Mail Stop 6010

May 29, 2007

Bradford A. Zakes
Chief Executive Officer
ImaRx Therapeutics, Inc.
1635 East 18th Street
Tucson, AZ 85719

Re: ImaRx Therapeutics, Inc.
Registration Statement on Form S-1
Filed May 4, 2007
File No. 333- 142646

Dear Mr. Zakes:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

FORM S-1

General

1. Please provide us proofs of all graphic, visual, or photographic information you will provide in the printed prospectus prior to its use, for example in a preliminary prospectus. Please note we may have comments regarding these materials.

Summary, page 1

2. Your entire Summary section, until the "Our Business Strategy" discussion on page 4, is repeated verbatim in the Business section of your document. Please

revise to provide a summary of the information that is contained in the Business section, rather than repeating pages of text from the Business section.

Overview, page 1

3. We note that "[a]ccording to the American Heart Association, approximately one-third of adults in the United States have some form of cardiovascular disease." Since the term "cardiovascular disease" is very broad and, by some definitions, refers to a wide range of conditions, please replace this statement with an estimate of the number of people who have the specific conditions your products and product candidates target. Make similar revisions where this statement appears on pages 49 and 54 of your filing.

Risk Factors

Our independent registered public accounting firm has expressed . . . , page 10

4. We note that both in this risk factor and in "We will need substantial additional capital . . ." on page 11, you assume continuing sales of Abbokinase will be adequate to repay the $15 million note to Abbott. Please state the basis for this assumption. Also, please add disclosure to your document that reconciles this assumption with the following other statements in your filing:

   - The statement on page 11 that you may need to refinance the note.
   - The Use of Proceeds disclosure on page 30 stating that you may need to use proceeds from this offering to repay the note.
   - The statement on page 38 that your Abbokinase inventory as of March 31, 2007 was a four-year supply, which is the same amount you started with.

We may be unable to sell our existing inventory of Abbokinase . . . , page 12

5. We note that "approximately 26% of all vials, or approximately $6.1 million in inventory value, is available for sale without risk of being written off." However, 26% of $16.7 million is $4.3 million, not $6.1 million. Please revise the risk factor to clarify how you arrive at $6.1 million as the amount that is not at risk of being written off. Provide similar disclosure regarding the statement that "approximately 46% of all vials, or approximately $10.7 million in inventory value, is available for sale but may be at risk of being written off." 46% of $16.7 million is $7.7 million, not $10.7 million.

We will need to increase the size of our organization . . . , page 18

6. We note you will need to expand your workforce. Please state the approximate number of employees you anticipate hiring in the coming 12 months and the approximate cost of doing so.

We depend on patents and other proprietary rights . . . , page 18

7. Please discuss the February 2005 and July 2003 events in a separate risk factor with an appropriate heading. Also, if you have received notice of any other potential patent infringements, discuss the situation(s) and potential consequences.

If you purchase shares of common stock in this offering . . . , page 26

8. Please revise this risk factor to explain that investors who purchase shares will contribute ___% of the total amount to fund the company but will own only ___% of the voting rights.

A significant portion of our outstanding common stock may be sold . . . , page 27

9. We note that an aggregate of 6,054,928 shares that are subject to lock-up agreements may be sold in the future. Please disclose when the lock-up agreements expire.

Use of Proceeds, page 30

10. We note you list specific uses and amounts for the proceeds, and the last paragraph of this section states that you may use some of the proceeds to re-pay the promissory note to Abbott Laboratories. Please state how you would prioritize the listed uses if you were to use some of the funds to re-pay Abbott. State the approximate amounts you would put toward each use in this situation.

11. Please disclose the interest rate on the promissory note with Abbott. See Instruction 4 to Item 504 of Regulation S-K. Also disclose this interest rate in the discussion of Abbokinase on page 51.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview, page 37

12. Please explain why you chose not to pursue the development of the two products you purchased from Abbott in September 2005. Quantify the R&D costs you had incurred on these products before deciding not to pursue them further.

13. We note that when Abbott repossessed the assets associated with the two products, you extinguished the debt, which page 44 says was $15 million that you had issued as partial consideration for the products. Please confirm in your response letter that Abbott is not disputing your apparent conclusion that the repossession satisfied the entire debt.

Our Business

SonoLysis Program, page 49

14. We note that "[a]pproximately 700,000 adults in the U.S. . . . are afflicted with . . . some form of stroke each year." We further note your estimates on pages 50 and 51 that "over 90,000 ischemic stroke patients in the U.S. could be eligible for SonoLysis+tPA therapy annually" and "over 200,000 ischemic stroke patients in the U.S. could be eligible for SonoLysis therapy annually." So that investors can better understand your products, please clarify the factors that will prevent some stroke victims from being able to use your products.

15. Please identify the company that owns the rights to tPA, and discuss the arrangement you have with that company to use the product. If you have a written agreement, please file it as an exhibit.

