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

DIVISION OF
CORPORATION FINANCE

December 2, 2010

Andrew L. Pearlman
President and Chief Executive Officer
Medgenics, Inc.
8000 Towers Crescent Drive, Suite 1300
Vienna, VA 22182

Re: Medgenics, Inc.
Registration Statement on Form S-1
Filed November 5, 2010
File No. 333-170425

Dear Dr. Pearlman:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

General

1. Please file all exhibits as soon as practicable. We may have further comments upon examination of these exhibits.

2. Please note that when you file a pre-effective amendment containing pricing-related information, we may have additional comments. As you are likely aware, you must file this amendment prior to circulating the prospectus. Please note that when you file a pre-effective amendment that includes your price range, it must be bone fide. We interpret this to mean that your range may not exceed $2 if you price below $20 and 10% if you price above $20.

3. 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 that we may have comments regarding this material.

Cover page

4. It is not appropriate to disclaim liability for statements included in the prospectus. Please delete the following statements:

   "We obtained statistical data, market data and other industry data and forecasts used throughout this prospectus from market research, publicly available information and industry publications. While we believe that the statistical data, industry data and forecasts and market research are reliable, we have not independently verified the data, and we do not make any representation as to the accuracy of the information."

Prospectus Summary, page 1

5. The summary should provide a balanced presentation of the information presented in your registration statement with respect to your company and operations. As currently written, your summary places more emphasis on your strengths, strategy and market opportunities than on your weaknesses and risks. Please revise your summary to balance the discussion of your strengths and key attributes with an equally prominent discussion of your weaknesses and/or risks, including, but not limited to, the fact that your most advanced clinical trial of EPODURE Biopumps has only treated twelve patients; that you do expect full commercialization of any of your product candidates for at least five years; and that your auditors have expressed substantial doubt about your ability to continue as a going concern. The discussion should contain the same level of detail as the discussion of your strengths and attributes.

6. We note that in the summary and throughout your prospectus you state that you "have begun to commercialize" or that you have entered into discussions with other parties to commercialize your Biompump Platform Technology based on the results of your phase I/II clinical study of the EPODURE Biopump and other development and testing efforts. However, as your Biopump Platform Technology is still being developed and has not been tested on a large scale, you do not have a commercialized product and have stated elsewhere in your prospectus that you are at least five years away from commercialization, suggestions that you have begun to commercialize your technology appear to be in error. Please delete these statements.

7. We note that in the summary under the section entitled "Proof of Concept of Biopump Platform Technology" and in the discussion of your EPODURE Biompump technology in your Business section, you make assertions regarding the results of the phase I/II clinical trial, such as:

   - The concept of the Biompump has been proven for this product candidate;
   - The trial has demonstrated that a single administration can provide sustained anemia treatment for at least six months … thereby improving patient quality of life;

- Results from the trial have shown/appear to confirm that the EPODURE Biompump helps to stabilize hemoglobin levels … elevating and stabilizing those levels within range for several months; and
- That you have "proved the principle of the Biopump

As you are in the early stages of clinical trials, have as yet only treated 12 patients in a single phase I/II trial, and are years away from receiving marketing approval for your treatment from any country's regulatory agency, these and similar statements may give the impression that your mode of treatment has been validated by regulatory authorities or that the Israeli Ministry of Health concurs with your assertions. Please revise your disclosure wherever necessary to make explicit that no regulatory authority overseeing food and drug law in any jurisdiction has indicated its agreement to, or otherwise validated, these statements, that such statements represent only your own beliefs and conclusions about the clinical trial and your product.

8. We note your statements here and elsewhere in the prospectus that:

   - One of the patients receiving treatment in your clinical trial has shown sustained hemoglobin (i.e., has been free of anemia) within the target range for more than 24 months; and
   - In most patients, hemoglobin levels stabilized following their EPODURE Biopump treatment.

   Please discuss the results for the other patients as well, in order to give a balanced summary of clinical outcomes.

