Stock Registration Information]

In the event that the certificate(s) surrendered represent a number of shares of Series A Preferred Stock in excess of the shares of Series A Preferred Stock converted pursuant to this notice, you are advised to issue and deliver to the undersigned holder a certificate representing the remaining balance of shares of Series A Preferred Stock represented by the surrendered certificate(s) not so converted.

Date: _____.

Your Signature: _____

(Sign exactly as your name appears on the
certificate representing the Shares of Series A
Preferred Stock being converted)

Certificate of Amendment

of

Certificate of Incorporation

of

SHEFFIELD MEDICAL TECHNOLOGIES INC.

Under Section 242 of the General Corporation Law

It is hereby certified that:

1. The certificate of incorporation of Sheffield Medical Technologies Inc. (the "Corporation") is hereby amended by striking Article FIRST thereof and by substituting in lieu of said Article the following new Article FIRST:

FIRST: The name of the corporation (hereinafter sometimes called the "Corporation") is Sheffield Pharmaceuticals, Inc. (the "Corporation").

2. The certificate of incorporation of the Corporation is hereby amended by striking out Article FOURTH thereof and by substituting in lieu of said Article the following new Article FOURTH:

"FOURTH: The total number of shares of stock that the Corporation shall have the authority to issue is (i) fifty million (50,000,000) shares of Common Stock, \$.01 par value ("Common Stock"), and (ii) three million (3,000,000) shares of Preferred Stock, \$.01 par value ("Preferred Stock").

(a) COMMON STOCK.

(i) GENERAL. The voting, dividend and liquidation rights of the holders of Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board of Directors upon any issuance of the Preferred Stock of any series.

(ii) VOTING. The holders of Common Stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting.

(iii) DIVIDENDS. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any preferential dividend rights of any then

outstanding Preferred Stock.

(iv) LIQUIDATION. Upon the dissolution or liquidation of the Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the Corporation available for distribution to its stockholders after payment of creditors and subject to any preferential and/or participating rights of any outstanding Preferred Stock.

(b) PREFERRED STOCK.

Authority is hereby expressly granted to the Board of Directors from time to time to issue the Preferred Stock in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative, participating, option or other special rights and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent now or hereafter permitted by the General Corporation Law of Delaware. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of Preferred Stock may provide that such series shall be superior or rank equally or junior to the Preferred Stock of any other series to the extent permitted by law. Except as expressly provided elsewhere in this Article FOURTH no vote of the holders of the Preferred Stock or Common Stock shall be required in connection with the designation or the issuance of any shares of any series of any Preferred Stock authorized by and complying with the conditions herein, the right to have such vote being expressly waived by all present and future holders of the capital stock of the Corporation."

3. The amendment of the certificate of incorporation herein certified has been duly adopted in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

Signed on June 26, 1997. SHEFFIELD MEDICAL TECHNOLOGIES
INC.

By: /S/ Loren G. Peterson

Name: Loren G. Peterson

Title: CEO

Attest:

/S/ George Lombardi

George Lombardi, Secretary

CERTIFICATE OF DESIGNATIONS,
PREFERENCES AND RIGHTS

OF

SERIES B CUMULATIVE CONVERTIBLE REDEEMABLE PREFERRED STOCK

OF

SHEFFIELD PHARMACEUTICALS, INC.

Pursuant to Section 151 of
the General Corporation Law of the State of Delaware

Sheffield Pharmaceuticals, Inc., a corporation organized and existing under the General Corporation Law of the State of Delaware (the "Corporation"), hereby certifies that the following resolutions were adopted by the Board of Directors of the Corporation on April 13, 1998 pursuant to authority of the Board of Directors as required by Section 151 of the General Corporation Law of the State of Delaware:

RESOLVED, that pursuant to the authority expressly granted to and vested in the Board of Directors of the Corporation (the "Board" or the "Board of Directors") by the provisions of the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), there hereby is created, out of the 3,000,000 shares of preferred stock of the Corporation authorized in Article FOURTH of the Certificate of Incorporation (the "Preferred Stock"), a series of Preferred Stock consisting of 1,250 shares, which series shall have the following powers, designations, preferences and relative, participating, optional or other rights, and the following qualifications, limitations and restrictions (in addition to the powers, designations, rights, and the qualifications, limitations and restrictions, set forth in the Certificate of Incorporation which are applicable to the Preferred Stock).

ARTICLE 1
DESIGNATION AND AMOUNT

The shares of such series shall be designated as "Series B Cumulative Convertible Redeemable Preferred Stock" (the "Series B Preferred Stock") and the authorized number of shares constituting such series shall be 1,250 shares. The par value of the Series B Preferred Stock shall be \$.01 per share. The stated value of the Series B Preferred Stock shall be One Thousand Dollars (\$1,000) per share (the "Stated Value").

ARTICLE 2
DEFINITIONS

SECTION 2.1 DEFINITIONS. The terms defined in this Article whenever used in this Certificate of Designations have the following respective meanings:

(a) "ADDITIONAL CAPITAL SHARES" has the meaning set forth in Section 6.1(c).

(b) "AFFILIATE" has the meaning ascribed to such term in Rule 12b-2 under the Securities Exchange Act of 1934, as amended.

(c) "BUSINESS DAY" means a day other than Saturday, Sunday or any day on which banks located in the State of New York are authorized or obligated to close.

(d) "CAPITAL SHARES" means the Common Shares and any other shares of any other class or series of common stock, whether now or hereafter authorized and however designated, which have the right to participate in the distribution of earnings and assets (upon dissolution, liquidation or winding-up) of the Corporation.

(e) "CLOSING DATE" means the date of issuance of the first share of Series B Preferred Stock.

(f) "COMMON SHARES" or "COMMON STOCK" means shares of common stock, \$.01 par value, of the Corporation.

(g) "COMMON STOCK ISSUED AT CONVERSION" when used with reference to the securities issuable upon conversion of the Series B Preferred Stock, means all Common Shares now or hereafter Outstanding and securities of any other class or series into which the Series B Preferred Stock hereafter shall have been changed or substituted, whether now or hereafter created and however designated.

(h) "CONVERSION DATE" means any day on which all or any portion of shares of the Series B Preferred Stock is converted in accordance with the provisions hereof.

(i) "CONVERSION NOTICE" has the meaning set forth in Section 6.2.

(j) "CONVERSION PRICE" means on any date of determination the applicable price for the conversion of shares of Series B Preferred Stock into Common Shares on such day as set forth in Section 6.1.

(k) "CONVERSION RATIO" means on any date of determination the applicable percentage of the Market Price for conversion of shares of Series B Preferred Stock into Common Shares on such day as set forth in Section 6.1.

(l) "CORPORATION" means Sheffield Pharmaceuticals, Inc. a Delaware corporation, and any successor or resulting corporation by way

(m) "CURRENT MARKET PRICE" on any date of determination means the closing price of a Common Share on such day as reported on the AMEX, or, if such security is not listed or admitted to trading on the AMEX, on the principal national security exchange or quotation system on which such security is quoted or listed or admitted to trading, or, if not quoted or listed or admitted to trading on any national securities exchange or quotation system, the closing price of such security on the over-the-counter market on the day in question as reported by the National Quotation Bureau Incorporated, or a similar generally accepted reporting service, or if not so available, in such manner as furnished by any Nasdaq member firm of the National Association of Securities Dealers, Inc. selected from time to time by the Board of Directors of the Corporation for that purpose, or a price determined in good faith by the Board of Directors of the Corporation as being equal to the fair market value thereof, as the case may be.

(n) "DEFAULT DIVIDEND RATE" shall be equal to the Preferred Stock Dividend Rate plus an additional 4% per annum.

(o) "HOLDER" means The Shaar Fund Ltd., any successor thereto, or any Person to whom the Series B Preferred Stock is subsequently transferred in accordance with the provisions hereof.

(p) "ISSUE DATE" means the date of original issuance of the applicable share of Series B Preferred Stock.

(q) "MARKET DISRUPTION EVENT" means any event that results in a material suspension or limitation of trading of Common Shares on the AMEX.

(r) "MARKET PRICE" per Common Share means the average of the closing prices of the Common Shares as reported on the AMEX for the five Trading Days in any Valuation Period.

(s) "OUTSTANDING" when used with reference to Common Shares or Capital Shares (collectively, "Shares"), means, on any date of determination, all issued and outstanding Shares, and includes all such Shares issuable in respect of outstanding scrip or any certificates representing fractional interests in such Shares; PROVIDED, HOWEVER, that any such Shares directly or indirectly owned or held by or for the account of the Corporation or any Subsidiary of the Corporation shall not be deemed "Outstanding" for purposes hereof.

(t) "PERSON" means an individual, a corporation, a partnership, an association, a limited liability company, a unincorporated business organization, a trust or other entity or organization, and any government or political subdivision or any agency or instrumentality thereof.

(u) "SEC" means the United States Securities and Exchange Commission.

(v) "SECURITIES ACT" means the Securities Act of 1933, as amended, and the rules and regulations of the SEC thereunder, all as in effect at the time.

(w) "SERIES B PREFERRED STOCK" means the Series B Cumulative Convertible Redeemable Preferred Stock of the Corporation created by this Certificate of Designations or such other convertible Preferred Stock exchanged therefor as provided in Section 6.4.

(aa) "STATED VALUE" has the meaning set forth in Article 1.

(bb) "SUBSIDIARY" means any entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are owned directly or indirectly by the Corporation.

(cc) "TRADING DAY" means any day on which purchases and sales of securities authorized for quotation on the AMEX are reported thereon and on which no Market Disruption Event has occurred or, if the Common Stock is not listed or admitted to trading on the AMEX, a day on which the principal national securities exchange on which the Common Stock is listed or admitted to trading is open for the transaction of business, or, if the Common Stock is not so listed or admitted to trading on any national securities exchange, a day on which the Nasdaq National Market (or any successor thereto) or such other system then in use is open for the transaction of business, or, if the Common Stock is not quoted by any such organization, any day other than a Saturday, Sunday or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close.

(dd) "VALUATION EVENT" has the meaning set forth in Section 6.1.

(ee) "VALUATION PERIOD" means the five Trading Day period immediately preceding the applicable Conversion Date.

All references to "cash" or "\$" herein means currency of the United States of America.

ARTICLE 3 RANK

The Series B Preferred Stock shall rank (i) prior to the Common Stock; (ii) prior to any class or series of capital stock of the Corporation hereafter created other than "Pari Passu Securities" (collectively, with the Common Stock, "Junior Securities"); (iii) pari passu with the Corporation's Series A Cumulative Convertible Redeemable Preferred Stock (the "Series A Preferred Stock"); and (iv) pari passu with any class or series of capital stock of the Corporation hereafter created specifically ranking on parity with the Series B Preferred Stock (collectively, with the Series A Preferred Stock, "Pari Passu Securities").

ARTICLE 4 DIVIDENDS

SECTION 4.1

(a) (i) Subject to Article 6, the Holder shall be entitled to receive, when, as and if declared by the Board of Directors, out of funds legally available for the payment of dividends, dividends (subject to Sections 4(a)(ii) hereof) at the rate of 6% per annum (computed on the basis of a 360-day year) (the "Dividend Rate") on the Liquidation Value (as defined below) of each share of Series B Preferred Stock on and as of the most recent Dividend Payment Due Date (as defined below) with respect to each Dividend Period (as defined below). Dividends on the Series B Preferred Stock shall be cumulative from the date of issue, whether or not declared for any reason, including if such declaration is prohibited under any outstanding indebtedness or borrowings of the Corporation or any of its Subsidiaries, or any other contractual provision binding on the Corporation or any of its Subsidiaries, and whether or not there shall be funds legally available for the payment thereof.

(ii) Each dividend shall be payable in equal quarterly amounts on each March 31, June 30, September 30 and December 31 of each year (each, a "Dividend Payment Due Date"), commencing September 30, 1998, to the holders of record of shares of the Series B Preferred Stock, as they appear on the stock records of the Corporation at the close of business on any record date, not more than 60 days or less than 10 days preceding the payment dates thereof, as shall be fixed by the Board of Directors. For the purposes hereof, "Dividend Period," in respect of any share of Series B Preferred Stock, shall mean (i) the period commencing on and including the Issue Date of such share and including September 30, 1998 and, thereafter, the quarterly period commencing on and including the day after the immediately preceding Dividend Payment Date and ending on and including the immediately subsequent Dividend Payment Date. Accrued and unpaid dividends for any past Dividend Period may be declared and paid at any time, without reference to any Dividend Payment Due Date, to holders of record on such date, not more than 15 days preceding the payment date thereof, as may be fixed by the Board of Directors.

(iii) At the option of the Corporation, the dividend shall be paid in cash or through the issuance of duly and validly authorized and issued, fully paid and non-assessable shares of the Common Stock valued at the Market Price. Notwithstanding the foregoing, until the shares of Common Stock issuable as dividends on the Series B Preferred Stock have been registered for resale under a registration statement that has been declared effective under the Securities Act by the SEC, payment of dividends on the Series B Preferred Stock shall be in cash.

(b) The Holder shall not be entitled to any dividends in excess of the cumulative dividends, as herein provided, on the Series B Preferred Stock. Except as provided in this Article 4, no interest, or sum of money in lieu of interest, shall be payable in respect of any dividend payment or payments on the Series B Preferred Stock that may be in arrears.

(c) So long as any shares of the Series B Preferred Stock are outstanding, no dividends, except as described in the next succeeding sentence, shall be declared or paid or set apart for payment on Pari Passu Securities for any period unless full cumulative dividends required to be paid in cash have been or contemporaneously are declared and paid or declared and a sum sufficient

for the payment thereof set apart for such payment on the Series B Preferred Stock for all Dividend Periods terminating on or prior to the date of payment of the dividend on such class or series of Pari Passu Securities. When dividends are not paid in full or a sum sufficient for such payment is not set apart, as aforesaid, all dividends declared upon shares of the Series B Preferred Stock and all dividends declared upon any other class or series of Pari Passu Securities shall be declared ratably in proportion to the respective amounts of dividends accumulated and unpaid on the Series B Preferred Stock and accumulated and unpaid on such Pari Passu Securities.

(d) So long as any shares of the Series B Preferred Stock are outstanding, no dividends shall be declared or paid or set apart for payment or other distribution declared or made upon Junior Securities, nor shall any Junior Securities be redeemed, purchased or otherwise acquired (other than a redemption, purchase or other acquisition of shares of Common Stock made for purposes of an employee incentive or benefit plan (including a stock option plan) of the Corporation or any Subsidiary, (all such dividends, distributions, redemptions or purchases being hereinafter referred to as a "Junior Securities Distribution") for any consideration (or any moneys be paid to or made available for a sinking fund for the redemption of any shares of any such stock) by the Corporation, directly or indirectly, unless in each case (i) the full cumulative dividends required to be paid in cash on all outstanding shares of the Series B Preferred Stock and any other Pari Passu Securities shall have been paid or set apart for payment for all past Dividend Periods with respect to the Series B Preferred Stock and all past dividend periods with respect to such Pari Passu Securities, and (ii) sufficient funds shall have been paid or set apart for the payment of the dividend for the current Dividend Period with respect to the Series B Preferred Stock and the current dividend period with respect to such Pari Passu Securities.

ARTICLE 5 LIQUIDATION PREFERENCE

SECTION 5.1

(a) If the Corporation shall commence a voluntary case under the Federal bankruptcy laws or any other applicable Federal or State bankruptcy, insolvency or similar law, or consent to the entry of an order for relief in an involuntary case under any law or to the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or make an assignment for the benefit of its creditors, or admit in writing its inability to pay its debts generally as they become due, or if a decree or order for relief in respect of the Corporation shall be entered by a court having

jurisdiction in the premises in an involuntary case under the Federal bankruptcy laws or any other applicable Federal or state bankruptcy, insolvency or similar law resulting in the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or ordering the winding up or liquidation of its affairs, and any such decree or order shall be unstayed and in effect for a period of sixty (60) consecutive days and, on account of any such event, the

Corporation shall liquidate, dissolve or wind up, or if the Corporation shall otherwise liquidate, dissolve or wind up (each such event being considered a "Liquidation Event"), no distribution shall be made to the holders of any Junior Securities of the Corporation upon liquidation, dissolution or winding up unless prior thereto, the holders of shares of Series B Preferred Stock, subject to Article 5, shall have received the Liquidation Preference (as defined in Article 5(b)) with respect to each share. If upon the occurrence of a Liquidation Event, the assets and funds available for distribution among the holders of the Series B Preferred Stock and holders of Pari Passu Securities shall be insufficient to permit the payment to such holders of the preferential amounts payable thereon, then the entire assets and funds of the Corporation legally available for distribution to the Series B Preferred Stock and the Pari Passu Securities shall be distributed ratably among such shares in proportion to the ratio that the Liquidation Preference payable on each such share bears to the aggregate liquidation Preference payable on all such shares.

(b) For purposes hereof, the "Liquidation Preference" with respect to a share of the Series B Preferred Stock shall mean an amount equal to the sum of (i) the Stated Value thereof, plus (ii) the aggregate of all accrued and unpaid dividends on such share of Series B Preferred Stock until the most recent Dividend Payment Date; PROVIDED that, in the event of an actual liquidation, dissolution or winding up of the Corporation, the amount referred to in clause (iii) above shall be calculated by including accrued and unpaid dividends to the actual date of such liquidation, dissolution or winding up, rather than the Dividend Payment Due Date referred to above.

