

Mail Stop 6010

May 7, 2007

Richard Gabriel
Chief Executive Officer and President
DNAPrint Genomics, Inc.
1621 West University Parkway
Sarasota, FL 34243

**Re: DNAPrint Genomics, Inc.
Registration Statement on Form SB-2
Filed April 10, 2007
File No. 333-141991**

Dear Mr. Gabriel:

We have limited our review of your filing to those issues we have addressed in our 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. Given the nature and size of the transaction being registered, along with the other transactions registered during the past year, 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).
2. Please provide us, with a view toward disclosure in the prospectus, with tabular disclosure of the dollar amount of each payment (including the value of any payments to be made in common stock) in connection with the transaction that you have made or may be required to make to the selling shareholder, any affiliate of the selling shareholder, or any person with whom any selling shareholder has a contractual relationship regarding the transaction (including any interest payments, liquidated damages, payments made to "finders" or "placement agents," and any other payments or potential payments). Please provide footnote disclosure of the terms of each such payment.

Further, please provide us, with a view toward disclosure in the prospectus, with disclosure of the net proceeds to the issuer from exercises of the puts and the total possible payments to the selling shareholder and any of its affiliates.

3. Further, please provide us, with a view toward disclosure in the prospectus, with tabular disclosure of:
 - The total possible profit the selling shareholder could realize as a result of the discount for the securities, presented in a table with the following information disclosed separately:
 - The market price per share of the securities on the date the investment agreement was entered into;
 - The selling shareholders price per share on the date of the investment agreement, calculated using the discount rate and the market price on the date the investment agreement was entered into;
 - The total possible shares underlying the investment agreement; and
 - The combined market price of the total number of shares underlying the investment agreement, calculated using the market price on the date the investment agreement was entered into.

4. Please provide us, with a view toward disclosure in the prospectus, with tabular disclosure of:
 - The total profit to be realized as a result of any discounts for the securities underlying any warrants any other warrants, options, notes, or other securities of the issuer that are held by the selling shareholder or any affiliates of the selling shareholders, presented in a table with the following information disclosed separately:
 - Market price of the underlying security on the date of the sale of that other security;
 - The conversion/exercise price per share as of the date of the sale of that other security, calculated as follows:
 - If the conversion/exercise price per share is set at a fixed price, use the price per share on the date of the sale of the other security; and
 - If the conversion/exercise price per share is not set at a fixed price and, instead, is set at a floating rate in relationship to the market price of the of the underlying security, use the conversion/exercise discount rate and the market rate per share on the date of the sale of that other security and determine the conversion price per share as of that date;
 - The total possible shares to be received under the particular securities assuming complete conversion/exercise;
 - The combined market price of the total number of underlying shares, calculated using the market price per share on the date of the sale of that other security and the total possible shares to be received;
 - The total possible shares to be received and the combines conversion price of the total number of shares underlying that other security and the total possible number of underlying shares; and
 - The total possible discount to the market price as of the date of the sale of that other security, calculated by subtracting the total conversion/exercise price on the date of the sale of that other security from the combined market price of the total number of underlying shares on that date.
5. Please provide us, with a view toward disclosure in the prospectus, with tabular disclosure of:
 - the gross proceeds paid or payable to the issuer in the convertible note transaction;
 - all payments that have been made or that may be required to be made by the issuer that are disclosed in response to Comment 2;

- the resulting net proceeds to the issuer; and
 - the combined total possible profit to be realized as a result of any conversion discounts regarding the securities underlying the convertible notes and any other warrants, options, notes, or other securities of the issuer that are held by the selling shareholders or any affiliates of the selling shareholders that is disclosed in response to Comment 3 and Comment 4.
6. Please provide us, with a view toward disclosure in the prospectus, with tabular disclosure of all prior securities transactions between the issuer (or any of its predecessors) and the selling shareholders, any affiliates of the selling shareholders, or any person with whom any selling shareholder has a contractual relationship regarding the transaction (or any predecessors of those persons), with the table including the following information disclosed separately for each transaction:
- the date of the transaction;
 - the number of shares of the class of securities subject to the transaction that were outstanding prior to the transaction;
 - the number of shares of the class of securities subject to the transaction that were outstanding prior to the transaction and held by persons other than the selling shareholders, affiliates of the company, or affiliates of the selling shareholders;
 - the number of shares of the class of securities subject to the transaction that were issued or issuable in connection with the transaction;
 - the percentage of total issued and outstanding securities that were issued or issuable in the transaction (assuming full issuance), with the percentage calculated by taking the number of shares issued and outstanding prior to the applicable transaction and held by persons other than the selling shareholders, affiliates of the company, or affiliates of the selling shareholders, and dividing that number by the number of shares issued or issuable in connection with the applicable transaction;
 - the market price per share of the class of securities subject to the transaction immediately prior to the transaction (reverse split adjusted, if necessary); and
 - the current market price per share of the class of securities subject to the transaction (reverse split adjusted, if necessary).