9. We note that on pages 4 and 11 you state that your Biopump technology has been shown to be "safe". Please, revise this disclosure to remove use of the word "safe". The determination of product safety is within the purview of the Israeli Ministry of Health and the FDA and therefore company may not substitute its own judgment or conclusions about product safety for those agencies. If the product was well tolerated at specific dosages and no adverse effects were observed, you may disclose such, but product safety is a judgment reserved to the applicable regulatory authority.

10. Please provide the basis for the statements that "the cost of FACTOR VIII injections in a typical hemophilia patient typically exceeds $100,000 per year" (page 4) and "an annual anemia treatment regimen for an ESRD patient typically [costs] at least $15,000 to $25,000 (page 49).

Summary Financial Data, page 7

Selected Financial Data, page 32

11. You reference the disclosure of pro forma basic and diluted net loss per share, yet you do not present this pro forma information. Please revise your disclosure to remove this reference or provide the pro forma net loss per share information and describe how you calculated it.

12. In these tables you present loss from operations and loss as positive numbers. In your consolidated statements of operations on page F-5, you present them as negative numbers. Please revise your presentation throughout the filing to present loss amounts in tables and statements consistently.

13. We note that you conduct substantially all of your operations outside of the United States. In order to enhance our understanding of how you prepare your financial statements and assess your disclosure controls and procedures, we ask that you provide us with information that will help us answer the following comments.

    - Please tell us how you maintain your books and records and prepare your financial statements. In this regard, explain whether you maintain your books and records in accordance with US GAAP, describe the controls you maintain to ensure that the activities you conduct and the transactions you consummate are recorded in accordance with US GAAP. If you do not maintain your books and records in accordance with US GAAP, tell us what basis of accounting you use and describe the process you go through to convert your books and records to US GAAP for SEC reporting. Describe the controls you maintain to ensure that you have made all necessary and appropriate adjustments in your conversions and disclosures.

    - Please tell us who is involved in your financial reporting. We would like to understand more about the background of the people who are primarily responsible for preparing and supervising the preparation of your financial statements and evaluating the effectiveness of your internal control over financial reporting and their knowledge of US GAAP and SEC rules and regulations. Without identifying people by name, for each person, please tell us:

        - what role he or she takes in preparing your financial statements and evaluating the effectiveness of your internal control;
        - what relevant education and ongoing training he or she has had relating to US GAAP;
        - the nature of his or her contractual or other relationship to you;
        - whether he or she holds and maintains any professional designations such as Certified Public Accountant (US) or Certified Management Accountant; and

- about his or her professional experience, including experience in preparing and/or auditing financial statements prepared in accordance with US GAAP and evaluating effectiveness of internal control over financial reporting.

If you retain an accounting firm or an organization to prepare your financial statements or evaluate your internal control over financial reporting, please tell us:

- the name and address of the accounting firm or organization;
- the qualifications of their employees who perform the services for your company;
- how and why they are qualified to prepare your financial statements or evaluate your internal control over financial reporting;
- how many hours they spent last year performing these services for you; and
- the total amount of fees you paid to each accounting firm or organization in connection with the preparation of your financial statements and in connection with the evaluation of internal control over financial reporting for the most recent fiscal year end.

If you retain individuals who are not your employees to prepare your financial statements or evaluate your internal control over financial reporting, without providing us with their names, please tell us:

- why you believe they are qualified to prepare your financial statements or evaluate your internal control over financial reporting;
- how many hours they spent last year performing these services for you; and
- the total amount of fees you paid to each individual in connection with the preparation of your financial statements and in connection with the evaluation of internal control over financial reporting for the most recent fiscal year end.

- Please describe for us the qualifications of your identified audit committee financial expert, including the extent of his knowledge of US GAAP and internal control over financial reporting.

Risk Factors, page 9

14. It is not appropriate to warn shareholders about risks that are not described in the prospectus. Please delete the statement relating to risks that you do not know about or you believe to be immaterial.

"Our Biopump Platform Technology is still being developed…," page 11

15. Please expand your disclosure regarding the potential adverse effects of the viral vector particles and the basis upon which you have identified such risk. Please disclose the results of any clinical trials or preclinical studies that have led you to conclude that this risk may be present.