ARTICLE 6

CONVERSION AND REDEMPTION OF PREFERRED STOCK

SECTION 6.1 CONVERSION; CONVERSION PRICE. At the option of the Holder, the shares of Preferred Stock may be converted, either in whole or in part, into Common Shares (calculated as to each such conversion to the nearest 1/100th of a share), at any time, and from time to time after the 90th day following the Issue Date at a Conversion Price equal to 75% of the Market Price; provided, however, that the Holder shall not have the right to convert any portion of the Series B Preferred Stock to the extent that the issuance to the Holder of Common Shares upon such conversion would result in the Holder being deemed the "beneficial owner" of 5% or more of the then outstanding Common Shares within the meaning of Rule 13d-3 of the Securities Exchange Act of 1934, as amended, provided, however, that the Corporation shall have no obligation to determine whether or not a Holder is a "beneficial owner" of 5% or more of the outstanding Common Stock in connection with any

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conversion of Series B Preferred Stock. At the Corporation's option, the amount of accrued and unpaid dividends as of the Conversion Date shall not be subject to conversion but instead may be paid in cash as of the Conversion Date; if the Corporation elects to convert the amount of accrued and unpaid dividends at the Conversion Date into Common Stock, the Common Stock issued to the Holder shall be valued at the Conversion Price as of the applicable Conversion Date. Notwithstanding the previous sentence, in no event shall the Holder have the right to convert that portion of the Series B Preferred Stock to the extent that the issuance of Common Shares upon the conversion of such Series B Preferred

Stock, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and the Warrants, would exceed 19.99% of the Common Stock outstanding on the Closing Date. Within ten (10) Business Days after the receipt of the Conversion Notice which upon conversion would, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and Warrants, exceed 19.99% of the Common Stock outstanding on the Closing Date, the Corporation shall redeem all remaining outstanding shares of Series B Preferred Stock at one hundred and fifteen percent (115%) of the Stated Value thereof, together with all accrued and unpaid dividends thereon, in cash, to the date of such redemption.

The number of shares of Common Stock due upon conversion of Series B Preferred Stock in respect of any Conversion Date shall be (i) the number of shares of Series B Preferred Stock to be converted, multiplied by (ii) the Stated Value and divided by (iii) the applicable Conversion Price for such Conversion Date.

Within two (2) Business Days of the occurrence of a Valuation Event, the Corporation shall send notice (the "Valuation Event Notice") of such occurrence to the Holder. Notwithstanding anything to the contrary contained herein, if a Valuation Event occurs during any Valuation Period, a new Valuation Period shall begin on the Trading Day immediately following the occurrence of such Valuation Event and end on the Conversion Date; PROVIDED that, if a Valuation Event occurs on the fifth day of any Valuation Period, then the Conversion Price shall be the Current Market Price of the Common Shares on such day; and PROVIDED, FURTHER, that the Holder may, in its discretion, postpone such Conversion Date to a Trading Day which is no more than five (5) Trading Days after the occurrence of the latest Valuation Event by delivering a notification to the Corporation within two (2) Business Days of the receipt of the Valuation Event Notice. In the event that the Holder deems the Valuation Period to be other than the five (5) Trading Days immediately prior to the Conversion Date, the Holder shall give written notice of such fact to the Corporation in the related Conversion Notice at the time of conversion.

For purposes of this Section 6.1, a "VALUATION EVENT" shall mean an event in which the Corporation at any time during a Valuation Period takes any of the following actions:

(a) subdivides or combines its Capital Shares;

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(b) makes any distribution of its Capital Shares;

(c) issues any additional Capital Shares (the "Additional Capital Shares"), otherwise than as provided in the foregoing Sections 6.1(a) and 6.1(b) above, at a price per share less, or for other consideration lower, than the Current Market Price in effect immediately prior to such issuances, or without consideration, except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its Subsidiaries;

(d) issues any warrants, options or other rights to subscribe for or purchase any Additional Capital Shares and the price per share for which Additional Capital Shares may at any time thereafter be issuable pursuant to such warrants, options or other rights shall be less than the Current Market Price in effect immediately prior to such issuance; except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its Subsidiaries;

(e) issues any securities convertible into or exchangeable or exercisable for Capital Shares and the consideration per share for which Additional Capital Shares may at any time thereafter be issuable pursuant to the terms of such convertible, exchangeable or exercisable securities shall be less than the Current Market Price in effect immediately prior to such issuance except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its subsidiaries;

(f) makes a distribution of its assets or evidences of indebtedness to the holders of its Capital Shares as a dividend in liquidation or by way of return of capital or other than as a dividend payable out of earnings or surplus legally available for the payment of dividends under applicable law or any distribution to such holders made in respect of the sale of all or substantially all of the Corporation's assets (other than under the circumstances provided for in the foregoing Sections 6.1(a) through 6.1(e)); or

(g) takes any action affecting the number of Outstanding Capital Shares, other than an action described in any of the foregoing Sections 6.1(a) through 6.1(f) hereof, inclusive, which in the opinion of the Corporation's Board of Directors, determined in good faith, would have a material adverse effect upon the rights of the Holder at the time of a conversion of the Series B Preferred Stock.

SECTION 6.2 EXERCISE OF CONVERSION PRIVILEGE. (a) Conversion of the Series B Preferred Stock may be exercised, in whole or in part, by

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the Holder by telecopying an executed and completed notice of conversion in the form annexed hereto as Annex I (the "Conversion Notice") to the Corporation and delivering a copy of the Conversion Notice to the Corporation by nationally recognized overnight courier not later than five (5) Business Days next following the date on which the telecopied Conversion Notice has been transmitted to the Corporation. Each date on which a Conversion Notice is telecopied to and received by the Corporation in accordance with the provisions of this Section 6.2 shall be deemed a Conversion Date. The Corporation shall convert the Preferred Stock and issue the Common Stock Issued at Conversion effective as of the Conversion Date. The Conversion Notice also shall state the name or names (with addresses) of the persons who are to become the holders of the Common Stock Issued at Conversion in connection with such conversion. The

applicable Holder shall deliver the stock certificate representing the shares of Series B Preferred Stock so converted to the Corporation by nationally recognized overnight courier service within 15 days following the date on which the telecopied Conversion Notice has been transmitted to the Corporation. Upon surrender for conversion, the Preferred Stock shall be accompanied by a proper assignment hereof to the Corporation or be endorsed in blank. As promptly as practicable after the delivery to the Corporation of the applicable Conversion Notice as aforesaid, but in any event not more than five (5) Business Days after the Corporation's delivery to the Corporation of the applicable Conversion Notice, the Corporation shall (i) issue the Common Stock issued at Conversion in accordance with the provisions of this Article 6, and (ii) cause to be mailed for delivery by overnight courier to the Holder (X) a certificate or certificate(s) representing the number of Common Shares to which the Holder is entitled by virtue of such conversion, (Y) cash, as provided in Section 6.3, in respect of any fraction of a Share issuable upon such conversion and (Z) cash or Common Stock, as applicable representing the amount of accrued and unpaid dividends as of the Conversion Date. Such conversion shall be deemed to have been effected at the time at which the Conversion Notice indicates so long as the Corporation shall have been delivered the applicable Conversion Notice in accordance with this Section 6.2, and at such time the rights of the Holder of the Preferred Stock, as such, shall cease and the Person and Persons in whose name or names the Common Stock Issued at Conversion shall be issuable shall be deemed to have become the holder or holders of record of the Common Shares represented thereby. The Conversion Notice shall constitute a contract between the Holder and the Corporation, whereby the Holder shall be deemed to subscribe for the number of Common Shares which it will be entitled to receive upon such conversion and, in consideration of such conversion, to surrender the Preferred Stock and to release the Corporation from all liability thereon.

(b) From and after the delivery of the Conversion Notice in respect of any conversion of shares of Series B Preferred Stock, all such shares of Series B Preferred Stock shall be deemed to have been converted into shares of Common Stock as of the applicable Conversion Date at the applicable conversion rate, all stock dividends on such shares of the Series B Preferred Stock shall cease to accrue, and all rights of the holders thereof as holders of Series B Preferred Stock, except the right to receive all accrued and unpaid stock dividends to such Conversion Date at the applicable rate for such shares of Series B

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Preferred Stock and the right to receive certificates representing shares of Common Stock issuable upon the conversion of such shares (including, without limitation, with respect to such stock dividends, as applicable), shall cease and terminate, such shares of Series B Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such shares shall not be deemed to be outstanding for any purpose whatsoever.

(c) If, at any time (i) the Corporation challenges, disputes or denies the right of the Holder hereof to effect the conversion of the Preferred Stock into Common Shares or otherwise dishonors or rejects any Conversion Notice delivered in accordance with this Section 6.2 or (ii) any third party who is not and has never been an Affiliate of the Holder commences any lawsuit or proceeding or otherwise asserts any claim before any court or public or governmental authority which seeks to challenge, deny, enjoin, limit,

modify, delay or dispute the right of the Holder hereof to effect the conversion of the Preferred Stock into Common Shares, then the Holder shall have the right, by written notice to the Corporation, to require the Corporation to promptly redeem the Preferred Stock for cash at a redemption price equal to 125% of the Stated Value thereof together with all accrued and unpaid dividends thereon. Under any of the circumstances set forth above, the Corporation shall be responsible for the payment of all costs and expenses of the Holder, including reasonable legal fees and expenses, as and when incurred in disputing any such action or pursuing its rights hereunder (in addition to any other rights of the Holder).

(d) Notwithstanding the preceeding paragraph (c), in the event a dispute arises over whether a Conversion Notice was delivered to the Corporation by the Holder pursuant to Section 6.2, the Holder purporting to have telecopied such notice shall have the burden of proving that such notice was telecopied to the Corporation.

SECTION 6.3 FRACTIONAL SHARES. No fractional Common Shares or scrip representing fractional Common Shares shall be issued upon conversion of the Series B Preferred Stock. Instead of any fractional Common Shares which otherwise would be issuable upon conversion of the Series B Preferred Stock, the Corporation shall pay a cash adjustment in respect of such fraction in an amount equal to the same fraction. No cash payment of less than \$1.50 shall be required to be given unless specifically requested by the Holder.

SECTION 6.4 ADJUSTMENTS. The Conversion Price and the number of shares issuable upon conversion of the Series B Preferred Stock are subject to adjustment from time to time as follows.

(a) MERGER, SALE OF ASSETS, ETC. If at any time while the Series B Preferred Stock, or any portion thereof, is outstanding there shall be (i) a reorganization (other than a combination, reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Corporation with or into another corporation in which the Corporation is the surviving entity but the shares of the Corporation's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash or

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otherwise, or (iii) a sale or transfer of the Corporation's properties and assets as, or substantially as, an entirety to any other person, then as a part of such reorganization, merger, consolidation, sale or transfer lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon conversion of the Series B Preferred Stock, during the period specified herein, the number of shares of stock or other securities or property of the successor corporation resulting from such reorganization, merger, consolidation, sale or transfer that the Holder would have been entitled to receive in such reorganization, consolidation, merger, sale or transfer if the Series B Preferred Stock had been converted immediately before such reorganization, merger, consolidation, sale or transfer, all subject to further adjustment as provided in this Section 6.4. The foregoing provisions of this Section 6.4 shall similarly apply to successive reclassification, changes, consolidations, mergers, mandatory share exchanges and sales and transfers. If the per share consideration payable to the holder hereof for shares in connection with any

such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions of this Certificate of Designations with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Certificate of Designations shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon conversion of the Series B Preferred Stock.

(b) RECLASSIFICATION, ETC. If the Corporation, at any time while the Series B Preferred Stock, or any portion thereof, remains outstanding, shall change any of the securities as to which conversion rights under this Certificate of Designations exist into the same or a different number of securities of any other class or classes, the Series B Preferred Stock shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the conversion rights under this Certificate of Designations immediately prior to such reclassification or other change and the Conversion Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Certificate of Designations.

(c) SPLIT, SUBDIVISION OR COMBINATION OF SHARES. If the Corporation at any time while the Series B Preferred Stock, or any portion thereof, remains outstanding shall split, subdivide or combine the securities as to which conversion rights under this Certificate of Designations exist, into a different number of securities of the same class, the Conversion Price shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

(d) ADJUSTMENTS FOR DIVIDENDS IN STOCK AND OTHER SECURITIES OR PROPERTY. If while the Series B Preferred Stock, or any portion hereof, remains outstanding, the holders of the securities as to which conversion rights under this Certificate of Designations exist at the time shall have received, or, on or after the record date fixed for the

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determination of eligible stockholders of the Corporation, shall have become entitled to receive, without payment therefor, other or additional stock or other securities or property (other than cash) of the Corporation by way of dividend, then and in each case, the Series B Preferred Stock shall represent the right to acquire, upon conversion, in addition to the number of shares of the security receivable upon conversion of the Series B Preferred Stock, and without payment of any additional consideration therefor, the amount of such other or additional stock or other securities or property (other than cash) of the Corporation that the Holder would hold on the date of such conversion had it been the holder of record of the security receivable upon conversion of the Series B Preferred Stock on the date hereof and had thereafter, during the period from the date hereof to and including the date of such conversion, retained such shares and/or additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 6.4.

(e) CERTIFICATE AS TO ADJUSTMENTS. Upon the occurrence of each

adjustment or readjustment pursuant to this Section 6.4, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based.

SECTION 6.5 MANDATORY REDEMPTION UNDER CERTAIN CIRCUMSTANCES. (a) If at anytime from the Closing Date until the 90th day after the Closing Date (the "Mandatory Redemption Termination Date"), the Corporation shall be a party to a transaction or a series of transactions involving the issuance of equity securities, the incurrence of debt of the Corporation, the sale of licensing rights, the entering into of joint ventures or any other similar infusion of cash (collectively, a "Cash Infusion") as a result of which the Corporation shall receive funds in an aggregate amount in excess of \$300,000, the Corporation shall immediately upon receipt of such Cash Infusion redeem the Series B Preferred Stock at the applicable Mandatory Redemption Price (as defined below), together with all accrued and unpaid dividends thereon to the date of the Corporation's receipt of such funds (the "Mandatory Redemption Date") by the amount of such excess funds; PROVIDED, HOWEVER, that any funds received by the Corporation from Zambon Group, SpA (or any affiliate thereof) shall not be required to be aggregated to satisfy the \$300,000 amount provided for in the preceding clause but shall be used immediately for redemption under this Section 6.5; PROVIDED FURTHER, HOWEVER, should the amounts received by the Corporation from any of the foregoing transactions be lower than the amount needed to redeem the Series B Preferred Stock in full, then any amounts so received shall be used to redeem shares on a pro rata basis. The proceeds available for redemption under this Section 6.5 shall be applied first to accrued and unpaid dividends thereon to the date of redemption and second to the redemption of Series B Preferred Stock.

(b) For purposes hereof, the "Mandatory Redemption Price" shall mean as follows: (i) with respect to each share of Series B Preferred Stock redeemed during the period beginning on the Issue Date

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of each such share and ending on the 45th day after such Issue Date, an amount equal to 106% of the Stated Value thereof; and (ii) with respect to each share of Series B Preferred Stock redeemed during the period beginning on the 46th day after the Issue Date of each such share and ending on or before the Mandatory Redemption Termination Date, an amount equal to the sum of (A) 106% of the Stated Value thereof for the period from the Issue Date until the 45th day after the Issue Date and (B) 0.1334% of the Stated Value of each such share for each day, if any, from the 46th day after the Issue Date through and including the Mandatory Redemption Date.

(c) After the Mandatory Redemption Termination Date, the Corporation shall cease to have any obligation to redeem shares of Series B Preferred Stock under this Section 6.5.

SECTION 6.6 OPTIONAL REDEMPTION UNDER CERTAIN CIRCUMSTANCES. At any time after the date of issuance of the Series B Preferred Stock until the Mandatory Conversion Date (as defined below), the Corporation, upon notice delivered to the Holder as provided in Section 6.7, may redeem the Series B Preferred Stock (but only with respect to such shares as to which the Holder has

not theretofore furnished a Conversion Notice in compliance with Section 6.2), at 125% of the Stated Value thereof (the "Optional Redemption Price"), together with all accrued and unpaid dividends thereon to the date of redemption (the "Redemption Date"); PROVIDED, HOWEVER, that the Corporation may only redeem the Series B Preferred Stock under this Section 6.6 if the Current Market Price on the date the notice of redemption pursuant to this Section 6.6 is less than the Current Market Price on the Closing Date. Except as set forth in Sections 6.5 and 6.6, the Corporation shall not have the right to prepay or redeem the Series B Preferred Stock.

SECTION 6.7 NOTICE OF REDEMPTION. (a) Notice of redemption pursuant to Sections 6.5 and 6.6 shall be provided by the Corporation to the Holder in writing (by registered mail or overnight courier at the Holder's last address appearing in the Corporation's security registry) not less than ten (10) nor more than fifteen (15) days prior to the proposed Mandatory Redemption Date or the Redemption Date, as the case may be, which notice shall specify the proposed Mandatory Redemption Date or the Redemption Date, as the case may be, and refer to Section 6.5 or 6.6 (including, with respect to Section 6.6, a statement of the Market Price) and this Section 6.7.

(b) Any notice of redemption delivered by the Corporation in connection with a redemption under Section 6.5 may state that such redemption is conditioned on the consummation of the transactions giving rise to such redemption and may be revoked by the Corporation by notice to the Holder in the event that such transaction is not consummated, whereupon the Corporation's obligation to redeem shares of Series B Preferred Stock in respect thereof shall terminate.

SECTION 6.8 SURRENDER OF PREFERRED STOCK. Upon any redemption of the Series B Preferred Stock pursuant to Sections 6.5 or 6.6, the Holder, within 15 days of the date of any such redemption, shall either deliver the Series B Preferred Stock by hand to the Corporation at its principal executive offices or surrender the same to the Corporation at

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such address by express courier. Payment of the Mandatory Redemption Price or the Optional Redemption Price specified in Section 6.5 or 6.6, as the case may be, shall be made by the Corporation to the Holder by wire transfer of immediately available funds to such account(s) as the Holder shall specify to the Corporation. If payment of such redemption price is not made in full by the Mandatory Redemption Date or the Redemption Date, as the case may be, the Holder shall again have the right to convert the Series B Preferred Stock as provided in Article 6 hereof.

SECTION 6.9 MANDATORY CONVERSION. On the third anniversary of the date of this Agreement (the "Mandatory Conversion Date"), the Corporation shall convert all Series B Preferred Stock outstanding at the Conversion Price. Notwithstanding the previous sentence, in no event shall the Corporation convert that portion of the Series B Preferred Stock to the extent that the issuance of Common Shares upon the conversion of such Series B Preferred Stock, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and Warrants, would exceed 19.99% of the Common Stock outstanding on the Closing Date. Within ten (10) Business Days

after the Mandatory Conversion Date, the Corporation shall redeem all remaining outstanding Series B Preferred Stock at one hundred and twenty-five percent (125%) of the Stated Value thereof, together with all accrued and unpaid dividends thereon, in cash, to the date of redemption.