16. Since Abbokinase is a thrombolytic drug that your company owns, please explain why you chose to use tPA rather than Abbokinase as the thrombolytic drug in SonoLysis+tPA therapy. For example, does using tPA make the clinical trial process less burdensome since tPA is already approved for the treatment of ischemic stroke?

Abbokinase, page 51

17. We note you acquired a four-year supply of Abbokinase inventory from Abbott. Please state, as stated in a risk factor on page 12, that this is 153,000 vials. Also, explain the assumptions, such as the market size, frequency of use, etc., underlying the estimate that this amount is a four-year supply.

18. We note you began selling Abbokinase in October 2006. Please state the amount of vials you have sold as of the most recent practicable date.

19. We note from "If we want to sell urokinase . . ." on page 14 that you do not currently plan to manufacture additional Abbokinase in the near term. Please explain the rationale for this decision in the Business section.

SonoLysis Microbubble Technology, page 56

20. We note that "members of your scientific team invented the microbubble technology that became Definity." State whether they made this invention while working at your company. Also, discuss the current status of Definity. For example, is it a competitor with your products? How do your proprietary MRX-801 microbubbles differ from Definity?

SonoLysis+tpa Therapy, page 56

21. We note the discussion of the clinical trial in the second paragraph of this section. Since this trial used microbubbles that are "not [your] MRX-801 microbubbles," state that the results of any clinical trials involving your product may differ from the results of the discussed trial.

Sales and Marketing, page 62

22. Please state how many employees are involved in selling and marketing Abbokinase.

Material Contracts, page 63

23. We note that the Abbott agreement requires escrowing 50% of the proceeds from Abbokinase sales. We also note that you have made sales but have "escrowed none of those proceeds." Please state whether this is a default or breach of the agreement and the potential consequences.

24. The agreements with Bristol-Myers Squibb Medical Imaging, UNEMED, Dr. med. Reinhard Schlief, and University of Arkansas all involve technology relating to ultrasound and/or microbubbles. Please explain, either in a brief introductory paragraph or in the individual discussions of each agreement, how the technologies covered by each agreement differ from each other. Also state which of your product candidates use the technologies of each agreement.

Compensation Discussion and Analysis, page 73

25. We note from the "Base Salary" paragraph on page 74 that your salaries take into account the "compensation paid by other companies in our industry and in our region for similar positions, and our financial profile." Please list these "other companies." Also, describe your financial profile.

26. We note from the "Quarterly Cash Bonus" paragraph on page 74 that your bonus plan covers all of your employees, including executive officers. However, the Summary Compensation Table does not include a "Bonus" column. Please

disclose, if true, that none of the named executive officers received a bonus during 2006. If they did receive bonuses, disclose them in the Summary Compensation Table and discuss in CD&A the specific accomplishments upon which each bonus was based.

27. We note from the "Options" paragraph on pages 74-75 that certain named executive officers were awarded stock options during 2006. Please identify and discuss the specific objectives each recipient met to earn these awards.

Certain Relationships and Related Transactions, page 85

28. We note the agreement with Edson Moore Healthcare Ventures and John Moore covers past consulting services and future services through March 2008. Please state the actual number of hours already worked and, if ascertainable, the approximate number of hours you anticipate they will work before March 2008.

29. We note the agreement with Dr. Evan Unger is a "broad waiver and release of claims" against the company. Please disclose the claims.

Principal Stockholders, page 87

30. Please identify the natural persons who beneficially own the shares held by Edson Moore Healthcare Ventures, Inc.

Consolidated Statements of Operations, page F-4

31. It appears from your disclosure of depreciation and amortization that the amortization of Abbokinase intangible assets is not classified in cost of product sales. Please explain to us if the amortization of these intangibles is included in cost of product sales. If not, please revise your disclosure to reclassify the appropriate amounts to cost of product sales. Alternatively, expand the cost of product sales caption to include parenthetical disclosure indicating that amortization of intangible assets related to products sold is excluded and disclose the amount of amortization excluded from cost of product sales. Please refer to SAB Topic 11:B.