"If any of our key employees discontinue his or her services with us…," page 17

16. Please expand your disclosure to disclose whether or not you carry key man insurance.

"If we are not able to obtain and maintain adequate patent protection…," page 17

17. To the extent that you have experienced problems in the past or are aware of any claims regarding infringement of intellectual property rights, please revise to describe these problems or claims. Further, please expand your disclosure to describe any potential claims of which you are aware regarding infringement of your licensed intellectual property.

"We may experience product liability claims…," page 20

18. Please expand your disclosure to disclose whether you carry product liability insurance in connection with your clinical trials. If so, please disclose your level of product liability insurance coverage and briefly describe what potential liabilities are and are not covered. Please also disclose the cost to you of such coverage, if material.

Capitalization, page 28

19. We note that you elected to measure the 2009 Debentures entirely at fair value with changes in fair value recognized in earnings. It appears based on your disclosure on page F-41 that the holders of these debentures will likely benefit from the automatic conversion upon a Qualified Transaction in the form of either a discount from the Qualified Transaction Price or the doubling of the amount of warrants the holders otherwise would have been entitled to receive. Please confirm whether the pro forma information will reflect the effects of this discount or incremental warrant issuance once an estimated offering price has been established and disclose this information in the notes to the financial statements. In addition, please disclose how the fair value of the debentures will change the closer you get to the completion of a Qualified Transaction and disclose how you will account for the automatic conversion.

20. On page 39 and elsewhere you disclose the commitment to pay Yissum a $200,000 milestone payment when cumulative equity investments in you by third parties reach a specified level. Please revise your pro forma presentation here and in Dilution to disclose whether this offering will trigger the next milestone payment. If so, include the milestone payment as a pro forma adjustment and include its impact in your capitalization and dilution computations.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 34

Liquidity and Capital Resources, page 37

21. We note your disclosure on page 23 in the risk factor titled "Our Amended and Restated By-Laws contain provisions that restrict our ability to borrow funds." Please expand your disclosure to include a discussion of the limitations on incurring future indebtedness as described in the risk factor.

Business, page 44

General

22. We note you have filed a number of material agreements which you have not discussed in your business description. We note further your disclosure on page 13 in the risk factor titled "We are subject to intense government regulation and we may not be able to successfully complete the necessary clinical trials" the following statements:

    - "Approval also depends on our obtaining certain key materials such as the GMP produced gutless adenoviral vector, which is prepared through a contract with a GMP vector manufacturer."
    - "Approval and commencement of studies further depends on the successful and timely completion of the necessary devices to harvest, implant and ablate Biopumps, which is largely dependent on the work of outside engineering contractors, and could suffer delays."

    It appears that you may be substantially dependent upon manufacturing, research, clinical trial services and consultant services of third-parties. Please expand your disclosure to identify any such third-parties and describe the material terms of your agreements with such parties. To the extent applicable, please describe the terms of your agreements filed at Exhibit 10.25 to 10.40.

23. Please provide the basis for your statement that "new DAAs are expected to [sic] far more expensive than current treatment based on IFN-α" that appears on page 54.

Business Strategy, page 56

24. Please file a copy of your October 2009 agreement regarding the development of a Factor VIII Biopump for hemophilia, which we understand has been extended for an additional six-months. Further, please expand your disclosure to describe the material terms of your agreement, including term and termination provisions, payments made to date, aggregate potential milestone payments and royalty rates. Your description should identify the major pharmaceutical company with which you have collaborated and the fact that the

counterparty has the option to negotiate a definitive agreement regarding a transaction related to the Factor VIII Biopump technology anytime prior to the end of such 6-month period upon payment to Medgenics of a $2,500,000 option fee. Please also file any agreement related to the extension and disclose the material terms of the extension, if different from the original agreement.

25. Please advise us as to your time frame for your scale-up and commercial implementation of Biopump treatment technology and your plans for processing and manufacturing Biopumps. We note your discussion regarding potential agreements with commercial or pharmaceutical partners for installation and use of Biopumps. Please advise us as to any plans to market and sell the Biopump devices in advance of or in connection with commercialization of your specific Biopump Platform Technologies.