ARTICLE 7 VOTING RIGHTS

The holders of the Series B Preferred Stock have no voting power, except as otherwise provided by the General Corporation Law of the State of Delaware ("DGCL"), in this Article 7, and in Article 8 below.

The Corporation shall provide each holder of Series B Preferred Stock with prior notification of any meeting of the shareholders (and copies of proxy materials and other information sent to shareholders). In the event of any taking by the Corporation of a record of its shareholders for the purpose of determining shareholders who are entitled to receive payment of any dividend or other distribution, any right to subscribe for, purchase or otherwise acquire (including by way of merger, consolidation or recapitalization) any share of any class or any other securities or property, or to receive any other right, or for the purpose of determining shareholders who are entitled to vote in connection with any proposed liquidation, dissolution or winding up of the Corporation, the Corporation shall mail a notice to each holder, at least thirty (30) days prior to the consummation of the transaction or event, whichever is earlier, of the date on which any such action is to be taken for the purpose of such dividend, distribution, right or other event, and a brief statement regarding the amount and character of such dividend, distribution, right or other event to the extent known at such time.

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To the extent that under the DGCL the vote of the holders of the Series B Preferred Stock, voting separately as a class or series as applicable, is required to authorize a given action of the Corporation, the affirmative vote or consent of the holders of at least a majority of the shares of the Series B Preferred Stock represented at a duly held meeting at which a quorum is present or by written consent of a majority of the shares of Series B Preferred Stock (except as otherwise may be required under the DGCL) shall constitute the approval of such action by the class. To the extent that under the DGCL holders of the Series B Preferred Stock are entitled to vote on a matter with holders of Common Stock, voting together as one class, each share of Series B Preferred Stock shall be entitled to a number of votes equal to the number of shares of Common Stock into which convertible the record date for the taking of such vote of shareholders as the date as of which the Conversion Price is calculated. Holders of the Series B Preferred Stock shall be entitled to notice of all shareholder meetings or written consents (and copies of proxy materials and other information sent to shareholders) with respect to which they would be entitled as of right under the DGCL which notice would be provided pursuant to the Corporation's bylaws and the DGCL.

ARTICLE 8 PROTECTIVE PROVISIONS

So long as shares of Series B Preferred Stock are outstanding, the Corporation shall not, without first obtaining the approval (by vote or written consent, as provided by the DGCL) of the holders of at least a majority of the then outstanding shares of Series B Preferred Stock:

(a) alter or change the rights, preferences or privileges of the Series B Preferred Stock;

(b) create any new class or series of capital stock having a preference over the Series B Preferred Stock as to distribution of assets upon liquidation, dissolution or winding up of the Corporation ("Senior Securities") or alter or change the rights, preferences or privileges of any Senior Securities so as to affect adversely the Series B Preferred Stock;

(c) increase the authorized number of shares of Series B Preferred Stock; or

(d) do any act or thing not authorized or contemplated by this Certificate of Designation which would result in taxation of the holders of shares of the Series B Preferred Stock under Section 305 of the Internal Revenue Code of 1986, as amended (or any comparable provision of the Internal Revenue Code as hereafter from time to time amended).

In the event holders of at least a majority of the then outstanding shares of Series B Preferred Stock agree to allow the Corporation to alter or change the rights, preferences or privileges of the shares of Series B Preferred Stock, pursuant to subsection (a) above, so as to affect the Series B Preferred Stock, then the

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Corporation will deliver notice of such approved change to the holders of the Series B Preferred Stock that did not agree to such alteration or change (the "Dissenting Holders") and Dissenting Holders shall have the right for a period of thirty (30) days to convert pursuant to the terms of this Certificate of Designations as they exist prior to such alteration or change or continue to hold their shares of Series B Preferred Stock.

ARTICLE 9 MISCELLANEOUS

SECTION 9.1 LOSS, THEFT, DESTRUCTION OF PREFERRED STOCK. Upon receipt of evidence satisfactory to the Corporation of the loss, theft, destruction or mutilation of shares of Series B Preferred Stock and, in the case of any such loss, theft or destruction, upon receipt of indemnity or security reasonably satisfactory to the Corporation, or, in the case of any such mutilation, upon surrender and cancellation of the Series B Preferred Stock, the Corporation shall make, issue and deliver, in lieu of such lost, stolen, destroyed or mutilated shares of Series B Preferred Stock, new shares of Series B Preferred Stock of like date and tenor.

SECTION 9.2 WHO DEEMED ABSOLUTE OWNER. The Corporation may deem the Person in whose name the Series B Preferred Stock shall be registered upon the

registry books of the Corporation to be, and may treat it as, the absolute owner of the Series B Preferred Stock for the purpose of receiving payment of dividends on the Series B Preferred Stock, for the conversion of the Series B Preferred Stock and for all other purposes, and the Corporation shall not be affected by any notice to the contrary. All such payments and such conversion shall be valid and effectual to satisfy and discharge the liability upon the Series B Preferred Stock to the extent of the sum or sums so paid or the conversion so made.

SECTION 9.3 REGISTER. The Corporation shall keep at its principal office a register in which the Corporation shall provide for the registration of the Series B Preferred Stock. Upon any transfer of the Series B Preferred Stock in accordance with the provisions hereof, the Corporation shall register such transfer on the Series B Preferred Stock register.

SECTION 9.4 WITHHOLDING. To the extent required by applicable law, the Corporation may withhold amounts for or on account of any taxes imposed or levied by or on behalf of any taxing authority in the United States having jurisdiction over the Corporation from any payments made pursuant to the Series B Preferred Stock.

SECTION 9.5 HEADINGS. The headings of the Articles and Sections of this Certificate of Designations are inserted for convenience only and do not constitute a part of this Certificate of Designations.

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IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designations, Preferences and Rights to be signed by Loren G. Peterson, its President and Chief Executive Officer, and attested by Judy Roeske Bullock, its Secretary, on this 15th day of April, 1998.

SHEFFIELD PHARMACEUTICALS, INC.

By: /S/ LOREN G. PETERSON

Loren G. Peterson
President and Chief Executive
Officer

Attested:

By: /S/ JUDY ROESKE BULLOCK

Judy Roeske Bullock
Secretary

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TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner of shares of Series B Cumulative Convertible Redeemable Preferred Stock (the "Series B Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercises its option to convert _____ shares of the Series B Preferred Stock into shares of the common stock, \$.01 par value, of the Corporation ("Common Stock"), in accordance with the terms of the Certificate of Designations of the Series B Preferred Stock. The undersigned hereby instructs the Corporation to convert the number of shares of the Series B Preferred Stock specified above into shares of Common Stock in accordance with the provisions of Article 6 of such Certificate of Designations. The undersigned directs that the Common Stock issuable and certificates therefor deliverable upon conversion, the Series B Preferred Stock recertificated, if any, not being surrendered for conversion hereby, together with any check in payment for fractional Common Stock, be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated: _____ -

Signature

Fill in for registration of Series B Preferred Stock:

Please print name and address
(including zip code number) :

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FORM OF
CERTIFICATE OF DESIGNATIONS,
PREFERENCES AND RIGHTS

OF

SERIES C CUMULATIVE CONVERTIBLE PREFERRED STOCK

OF

SHEFFIELD PHARMACEUTICALS, INC.

Pursuant to Section 151 of
the General Corporation Law of the State of Delaware

Sheffield Pharmaceuticals, Inc., a corporation organized and existing under the General Corporation Law of the State of Delaware (the "Corporation"), hereby certifies that the following resolutions were adopted by the Board of Directors of the Corporation by unanimous written consent dated June 26, 1998 pursuant to authority of the Board of Directors as required by Section 151 of the General Corporation Law of the State of Delaware:

RESOLVED, that pursuant to the authority expressly granted to and vested in the Board of Directors of the Corporation (the "Board" or the "Board of Directors") by the provisions of the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), there hereby is created, out of the 3,000,000 shares of preferred stock of the Corporation authorized in Article FOURTH of the Certificate of Incorporation (the "Preferred Stock"), a series of Preferred Stock consisting of 23,000 shares, which series shall have the following powers, designations, preferences and relative, participating, optional or other rights, and the following qualifications, limitations and restrictions (in addition to the powers, designations, rights, and the qualifications, limitations and restrictions, set forth in the Certificate of Incorporation which are applicable to the Preferred Stock).

ARTICLE 1
DESIGNATION AND AMOUNT

The shares of such series shall be designated as "Series C Cumulative Convertible Preferred Stock" (the "Series C Preferred Stock") and the authorized number of shares constituting such series shall be 23,000 shares. The par value of the Series C Preferred Stock shall be \$.01 per share. The stated value of the Series C Preferred Stock shall be One Thousand Dollars (\$1,000) per share (the "Stated Value").

ARTICLE 2
DEFINITIONS

The terms defined in this Article whenever used in this Certificate of Designations have the following respective meanings:

(a) "AMEX" means the American Stock Exchange.

(b) "BUSINESS DAY" means a day other than Saturday, Sunday or any day on which banks located in the State of New York are authorized or obligated to close.

(c) "COMMON SHARES" or "COMMON STOCK" means shares of common stock, \$.01 par value, of the Corporation.

(d) "CONVERSION DATE" means any day on which all or any portion of shares of the Series C Preferred Stock is converted in accordance with the provisions hereof.

(e) "CONVERSION NOTICE" has the meaning set forth in Section 6.1.

(f) "CONVERSION PRICE" has the meaning set forth in Section 6.1.

(g) "CORPORATION" means Sheffield Pharmaceuticals, Inc. a Delaware corporation, and any successor or resulting corporation by way of merger, consolidation, sale or exchange of all or substantially all of the Corporation's assets, or otherwise.

(h) "CURRENT MARKET PRICE" on any date of determination means the closing price of a Common Share on such day as reported on the AMEX, or, if such security is not listed or admitted to trading on the AMEX, on the principal national security exchange or quotation system on which such security is quoted or listed or admitted to trading, or, if not quoted or listed or admitted to trading on any national securities exchange or quotation system, the average of the closing bid and ask prices of such security on the over-the-counter market on the day in question as reported by the National Quotation Bureau Incorporated, or a similar generally accepted reporting service, or if not so available, in such manner as furnished by any Nasdaq member firm of the National Association of Securities Dealers, Inc. selected from time to time by the Board

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of Directors of the Corporation for that purpose, or a price determined in good faith by the Board of Directors of the Corporation as being equal to the fair market value thereof, as the case may be.

(i) "DIVIDEND PAYMENT DATE" has the meaning set forth in Section 4.1.

(j) "DIVIDEND PERIOD" has the meaning set forth in Section 4.1.

(k) "DIVIDEND SHARES" means the shares of Series C Preferred Stock issued as dividends on outstanding shares of Series C Preferred stock in accordance with Article 4 hereof.

(l) "DOLLARS" or "\$" means currency of the United States of America.

(m) "EXCHANGE DATE" has the meaning set forth in Article 7.

(n) "EXCHANGE NOTICE" has the meaning set forth in Article 7.

(o) "HOLDER" OR "HOLDERS" means Elan International Services, Ltd., a Bermuda corporation, any successor thereto, or any Person(s) to whom the Series C Preferred Stock is subsequently transferred in accordance with the provisions hereof.

(p) "ISSUE DATE" means the date of original issuance of the applicable

share of Series C Preferred Stock.

(q) "JUNIOR SECURITIES" has the meaning set forth in Article 3.

(r) "LIQUIDATION PREFERENCE" has the meaning set forth in Section 5.1(b).

(s) "MANDATORY CONVERSION DATE" has the meaning set forth in Section 6.3.

(t) "PARI PASSU SECURITIES" has the meaning set forth in Article 3.

(u) "PERSON" means an individual, a corporation, a partnership, an association, a limited liability company, a unincorporated business organization, a trust or other entity or organization, and any government or political subdivision or any agency or instrumentality thereof.

(v) "RIGHTS" has the meaning set forth in Section 6.2(e).

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(w) "SERIES C PREFERRED STOCK" means the Series C Cumulative Convertible Preferred Stock of the Corporation created by this Certificate of Designations.

(x) "SPD" Systemic Pulmonary Delivery, Ltd., a Bermuda corporation.

(y) "STATED VALUE" has the meaning set forth in Article 1.

(z) "TRADING DAY" means any day on which purchases and sales of securities authorized for quotation on the AMEX are reported thereon or, if the Common Stock is not listed or admitted to trading on the AMEX, a day on which the principal national securities exchange on which the Common Stock is listed or admitted to trading is open for the transaction of business, or, if the Common Stock is not so listed or admitted to trading on any national securities exchange, a day on which the Nasdaq National Market (or any successor thereto) or such other system then in use is open for the transaction of business, or, if the Common Stock is not quoted by any such organization, any day other than a Saturday, Sunday or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close.

ARTICLE 3 RANK

The Series C Preferred Stock shall rank (i) prior to the Common Stock; (ii) prior to any class or series of capital stock of the Corporation hereafter created other than "Pari Passu Securities" (collectively, with the Common Stock, "Junior Securities"); (iii) pari passu with the Corporation's Series B Cumulative Convertible Redeemable Preferred Stock (the "Series B Preferred Stock"); and (iv) pari passu with any class or series of capital stock of the Corporation hereafter created specifically ranking on parity with the Series C Preferred Stock (collectively, with the Series B Preferred Stock, "Pari Passu Securities").

ARTICLE 4
DIVIDENDS

SECTION 4.1

(a) (i) Subject to Article 6, the Holder shall be entitled to receive, out of funds legally available for the payment of dividends, dividends at the rate of 7.0% per annum (computed on the basis of a 360-day year) (the "Dividend Rate") on the Stated Value of each outstanding share of Series C Preferred Stock payable on and as of the most recent Dividend Payment Date with respect to each Dividend Period. Dividends on the Series C Preferred Stock shall be cumulative from the date of issue or the most recent

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Dividend Payment Date upon which dividends have been paid on the Series C Preferred Stock by the Corporation.

(ii) Dividend on the Series C Preferred Stock shall be payable in equal quarterly amounts on each March 31, June 30, September 30 and December 31 of each year (each, a "Dividend Payment Date"), commencing September 30, 1998, to the holders of record of shares of the Series C Preferred Stock, as they appear on the stock records of the Corporation at the close of business on any record date, not more than 60 days or less than 10 days preceding the payment dates thereof, as shall be fixed by the Board of Directors. For the purposes hereof, "Dividend Period," in respect of any share of Series C Preferred Stock, shall mean (i) the period commencing on and including the Issue Date of such share and including September 30, 1998 and, thereafter, the quarterly period commencing on and including the day after the immediately preceding Dividend Payment Date and ending on and including the immediately subsequent Dividend Payment Date. Accrued and unpaid dividends for any past Dividend Period may be declared and paid at any time, without reference to any Dividend Payment Date, to holders of record on such date, not more than 15 days preceding the payment date thereof, as may be fixed by the Board of Directors.

(iii) Dividends on the outstanding shares of Series C Preferred Stock shall be paid through the issuance of duly and validly authorized and issued, fully paid and non-assessable additional shares of Series C Preferred Stock to be issued at the rate of one (1) share of Series C Preferred Stock for each \$1,000 of dividend due and payable. No fractional shares of the Series C Preferred Stock shall be issued as Dividend Shares. Instead of any fractional shares of Series C Preferred Stock which would otherwise be issuable as Dividend Shares, the Corporation shall pay a cash adjustment in respect of such fractional interest in an amount equal to 1,000 times the fractional interest.

(b) The Holder shall not be entitled to any dividends in excess of the cumulative dividends, as herein provided, on the Series C Preferred Stock. Except as provided in this Article 4, no interest, or sum of money in lieu of interest, shall be payable in respect of any dividend payment or payments on the Series C Preferred Stock that may be in arrears.

ARTICLE 5
LIQUIDATION PREFERENCE

SECTION 5.1

(a) If the Corporation shall commence a voluntary case under the Federal bankruptcy laws or any other applicable Federal or State bankruptcy, insolvency or similar law, or consent to the entry of an order for relief in an involuntary case under any law or to the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or make an

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assignment for the benefit of its creditors, or admit in writing its inability to pay its debts generally as they become due, or if a decree or order for relief in respect of the Corporation shall be entered by a court having jurisdiction in the premises in an involuntary case under the Federal bankruptcy laws or any other applicable Federal or state bankruptcy, insolvency or similar law resulting in the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or ordering the winding up or liquidation of its affairs, and any such decree or order shall be unstayed and in effect for a period of ninety (90) consecutive days and, on account of any such event, the Corporation shall liquidate, dissolve or wind up, or if the Corporation shall otherwise liquidate, dissolve or wind up (each such event being considered a "Liquidation Event"), no distribution shall be made to the holders of any Junior Securities of the Corporation upon liquidation, dissolution or winding up unless prior thereto, the Holders, subject to Article 5, shall have received the Liquidation Preference (as defined in Article 5.1(b)) with respect to each share. If upon the occurrence of a Liquidation Event, the assets and funds available for distribution among the Holders and holders of shares of Pari Passu Securities shall be insufficient to permit the payment to such holders of the preferential amounts payable thereon, then the entire assets and funds of the Corporation legally available for distribution to the Series C Preferred Stock and the Pari Passu Securities shall be distributed ratably among such shares in proportion to the ratio that the preferential amounts payable on each such share bears to the aggregate preferential amounts payable on all such shares.

(b) For purposes hereof, the "Liquidation Preference" with respect to a share of the Series C Preferred Stock shall mean an amount equal to (i) the Stated Value thereof, plus (ii) the aggregate of all accrued and unpaid stock dividends on such share of Series C Preferred Stock until the most recent Dividend Payment Date; PROVIDED that, in the event of an actual liquidation, dissolution or winding up of the Corporation, the amount referred to in clause (iii) above shall be calculated by including accrued and unpaid stock dividends to the actual date of such liquidation, dissolution or winding up, rather than the applicable Dividend Payment Due Date referred to above.

ARTICLE 6
CONVERSION OF SERIES C PREFERRED STOCK

SECTION 6.1 CONVERSION.