7. Please provide us, with a view toward disclosure in the prospectus, with tabular disclosure comparing:

- the number of shares outstanding prior to entering into the investment agreement that are held by persons other than the selling shareholders, affiliates of the company, and affiliates of the selling shareholders;
- the number of shares registered for resale by the selling shareholders or affiliates of the selling shareholders in prior registration statements;
- the number of shares registered for resale by the selling shareholders or affiliates of the selling shareholders that continue to be held by the selling shareholders or affiliates of the selling shareholders;
- the number of shares that have been sold in registered resale transactions by the selling shareholders or affiliates of the selling shareholders; and
- the number of shares registered for resale on behalf of the selling shareholders or affiliates of the selling shareholders in the current transaction.

In this analysis, the calculation of the number of outstanding shares should not include any securities underlying any outstanding convertible securities, options, or warrants.

8. Please provide us, with a view toward disclosure in the prospectus, with the following information:

- whether the issuer has the intention, and a reasonable basis to believe that it will have the financial ability, to make all payments on the overlying securities; and
- whether – based on information obtained from the selling shareholders – any of the selling shareholders have an existing short position in the company's common stock and, if any of the selling shareholders have an existing short position in the company's stock, the following additional information:
 - the date on which each such selling shareholder entered into that short position; and
 - the relationship of the date on which each such selling shareholder entered into that short position to the date of the announcement of the transaction and the filing of the registration statement (*e.g.*, before or after the announcement of the convertible note transaction, before the filing or after the filing of the registration statement, etc.).

9. Please provide us, with a view toward disclosure in the prospectus, with:
- a materially complete description of the relationships and arrangements that have existed in the past three years or are to be performed in the future between the issuer (or any of its predecessors) and the selling shareholders, any affiliates of the selling shareholders, or any person with whom any selling shareholder has a contractual relationship regarding the transaction (or any predecessors of those persons) – the information provided should include, in reasonable detail, a complete description of the rights and obligations of the parties in connection with the investment agreement; and
 - copies of all agreements between the issuer (or any of its predecessors) and the selling shareholders, any affiliates of the selling shareholders, or any person with whom any selling shareholder has a contractual relationship regarding the transaction (or any predecessors of those persons) in connection with the sale of the convertible notes.

If it is your view that such a description of the relationships and arrangements between and among those parties already is presented in the prospectus and that all agreements between and/or among those parties are included as exhibits to the registration statement, please provide us with confirmation of your view in this regard.

10. Please provide us, with a view toward disclosure in the prospectus, with a description of the method by which the company determined the number of shares it seeks to register in connection with this registration statement.
11. The Corporate Profile page on your company's website states that the company is concentrating on "four distinct areas; Pharmacogenomics, Forensics, Genotyping, and Consumer Products," and the Business section of your filing discusses all four areas. The Investor Relations page and the Prospectus Summary, on the other hand, state the company is concentrating on three markets: Pharmacogenomics, Forensics, and Consumer Products. Please reconcile these statements. Although your website is not incorporated by reference into the prospectus, it should consistent with the prospectus.
12. Your website's Investor Relations page states that it "contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act as amended." Please remove the phrase "within the meaning of Section 21E of the Securities Exchange Act as amended." This phrase could give the impression that your company is eligible for the safe harbor of Section 21E, which it is not because your stock is penny stock. See Section 21E(b)(1)(C).

