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

POST-EFFECTIVE
AMENDMENT NO. 1 TO
FORM S-1
REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

NEUROMETRIX, INC.

Delaware
(State or other jurisdiction of
incorporation or organization)

(Exact name of registrant as specified in its charter)
3841
(Primary Standard Industrial
Classification Code Number)

04-3308180
(I.R.S. Employer
Identification No.)

**62 Fourth Avenue
Waltham, Massachusetts 02451
(781) 890-9989**

(Address, including zip code, and telephone number,
including area code, of registrant's principal executive offices)

**Shai N. Gozani, M.D., Ph.D.
Chief Executive Officer
NeuroMetrix, Inc.
62 Fourth Avenue
Waltham, Massachusetts 02451
(781) 890-9989**

(Name, address, including zip code, and telephone number,
including area code, of agent for service)

**Jonathan L. Kravetz, Esq.
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Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box: x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. x **File No. 333-178165**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in

Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Accelerated filer

Smaller reporting company

EXPLANATORY NOTE

This Post-Effective Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-178165) is filed pursuant to Rule 462(d) under the Securities Act of 1933, as amended (the "Securities Act"), solely to add a new Exhibit 5.1 to such Registration Statement. This Registration Statement shall become effective upon filing with the Commission in accordance with Rule 462(d) under the Securities Act.

Item 16. Exhibits and Financial Statement Schedules

The exhibits filed with this registration statement are set forth on the exhibit index following the signature page and are incorporated by reference in their entirety into this item.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Post-Effective Amendment No.1 to the Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Waltham, Commonwealth of Massachusetts, on February 8, 2012.

NEUROMETRIX, INC.

By /s/ Shai N. Gozani

Shai N. Gozani, M.D., Ph.D.

President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this Post-Effective Amendment No. 1 to the Registration Statement on Form S-1 has been signed by the following persons in the capacities and on the date indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
By: <u>/s/ Shai N. Gozani</u> Shai N. Gozani, M.D., Ph.D.	Chairman, President and Chief Executive Officer (Principal Executive Officer)	February 8, 2012
By: <u>/s/ Thomas T. Higgins</u> Thomas T. Higgins	Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer and Principal Accounting Officer)	February 8, 2012
By: <u>*</u> David E. Goodman, M.D.	Director	February 8, 2012
By: <u>*</u> Allen J. Hinkle M.D.	Director	February 8, 2012
By: <u>*</u> Nancy E. Katz	Director	February 8, 2012
By: <u>*</u> Charles R. LaMantia	Director	February 8, 2012
By: <u>*</u> Timothy R. Surgenor	Director	February 8, 2012
*By: <u>/s/ Thomas T. Higgins</u> Thomas T. Higgins, Attorney-in-fact		February 8, 2012