(a) Holders of shares of the Series C Preferred Stock shall have the right, exercisable at any time and from time to time through the Mandatory Conversion Date, to convert all or any such shares of the Series C Preferred Stock into shares of the Common Stock (calculated as to each conversion to the nearest 1/100th of a share) at the conversion price of \$1.41 per share of the Common Stock (equivalent to a conversion rate of 709.22 shares of Common

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Stock for each share of the Series C Preferred Stock so converted), subject to adjustment as described below (the "Conversion Price"). Upon conversion, no adjustment or payment will be made for dividends, but if any holder surrenders a share of the Series C Preferred Stock for conversion after the close of business on the record date for the payment of a dividend and prior to the opening of business on the next Dividend Payment Date, then, notwithstanding such conversion, the dividend payable on such Dividend Payment Date will be paid to the registered holder of such share on such record date. In such event, such share, when surrendered for conversion during the period between the close of business on any dividend payment record date and the opening of business on the corresponding Dividend Payment Date, must be accompanied by payment of an amount equal to the dividend payable on such Dividend Payment Date on the share so converted.

(b) Any holder of a share or shares of the Series C Preferred Stock electing to convert such share or shares thereof shall deliver the certificate or certificates therefor to the principal office of the Corporation or any transfer agent for the Common Stock, with the form of notice of election to convert attached to this Certificate of Designations (the "Conversion Notice"), fully completed and duly executed and (if such required by the Corporation or any conversion agent) accompanied by instruments of transfer in form satisfactory to the Corporation and to any conversion agent, duly executed by the registered Holder of his duly authorized attorney. The conversion right with respect to any such shares shall be deemed to have been exercised at the date upon which the certificates therefore accompanied by such duly executed notice of election and instruments of transfer and such taxes, stamps, funds, or evidence of payment shall have been so delivered, and the Person or Persons entitled to receive the shares of the Common Stock issuable upon such conversion shall be treated for all purposes as the record Holder or Holders of such shares of the Common Stock upon said date.

(c) From and after the delivery of the Conversion Notice in respect of any conversion of shares of Series C Preferred Stock, all such shares of Series C Preferred Stock shall be deemed to have been converted into shares of Common Stock as of the applicable Conversion Date at the applicable conversion rate, all stock dividends on such shares of the Series C Preferred Stock shall cease to accrue, and all rights of the Holders thereof as holders of Series C Preferred Stock, except the right to receive all accrued and unpaid stock dividends to such Conversion Date at the applicable rate for such shares of Series C Preferred Stock and the right to receive certificates representing shares of Common Stock issuable upon the conversion of such shares (including, without limitation, with respect to such stock dividends, as applicable), shall cease and terminate, such shares of Series C Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such

shares shall not be deemed to be outstanding for any purpose whatsoever.

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(d) No fractional shares of the Common Stock or scrip representing fractional shares shall be issued upon conversion of shares of the Series C Preferred Stock. If more than one share of the Series C Preferred Stock shall be surrendered for conversion at one time by the same holder, the number of full shares of the Common Stock which shall be issuable upon conversion thereof shall be computed on the basis of the aggregate number of shares of the Series C Preferred Stock so surrendered. Instead of any fractional shares of the Common Stock which would otherwise be issuable upon conversion of any shares of the Series C Preferred Stock, the Corporation shall pay a cash adjustment in respect of such fraction in an amount equal to the same fraction of the Current Market Price for the Common Stock on the last Trading Day preceding the applicable date of conversion.

(e) Each Conversion Notice under this Section 6.1 shall request the conversion of at least 500 shares of Series C Preferred Stock or the remaining balance of Series C Preferred Stock held by the converting Holder, whichever is less.

SECTION 6.2 ADJUSTMENTS. The Conversion Price and the number of shares issuable upon conversion of the Series C Preferred Stock are subject to adjustment from time to time as follows:

(a) MERGER, SALE OF ASSETS, ETC. If at any time while the Series C Preferred Stock, or any portion thereof, is outstanding there shall be (i) a reorganization (other than a combination, reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Corporation with or into another corporation in which the Corporation is the surviving entity but the shares of the Corporation's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash or otherwise, or (iii) a sale or transfer of the Corporation's properties and assets as, or substantially as, an entirety to any other person, then as a part of such reorganization, merger, consolidation, sale or transfer lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon conversion of the Series C Preferred Stock, during the period specified herein, the number of shares of stock or other securities or property of the successor corporation resulting from such reorganization, merger, consolidation, sale or transfer that the Holder would have been entitled to receive in such reorganization, consolidation, merger, sale or transfer if the Series C Preferred Stock had been converted immediately before such reorganization, merger, consolidation, sale or transfer, all subject to further adjustment as provided in this Section 6.2(a). The foregoing provisions of this Section 6.2(a) shall similarly apply to successive reclassification, changes, consolidations, mergers, mandatory share exchanges and sales and transfers. If the per share consideration payable to the holder hereof for shares in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Board of Directors. In all events, appropriate adjustment (as determined in good faith by

the Board of Directors) shall be made in the application of the provisions of this Certificate of Designations with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Certificate of Designations shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon conversion of the Series C Preferred Stock.

(b) RECLASSIFICATION, ETC. If the Corporation, at any time while the Series C Preferred Stock, or any portion thereof, remains outstanding, shall change any of the securities as to which conversion rights under this Certificate of Designations exist into the same or a different number of securities of any other class or classes, the Series C Preferred Stock shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the conversion rights under this Certificate of Designations immediately prior to such reclassification or other change and the Conversion Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Certificate of Designations.

(c) SPLIT, SUBDIVISION OR COMBINATION OF SHARES. If the Corporation at any time while the Series C Preferred Stock, or any portion thereof, remains outstanding shall split, subdivide or combine the securities as to which conversion rights under this Certificate of Designations exist, into a different number of securities of the same class, the Conversion Price shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

(d) ADJUSTMENTS FOR DIVIDENDS IN STOCK AND OTHER SECURITIES OR PROPERTY. If while the Series C Preferred Stock, or any portion hereof, remains outstanding, the holders of the securities as to which conversion rights under this Certificate of Designations exist at the time shall have received, or, on or after the record date fixed for the determination of eligible stockholders of the Corporation, shall have become entitled to receive, without payment therefor, other or additional stock or other securities or property (other than cash) of the Corporation by way of dividend, then and in each case, the Series C Preferred Stock shall represent the right to acquire, upon conversion, in addition to the number of shares of the security receivable upon conversion of the Series C Preferred Stock, and without payment of any additional consideration therefor, the amount of such other or additional stock or other securities or property (other than cash) of the Corporation that the Holder would hold on the date of such conversion had it been the holder of record of the security receivable upon conversion of the Series C Preferred Stock on the date hereof and had thereafter, during the period from the date hereof to and including the date of such conversion, retained such shares and/or additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 6.2.

(e) REPURCHASES OR REDEMPTIONS OF COMMON STOCK OR OPTIONS. If the Corporation at any time while shares of Series C Preferred Stock are

outstanding, shall repurchase or redeem any outstanding shares of Common Stock or rights, options or warrants granting the holder thereof the right to acquire shares of Common Stock (collectively, the "Rights") in a single transaction or a series of related transactions involving an aggregate repurchase or redemption price in excess of \$500,000 at a price (on a per share basis) which is greater than 125% of the Current Market Price as of the day prior to such repurchase or redemption, the Conversion Price shall thereupon be adjusted by multiplying the Conversion Price in effect immediately prior to the applicable repurchase or redemption by a fraction (i) the numerator of which shall be the Conversion Price in effect immediately prior to such repurchase or redemption and (ii) the denominator of which shall be the fair market value of the consideration paid by the Corporation for each share of Common Stock (or each share of Common Stock issuable upon exercise of the Right(s) subject to such repurchase or redemption) in such repurchase or redemption.

(f) CERTIFICATE AS TO ADJUSTMENTS. Upon the occurrence of each adjustment or readjustment pursuant to this Section 6.2, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based.

(g) CUMULATIVE ADJUSTMENTS. No adjustment in the Conversion Price shall be required until cumulative adjustments result in a concomitant change of 1% or more of the Conversion Price as in effect prior to the last adjustment of the Conversion Price; PROVIDED, HOWEVER, that any adjustments which by reason of this Section 6.2 are not required to be made shall be carried forward and taken into account in any subsequent adjustment. All calculations under this Section 6.2 shall be made to the nearest cent or to the nearest one-hundredth of a share, as the case may be. No adjustment to the Conversion Price shall be made for cash dividends.

SECTION 6.3 MANDATORY CONVERSION. On the tenth anniversary of the Issue Date (the "Mandatory Conversion Date"), all Series C Preferred Stock outstanding on such date shall be automatically converted at the Conversion Price in effect as of the Mandatory Conversion Date. For purposes of such conversion, each Holder shall be deemed to have delivered a Notice of Conversion to the Corporation in accordance with Section 6.1, with the applicable Conversion Date being the Mandatory Conversion Date.

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ARTICLE 7 EXCHANGE RIGHTS

Holders of at least a majority of the then outstanding shares of Series C Preferred Stock shall have the right, by written notice delivered to the Corporation in the form of notice of election to exchange attached to this Certificate of Designations (the "Exchange Notice"), fully completed and duly executed by the requisite Holders, to require the Corporation to exchange all outstanding shares of Series C Preferred Stock as of any Dividend Payment Date (such date being the "Exchange Date") for fifty percent (50%) of the then outstanding capital stock of SPD owned by the Corporation as of the Exchange Date, with such capital stock to be delivered to all Holders on a pro rata basis

based on their respective holdings of Series C Preferred Stock on the Exchange Date. The Exchange Notice shall be delivered at least 30 days prior to the Exchange Date. Upon receipt of the Exchange Notice, the Corporation shall promptly notify all Holders of its receipt of thereof and all Holders will promptly deliver the certificate or certificates therefor to the principal office of the Corporation or any transfer agent for the Common Stock for cancellation.

From and after the delivery of the Exchange Notice, all shares of Series C Preferred Stock (other than Dividend Shares) shall be deemed to have been exchanged for fifty percent (50%) of the then outstanding capital stock of SPD (in the aggregate) as of Exchange Date, all stock dividends on such shares of the Series C Preferred Stock shall cease to accrue, and all rights of the Holders thereof as holders of Series C Preferred Stock, except the right to receive all accrued and unpaid stock dividends to the Exchange Date at the applicable rate for such shares of such shares of Series C Preferred Stock and the right to receive certificates representing the applicable shares of SPD capital stock issuable in respect of the exchange, shall cease and terminate, such shares of Series C Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such shares shall not be deemed to be outstanding for any purpose whatsoever.

The Rights of Holders under this Article 7 shall terminate and such Holders shall not be entitled to exchange shares of Series C Preferred Stock under this Article 7 after a Conversion Notice has been delivered to the Corporation pursuant to this Section 6.1. Notwithstanding anything to the contrary in this Article 7, the delivery of the exchange notice shall not effect any Holder's rights to convert Dividend Shares held by such holder pursuant to Section 6.2 hereof, except that any conversion of Dividend Shares must occur within thirty months from the Exchange Date.

ARTICLE 8 VOTING RIGHTS

The holders of the Series C Preferred Stock have no voting power, except as otherwise provided by the General

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Corporation Law of the State of Delaware ("DGCL"), in this Article 8, and in Article 9 below.

The Corporation shall provide each Holder of Series C Preferred Stock with prior notification of any meeting of the shareholders of the Corporation (and copies of proxy materials and other information sent to shareholders). In the event of any taking by the Corporation of a record of its shareholders for the purpose of determining shareholders who are entitled to receive payment of any dividend or other distribution, any right to subscribe for, purchase or otherwise acquire (including by way of merger, consolidation or recapitalization) any share of any class or any other securities or property, or to receive any other right, or for the purpose of determining shareholders who are entitled to vote in connection with any proposed liquidation, dissolution or winding up of the Corporation, the Corporation shall mail a notice to each Holder, at least thirty (30) days prior to the consummation of the transaction

or event, whichever is earlier), of the date on which any such action is to be taken for the purpose of such dividend, distribution, right or other event, and a brief statement regarding the amount and character of such dividend, distribution, right or other event to the extent known at such time.

To the extent that under the DGCL the vote of the Holders of the Series C Preferred Stock, voting separately as a class or series as applicable, is required to authorize a given action of the Corporation, the affirmative vote or consent of the Holders of at least a majority of the shares of the Series C Preferred Stock represented at a duly held meeting at which a quorum is present or by written consent of a majority of the shares of Series C Preferred Stock (except as otherwise may be required under the DGCL) shall constitute the approval of such action by the class. To the extent that under the DGCL Holders of the Series C Preferred Stock are entitled to vote on a matter with Holders of Common Stock, voting together as one class, each share of Series C Preferred Stock shall be entitled to a number of votes equal to the number of shares of Common Stock into which convertible the record date for the taking of such vote of shareholders as the date as of which the Conversion Price is calculated. Holders of the Series C Preferred Stock shall be entitled to notice of all shareholder meetings or written consents (and copies of proxy materials and other information sent to shareholders) with respect to which they would be entitled as of right under the DGCL which notice would be provided pursuant to the Corporation's bylaws and the DGCL.

ARTICLE 9 PROTECTIVE PROVISIONS

So long as shares of Series C Preferred Stock are outstanding, the Corporation shall not, without first obtaining the approval (by vote or written consent, as provided by the DGCL) of the Holders of at least a majority of the then outstanding shares of Series C Preferred Stock:

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(a) create any new class or series of capital stock having a preference over the Series C Preferred Stock as to distribution of assets upon liquidation, dissolution or winding up of the Corporation ("Senior Securities") or alter or change the rights, preferences or privileges of any Senior Securities so as to affect adversely the Series C Preferred Stock; or

(b) amend or alter whether by merger, consolidation or otherwise, any of the provisions of the Certificate of Incorporation (including this Certificate of Designations) that would change the preferences, rights or privileges with respect to the Series C Preferred Stock so as to affect the Series C Preferred Stock adversely.

In the event holders of at least a majority of the then outstanding shares of Series C Preferred Stock agree to allow the Corporation to amend or alter the preferences, rights or privileges of the shares of Series C Preferred Stock, pursuant to subsection (b) above, so as to affect adversely the Series C Preferred Stock, then the Corporation will deliver notice of such approved change to the Holders of the Series C Preferred Stock that did not agree to such amendment or change (the "Dissenting Holders") and Dissenting

Holders shall have the right for a period of thirty (30) days to convert pursuant to Section 6.2 of this Certificate of Designations as they exist prior to such alteration or change or continue to hold their shares of Series C Preferred Stock.

ARTICLE 10 MISCELLANEOUS

SECTION 10.1 LOSS, THEFT, DESTRUCTION OF PREFERRED STOCK. Upon receipt of evidence satisfactory to the Corporation of the loss, theft, destruction or mutilation of shares of Series C Preferred Stock and, in the case of any such loss, theft or destruction, upon receipt of indemnity or security reasonably satisfactory to the Corporation, or, in the case of any such mutilation, upon surrender and cancellation of the Series C Preferred Stock, the Corporation shall make, issue and deliver, in lieu of such lost, stolen, destroyed or mutilated shares of Series C Preferred Stock, new shares of Series C Preferred Stock of like date and tenor.

SECTION 10.2 WHO DEEMED ABSOLUTE OWNER. The Corporation may deem the Person in whose name the Series C Preferred Stock shall be registered upon the registry books of the Corporation to be, and may treat it as, the absolute owner of the Series C Preferred Stock for the purpose of receiving payment of dividends on the Series C Preferred Stock, for the conversion of the Series C Preferred Stock and for all other purposes, and the Corporation shall not be affected by any notice to the contrary. All such payments and such conversion shall be valid and effectual to satisfy and discharge the liability upon the Series C Preferred Stock to the extent of the sum or sums so paid or the conversion so made.

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SECTION 10.3 REGISTER. The Corporation shall keep at its principal office a register in which the Corporation shall provide for the registration of the Series C Preferred Stock. Upon any transfer of the Series C Preferred Stock in accordance with the provisions hereof, the Corporation shall register such transfer on the Series C Preferred Stock register.

SECTION 10.4 WITHHOLDING. To the extent required by applicable law, the Corporation may withhold amounts for or on account of any taxes imposed or levied by or on behalf of any taxing authority in the United States having jurisdiction over the Corporation from any payments made pursuant to the Series C Preferred Stock.

SECTION 10.5 HEADINGS. The headings of the Articles and Sections of this Certificate of Designations are inserted for convenience only and do not constitute a part of this Certificate of Designations.

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IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designations, Preferences and Rights to be signed by Loren G. Peterson, its President and Chief Executive Officer, and attested by Judy Roeske Bullock, its Secretary, on this 30th day of June, 1998.

SHEFFIELD PHARMACEUTICALS, INC.

By: /S/ LOREN G. PETERSON

Loren G. Peterson
President and Chief Executive
Officer

Attested:

By: /S/ JUDY ROESKE BULLOCK

Judy Roeske Bullock
Secretary

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FORM OF CONVERSION NOTICE

TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner of shares of Series C Cumulative Convertible Preferred Stock (the "Series C Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercises its option to convert _____ shares of the Series C Preferred Stock into shares of the common stock, \$.01 par value, of the Corporation ("Common Stock"), in accordance with the terms of the Certificate of Designations of the Series C Preferred Stock. The undersigned hereby instructs the Corporation to convert the number of shares of the Series C Preferred Stock specified above into shares of Common Stock in accordance with the provisions of Article 6 of such Certificate of Designations. The undersigned directs that the Common Stock issuable and certificates therefor deliverable upon conversion, the Series C Preferred Stock recertificated, if any, not being surrendered for conversion hereby, together with any check in payment for fractional Common Stock, be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated:_____

Signature

Fill in for registration of Series C Preferred Stock:

Please print name and address
(including zip code number) :

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FORM OF EXCHANGE NOTICE

TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner(s) of shares of Series C Cumulative Convertible Preferred Stock (the "Series C Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercise its option to cause the Corporation to exchange 11,500 shares of Series C Preferred Stock for 50% of the outstanding capital stock Systemic Pulmonary Delivery, Ltd. ("SPD Stock") in accordance with the terms of the Certificate of Designations of the Series C Preferred Stock. The undersigned hereby instructs the Corporation to advise all other holders of Series C Preferred Stock, if any, of this exercise by the undersigned owner(s). The undersigned direct that the SPD Stock issuable and certificates therefor deliverable to the undersigned upon such exchange be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated:_____

Signature

Fill in for registration of SPD Stock:

Please print name and address
(including zip code number) :

EX-4.1

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CERTIFICATE OF DESIGNATIONS

CERTIFICATE OF DESIGNATIONS,
PREFERENCES AND RIGHTS

OF

SERIES B CUMULATIVE CONVERTIBLE REDEEMABLE PREFERRED STOCK

OF

SHEFFIELD PHARMACEUTICALS, INC.