Cover page

13. Please revise the file number on the cover page to use the correct file number, 333-141991.

Prospectus Summary, page 1

14. Please define in everyday language the terms “human genome sciences” and “pharmacogenomics.” Additionally, provide a brief discussion of the product or product candidates in each market.
15. We note you “focus on the sale of genetic testing products and services,” and you have “products” targeting the pharmacogenomics, forensics, and consumer products markets. However, in a risk factor on page 5, you state your company is in the developmental stage, your principal operations have not commenced, and you are in the research and development phase of your pharmacogenomics product and services. Please revise the Prospectus Summary so that it includes this information from the risk factor, and also add disclosure stating which products are already on the market and which ones are not yet on the market.
16. Please disclose, as stated in “We also face serious competition . . .” on page 5, that you are skeptical as to the future prospects of the consumer market for your products.

Dutchess Agreement, page 3

17. We note Dutchess’s obligation to purchase stock is contingent upon your company having an effective registration statement covering the shares to be issued. Please disclose, as you state in a risk factor on page 7, that at your stock’s current price, this limitation will cause your company to be able to access only \$1.5 million of the \$10 million anticipated by the agreement unless and until a new registration statement is declared effective.

Risk Factors, page 3

18. Please disclose in a new, first risk factor the strong possibility that your share price will decrease as shares are issued to Dutchess. We note your disclosure in “Recent Sales of Unregistered Securities” that you have issued approximately 148 million shares to Dutchess during the past year and your disclosure in the Selling Shareholder table that Dutchess currently does not own any of your shares. Disclose the number of shares you have issued to Dutchess in the past, the fact that Dutchess has sold all of these shares and the number of shares you could

potentially issue to Dutchess in the future pursuant to the various arrangements you have with them.

19. We note from the “Dutchess Security Agreement” discussion on page 83 that the Dutchess notes are subject to a security interest in substantially all of your assets. Since you are currently in default on these notes, please add a risk factor addressing this issue.
20. We note from the Use of Proceeds disclosure on page 8 that you will use a substantial part—and possibly all—of the proceeds you receive from Dutchess to pay off debt. Please describe this issue in a new risk factor, and state that these funds will not be available to build your business.

Our success will depend, in part, on how rapidly . . . , page 3

21. Please clarify what “draft guidance” is. For example, is it one step in a process through which the “guidance” may eventually become mandatory?
22. The last sentence of this risk factor states that the pharmaceutical and biotechnology industry’s failure to implement the guidance could threaten all of your tests and services. Although it is relatively clear how your pharmacogenomics products and services could be affected by this issue, please clarify why you believe your forensic and consumer product lines could be affected by this issue.

We also face serious competition from competitors in the forensics . . . , page 5

23. The heading for this risk factor does not seem to summarize the risk that is described in the risk factor itself. Please consider which risks you are trying to communicate, and revise the risk factor and its heading accordingly. This may result in two separate risk factors.
24. Please explain what the “contract services outsourcing market” is.

We have had losses since our inception . . . , page 5

25. Please state your accumulated deficit.

We continue to be a developmental stage enterprise company . . . , page 5

26. This risk factor mentions your pharmacogenomics products. An April 9, 2007 Boston Globe article refers to your PT-401 product as “a long shot.” Please disclose in the risk factor that your pharmacogenomics efforts may never

materialize into a commercialized product. Also add to this risk factor some disclosure regarding the potential cost and time frame to develop these products.

We need immediate funds and may not be able to obtain . . . , page 6

27. Please state your estimate as to the amount of funding you need in the immediate future. Also state whether you expect the funds from the agreement with Dutchess to satisfy this need.
28. We note your statement that if Dutchess were to sell stock you put to them, it will likely have a depressive effect on the market price of your common stock. Please expand the disclosure to disclose the number of times during the past 12 months that you have issued shares to Dutchess and the fact that they have sold these shares.
29. Please consider including a risk factor disclosing the number of shares currently issuable to La Jolla Cove and the effect such issuances could have on the market price of your stock.