EXHIBIT INDEX

Exhibit Number	Description
2.1	Asset Purchase Agreement dated November 7, 2008 by and between NeuroMetrix, Inc. and Advanced diagnostics, LLC ⁽⁷⁾
3.1.1	Third Amended and Restated Certificate of Incorporation of NeuroMetrix, Inc. ⁽⁶⁾
3.1.2	Certificate of Designations for Series A Junior Cumulative Preferred Stock, par value \$0.001 per share ⁽⁴⁾
3.1.3	Certificate of Amendment to Restated Certificate of Incorporation of NeuroMetrix, Inc. dated September 1, 2011 ⁽¹⁸⁾
3.2.1	Second Amended and Restated Bylaws of NeuroMetrix, Inc. ⁽⁶⁾
3.2.2	Amendment No. 1 to Second Amended and Restated Bylaws of NeuroMetrix, Inc. ⁽³⁾
4.1	Specimen Certificate for Shares of Common Stock ⁽¹⁾
4.2.1	Shareholder Rights Agreement, dated as of March 7, 2007, between NeuroMetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent ⁽⁴⁾
4.2.2	Amendment to Shareholder Rights Agreement, dated September 8, 2009, between NeuroMetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent ⁽¹¹⁾
4.3	Form of Common Stock Purchase Warrant ⁽¹¹⁾
4.4	Form of First Addendum to Common Stock Purchase Warrant issued to investors pursuant to Securities Purchase Agreements dated September 8, 2009 ⁽¹³⁾
4.5**	Form of Unit Warrant to purchase Common Stock
4.6**	Form of Placement Agent Warrant
5.1%	Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (replaces previously filed Exhibit 5.1 in its entirety)
10.1.1	Lease Agreement, dated October 18, 2000, between Fourth Avenue LLC and NeuroMetrix, Inc. ⁽¹⁾
10.1.2	Amendment Number One to Lease, dated February 22, 2008, between Fourth Avenue LLC and NeuroMetrix, Inc. ⁽¹⁵⁾
10.2.1	Loan and Security Agreement between NeuroMetrix, Inc. and Comerica Bank, dated March 5, 2010 ⁽¹⁶⁾
10.2.2	First Modification to Loan and Security Agreement between NeuroMetrix, Inc. and Comerica Bank, dated March 1, 2011 ⁽¹⁹⁾
10.3+	Amended and Restated 1996 Stock Option/Restricted Stock Plan ⁽¹⁾
10.4.1+	Amended and Restated 1998 Equity Incentive Plan ⁽¹⁾
10.4.3+	Second Amendment to Amended and Restated 1998 Equity Incentive Plan ⁽¹⁾
10.5+	Second Amended and Restated 2004 Stock Option and Incentive Plan ⁽⁸⁾
10.6.1+	Third Amended and Restated 2004 Stock Option and Incentive Plan ⁽¹⁰⁾
10.6.2+	Form of Restricted Stock Agreement pursuant to the Third Amended and Restated 2004 Stock Option and Incentive Plan ⁽¹⁶⁾
10.7+	2010 Employee Stock Purchase Plan ⁽¹⁷⁾
10.8+	2009 Non-Qualified Inducement Stock Plan ⁽²⁰⁾
10.9+	Form of Indemnification Agreement between NeuroMetrix, Inc. and each of its directors ⁽¹⁾
10.10.1+	Employment Agreement, dated June 21, 2004, by and between NeuroMetrix, Inc. and Shai N. Gozani, M.D., Ph.D. ⁽¹⁾
10.10.2+	First Amendment to Employment Agreement dated December 31, 2008, by and between NeuroMetrix, Inc. and Shai N. Gozani, M.D., Ph.D. ⁽⁹⁾

Exhibit Number	Description
10.10.3+	Indemnification Agreement dated June 21, 2004, by and between Shai N. Gozani, M.D., Ph.D., and NeuroMetrix, Inc. ⁽¹⁾
10.10.4+	NeuroMetrix, Inc. Non-Statutory Stock Option Agreement (pursuant to the Amended and Restated 1998 Equity Incentive Plan), dated as of June 21, 2004, by and between Shai N. Gozani M.D., Ph.D., and NeuroMetrix, Inc. ⁽¹⁾
10.11.1+	Letter Agreement, dated February 5, 2008 between NeuroMetrix, Inc. and Michael Williams, Ph.D. ⁽¹⁴⁾
10.11.2+	First Amendment to Letter Agreement, dated December 31, 2008, between NeuroMetrix, Inc. and Michael Williams, Ph.D. ⁽⁹⁾
10.12.1+	Letter Agreement, dated February 5, 2008, between NeuroMetrix, Inc. and Guy Daniello ⁽¹⁴⁾
10.12.2+	First Amendment to Letter Agreement, dated December 31, 2008, between NeuroMetrix, Inc. and Guy Daniello ⁽⁹⁾
10.13.1+	Letter Agreement, dated August 31, 2009, between NeuroMetrix, Inc. and Thomas T. Higgins ⁽¹²⁾
10.13.2+	Indemnification Agreement, dated September 10, 2009, by and between NeuroMetrix, Inc. and Thomas T. Higgins ⁽¹²⁾
10.14.1+	Letter Agreement, dated January 20, 2010, between NeuroMetrix, Inc. and Krishnamurthy Balachandran ⁽¹⁶⁾
10.14.2+	Indemnification Agreement, dated April 19, 2010, by and between NeuroMetrix, Inc. and Krishnamurthy Balachandran ⁽¹⁶⁾
10.15	Form of Securities Purchase Agreement, dated September 8, 2009 between the Company and each investor ⁽¹¹⁾
10.16†	Manufacturing and Supply Agreement, dated as of August 2, 2006, by and between Parlex Polymer Flexible Circuits, Inc. and NeuroMetrix, Inc. ⁽²⁾
10.17	Deferred Prosecution Agreement dated February 5, 2009 by and between NeuroMetrix, Inc and the United States Attorney's Office for the District of Massachusetts ⁽⁵⁾
10.18	Settlement Agreement and Release dated February 9, 2009 by and among NeuroMetrix, Inc. and the United States of America acting through the United States Attorney's Office for the District of Massachusetts and the Office of Inspector General of the United States Department of Health and Human Services ⁽⁵⁾
10.19.1*	Engagement Letter by and between NeuroMetrix, Inc. and Dawson James Securities, Inc., dated December 30, 2011
10.19.2**	First Amendment to Engagement Letter by and between NeuroMetrix, Inc. and Dawson James Securities, Inc., dated January 30, 2012
10.20*	Form of Lock-Up Agreement
23.1**	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm
23.2%	Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (included in Exhibit 5.1)
24.1	Power of Attorney (included on signature page to the original filing of this this registration statement)