Pursuant to Section 151 of
the General Corporation Law of the State of Delaware

Sheffield Pharmaceuticals, Inc., a corporation organized and existing under the General Corporation Law of the State of Delaware (the "Corporation"), hereby certifies that the following resolutions were adopted by the Board of Directors of the Corporation on April 13, 1998 pursuant to authority of the Board of Directors as required by Section 151 of the General Corporation Law of the State of Delaware:

RESOLVED, that pursuant to the authority expressly granted to and vested in the Board of Directors of the Corporation (the "Board" or the "Board of Directors") by the provisions of the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), there hereby is created, out of the 3,000,000 shares of preferred stock of the Corporation authorized in Article FOURTH of the Certificate of Incorporation (the "Preferred Stock"), a series of Preferred Stock consisting of 1,250 shares, which series shall have the following powers, designations, preferences and relative, participating, optional or other rights, and the following qualifications, limitations and restrictions (in addition to the powers, designations, rights, and the qualifications, limitations and restrictions, set forth in the Certificate of Incorporation which are applicable to the Preferred Stock).

ARTICLE 1
DESIGNATION AND AMOUNT

The shares of such series shall be designated as "Series B Cumulative Convertible Redeemable Preferred Stock" (the "Series B Preferred Stock") and the authorized number of shares constituting such series shall be

1,250 shares. The par value of the Series B Preferred

Stock shall be \$.01 per share. The stated value of the Series B Preferred Stock shall be One Thousand Dollars (\$1,000) per share (the "Stated Value").

ARTICLE 2 DEFINITIONS

SECTION 2.1 DEFINITIONS. The terms defined in this Article whenever used in this Certificate of Designations have the following respective meanings:

(a) "ADDITIONAL CAPITAL SHARES" has the meaning set forth in Section 6.1(c).

(b) "AFFILIATE" has the meaning ascribed to such term in Rule 12b-2 under the Securities Exchange Act of 1934, as amended.

(c) "BUSINESS DAY" means a day other than Saturday, Sunday or any day on which banks located in the State of New York are authorized or obligated to close.

(d) "CAPITAL SHARES" means the Common Shares and any other shares of any other class or series of common stock, whether now or hereafter authorized and however designated, which have the right to participate in the distribution of earnings and assets (upon dissolution, liquidation or winding-up) of the Corporation.

(e) "CLOSING DATE" means the date of issuance of the first share of Series B Preferred Stock.

(f) "COMMON SHARES" or "COMMON STOCK" means shares of common stock, \$.01 par value, of the Corporation.

(g) "COMMON STOCK ISSUED AT CONVERSION" when used with reference to the securities issuable upon conversion of the Series B Preferred Stock, means all Common Shares now or hereafter Outstanding and securities of any other class or series into which the Series B Preferred Stock hereafter shall have been changed or substituted, whether now or hereafter created and however designated.

(h) "CONVERSION DATE" means any day on which all or any portion of shares of the Series B Preferred Stock is converted in accordance with the provisions hereof.

(i) "CONVERSION NOTICE" has the meaning set forth in Section 6.2.

(j) "CONVERSION PRICE" means on any date of determination the applicable price for the conversion of shares of Series B Preferred Stock into Common Shares on such day as set forth in Section 6.1.

(k) "CONVERSION RATIO" means on any date of determination the applicable percentage of the Market Price for conversion of shares of Series B Preferred Stock into Common Shares on such day as set forth in Section 6.1.

(l) "CORPORATION" means Sheffield Pharmaceuticals, Inc. a Delaware corporation, and any successor or resulting corporation by way of merger, consolidation, sale or exchange of all or substantially all of the Corporation's assets, or otherwise.

(m) "CURRENT MARKET PRICE" on any date of determination means the closing price of a Common Share on such day as reported on the AMEX, or, if such security is not listed or admitted to trading on the AMEX, on the principal national security exchange or quotation system on which such security is quoted or listed or admitted to trading, or, if not quoted or listed or admitted to trading on any national securities exchange or quotation system, the closing price of such security on the over-the-counter market on the day in question as reported by the National Quotation Bureau Incorporated, or a similar generally accepted reporting service, or if not so available, in such manner as furnished by any Nasdaq member firm of the National Association of Securities Dealers, Inc. selected from time to time by the Board of Directors of the Corporation for that purpose, or a price determined in good faith by the Board of Directors of the Corporation as being equal to the fair market value thereof, as the case may be.

(n) "DEFAULT DIVIDEND RATE" shall be equal to the Preferred Stock Dividend Rate plus an additional 4% per annum.

(o) "HOLDER" means The Shaar Fund Ltd., any successor thereto, or any Person to whom the Series B Preferred Stock is subsequently transferred in accordance with the provisions hereof.

(p) "ISSUE DATE" means the date of original issuance of the applicable share of Series B Preferred Stock.

(q) "MARKET DISRUPTION EVENT" means any event that results in a material suspension or limitation of trading of Common Shares on the AMEX.

(r) "MARKET PRICE" per Common Share means the average of the closing prices of the Common Shares as reported on the AMEX for the five Trading Days in any Valuation Period.

(s) "OUTSTANDING" when used with reference to Common Shares or Capital Shares (collectively, "Shares"), means, on any date of determination, all issued and outstanding Shares, and includes all such Shares issuable in respect of outstanding scrip or any certificates representing fractional interests in such Shares; PROVIDED, HOWEVER, that any such Shares directly or indirectly owned or held by or for the account of the Corporation or any Subsidiary of the Corporation shall not be deemed "Outstanding" for purposes hereof.

(t) "PERSON" means an individual, a corporation, a partnership, an association, a limited liability company, a unincorporated business organization, a trust or other entity or organization, and any government or political subdivision or any agency or instrumentality thereof.

(u) "SEC" means the United States Securities and Exchange Commission.

(v) "SECURITIES ACT" means the Securities Act of 1933, as amended, and the rules and regulations of the SEC thereunder, all as in effect at the time.

(w) "SERIES B PREFERRED STOCK" means the Series B Cumulative Convertible Redeemable Preferred Stock of the Corporation created by this Certificate of Designations or such other convertible Preferred Stock exchanged therefor as provided in Section 6.4.

(aa) "STATED VALUE" has the meaning set forth in Article 1.

(bb) "SUBSIDIARY" means any entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are owned directly or indirectly by the Corporation.

(cc) "TRADING DAY" means any day on which purchases and sales of securities authorized for quotation on the AMEX are reported thereon and on which no Market Disruption Event has occurred or, if the Common Stock is not listed or admitted to trading on the AMEX, a day on which the principal national securities exchange on which the Common Stock is listed or admitted to trading is open for the transaction of business, or, if the Common Stock is not so listed or admitted to trading on any national securities exchange, a day on which the Nasdaq National Market (or any successor thereto) or such other system then in use is open for the transaction of business, or, if the Common Stock is not quoted by any such organization, any day other than a Saturday, Sunday or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close.

(dd) "VALUATION EVENT" has the meaning set forth in Section 6.1.

(ee) "VALUATION PERIOD" means the five Trading Day period immediately preceding the applicable Conversion Date.

All references to "cash" or "\$" herein means currency of the United States of America.

ARTICLE 3 RANK

The Series B Preferred Stock shall rank (i) prior to the Common Stock; (ii) prior to any class or series of capital stock of the

Corporation hereafter created other than "Pari Passu Securities" (collectively, with the Common Stock, "Junior Securities"); (iii) pari passu with the Corporation's Series A Cumulative Convertible Redeemable Preferred Stock (the "Series A Preferred Stock"); and (iv) pari passu with any class or series of capital stock of the Corporation hereafter created specifically ranking on parity with the Series B Preferred Stock (collectively, with the Series A Preferred Stock, "Pari Passu Securities").

ARTICLE 4 DIVIDENDS

SECTION 4.1

(a) (i) Subject to Article 6, the Holder shall be entitled to receive, when, as and if declared by the Board of Directors, out of funds legally available for the payment of dividends, dividends (subject to Sections 4(a)(ii) hereof) at the rate of 6% per annum (computed on the basis of a 360-day year) (the "Dividend Rate") on the Liquidation Value (as defined below) of each share of Series B Preferred Stock on and as of the most recent Dividend Payment Due Date (as defined below) with respect to each Dividend Period (as defined below). Dividends on the Series B Preferred Stock shall be cumulative from the date of issue, whether or not declared for any reason, including if such declaration is prohibited under any outstanding indebtedness or borrowings of the Corporation or any of its Subsidiaries, or any other contractual provision binding on the Corporation or any of its Subsidiaries, and whether or not there shall be funds legally available for the payment thereof.

(ii) Each dividend shall be payable in equal quarterly amounts on each March 31, June 30, September 30 and December 31 of each year (each, a "Dividend Payment Due Date"), commencing September 30, 1998, to the holders of record of shares of the Series B Preferred Stock, as they appear on the stock records of the Corporation at the close of business on any record date, not more than 60 days or less than 10 days preceding the payment dates thereof, as shall be fixed by the Board of Directors. For the purposes hereof, "Dividend Period," in respect of any share of Series B Preferred Stock, shall mean (i) the period commencing on and including the Issue Date of such share and including September 30, 1998 and, thereafter, the quarterly period commencing on and including the day after the immediately preceding Dividend Payment Date and ending on and including the immediately subsequent Dividend Payment Date. Accrued and unpaid dividends for any past Dividend Period may be declared and paid at any time, without reference to any Dividend Payment Due Date, to holders of record on such date, not more than 15 days preceding the payment date thereof, as may be fixed by the Board of Directors.

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(iii) At the option of the Corporation, the dividend shall be paid in cash or through the issuance of duly and validly authorized and issued, fully paid and non-assessable shares of the Common Stock valued at the Market Price. Notwithstanding the foregoing, until the shares of Common Stock issuable as dividends on the Series B Preferred Stock have been registered for resale under a registration statement that has been declared effective under the Securities Act by the SEC, payment of dividends on the Series B Preferred Stock

shall be in cash.

(b) The Holder shall not be entitled to any dividends in excess of the cumulative dividends, as herein provided, on the Series B Preferred Stock. Except as provided in this Article 4, no interest, or sum of money in lieu of interest, shall be payable in respect of any dividend payment or payments on the Series B Preferred Stock that may be in arrears.

(c) So long as any shares of the Series B Preferred Stock are outstanding, no dividends, except as described in the next succeeding sentence, shall be declared or paid or set apart for payment on Pari Passu Securities for any period unless full cumulative dividends required to be paid in cash have been or contemporaneously are declared and paid or declared and a sum sufficient for the payment thereof set apart for such payment on the Series B Preferred Stock for all Dividend Periods terminating on or prior to the date of payment of the dividend on such class or series of Pari Passu Securities. When dividends are not paid in full or a sum sufficient for such payment is not set apart, as aforesaid, all dividends declared upon shares of the Series B Preferred Stock and all dividends declared upon any other class or series of Pari Passu Securities shall be declared ratably in proportion to the respective amounts of dividends accumulated and unpaid on the Series B Preferred Stock and accumulated and unpaid on such Pari Passu Securities.

(d) So long as any shares of the Series B Preferred Stock are outstanding, no dividends shall be declared or paid or set apart for payment or other distribution declared or made upon Junior Securities, nor shall any Junior Securities be redeemed, purchased or otherwise acquired (other than a redemption, purchase or other acquisition of shares of Common Stock made for purposes of an employee incentive or benefit plan (including a stock option plan) of the Corporation or any Subsidiary, (all such dividends, distributions, redemptions or purchases being hereinafter referred to as a "Junior Securities Distribution") for any consideration (or any moneys be paid to or made available for a sinking fund for the redemption of any shares of any such stock) by the Corporation, directly or indirectly, unless in each case (i) the full cumulative dividends required to be paid in cash on all outstanding shares of the Series B Preferred Stock and any other Pari Passu Securities shall have been paid or set apart for payment for all past Dividend Periods with respect to the Series B Preferred Stock and all past dividend periods with respect to such Pari Passu Securities, and (ii) sufficient funds shall have been paid or set apart for the payment of the dividend for the current Dividend Period with respect to the Series B Preferred Stock and the current dividend period with respect to such Pari Passu Securities.

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ARTICLE 5 LIQUIDATION PREFERENCE

SECTION 5.1

(a) If the Corporation shall commence a voluntary case under the Federal bankruptcy laws or any other applicable Federal or State bankruptcy, insolvency or similar law, or consent to the entry of an order for relief in an involuntary case under any law or to the appointment of a receiver, liquidator,

assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or make an assignment for the benefit of its creditors, or admit in writing its inability to pay its debts generally as they become due, or if a decree or order for relief in respect of the Corporation shall be entered by a court having jurisdiction in the premises in an involuntary case under the Federal bankruptcy laws or any other applicable Federal or state bankruptcy, insolvency or similar law resulting in the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or ordering the winding up or liquidation of its affairs, and any such decree or order shall be unstayed and in effect for a period of sixty (60) consecutive days and, on account of any such event, the Corporation shall liquidate, dissolve or wind up, or if the Corporation shall otherwise liquidate, dissolve or wind up (each such event being considered a "Liquidation Event"), no distribution shall be made to the holders of any Junior Securities of the Corporation upon liquidation, dissolution or winding up unless prior thereto, the holders of shares of Series B Preferred Stock, subject to Article 5, shall have received the Liquidation Preference (as defined in Article 5(b)) with respect to each share. If upon the occurrence of a Liquidation Event, the assets and funds available for distribution among the holders of the Series B Preferred Stock and holders of Pari Passu Securities shall be insufficient to permit the payment to such holders of the preferential amounts payable thereon, then the entire assets and funds of the Corporation legally available for distribution to the Series B Preferred Stock and the Pari Passu Securities shall be distributed ratably among such shares in proportion to the ratio that the Liquidation Preference payable on each such share bears to the aggregate liquidation Preference payable on all such shares.

(b) For purposes hereof, the "Liquidation Preference" with respect to a share of the Series B Preferred Stock shall mean an amount equal to the sum of (i) the Stated Value thereof, plus (ii) the aggregate of all accrued and unpaid dividends on such share of Series B Preferred Stock until the most recent Dividend Payment Date; PROVIDED that, in the event of an actual liquidation, dissolution or winding up of the Corporation, the amount referred to in clause (iii) above shall be calculated by including accrued and unpaid dividends to the actual date of such liquidation, dissolution or winding up, rather than the Dividend Payment Due Date referred to above.

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ARTICLE 6 CONVERSION AND REDEMPTION OF PREFERRED STOCK

SECTION 6.1 CONVERSION; CONVERSION PRICE. At the option of the Holder, the shares of Preferred Stock may be converted, either in whole or in part, into Common Shares (calculated as to each such conversion to the nearest 1/100th of a share), at any time, and from time to time after the 90th day following the Issue Date at a Conversion Price equal to 75% of the Market Price; provided, however, that the Holder shall not have the right to convert any portion of the Series B Preferred Stock to the extent that the issuance to the Holder of Common Shares upon such conversion would result in the Holder being deemed the "beneficial owner" of 5% or more of the then outstanding Common Shares within the meaning of Rule 13d-3 of the Securities Exchange Act of 1934, as amended, provided, however, that the Corporation shall have no obligation to determine

whether or not a Holder is a "beneficial owner" of 5% or more of the outstanding Common Stock in connection with any conversion of Series B Preferred Stock. At the Corporation's option, the amount of accrued and unpaid dividends as of the Conversion Date shall not be subject to conversion but instead may be paid in cash as of the Conversion Date; if the Corporation elects to convert the amount of accrued and unpaid dividends at the Conversion Date into Common Stock, the Common Stock issued to the Holder shall be valued at the Conversion Price as of the applicable Conversion Date. Notwithstanding the previous sentence, in no event shall the Holder have the right to convert that portion of the Series B Preferred Stock to the extent that the issuance of Common Shares upon the conversion of such Series B Preferred Stock, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and the Warrants, would exceed 19.99% of the Common Stock outstanding on the Closing Date. Within ten (10) Business Days after the receipt of the Conversion Notice which upon conversion would, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and Warrants, exceed 19.99% of the Common Stock outstanding on the Closing Date, the Corporation shall redeem all remaining outstanding shares of Series B Preferred Stock at one hundred and fifteen percent (115%) of the Stated Value thereof, together with all accrued and unpaid dividends thereon, in cash, to the date of such redemption.

The number of shares of Common Stock due upon conversion of Series B Preferred Stock in respect of any Conversion Date shall be (i) the number of shares of Series B Preferred Stock to be converted, multiplied by (ii) the Stated Value and divided by (iii) the applicable Conversion Price for such Conversion Date.

Within two (2) Business Days of the occurrence of a Valuation Event, the Corporation shall send notice (the "Valuation Event Notice") of such occurrence to the Holder. Notwithstanding anything to the contrary contained herein, if a Valuation Event occurs during any Valuation Period, a new Valuation Period shall begin on the Trading Day immediately following the occurrence of such Valuation Event and end on the Conversion Date; PROVIDED that, if a Valuation Event occurs on the fifth day of any Valuation Period, then the Conversion Price

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shall be the Current Market Price of the Common Shares on such day; and PROVIDED, FURTHER, that the Holder may, in its discretion, postpone such Conversion Date to a Trading Day which is no more than five (5) Trading Days after the occurrence of the latest Valuation Event by delivering a notification to the Corporation within two (2) Business Days of the receipt of the Valuation Event Notice. In the event that the Holder deems the Valuation Period to be other than the five (5) Trading Days immediately prior to the Conversion Date, the Holder shall give written notice of such fact to the Corporation in the related Conversion Notice at the time of conversion.