Notes to Consolidated Financial Statements

Note 2: Significant Accounting Policies

Inventory, page F-8

32. You disclose that you have approximately a four year supply of Abbokinase on hand at March 31, 2007. You also disclose that your current stability data as of

March 31, 2007 indicates that approximately 74% of this inventory will expire in October 2007 and that you have an ongoing stability program to attempt to extend the expiration dates. Please address the following comments:

a. Please revise your disclosure here and throughout your filing to clarify whether the October 2007 expiration date you disclose is the expiration date marked on the product label.
b. Please revise your disclosure here and throughout your filing to clarify whether the "current stability data" as of March 31, 2007 includes the results of your "ongoing stability program."
c. As October 2007 is less than five months away, please revise your MD&A and Business disclosures to clearly indicate the steps you must complete in order to extend the product expiration date. In this regard, please disclose whether you must make a submission to the FDA. If so, please disclose when you plan to make this submission and when you expect to hear back from them regarding approval. As it appears that you must re-brand the product if you are successful in extending the expiration date, please disclose whether you can submit the new product name and marketing information for approval with any filing to extend the product life or whether this is a separate filing and disclose the anticipated timing of any separate filing and response. In addition, please disclose whether you intend to continue the ongoing stability testing even if you are successful in extending the expiration date.
d. In MD&A on page 44 you disclose that you intend to continue the current stability testing program. Please revise your disclosure to clarify as it appears from your other disclosures that you are currently continuing this program.

Revenue Recognition, page F-9

33. You disclose here and in MD&A on page 38 that you defer recognition of revenue until your wholesalers sell Abbokinase to a hospital or other health care provider expected to be the end user because the amount of future returns is uncertain due to the lack of returns history data. On page 38 you disclose that you accept returns of original, unopened cartons only. Please revise your disclosure to clarify whether hospitals or other end users can return purchased product to wholesalers who in turn can return product to you. If so, please explain to us how your revenue recognition policy complies with the guidance in paragraphs 6f and 8 of SFAS 48. Depending on the carton size, it appears at least reasonably possible that an individual hospital could purchase an entire carton, which could be subject to return.

Shipping and Handling, page F-12

34. Please disclose the amount of shipping and handling costs included in general and administrative costs or explain to us why this disclosure is not warranted. Please see paragraph 6 of EITF 00-10.

Note 4: Income Taxes, page F-15

35. You disclose that you generated a significant temporary difference in intangible assets in 2006 related to your acquired in-process research and development. This disclosure does not appear to adequately explain the significant reduction in deferred tax assets related to intangible assets from 2005 to 2006 considering that you acquired in-process research and development in 2005. Please revise your disclosure to clarify why your intangible asset deferred tax asset decreased from 2006 to 2005.

Note 7: Notes Payable

Note Payable for Technology Acquisition, page F-18

36. Please confirm for us that Abbott has no other legal rights under this note, other than the recovery of its intangible assets. In your response, please represent to us that the debt has been legally extinguished as required by paragraph 16 of SFAS 140.

Note 8: Equity Transactions

Series A, D and F Preferred Stock, page F-18

37. On pages 7 and 34, you indicate that the conversion rate of your Series F preferred stock is one-to-0.84 assuming an offering price of $7.00 per share. This conversion rate appears to be consistent with the variable formula you disclose in this footnote. However, the formula appears to be different from that disclosed on page F-19 of Amendment No. 4 to your withdrawn Form S-1 No. 333-134311 filed September 21, 2006. In that filing, you indicate that the formula is determined by dividing $8.33 by the lesser of $8.33 or 85% of offering price. Applying your May 4, 2007 one-for-three reverse stock split, it appears that your conversion rate should be $25.00 divided by the lesser of $25.00 or 85% of the offering price. Please address the following comments:
    a. Please explain to us why your formula has apparently changed.
    b. Please tell us if any consideration was exchanged for this apparent change in formula.
    c. Please explain to us how you accounted for this change in formula and reference for us the authoritative literature you relied upon to support your accounting.
    d. It appears that your anticipated offering price will result in the variable conversion feature increasing the number of common shares issuable. It also appears that this variable conversion feature is a contingent conversion option as contemplated by paragraphs 8-12 of EITF 00-27. Please revise your disclosure to indicate your anticipated accounting for any beneficial

conversion feature you expect upon completion of your IPO. If you do not believe that a beneficial conversion feature exists, please explain to us why and reference the authoritative literature you rely upon to support your position.

Note 9: Stock Options, page F-24

38. You disclose that you modified the vesting of two series of options in March 2006 from performance-based to time-based. Although you disclose the compensation charges in the first quarter of 2007 related to these modifications, you do not appear to disclose the charges in 2006. Please revise your disclose to also disclose the amount of compensation charges recorded in 2006 related to your March 2006 award modifications.

Item 16. Exhibits and Financial Statement Schedules, page II-4

39. We note some exhibits are not yet filed. Please be aware that we may have comments on the exhibits when they are filed, and all comments will need to be resolved prior to effectiveness.

* * *

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;

- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and

- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

You may contact Mark Brunhofer at (202) 551-3638 or James Rosenberg at (202) 551-3679 if you have questions regarding comments on the financial statements and related matters. Please contact Greg Belliston at (202) 551-3861 or me at (202) 551-3715 with any other questions.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: John M. Steel, Esq.
Mark F. Hoffman, Esq.
Heidi M. Drivdahl, Esq.
DLA Piper US LLP
701 Fifth Avenue, Suite 7000
Seattle, WA 98104-7044