We may not have adequate patent protection . . . , page 6

30. Please identify the products or product candidates for which you already have patent protection.
31. To the extent you are aware that you have any patents that are being infringed upon or that you have been notified of a third party's belief that you are infringing on their patent(s), please revise to disclose the situation and potential consequences.
32. We note from the Legal Proceedings discussion on page 10 that you believe a former employee inappropriately took confidential company materials and disclosed or threatened to disclose them. Please discuss this issue in this risk factor.

If we are unable to retain the services . . . , page 6

33. Please state whether you have written employment contracts with Messrs. Gabriel, Frudakis, or Gomez.

We have not paid our Dutchess note principal payments . . . , page 7

34. Please state the total amounts that are past due to Dutchess and the number of shares you could potentially be required to issue to Dutchess as a result of your defaults.

35. Provide similar information about amounts owed to La Jolla Cove.

We may not be able to register sufficient shares to fully access the equity line..., page 7

36. Assuming the current market price, please revise to quantify the number of shares you would have to register in order to access the full amount of the equity line.

Existing stockholders may experience significant dilution from the sale of securities pursuant to our investment agreement with Dutchess, page 7

37. Please disclose the dilutive impact your issuances to Dutchess have had in the recent past.

Our stock prices have been volatile, page 8

38. Please revise to disclose the high and low market price over the past 24 months. Additionally, disclose the approximate timeframe related to both the high and the low prices.

Use of Proceeds, page 8

39. We note you intend to use the proceeds from the Investment Agreement for the retirement of debt. Please state the interest rate and maturity of the debt. Also, if the debt was incurred within the past year, describe the use of the proceeds of the debt. See Instruction 1 to Item 504 of Regulation S-B.

40. Please describe with more specificity the uses currently categorized as “working capital and general corporate expenses.” State an amount for each use.

Interest of Named Experts and Counsel, page 13

41. We note that exhibit 10.54 to the registration statement entitles your counsel, Amy Trombly, to up to 8,000,000 shares of common stock. If she has received any of these shares, please consider whether her interest in the company is required to be disclosed pursuant to Item 509 of Regulation S-B.

Description of Business, page 13

42. Please describe the following aspects of your business, as required by Item 101(b) of Regulation S-B:

- Distribution methods of your products and services;
- Dependence on one or a few major customers;
- Government regulation of your industry and any needs for government approvals of your principal products or services;
- The approximate amount spent during each of the last two fiscal years on research and development activities; and
- Number of total employees and number of full-time employees.

43. Please provide the information about reports to security holders that is required by Item 101(c) of Regulation S-B.

Research and Development, page 15

44. This section seems to be written in a way that it assumes the reader is familiar with your company and industry. For example, the first paragraph states you plan to expand your library of predictive drug response tests, but you have not yet described in your Business section what a predictive drug response test is or identified the predictive drug response tests you already have. Similarly, you state that in 2004 you conducted research for enhancements to DNAWitness, but this is the first mention of DNAWitness in your filing. Please revise this section to provide background information about all of the products you discuss. It may also be appropriate to relocate this section and the “Strategic Alliances” section so that they come after the description of your products.

45. So that it is clearer which projects you are focusing on, please state the approximate amount you spent during 2006 on each of the projects described in this section.

46. Please provide a brief overview of the development process for each project described in this section. For example, will you need to conduct clinical trials or obtain government approval for any of the products before marketing them?

Strategic Alliances, page 16

47. Please provide additional detail regarding each of the alliances discussed in this section. For each alliance, ensure you have disclosed each party’s material rights and obligations, duration and termination provisions and all payments

made/received to date, annual payments, aggregate potential milestone payments and the existence of royalty provisions.

The Pharmacogenomics Market, page 17

48. Please explain in this section how a pharmacogenomics test is physically administered to a patient. For example, is a blood sample taken and then combined with a sample of the drug for which compatibility is being tested?