For purposes of this Section 6.1, a "VALUATION EVENT" shall mean an event in which the Corporation at any time during a Valuation Period takes any of the following actions:

(a) subdivides or combines its Capital Shares;

(b) makes any distribution of its Capital Shares;

(c) issues any additional Capital Shares (the "Additional Capital Shares"), otherwise than as provided in the foregoing Sections 6.1(a) and 6.1(b) above, at a price per share less, or for other consideration lower, than the Current Market Price in effect immediately prior to such issuances, or without consideration, except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its Subsidiaries;

(d) issues any warrants, options or other rights to subscribe for or purchase any Additional Capital Shares and the price per share for which Additional Capital Shares may at any time thereafter be issuable pursuant to such warrants, options or other rights shall be less than the Current Market Price in effect immediately prior to such issuance; except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its Subsidiaries;

(e) issues any securities convertible into or exchangeable or exercisable for Capital Shares and the consideration per share for which Additional Capital Shares may at any time thereafter be issuable pursuant to the terms of such convertible, exchangeable or exercisable securities shall be less than the Current Market Price in effect immediately prior to such issuance except for the issuance of (i) Common Stock and other securities of the Corporation issuable upon the exercise or conversion of options, warrants or other rights to purchase securities of the Corporation outstanding as of the date hereof and (ii) securities to officers, directors or employees of the Corporation or any of its subsidiaries;

(f) makes a distribution of its assets or evidences of indebtedness to the holders of its Capital Shares as a dividend in liquidation or by way of return of capital or other than as a dividend payable out of earnings or surplus legally available for the payment of dividends under

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applicable law or any distribution to such holders made in respect of the sale of all or substantially all of the Corporation's assets (other than under the circumstances provided for in the foregoing Sections 6.1(a) through 6.1(e)); or

(g) takes any action affecting the number of Outstanding Capital Shares, other than an action described in any of the foregoing Sections 6.1(a) through 6.1(f) hereof, inclusive, which in the opinion of the Corporation's Board of Directors, determined in good faith, would have a material adverse effect upon the rights of the Holder at the time of a conversion of the Series B Preferred Stock.

SECTION 6.2 EXERCISE OF CONVERSION PRIVILEGE. (a) Conversion of the

Series B Preferred Stock may be exercised, in whole or in part, by the Holder by telecopying an executed and completed notice of conversion in the form annexed hereto as Annex I (the "Conversion Notice") to the Corporation and delivering a copy of the Conversion Notice to the Corporation by nationally recognized overnight courier not later than five (5) Business Days next following the date on which the telecopied Conversion Notice has been transmitted to the Corporation. Each date on which a Conversion Notice is telecopied to and received by the Corporation in accordance with the provisions of this Section 6.2 shall be deemed a Conversion Date. The Corporation shall convert the Preferred Stock and issue the Common Stock Issued at Conversion effective as of the Conversion Date. The Conversion Notice also shall state the name or names (with addresses) of the persons who are to become the holders of the Common Stock Issued at Conversion in connection with such conversion. The applicable Holder shall deliver the stock certificate representing the shares of Series B Preferred Stock so converted to the Corporation by nationally recognized overnight courier service within 15 days following the date on which the telecopied Conversion Notice has been transmitted to the Corporation. Upon surrender for conversion, the Preferred Stock shall be accompanied by a proper assignment hereof to the Corporation or be endorsed in blank. As promptly as practicable after the delivery to the Corporation of the applicable Conversion Notice as aforesaid, but in any event not more than five (5) Business Days after the Corporation's delivery to the Corporation of the applicable Conversion Notice, the Corporation shall (i) issue the Common Stock issued at Conversion in accordance with the provisions of this Article 6, and (ii) cause to be mailed for delivery by overnight courier to the Holder (X) a certificate or certificate(s) representing the number of Common Shares to which the Holder is entitled by virtue of such conversion, (Y) cash, as provided in Section 6.3, in respect of any fraction of a Share issuable upon such conversion and (Z) cash or Common Stock, as applicable representing the amount of accrued and unpaid dividends as of the Conversion Date. Such conversion shall be deemed to have been effected at the time at which the Conversion Notice indicates so long as the Corporation shall have been delivered the applicable Conversion Notice in accordance with this Section 6.2, and at such time the rights of the Holder of the Preferred Stock, as such, shall cease and the Person and Persons in whose name or names the Common Stock Issued at Conversion shall be issuable shall be deemed to have become the holder or holders of record of the Common Shares represented thereby. The Conversion Notice shall constitute a contract between the Holder and the Corporation, whereby the Holder shall be deemed to subscribe for the number of Common Shares which it will be entitled to receive upon such conversion and, in consideration of such

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conversion, to surrender the Preferred Stock and to release the Corporation from all liability thereon.

(b) From and after the delivery of the Conversion Notice in respect of any conversion of shares of Series B Preferred Stock, all such shares of Series B Preferred Stock shall be deemed to have been converted into shares of Common Stock as of the applicable Conversion Date at the applicable conversion rate, all stock dividends on such shares of the Series B Preferred Stock shall cease to accrue, and all rights of the holders thereof as holders of Series B Preferred Stock, except the right to receive all accrued and unpaid stock dividends to such Conversion Date at the applicable rate for such shares of Series B Preferred Stock and the right to receive certificates representing

shares of Common Stock issuable upon the conversion of such shares (including, without limitation, with respect to such stock dividends, as applicable), shall cease and terminate, such shares of Series B Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such shares shall not be deemed to be outstanding for any purpose whatsoever.

(c) If, at any time (i) the Corporation challenges, disputes or denies the right of the Holder hereof to effect the conversion of the Preferred Stock into Common Shares or otherwise dishonors or rejects any Conversion Notice delivered in accordance with this Section 6.2 or (ii) any third party who is not and has never been an Affiliate of the Holder commences any lawsuit or proceeding or otherwise asserts any claim before any court or public or governmental authority which seeks to challenge, deny, enjoin, limit, modify, delay or dispute the right of the Holder hereof to effect the conversion of the Preferred Stock into Common Shares, then the Holder shall have the right, by written notice to the Corporation, to require the Corporation to promptly redeem the Preferred Stock for cash at a redemption price equal to 125% of the Stated Value thereof together with all accrued and unpaid dividends thereon. Under any of the circumstances set forth above, the Corporation shall be responsible for the payment of all costs and expenses of the Holder, including reasonable legal fees and expenses, as and when incurred in disputing any such action or pursuing its rights hereunder (in addition to any other rights of the Holder).

(d) Notwithstanding the preceeding paragraph (c), in the event a dispute arises over whether a Conversion Notice was delivered to the Corporation by the Holder pursuant to Section 6.2, the Holder purporting to have telecopied such notice shall have the burden of proving that such notice was telecopied to the Corporation.

SECTION 6.3 FRACTIONAL SHARES. No fractional Common Shares or scrip representing fractional Common Shares shall be issued upon conversion of the Series B Preferred Stock. Instead of any fractional Common Shares which otherwise would be issuable upon conversion of the Series B Preferred Stock, the Corporation shall pay a cash adjustment in respect of such fraction in an amount equal to the same fraction. No cash payment of less than \$1.50 shall be required to be given unless specifically requested by the Holder.

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SECTION 6.4 ADJUSTMENTS. The Conversion Price and the number of shares issuable upon conversion of the Series B Preferred Stock are subject to adjustment from time to time as follows.

(a) MERGER, SALE OF ASSETS, ETC. If at any time while the Series B Preferred Stock, or any portion thereof, is outstanding there shall be (i) a reorganization (other than a combination, reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Corporation with or into another corporation in which the Corporation is the surviving entity but the shares of the Corporation's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash or otherwise, or (iii) a sale or transfer of the Corporation's properties and assets as, or substantially as, an entirety to any other person, then as a part

of such reorganization, merger, consolidation, sale or transfer lawful provision shall be made so that the Holder shall thereafter be entitled to receive upon conversion of the Series B Preferred Stock, during the period specified herein, the number of shares of stock or other securities or property of the successor corporation resulting from such reorganization, merger, consolidation, sale or transfer that the Holder would have been entitled to receive in such reorganization, consolidation, merger, sale or transfer if the Series B Preferred Stock had been converted immediately before such reorganization, merger, consolidation, sale or transfer, all subject to further adjustment as provided in this Section 6.4. The foregoing provisions of this Section 6.4 shall similarly apply to successive reclassification, changes, consolidations, mergers, mandatory share exchanges and sales and transfers. If the per share consideration payable to the holder hereof for shares in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions of this Certificate of Designations with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Certificate of Designations shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon conversion of the Series B Preferred Stock.

(b) RECLASSIFICATION, ETC. If the Corporation, at any time while the Series B Preferred Stock, or any portion thereof, remains outstanding, shall change any of the securities as to which conversion rights under this Certificate of Designations exist into the same or a different number of securities of any other class or classes, the Series B Preferred Stock shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the conversion rights under this Certificate of Designations immediately prior to such reclassification or other change and the Conversion Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Certificate of Designations.

(c) SPLIT, SUBDIVISION OR COMBINATION OF SHARES. If the Corporation at any time while the Series B Preferred Stock, or any portion thereof, remains outstanding shall split, subdivide or combine the securities as to which conversion rights under this Certificate of

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Designations exist, into a different number of securities of the same class, the Conversion Price shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

(d) ADJUSTMENTS FOR DIVIDENDS IN STOCK AND OTHER SECURITIES OR PROPERTY. If while the Series B Preferred Stock, or any portion hereof, remains outstanding, the holders of the securities as to which conversion rights under this Certificate of Designations exist at the time shall have received, or, on or after the record date fixed for the determination of eligible stockholders of the Corporation, shall have become entitled to receive, without payment therefor, other or additional stock or other securities or property (other than cash) of the Corporation by way of dividend, then and in each case, the Series B Preferred Stock shall represent the right to acquire, upon conversion, in

addition to the number of shares of the security receivable upon conversion of the Series B Preferred Stock, and without payment of any additional consideration therefor, the amount of such other or additional stock or other securities or property (other than cash) of the Corporation that the Holder would hold on the date of such conversion had it been the holder of record of the security receivable upon conversion of the Series B Preferred Stock on the date hereof and had thereafter, during the period from the date hereof to and including the date of such conversion, retained such shares and/or additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 6.4.

(e) CERTIFICATE AS TO ADJUSTMENTS. Upon the occurrence of each adjustment or readjustment pursuant to this Section 6.4, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based.

SECTION 6.5 MANDATORY REDEMPTION UNDER CERTAIN CIRCUMSTANCES. (a) If at anytime from the Closing Date until the 90th day after the Closing Date (the "Mandatory Redemption Termination Date"), the Corporation shall be a party to a transaction or a series of transactions involving the issuance of equity securities, the incurrence of debt of the Corporation, the sale of licensing rights, the entering into of joint ventures or any other similar infusion of cash (collectively, a "Cash Infusion") as a result of which the Corporation shall receive funds in an aggregate amount in excess of \$300,000, the Corporation shall immediately upon receipt of such Cash Infusion redeem the Series B Preferred Stock at the applicable Mandatory Redemption Price (as defined below), together with all accrued and unpaid dividends thereon to the date of the Corporation's receipt of such funds (the "Mandatory Redemption Date") by the amount of such excess funds; provided, however, that any funds received by the Corporation from Zambon Group, SpA (or any affiliate thereof) shall not be required to be aggregated to satisfy the \$300,000 amount provided for in the preceding clause but shall be used immediately for redemption under this Section 6.5; provided further, however, should the amounts received by the Corporation from any of the foregoing transactions be lower than the amount needed to redeem the Series B Preferred Stock in full, then any amounts so received shall be used to redeem shares on a pro rata basis. The proceeds available for redemption under this Section 6.5

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shall be applied first to accrued and unpaid dividends thereon to the date of redemption and second to the redemption of Series B Preferred Stock.

(b) For purposes hereof, the "Mandatory Redemption Price" shall mean as follows: (i) with respect to each share of Series B Preferred Stock redeemed during the period beginning on the Issue Date of each such share and ending on the 45th day after such Issue Date, an amount equal to 106% of the Stated Value thereof; and (ii) with respect to each share of Series B Preferred Stock redeemed during the period beginning on the 46th day after the Issue Date of each such share and ending on or before the Mandatory Redemption Termination Date, an amount equal to the sum of (A) 106% of the Stated Value thereof for the period from the Issue Date until the 45th day after the Issue Date and (B) 0.1334% of the Stated Value of each such share for each day, if any, from the

46th day after the Issue Date through and including the Mandatory Redemption Date.

(c) After the Mandatory Redemption Termination Date, the Corporation shall cease to have any obligation to redeem shares of Series B Preferred Stock under this Section 6.5.

SECTION 6.6 OPTIONAL REDEMPTION UNDER CERTAIN CIRCUMSTANCES. At any time after the date of issuance of the Series B Preferred Stock until the Mandatory Conversion Date (as defined below), the Corporation, upon notice delivered to the Holder as provided in Section 6.7, may redeem the Series B Preferred Stock (but only with respect to such shares as to which the Holder has not theretofore furnished a Conversion Notice in compliance with Section 6.2), at 125% of the Stated Value thereof (the "Optional Redemption Price"), together with all accrued and unpaid dividends thereon to the date of redemption (the "Redemption Date"); PROVIDED, HOWEVER, that the Corporation may only redeem the Series B Preferred Stock under this Section 6.6 if the Current Market Price on the date the notice of redemption pursuant to this Section 6.6 is less than the Current Market Price on the Closing Date. Except as set forth in Sections 6.5 and 6.6, the Corporation shall not have the right to prepay or redeem the Series B Preferred Stock.

SECTION 6.7 NOTICE OF REDEMPTION. (a) Notice of redemption pursuant to Sections 6.5 and 6.6 shall be provided by the Corporation to the Holder in writing (by registered mail or overnight courier at the Holder's last address appearing in the Corporation's security registry) not less than ten (10) nor more than fifteen (15) days prior to the proposed Mandatory Redemption Date or the Redemption Date, as the case may be, which notice shall specify the proposed Mandatory Redemption Date or the Redemption Date, as the case may be, and refer to Section 6.5 or 6.6 (including, with respect to Section 6.6, a statement of the Market Price) and this Section 6.7.

(b) Any notice of redemption delivered by the Corporation in connection with a redemption under Section 6.5 may state that such redemption is conditioned on the consummation of the transactions giving rise to such redemption and may be revoked by the Corporation by notice to the Holder in the event that such transaction is not consummated, whereupon the Corporation's obligation to redeem shares of Series B Preferred Stock in respect thereof shall terminate.

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SECTION 6.8 SURRENDER OF PREFERRED STOCK. Upon any redemption of the Series B Preferred Stock pursuant to Sections 6.5 or 6.6, the Holder, within 15 days of the date of any such redemption, shall either deliver the Series B Preferred Stock by hand to the Corporation at its principal executive offices or surrender the same to the Corporation at such address by express courier. Payment of the Mandatory Redemption Price or the Optional Redemption Price specified in Section 6.5 or 6.6, as the case may be, shall be made by the Corporation to the Holder by wire transfer of immediately available funds to such account(s) as the Holder shall specify to the Corporation. If payment of such redemption price is not made in full by the Mandatory Redemption Date or the Redemption Date, as the case may be, the Holder shall again have the right to convert the Series B Preferred Stock as provided in Article 6 hereof.

SECTION 6.9 MANDATORY CONVERSION. On the third anniversary of the date of this Agreement (the "Mandatory Conversion Date"), the Corporation shall convert all Series B Preferred Stock outstanding at the Conversion Price. Notwithstanding the previous sentence, in no event shall the Corporation convert that portion of the Series B Preferred Stock to the extent that the issuance of Common Shares upon the conversion of such Series B Preferred Stock, when combined with shares of Common Stock received upon other conversions of Series B Preferred Stock and exercise of the Warrants by such Holder and any other holders of Series B Preferred Stock and Warrants, would exceed 19.99% of the Common Stock outstanding on the Closing Date. Within ten (10) Business Days after the Mandatory Conversion Date, the Corporation shall redeem all remaining outstanding Series B Preferred Stock at one hundred and twenty-five percent (125%) of the Stated Value thereof, together with all accrued and unpaid dividends thereon, in cash, to the date of redemption.

ARTICLE 7 VOTING RIGHTS

The holders of the Series B Preferred Stock have no voting power, except as otherwise provided by the General Corporation Law of the State of Delaware ("DGCL"), in this Article 7, and in Article 8 below.

The Corporation shall provide each holder of Series B Preferred Stock with prior notification of any meeting of the shareholders (and copies of proxy materials and other information sent to shareholders). In the event of any taking by the Corporation of a record of its shareholders for the purpose of determining shareholders who are entitled to receive payment of any dividend or other distribution, any right to subscribe for, purchase or otherwise acquire (including by way of merger, consolidation or recapitalization) any share of any class or any other securities or property, or to receive any other right, or for the purpose of determining shareholders who are entitled to vote in connection with any proposed liquidation, dissolution or winding up of the Corporation, the Corporation shall mail a notice to each holder, at least thirty (30) days prior to the consummation of the transaction or event, whichever is earlier, of the date on which any such act is to be taken for the purpose of such dividend, distribution, right or

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other event, and a brief statement regarding the amount and character of such dividend, distribution, right or other event to the extent known at such time.

To the extent that under the DGCL the vote of the holders of the Series B Preferred Stock, voting separately as a class or series as applicable, is required to authorize a given action of the Corporation, the affirmative vote or consent of the holders of at least a majority of the shares of the Series B Preferred Stock represented at a duly held meeting at which a quorum is present or by written consent of a majority of the shares of Series B Preferred Stock (except as otherwise may be required under the DGCL) shall constitute the approval of such action by the class. To the extent that under the DGCL holders of the Series B Preferred Stock are entitled to vote on a matter with holders of Common Stock, voting together as one class, each share of Series B Preferred Stock shall be entitled to a number of votes equal to the number of shares of Common Stock into which convertible the record date for the

taking of such vote of shareholders as the date as of which the Conversion Price is calculated. Holders of the Series B Preferred Stock shall be entitled to notice of all shareholder meetings or written consents (and copies of proxy materials and other information sent to shareholders) with respect to which they would be entitled as of right under the DGCL which notice would be provided pursuant to the Corporation's bylaws and the DGCL.