Regulatory Strategy, page 57

26. Please revise your disclosure to clarify how you have conducted your clinical trials to date "so that the results of these trials will support applications to both FDA and EMEA."

EPODURE Biopump Clinical Trials, page 58

27. With respect to your discussion of the October 2005 publication in the journal "Blood" of the results of the phase I clinical study, please clarify that several of the authors declared a financial interest in Medgenics and were employed by Medgenics while conducting the work for the study. As with other statements in the prospectus about the efficacy or safety of your product as demonstrated in the clinical trial, please revise here to make explicit that no regulatory authority has vetted or approved these statements.

Licenses, page 62

28. Please expand your expand your disclosure relating to the Yissum license agreement and the BCM license agreement to include all license fees, royalty rates, payments made to date and potential future milestone payments, as applicable for each agreement.

Executive Compensation, page 74

29. We note your disclosure on page 9 in your risk factor titled "We have significant severance liabilities and may not be able to satisfy such obligations." As the amounts owed appear to be material, please expand your disclosure to describe the severance and change of control payments due to each named executive officer and the terms by which such payments would come due. Please refer to Item 402(q) of Regulation S-K.

Financial Statements

30. Please update your financial statements as required by Rule 8-08 of Regulation S-X.

Consolidated Statements of Operations, page F-5

31. Please round your loss per common share to the nearest cent so as not to reflect a greater degree of precision than exists.

Notes to Financial Statements

Note 1: - General, page F-16

32. In note e. you disclose that you were notified in November 2010 that you will receive a cash grant from the U.S. government and the funds are immediately available. Please explain why it is appropriate to record the full award during the fourth quarter of 2010. Also, please expand your revenue recognition policy on page F-22 to include your policy for grants received from the U.S. government.

Note 9: - Stockholders' Equity, page F-30

33. Please disclose the warrants and options outstanding separately for all tables presented. Please reconcile the total amount of options and warrants outstanding to the disclosure of options and warrants outstanding on page 29.

34. In note f. you disclose the granting of consultant options and warrants that vest over three-year periods, yet you only disclose the weighted-average grant-date fair value assigned to all your option and warrant grants to consultants in 2008 and 2009. Please explain to us whether you remeasured the fair value of the unvested portions of these options and warrants at subsequent reporting dates as required by ASC 505-50-30-21. If not, please explain to us why not and reference for us the authoritative literature you relied upon to support your accounting.

35. In note g. you disclose compensation expense related to warrants and options, yet in the Statements of Changes in Stockholders' Equity (Deficit) for 2007, 2008, 2009 and 2010, you indicate that compensation relates solely to option grants. Please revise the captions in your Statements of Changes in Stockholders' Equity (Deficit) to appropriately attribute compensation to both options and warrants or explain to us how your presentation is appropriate.

Note 10: - Convertible Debentures, page F-41

36. You indicate that the warrants issued with the convertible debentures in September 2010 are subject to adjustment if you subsequently issue equity at a price lower than the exercise price of these warrants. In addition, the functional currency of the company is the U.S. Dollar but the warrants are denominated in British pounds sterling. Therefore, please confirm whether the warrants will be classified as liabilities pursuant to ASC 815-

40-15 and subsequent changes in fair value recorded in earnings. In addition, please confirm whether you used the Binomial model to value these warrants.

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 the information the Securities Act of 1933 and all applicable Securities Act rules require. 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 you request acceleration of the effective date of the pending registration statement please provide a written statement from the company 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Vanessa Robertson at (202) 551-3649 or Mark Brunhofer at (202) 551-3638 if you have questions regarding comments on the financial statements and related matters. Please contact Karen Ubell at (202) 551-3873, Dan Greenspan at (202) 551-3623 or me at (202) 551-3715 with any other questions.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: Gretchen Anne Trofa, Esq.
Barack Ferrazzano Kirschbaum & Nagelberg LLP
200 West Madison Street
Suite 3900
Chicago, IL 60606