Our Pharmacogenomics Products, page 19

49. It is not clear what your theranostics and diagnostic products are. “The Pharmacogenomics Market” discussion on pages 17-18 suggests that pharmacogenomics products are used to predict patients’ responses to specific drugs. However, the theranostics and diagnostic products you list appear to relate to specific diseases or indications, not specific drugs. Please clarify what your products are designed to do. If they do not predict patients’ responses to specific drugs, please clarify why you have included in your filing “The Pharmacogenomics Market” discussion on pages 17-18.
50. Please state where in the development process each product currently is, and with respect to each, explain what steps need to be completed prior to commercialization.
51. We note your disclosure that you have begun studies with Genomics Collaborative Division of Seracare Life Sciences, Inc. Please revise to disclose whether you have a formal agreement with this party. If you do, please file the agreement and disclose the material terms of the agreement. If you do not have a formal written agreement, please describe your current understandings with this party relating to each party’s rights and obligations, all payments, ownership of developments made during the course of the relationship, and any other material terms.

Our Products for the Forensics Market, page 20

52. Please revise the second paragraph to indicate the source of the statistics cited.
53. Please state the 2006 revenues attributable to each of the forensics products listed on page 21 and the consumer products listed on page 22.
54. Additionally, clarify how you generate revenues for these products. For example, do law enforcement agencies pay you fees on a case by case basis, do they pay annual subscription fees, or do they pay a one time fee.

55. Please provide disclosure as to the accuracy of your forensics products and your consumer products, and disclose the basis for your assessment.

The Consumer Products Market, page 22

56. Please state a source for the estimated market size and predicted growth rate. Also, reconcile the stated growth rate with the risk factor on page 5, in which you express doubt as to this market's permanence.
57. We note from the disclosure on page 32 that one of your distributors accounted for approximately \$514,000 of your 2006 sales. Since this is more than 20% of your total sales, please identify the distributor both in this section and on page 32. If you have a written agreement with the distributor, file it as an exhibit and discuss its material terms.

Our Genotyping Services, page 23

58. We note from the disclosure on page 32 that you have three principal customers of your genotyping services. Please identify these customers, and if you have written agreements with them, file them as exhibits and discuss their material terms. Also, state on page 32 the amount of revenue attributable to each of these customers.

Intellectual Property, page 23

59. Please add columns to the table on pages 25-27 to state the country in which each patent or patent application is filed, the product(s) to which each relates, and the expiration date if the patent has been granted.

Management's Discussion and Analysis or Plan of Operation for the Year Ended December 31, 2006

Financings, page 36

La Jolla Cove Convertible Debentures and Warrants, page 36

60. Please clarify whether there are any amounts that continue to be outstanding. If there are, quantify these amounts.

Dutchess Notes, page 37

61. You state that all four of the Dutchess notes will be repaid using the proceeds of the September 2004 Investment Agreement. Since you will cease receiving funds

from that agreement within one month, please update this disclosure if appropriate.

62. We note you paid approximately \$181,000 of fees to Athena. Since this is the first mention of Athena in your filing, please describe who Athena is and its role in the Dutchess agreements.

Dutchess Default, page 38

63. Quantify the total principal and interest amounts outstanding.

Executive Compensation, page 42

64. It appears that the 2004, 2005, and 2006 totals for Hector Gomez in the Executive Compensation table should each be moved down one line. Please revise.
65. We note that footnote (6) discloses deferred salary amounts. Please revise to clarify whether the deferred salaries have been paid or if they are stilled owed.

Exhibits, page 100

66. Generally, agreements that are filed as exhibits are sufficiently material that they should also be discussed in the body of your filing. Currently, it does not appear that you have discussed in the body of your filing the material terms of exhibits 10.1-10.6, 10.8-10.14, 10.16, 10.29, 10.34, 10.38, 10.41, 10.49, and 10.53-10.55. Please consider whether these and all of the other exhibits you currently list in your exhibit table are still required to be included as exhibits pursuant to Item 601 of Regulation S-B. After you have done this assessment, ensure that you have discussed in the body of your filing the material terms of all exhibits remaining in the exhibit table. Tell us in your response letter the page numbers where each exhibit is discussed.
67. We note the legal opinion and consent are not yet filed. Please be aware that these documents must be filed prior to effectiveness, and we may have comments on them.

* * *

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.

Richard Gabriel
DNAPrint Genomics, Inc.
May 7, 2007
Page 16

Please contact Greg Belliston at (202) 551-3861, Suzanne Hayes at (202) 551-3675 or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: Amy M. Trombly
Trombly Business Law
1320 Centre Street, Suite 202
Newton, MA 02459