ARTICLE 8 PROTECTIVE PROVISIONS

So long as shares of Series B Preferred Stock are outstanding, the Corporation shall not, without first obtaining the approval (by vote or written consent, as provided by the DGCL) of the holders of at least a majority of the then outstanding shares of Series B Preferred Stock:

(a) alter or change the rights, preferences or privileges of the Series B Preferred Stock;

(b) create any new class or series of capital stock having a preference over the Series B Preferred Stock as to distribution of assets upon liquidation, dissolution or winding up of the Corporation ("Senior Securities") or alter or change the rights, preferences or privileges of any Senior Securities so as to affect adversely the Series B Preferred Stock;

(c) increase the authorized number of shares of Series B Preferred Stock; or

(d) do any act or thing not authorized or contemplated by this Certificate of Designation which would result in taxation of the holders of shares of the Series B Preferred Stock under Section 305 of the Internal Revenue Code of 1986, as amended (or any comparable provision of the Internal Revenue Code as hereafter from time to time amended).

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In the event holders of at least a majority of the then outstanding shares of Series B Preferred Stock agree to allow the Corporation to alter or change the rights, preferences or privileges of the shares of Series B Preferred Stock, pursuant to subsection (a) above, so as to affect the Series B Preferred Stock, then the Corporation will deliver notice of such approved change to the holders of the Series B Preferred Stock that did not agree to such alteration or change (the "Dissenting Holders") and Dissenting Holders shall have the right for a period of thirty (30) days to convert pursuant to the terms of this Certificate of Designations as they exist prior to such alteration or change or continue to hold their shares of Series B Preferred Stock.

ARTICLE 9 MISCELLANEOUS

SECTION 9.1 LOSS, THEFT, DESTRUCTION OF PREFERRED STOCK. Upon receipt of evidence satisfactory to the Corporation of the loss, theft, destruction or mutilation of shares of Series B Preferred Stock and, in the case of any such

loss, theft or destruction, upon receipt of indemnity or security reasonably satisfactory to the Corporation, or, in the case of any such mutilation, upon surrender and cancellation of the Series B Preferred Stock, the Corporation shall make, issue and deliver, in lieu of such lost, stolen, destroyed or mutilated shares of Series B Preferred Stock, new shares of Series B Preferred Stock of like date and tenor.

SECTION 9.2 WHO DEEMED ABSOLUTE OWNER. The Corporation may deem the Person in whose name the Series B Preferred Stock shall be registered upon the registry books of the Corporation to be, and may treat it as, the absolute owner of the Series B Preferred Stock for the purpose of receiving payment of dividends on the Series B Preferred Stock, for the conversion of the Series B Preferred Stock and for all other purposes, and the Corporation shall not be affected by any notice to the contrary. All such payments and such conversion shall be valid and effectual to satisfy and discharge the liability upon the Series B Preferred Stock to the extent of the sum or sums so paid or the conversion so made.

SECTION 9.3 REGISTER. The Corporation shall keep at its principal office a register in which the Corporation shall provide for the registration of the Series B Preferred Stock. Upon any transfer of the Series B Preferred Stock in accordance with the provisions hereof, the Corporation shall register such transfer on the Series B Preferred Stock register.

SECTION 9.4 WITHHOLDING. To the extent required by applicable law, the Corporation may withhold amounts for or on account of any taxes imposed or levied by or on behalf of any taxing authority in the United States having jurisdiction over the Corporation from any payments made pursuant to the Series B Preferred Stock.

SECTION 9.5 HEADINGS. The headings of the Articles and Sections of this Certificate of Designations are inserted for convenience only and do not constitute a part of this Certificate of Designations.

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IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designations, Preferences and Rights to be signed by Loren G. Peterson, its President and Chief Executive Officer, and attested by Judy Roeske Bullock, its Secretary, on this 15th day of April, 1998.

SHEFFIELD PHARMACEUTICALS, INC.

By: /S/ Loren G. Peterson

Loren G. Peterson

President and Chief Executive Officer

Attested:

By: /S/ Judy Roeske Bullock

Judy Roeske Bullock
Secretary

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FORM OF CONVERSION NOTICE

TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner of shares of Series B Cumulative Convertible Redeemable Preferred Stock (the "Series B Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercises its option to convert _____ shares of the Series B Preferred Stock into shares of the common stock, \$.01 par value, of the Corporation ("Common Stock"), in accordance with the terms of the Certificate of Designations of the Series B Preferred Stock. The undersigned hereby instructs the Corporation to convert the number of shares of the Series B Preferred Stock specified above into shares of Common Stock in accordance with the provisions of Article 6 of such Certificate of Designations. The undersigned directs that the Common Stock issuable and certificates therefor deliverable upon conversion, the Series B Preferred Stock recertificated, if any, not being surrendered for conversion hereby, together with any check in payment for fractional Common Stock, be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated: _____

Signature

Fill in for registration of Series B Preferred Stock:

Please print name and address
(including zip code number) :

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FORM OF CERTIFICATE OF DESIGNATION

FORM OF
CERTIFICATE OF DESIGNATIONS,
PREFERENCES AND RIGHTS

OF

SERIES C CUMULATIVE CONVERTIBLE PREFERRED STOCK

OF

SHEFFIELD PHARMACEUTICALS, INC.

Pursuant to Section 151 of
the General Corporation Law of the State of Delaware

Sheffield Pharmaceuticals, Inc., a corporation organized and existing under the General Corporation Law of the State of Delaware (the "Corporation"), hereby certifies that the following resolutions were adopted by the Board of Directors of the Corporation by unanimous written consent dated June 26, 1998 pursuant to authority of the Board of Directors as required by Section 151 of the General Corporation Law of the State of Delaware:

RESOLVED, that pursuant to the authority expressly granted to and vested in the Board of Directors of the Corporation (the "Board" or the "Board of Directors") by the provisions of the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), there hereby is created, out of the 3,000,000 shares of preferred stock of the Corporation authorized in Article FOURTH of the Certificate of Incorporation (the "Preferred Stock"), a series of Preferred Stock consisting of 23,000 shares, which series shall have the following powers, designations, preferences and relative, participating, optional or other rights, and the following qualifications, limitations and restrictions (in addition to the powers, designations, rights, and the qualifications, limitations and restrictions, set forth in the Certificate of Incorporation which are applicable to the Preferred Stock).

ARTICLE 1
DESIGNATION AND AMOUNT

The shares of such series shall be designated as "Series C Cumulative Convertible Preferred Stock" (the "Series C Preferred Stock") and the authorized number of shares constituting such series shall be 23,000 shares. The par value of the Series C Preferred Stock shall be \$.01 per share. The stated value of the Series C Preferred Stock shall be One Thousand Dollars (\$1,000) per

share (the "Stated Value").

ARTICLE 2 DEFINITIONS

The terms defined in this Article whenever used in this Certificate of Designations have the following respective meanings:

(a) "AMEX" means the American Stock Exchange.

(b) "BUSINESS DAY" means a day other than Saturday, Sunday or any day on which banks located in the State of New York are authorized or obligated to close.

(c) "COMMON SHARES" or "COMMON STOCK" means shares of common stock, \$.01 par value, of the Corporation.

(d) "CONVERSION DATE" means any day on which all or any portion of shares of the Series C Preferred Stock is converted in accordance with the provisions hereof.

(e) "CONVERSION NOTICE" has the meaning set forth in Section 6.1.

(f) "CONVERSION PRICE" has the meaning set forth in Section 6.1.

(g) "CORPORATION" means Sheffield Pharmaceuticals, Inc. a Delaware corporation, and any successor or resulting corporation by way of merger, consolidation, sale or exchange of all or substantially all of the Corporation's assets, or otherwise.

(h) "CURRENT MARKET PRICE" on any date of determination means the closing price of a Common Share on such day as reported on the AMEX, or, if such security is not listed or admitted to trading on the AMEX, on the principal national security exchange or quotation system on which such security is quoted or listed or admitted to trading, or, if not quoted or listed or admitted to trading on any national securities exchange or quotation system, the average of the closing bid and ask prices of such security on the over-the-counter market on the day in question as reported by the National Quotation Bureau Incorporated, or a similar generally accepted reporting service, or if not so available, in such manner as furnished by any Nasdaq member firm of the National Association of Securities Dealers, Inc. selected from time to time

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by the Board of Directors of the Corporation for that purpose, or a price determined in good faith by the Board of Directors of the Corporation as being equal to the fair market value thereof, as the case may be.

(i) "DIVIDEND PAYMENT DATE" has the meaning set forth in Section 4.1.

(j) "DIVIDEND PERIOD" has the meaning set forth in Section 4.1.

(k) "DIVIDEND SHARES" means the shares of Series C Preferred Stock issued as dividends on outstanding shares of Series C Preferred stock in accordance with Article 4 hereof.

(l) "DOLLARS" or "\$" means currency of the United States of America.

(m) "EXCHANGE DATE" has the meaning set forth in Article 7.

(n) "EXCHANGE NOTICE" has the meaning set forth in Article 7.

(o) "HOLDER" OR "HOLDERS" means Elan International Services, Ltd., a Bermuda corporation, any successor thereto, or any Person(s) to whom the Series C Preferred Stock is subsequently transferred in accordance with the provisions hereof.

(p) "ISSUE DATE" means the date of original issuance of the applicable share of Series C Preferred Stock.

(q) "JUNIOR SECURITIES" has the meaning set forth in Article 3.

(r) "LIQUIDATION PREFERENCE" has the meaning set forth in Section 5.1(b).

(s) "MANDATORY CONVERSION DATE" has the meaning set forth in Section 6.3.

(t) "PARI PASSU SECURITIES" has the meaning set forth in Article 3.

(u) "PERSON" means an individual, a corporation, a partnership, an association, a limited liability company, a unincorporated business organization, a trust or other entity or organization, and any government or political subdivision or any agency or instrumentality thereof.

(v) "RIGHTS" has the meaning set forth in Section 6.2(e).

(w) "SERIES C PREFERRED STOCK" means the Series C Cumulative Convertible Preferred Stock of the Corporation created by this Certificate of Designations.

(x) "SPD" Systemic Pulmonary Delivery, Ltd., a Bermuda corporation.

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(y) "STATED VALUE" has the meaning set forth in Article 1.

(z) "TRADING DAY" means any day on which purchases and sales of securities authorized for quotation on the AMEX are reported thereon or, if the Common Stock is not listed or admitted to trading on the AMEX, a day on which the principal national securities exchange on which the Common Stock is listed or admitted to trading is open for the transaction of business, or, if the Common Stock is not so listed or admitted to trading on any national

securities exchange, a day on which the Nasdaq National Market (or any successor thereto) or such other system then in use is open for the transaction of business, or, if the Common Stock is not quoted by any such organization, any day other than a Saturday, Sunday or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close.

ARTICLE 3 RANK

The Series C Preferred Stock shall rank (i) prior to the Common Stock; (ii) prior to any class or series of capital stock of the Corporation hereafter created other than "Pari Passu Securities" (collectively, with the Common Stock, "Junior Securities"); (iii) pari passu with the Corporation's Series B Cumulative Convertible Redeemable Preferred Stock (the "Series B Preferred Stock"); and (iv) pari passu with any class or series of capital stock of the Corporation hereafter created specifically ranking on parity with the Series C Preferred Stock (collectively, with the Series B Preferred Stock, "Pari Passu Securities").

ARTICLE 4 DIVIDENDS

SECTION 4.1

(a) (i) Subject to Article 6, the Holder shall be entitled to receive, out of funds legally available for the payment of dividends, dividends at the rate of 7.0% per annum (computed on the basis of a 360-day year) (the "Dividend Rate") on the Stated Value of each outstanding share of Series C Preferred Stock payable on and as of the most recent Dividend Payment Date with respect to each Dividend Period. Dividends on the Series C Preferred Stock shall be cumulative from the date of issue or the most recent Dividend Payment Date upon which dividends have been paid on the Series C Preferred Stock by the Corporation.

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(ii) Dividend on the Series C Preferred Stock shall be payable in equal quarterly amounts on each March 31, June 30, September 30 and December 31 of each year (each, a "Dividend Payment Date"), commencing September 30, 1998, to the holders of record of shares of the Series C Preferred Stock, as they appear on the stock records of the Corporation at the close of business on any record date, not more than 60 days or less than 10 days preceding the payment dates thereof, as shall be fixed by the Board of Directors. For the purposes hereof, "Dividend Period," in respect of any share of Series C Preferred Stock, shall mean (i) the period commencing on and including the Issue Date of such share and including September 30, 1998 and, thereafter, the quarterly period commencing on and including the day after the immediately preceding Dividend Payment Date and ending on and including the immediately subsequent Dividend Payment Date. Accrued and unpaid dividends for any past Dividend Period may be declared and paid at any time, without reference to any Dividend Payment Date, to holders of record on such date, not more than 15 days preceding the payment date thereof, as may be fixed by the Board of

Directors.

(iii) Dividends on the outstanding shares of Series C Preferred Stock shall be paid through the issuance of duly and validly authorized and issued, fully paid and non-assessable additional shares of Series C Preferred Stock to be issued at the rate of one (1) share of Series C Preferred Stock for each \$1,000 of dividend due and payable. No fractional shares of the Series C Preferred Stock shall be issued as Dividend Shares. Instead of any fractional shares of Series C Preferred Stock which would otherwise be issuable as Dividend Shares, the Corporation shall pay a cash adjustment in respect of such fractional interest in an amount equal to 1,000 times the fractional interest.

(b) The Holder shall not be entitled to any dividends in excess of the cumulative dividends, as herein provided, on the Series C Preferred Stock. Except as provided in this Article 4, no interest, or sum of money in lieu of interest, shall be payable in respect of any dividend payment or payments on the Series C Preferred Stock that may be in arrears.

ARTICLE 5 LIQUIDATION PREFERENCE

SECTION 5.1

(a) If the Corporation shall commence a voluntary case under the Federal bankruptcy laws or any other applicable Federal or State bankruptcy, insolvency or similar law, or consent to the entry of an order for relief in an involuntary case under any law or to the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or make an assignment for the benefit of its creditors, or admit in writing its inability to pay its debts generally as they become due, or if a decree or order for relief in respect of the Corporation shall be entered by a court having jurisdiction in the premises in an involuntary case under the Federal bankruptcy laws or any other applicable Federal or state bankruptcy, insolvency or similar law resulting in

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the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator (or other similar official) of the Corporation or of any substantial part of its property, or ordering the winding up or liquidation of its affairs, and any such decree or order shall be unstayed and in effect for a period of ninety (90) consecutive days and, on account of any such event, the Corporation shall liquidate, dissolve or wind up, or if the Corporation shall otherwise liquidate, dissolve or wind up (each such event being considered a "Liquidation Event"), no distribution shall be made to the holders of any Junior Securities of the Corporation upon liquidation, dissolution or winding up unless prior thereto, the Holders, subject to Article 5, shall have received the Liquidation Preference (as defined in Article 5.1(b)) with respect to each share. If upon the occurrence of a Liquidation Event, the assets and funds available for distribution among the Holders and holders of shares of Pari Passu Securities shall be insufficient to permit the payment to such holders of the preferential amounts payable thereon, then the entire assets and funds of the Corporation legally available for distribution to the Series C Preferred Stock

and the Pari Passu Securities shall be distributed ratably among such shares in proportion to the ratio that the preferential amounts payable on each such share bears to the aggregate preferential amounts payable on all such shares.

(b) For purposes hereof, the "Liquidation Preference" with respect to a share of the Series C Preferred Stock shall mean an amount equal to (i) the Stated Value thereof, plus (ii) the aggregate of all accrued and unpaid stock dividends on such share of Series C Preferred Stock until the most recent Dividend Payment Date; PROVIDED that, in the event of an actual liquidation, dissolution or winding up of the Corporation, the amount referred to in clause (iii) above shall be calculated by including accrued and unpaid stock dividends to the actual date of such liquidation, dissolution or winding up, rather than the applicable Dividend Payment Due Date referred to above.

ARTICLE 6 CONVERSION OF SERIES C PREFERRED STOCK

SECTION 6.1 CONVERSION.

(a) Holders of shares of the Series C Preferred Stock shall have the right, exercisable at any time and from time to time through the Mandatory Conversion Date, to convert all or any such shares of the Series C Preferred Stock into shares of the Common Stock (calculated as to each conversion to the nearest 1/100th of a share) at the conversion price of \$1.41 per share of the Common Stock (equivalent to a conversion rate of 709.22 shares of Common Stock for each share of the Series C Preferred Stock so converted), subject to adjustment as described below (the "Conversion Price"). Upon conversion, no adjustment or payment will be made for dividends, but if any holder surrenders a share of the Series C Preferred Stock for conversion after the close of business on the record date for the payment of a dividend and prior to the opening of business on the next Dividend Payment Date, then, notwithstanding such conversion, the dividend payable on such Dividend Payment Date will be paid to the registered holder of such share on such record date. In such event, such share, when

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surrendered for conversion during the period between the close of business on any dividend payment record date and the opening of business on the corresponding Dividend Payment Date, must be accompanied by payment of an amount equal to the dividend payable on such Dividend Payment Date on the share so converted.

(b) Any holder of a share or shares of the Series C Preferred Stock electing to convert such share or shares thereof shall deliver the certificate or certificates therefor to the principal office of the Corporation or any transfer agent for the Common Stock, with the form of notice of election to convert attached to this Certificate of Designations (the "Conversion Notice"), fully completed and duly executed and (if such required by the Corporation or any conversion agent) accompanied by instruments of transfer in form satisfactory to the Corporation and to any conversion agent, duly executed by the registered Holder of his duly authorized attorney. The conversion right with respect to any such shares shall be deemed to have been exercised at the date upon which the certificates therefore accompanied by such duly executed notice of election and instruments of transfer and such taxes, stamps, funds, or

evidence of payment shall have been so delivered, and the Person or Persons entitled to receive the shares of the Common Stock issuable upon such conversion shall be treated for all purposes as the record Holder or Holders of such shares of the Common Stock upon said date.

