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January 5, 2007

*VIA EDGAR AND  
OVERNIGHT MAIL*

United States Securities  
and Exchange Commission  
100 F Street, NE  
Mail Stop 4561  
Washington, D.C. 20549  
Attention: Sonia Barros

*Re: Pipex Pharmaceuticals, Inc.  
File No. 333-139354*

Dear Ms. Barros:

Thank you for your December 22, 2006 letter regarding Pipex Pharmaceuticals, Inc. (the "Company"). We hereby submit a letter responding to the limited comment. For your convenience, we have set forth below the comment in its entirety followed by our response thereto.

1. We note that the securities you are registering on your Form SB-2 are being made on a shelf basis under Rule 415. Given the nature and size of the transaction being registered, please advise the staff of the company's basis for determining that the transaction is appropriately characterized as a transaction that is eligible to be made on a shelf basis under Rule 415(a)(1)(i).

Response: We understand the recent concern of the staff regarding the amount of shares being registered in small-cap transactions but believe for the reasons set forth below that the staff's concerns are not implicated by this offering.

We understand the difference between a primary offering and a secondary offering and that Rule 415(a)(1)(i) may not be utilized in the case of a primary offering because Rule 415(a)(1)(i) by its specific terms is limited to secondary offerings. However, this is not an instance in which the selling shareholders consist of one large investor - whether or not a large hedge fund - that has such a large position in the

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issuer that it effectively has a controlling interest in the issuer and may be perceived as an affiliate of the issuer or even the issuer's alter ego. Instead, in this registration there are a large number of investors with no single large stakeholder. Indeed, there are 53 separate unrelated selling shareholders in the Company's registration statement, each having made a separate investment decision over a period of six months after having independently conducted due diligence of the Company's pharmaceutical products and intellectual property by hiring third party counsel and scientific experts. And no selling shareholder here holds a large stake in the Company: one selling shareholder holds approximately 11% of the Company's outstanding common stock (8% on a fully diluted basis) while all the other selling shareholders hold less than 5% of the Company's outstanding common stock, with the majority of the shareholders each holding less than 1% of the outstanding common stock (these percentages have been further diluted by the recent issuance by the Company of 2,990,442 common shares in connection with the Company's merger with Effective Pharmaceuticals, Inc., as previously disclosed in the Form SB-2 registration statement). Under these circumstances, the offering is more properly characterized as a secondary offering under Rule 415(a)(1)(i). Indeed, we believe it would be unreasonable to saddle any investor here with the constraints of a primary offering as they seek to sell their shares.

Moreover, the transaction involved here was not a typical reverse merger into a public blank check shell. The public company that the Company merged with - Sheffield Pharmaceuticals, Inc. - had been an operating biopharmaceutical company since 1986 with approximately 3,500 shareholders and was listed on the American Stock Exchange until 2003 when it no longer met the continued listing requirements. The shares of the Company's outstanding common stock held by the original owners of the public shell represent a negligible percentage of the outstanding (.6%) and are subject to a lock-up agreement until November 2007. And none of the selling shareholders here are Company insiders or promoters. Indeed the Company's insiders, including its co-founder, Chairman, Chief Executive Officer and President, have invested approximately \$4.7 million in the Company during the years 2001 through 2006, are locked up until November 2007.

Furthermore, the selling shareholders here invested a large amount of money relative to the amount of money that the Company had on hand prior to the investments. While the total amount invested by the 53 selling shareholders was approximately \$13.9 million, the amount of money that the Company had on hand prior to the investment was approximately \$250,000 and \$3 million in convertible notes (these notes were converted into shares of the Company's common stock at the closing of the offering, are not included in this registration statement and are subject to a lock-up agreement until November 2007).

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Additionally, we believe it is particularly appropriate in this instance to evaluate the offering against the Company's outstanding common stock on a fully diluted basis. While no assurance can be given, since the Company's common stock had previously been listed on the American Stock Exchange (AMEX), the Company has had communications with AMEX that make it clear that its common stock is likely to be listed on AMEX in the near future. However, one of the initial listing requirements of AMEX is a certain registered market capitalization, which this registration statement would enable the Company to satisfy. As such, it is reasonable to expect that the Company's 5,118,590 outstanding stock options and 15,725,153 outstanding warrants will be exercised in the near future, thereby decreasing the percentage of outstanding shares being registered in this offering.

Finally, we submit that strictly applying a flat mathematical formula to small cap companies can work an injustice. Instead, we believe the math should only be one tool to help the staff in determining whether a latent primary offering is present, and that it is more just to also consider the other factors that we have addressed in this letter.

Sincerely,

/s/ Hank Gracin

Hank Gracin

HG:ckg  
cc: Pipex Pharmaceuticals, Inc.