(c) From and after the delivery of the Conversion Notice in respect of any conversion of shares of Series C Preferred Stock, all such shares of Series C Preferred Stock shall be deemed to have been converted into shares of Common Stock as of the applicable Conversion Date at the applicable conversion rate, all stock dividends on such shares of the Series C Preferred Stock shall cease to accrue, and all rights of the Holders thereof as holders of Series C Preferred Stock, except the right to receive all accrued and unpaid stock dividends to such Conversion Date at the applicable rate for such shares of Series C Preferred Stock and the right to receive certificates representing shares of Common Stock issuable upon the conversion of such shares (including, without limitation, with respect to such stock dividends, as applicable), shall cease and terminate, such shares of Series C Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such shares shall not be deemed to be outstanding for any purpose whatsoever.

(d) No fractional shares of the Common Stock or scrip representing fractional shares shall be issued upon conversion of shares of the Series C Preferred Stock. If more than one share of the Series C Preferred Stock shall be surrendered for conversion at one time by the same holder, the number of full shares of the Common Stock which shall be issuable upon conversion thereof shall be computed on the basis of the aggregate number of shares of the Series C Preferred Stock so surrendered. Instead of any fractional shares of the Common Stock which would otherwise be issuable upon conversion of any shares of the Series C Preferred Stock, the Corporation shall pay a cash adjustment in respect of such fraction in an amount equal to the same fraction of the Current Market Price for the Common Stock on the last Trading Day preceding the applicable date of conversion.

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(e) Each Conversion Notice under this Section 6.1 shall request the conversion of at least 500 shares of Series C Preferred Stock or the remaining balance of Series C Preferred Stock held by the converting Holder, whichever is less.

SECTION 6.2 ADJUSTMENTS. The Conversion Price and the number of shares issuable upon conversion of the Series C Preferred Stock are subject to adjustment from time to time as follows:

(a) MERGER, SALE OF ASSETS, ETC. If at any time while the Series C Preferred Stock, or any portion thereof, is outstanding there shall be (i) a reorganization (other than a combination, reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Corporation with or into another corporation in which the Corporation is the surviving entity but the shares of the Corporation's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash or otherwise, or (iii) a sale or transfer of the Corporation's properties and assets as, or substantially as, an entirety to any other person, then as a part of such reorganization, merger, consolidation, sale or transfer lawful provision

shall be made so that the Holder shall thereafter be entitled to receive upon conversion of the Series C Preferred Stock, during the period specified herein, the number of shares of stock or other securities or property of the successor corporation resulting from such reorganization, merger, consolidation, sale or transfer that the Holder would have been entitled to receive in such reorganization, consolidation, merger, sale or transfer if the Series C Preferred Stock had been converted immediately before such reorganization, merger, consolidation, sale or transfer, all subject to further adjustment as provided in this Section 6.2(a). The foregoing provisions of this Section 6.2(a) shall similarly apply to successive reclassification, changes, consolidations, mergers, mandatory share exchanges and sales and transfers. If the per share consideration payable to the holder hereof for shares in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Board of Directors) shall be made in the application of the provisions of this Certificate of Designations with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Certificate of Designations shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon conversion of the Series C Preferred Stock.

(b) RECLASSIFICATION, ETC. If the Corporation, at any time while the Series C Preferred Stock, or any portion thereof, remains outstanding, shall change any of the securities as to which conversion rights under this Certificate of Designations exist into the same or a different number of securities of any other class or classes, the Series C Preferred Stock shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the conversion rights under this Certificate of Designations immediately prior to such reclassification or other change and the Conversion Price therefor shall be appropriately adjusted, all subject to further adjustment as provided in this Certificate of Designations.

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(c) SPLIT, SUBDIVISION OR COMBINATION OF SHARES. If the Corporation at any time while the Series C Preferred Stock, or any portion thereof, remains outstanding shall split, subdivide or combine the securities as to which conversion rights under this Certificate of Designations exist, into a different number of securities of the same class, the Conversion Price shall be proportionately decreased in the case of a split or subdivision or proportionately increased in the case of a combination.

(d) ADJUSTMENTS FOR DIVIDENDS IN STOCK AND OTHER SECURITIES OR PROPERTY. If while the Series C Preferred Stock, or any portion hereof, remains outstanding, the holders of the securities as to which conversion rights under this Certificate of Designations exist at the time shall have received, or, on or after the record date fixed for the determination of eligible stockholders of the Corporation, shall have become entitled to receive, without payment therefor, other or additional stock or other securities or property (other than cash) of the Corporation by way of dividend, then and in each case, the Series C Preferred Stock shall represent the right to acquire, upon conversion, in addition to the number of shares of the security receivable upon conversion of the Series C Preferred Stock, and without payment of any additional consideration therefor, the amount of such other or additional stock or other

securities or property (other than cash) of the Corporation that the Holder would hold on the date of such conversion had it been the holder of record of the security receivable upon conversion of the Series C Preferred Stock on the date hereof and had thereafter, during the period from the date hereof to and including the date of such conversion, retained such shares and/or additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 6.2.

(e) REPURCHASES OR REDEMPTIONS OF COMMON STOCK OR OPTIONS. If the Corporation at any time while shares of Series C Preferred Stock are outstanding, shall repurchase or redeem any outstanding shares of Common Stock or rights, options or warrants granting the holder thereof the right to acquire shares of Common Stock (collectively, the "Rights") in a single transaction or a series of related transactions involving an aggregate repurchase or redemption price in excess of \$500,000 at a price (on a per share basis) which is greater than 125% of the Current Market Price as of the day prior to such repurchase or redemption, the Conversion Price shall thereupon be adjusted by multiplying the Conversion Price in effect immediately prior to the applicable repurchase or redemption by a fraction (i) the numerator of which shall be the Conversion Price in effect immediately prior to such repurchase or redemption and (ii) the denominator of which shall be the fair market value of the consideration paid by the Corporation for each share of Common Stock (or each share of Common Stock issuable upon exercise of the Right(s) subject to such repurchase or redemption) in such repurchase or redemption.

(f) CERTIFICATE AS TO ADJUSTMENTS. Upon the occurrence of each adjustment or readjustment pursuant to this Section 6.2, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to the Holder a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based.

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(g) CUMULATIVE ADJUSTMENTS. No adjustment in the Conversion Price shall be required until cumulative adjustments result in a concomitant change of 1% or more of the Conversion Price as in effect prior to the last adjustment of the Conversion Price; PROVIDED, HOWEVER, that any adjustments which by reason of this Section 6.2 are not required to be made shall be carried forward and taken into account in any subsequent adjustment. All calculations under this Section 6.2 shall be made to the nearest cent or to the nearest one-hundredth of a share, as the case may be. No adjustment to the Conversion Price shall be made for cash dividends.

SECTION 6.3 MANDATORY CONVERSION. On the tenth anniversary of the Issue Date (the "Mandatory Conversion Date"), all Series C Preferred Stock outstanding on such date shall be automatically converted at the Conversion Price in effect as of the Mandatory Conversion Date. For purposes of such conversion, each Holder shall be deemed to have delivered a Notice of Conversion to the Corporation in accordance with Section 6.1, with the applicable Conversion Date being the Mandatory Conversion Date.

ARTICLE 7 EXCHANGE RIGHTS

Holders of at least a majority of the then outstanding shares

of Series C Preferred Stock shall have the right, by written notice delivered to the Corporation in the form of notice of election to exchange attached to this Certificate of Designations (the "Exchange Notice"), fully completed and duly executed by the requisite Holders, to require the Corporation to exchange all outstanding shares of Series C Preferred Stock as of any Dividend Payment Date (such date being the "Exchange Date") for fifty percent (50%) of the then outstanding capital stock of SPD owned by the Corporation as of the Exchange Date, with such capital stock to be delivered to all Holders on a pro rata basis based on their respective holdings of Series C Preferred Stock on the Exchange Date. The Exchange Notice shall be delivered at least 30 days prior to the Exchange Date. Upon receipt of the Exchange Notice, the Corporation shall promptly notify all Holders of its receipt of thereof and all Holders will promptly deliver the certificate or certificates therefor to the principal office of the Corporation or any transfer agent for the Common Stock for cancellation.

From and after the delivery of the Exchange Notice, all shares of Series C Preferred Stock (other than Dividend Shares) shall be deemed to have been exchanged for fifty percent (50%) of the then outstanding capital stock of SPD (in the aggregate) as of Exchange Date, all stock dividends on such shares of the Series C Preferred Stock shall cease to accrue, and all rights of the Holders thereof as holders of Series C Preferred Stock, except the right to receive all accrued and unpaid stock dividends to the Exchange Date at the applicable rate for such shares of Series C Preferred Stock and the right to receive certificates representing the applicable shares of SPD capital stock issuable in respect of the exchange, shall cease and terminate, such shares of Series C Preferred Stock shall not thereafter be transferred (except with the consent of the Corporation) and such shares shall not be deemed to be outstanding for any purpose whatsoever.

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The Rights of Holders under this Article 7 shall terminate and such Holders shall not be entitled to exchange shares of Series C Preferred Stock under this Article 7 after a Conversion Notice has been delivered to the Corporation pursuant to this Section 6.1. Notwithstanding anything to the contrary in this Article 7, the delivery of the exchange notice shall not effect any Holder's rights to convert Dividend Shares held by such holder pursuant to Section 6.2 hereof, except that any conversion of Dividend Shares must occur within thirty months from the Exchange Date.

ARTICLE 8 VOTING RIGHTS

The holders of the Series C Preferred Stock have no voting power, except as otherwise provided by the General Corporation Law of the State of Delaware ("DGCL"), in this Article 8, and in Article 9 below.

The Corporation shall provide each Holder of Series C Preferred Stock with prior notification of any meeting of the shareholders of the Corporation (and copies of proxy materials and other information sent to shareholders). In the event of any taking by the Corporation of a record of its shareholders for the purpose of determining shareholders who are entitled to receive payment of any dividend or other distribution, any right to subscribe for, purchase or otherwise acquire (including by way of merger, consolidation or

recapitalization) any share of any class or any other securities or property, or to receive any other right, or for the purpose of determining shareholders who are entitled to vote in connection with any proposed liquidation, dissolution or winding up of the Corporation, the Corporation shall mail a notice to each Holder, at least thirty (30) days prior to the consummation of the transaction or event, whichever is earlier), of the date on which any such action is to be taken for the purpose of such dividend, distribution, right or other event, and a brief statement regarding the amount and character of such dividend, distribution, right or other event to the extent known at such time.

To the extent that under the DGCL the vote of the Holders of the Series C Preferred Stock, voting separately as a class or series as applicable, is required to authorize a given action of the Corporation, the affirmative vote or consent of the Holders of at least a majority of the shares of the Series C Preferred Stock represented at a duly held meeting at which a quorum is present or by written consent of a majority of the shares of Series C Preferred Stock (except as otherwise may be required under the DGCL) shall constitute the approval of such action by the class. To the extent that under the DGCL Holders of the Series C Preferred Stock are entitled to vote on a matter with Holders of Common Stock, voting together as one class, each share of Series C Preferred Stock shall be entitled to a number of votes equal to the number of shares of Common Stock into which convertible the record date for the taking of such vote of shareholders as the date as of which the Conversion Price is calculated. Holders of the Series C Preferred Stock shall be entitled to notice of all shareholder meetings or written consents (and copies of proxy materials and other information sent to shareholders) with respect to which they

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would be entitled as of right under the DGCL which notice would be provided pursuant to the Corporation's bylaws and the DGCL.

ARTICLE 9 PROTECTIVE PROVISIONS

So long as shares of Series C Preferred Stock are outstanding, the Corporation shall not, without first obtaining the approval (by vote or written consent, as provided by the DGCL) of the Holders of at least a majority of the then outstanding shares of Series C Preferred Stock:

(a) create any new class or series of capital stock having a preference over the Series C Preferred Stock as to distribution of assets upon liquidation, dissolution or winding up of the Corporation ("Senior Securities") or alter or change the rights, preferences or privileges of any Senior Securities so as to affect adversely the Series C Preferred Stock; or

(b) amend or alter whether by merger, consolidation or otherwise, any of the provisions of the Certificate of Incorporation (including this Certificate of Designations) that would change the preferences, rights or privileges with respect to the Series C Preferred Stock so as to affect the Series C Preferred Stock adversely.

In the event holders of at least a majority of the then outstanding shares of Series C Preferred Stock agree to allow the Corporation to amend or alter the preferences, rights or privileges of the shares of Series C

Preferred Stock, pursuant to subsection (b) above, so as to affect adversely the Series C Preferred Stock, then the Corporation will deliver notice of such approved change to the Holders of the Series C Preferred Stock that did not agree to such amendment or change (the "Dissenting Holders") and Dissenting Holders shall have the right for a period of thirty (30) days to convert pursuant to Section 6.2 of this Certificate of Designations as they exist prior to such alteration or change or continue to hold their shares of Series C Preferred Stock.

ARTICLE 10 MISCELLANEOUS

SECTION 10.1 LOSS, THEFT, DESTRUCTION OF PREFERRED STOCK. Upon receipt of evidence satisfactory to the Corporation of the loss, theft, destruction or mutilation of shares of Series C Preferred Stock and, in the case of any such loss, theft or destruction, upon receipt of indemnity or security reasonably satisfactory to the Corporation, or, in the case of any such mutilation, upon surrender and cancellation of the Series C Preferred Stock, the Corporation shall make, issue and deliver, in lieu of such lost, stolen, destroyed or mutilated shares of Series C Preferred Stock, new shares of Series C Preferred Stock of like date and tenor.

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SECTION 10.2 WHO DEEMED ABSOLUTE OWNER. The Corporation may deem the Person in whose name the Series C Preferred Stock shall be registered upon the registry books of the Corporation to be, and may treat it as, the absolute owner of the Series C Preferred Stock for the purpose of receiving payment of dividends on the Series C Preferred Stock, for the conversion of the Series C Preferred Stock and for all other purposes, and the Corporation shall not be affected by any notice to the contrary. All such payments and such conversion shall be valid and effectual to satisfy and discharge the liability upon the Series C Preferred Stock to the extent of the sum or sums so paid or the conversion so made.

SECTION 10.3 REGISTER. The Corporation shall keep at its principal office a register in which the Corporation shall provide for the registration of the Series C Preferred Stock. Upon any transfer of the Series C Preferred Stock in accordance with the provisions hereof, the Corporation shall register such transfer on the Series C Preferred Stock register.

SECTION 10.4 WITHHOLDING. To the extent required by applicable law, the Corporation may withhold amounts for or on account of any taxes imposed or levied by or on behalf of any taxing authority in the United States having jurisdiction over the Corporation from any payments made pursuant to the Series C Preferred Stock.

SECTION 10.5 HEADINGS. The headings of the Articles and Sections of this Certificate of Designations are inserted for convenience only and do not constitute a part of this Certificate of Designations.

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IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designations, Preferences and Rights to be signed by Loren G. Peterson, its President and Chief Executive Officer, and attested by Judy Roeske Bullock, its Secretary, on this 30th day of June, 1998.

SHEFFIELD PHARMACEUTICALS, INC.

By: /S/ LOREN G. PETERSON

Loren G. Peterson

President and Chief Executive Officer

Attested:

By: /S/ JUDY ROESKE BULLOCK

Judy Roeske Bullock

Secretary

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FORM OF CONVERSION NOTICE

TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner of shares of Series C Cumulative Convertible Preferred Stock (the "Series C Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercises its option to convert _____ shares of the Series C Preferred Stock into shares of the common stock, \$.01 par value, of the Corporation ("Common Stock"), in accordance with the terms of the Certificate of Designations of the Series C Preferred Stock. The undersigned hereby instructs the Corporation to convert the number of shares of the Series C Preferred Stock specified above into shares of Common Stock in accordance with the provisions of Article 6 of such Certificate of Designations. The undersigned directs that the Common Stock issuable and certificates therefor deliverable upon conversion, the Series C Preferred Stock recertificated, if any, not being surrendered for conversion hereby, together with any check in payment for fractional Common Stock, be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated:

Signature

Fill in for registration of Series C Preferred Stock:

Please print name and address (including zip code number) :

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FORM OF EXCHANGE NOTICE

TO: Sheffield Pharmaceuticals, Inc.
Attention: Chief Financial Officer

The undersigned owner(s) of shares of Series C Cumulative Convertible Preferred Stock (the "Series C Preferred Stock") issued by Sheffield Pharmaceuticals, Inc. (the "Corporation") hereby irrevocably exercise its option to cause the Corporation to exchange 11,500 shares of Series C Preferred Stock for 50% of the outstanding capital stock Systemic Pulmonary Delivery, Ltd. ("SPD Stock") in accordance with the terms of the Certificate of Designations of the Series C Preferred Stock. The undersigned hereby instructs the Corporation to advise all other holders of Series C Preferred Stock, if any, of this exercise by the undersigned owner(s). The undersigned direct that the SPD Stock issuable and certificates therefor deliverable to the undersigned upon such exchange be issued in the name of and delivered to the undersigned unless a different name has been indicated below. All capitalized terms used and not defined herein have the respective meanings assigned to them in such Certificate of Designations.

Dated:

Signature

Fill in for registration of SPD Stock:

Please print name and address (including zip code number) :

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ARTICLE 5 FDS

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THIS SCHEDULE CONTAINS SUMMARY FINANCIAL INFORMATION EXTRACTED FROM THE
 CONDENSED FINANCIAL STATEMENTS FOR THE THREE AND SIX MONTHS ENDED JUNE 30, 1998
 AND IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO SUCH STATEMENTS.

6-MOS
DEC-31-1998
JUN-30-1998
5,421,662
350,000
0
0
0
5,870,113
297,451
211,578
5,961,665
1,186,685
0
1,250,000
115
268,534
3,256,331
5,961,665
0
350,000
0
0
13,569,472
0
86,211
(13,303,121)
0
(13,303,121)
0
0
0
(13,303,121)
(0.67)
(0.67)

-----END PRIVACY-ENHANCED MESSAGE-----