* Previously filed with Amendment No. 1 to this Registration Statement on Form S-1.

** Previously filed with Amendment No. 2 to this Registration Statement on Form S-1.

% Filed herewith.

+ Indicates management contract or any compensatory plan, contract or arrangement.

† Portions of this Exhibit were omitted and have been filed separately with the Secretary of the SEC pursuant to the Registrant's application requesting confidential treatment thereof.

- (1) Incorporated herein by reference to NeuroMetrix, Inc.'s Registration Statement on Form S-1 filed on May 13, 2004, as amended (Registration No. 333-115440).
 - (2) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on August 2, 2006 (File No. 000-50856). Confidential treatment has been granted with respect to certain portions of this Exhibit, which portions have been omitted and filed separately with the Securities and Exchange Commission as part of an application for confidential treatment pursuant to the Securities Exchange Act of 1934, as amended.
 - (3) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on September 17, 2007 (File No. 001-33351).
 - (4) Incorporated herein by reference to NeuroMetrix, Inc.'s Form 8-A12(b) filed on March 8, 2007 (File No. 001-33351).
 - (5) Incorporated hereby by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on February 10, 2009 (File No. 001-33351).
 - (6) Incorporated herein by reference to NeuroMetrix, Inc.'s Registration Statement on Form S-8 filed on August 9, 2004 (File No. 333-118059).
 - (7) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on November 26, 2008 (File No. 001-33351).
 - (8) Incorporated herein by reference to Appendix A to NeuroMetrix, Inc.'s Proxy Statement on Schedule 14A filed on April 25, 2008 (File No. 001-33351).
 - (9) Incorporated herein by reference to NeuroMetrix, Inc.'s Annual Report on Form 10-K filed on March 20, 2009 (File No. 001-33351).
 - (10) Incorporated herein by reference to Appendix A to NeuroMetrix, Inc.'s Proxy Statement on Schedule 14A filed on April 24, 2009 (File No. 001-33351).
 - (11) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed September 14, 2009 (File No. 001-33351).
 - (12) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed September 15, 2009 (File No. 001-33351).
 - (13) Incorporated herein by reference to NeuroMetrix, Inc.'s Quarterly Report on Form 10-Q filed November 12, 2009 (File No. 001-33351).
 - (14) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on February 6, 2008 (File No. 001-33351).
 - (15) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on February 27, 2008 (File No. 001-33351).
 - (16) Incorporated herein by reference to NeuroMetrix, Inc.'s Quarterly Report on Form 10-Q filed on May 14, 2010 (File No. 001-33351).
 - (17) Incorporated herein by reference to Appendix A to NeuroMetrix, Inc.'s Proxy Statement on Schedule 14A filed on April 8, 2010.
 - (18) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on September 1, 2011 (File No. 001-33351).
 - (19) Incorporated herein by reference to NeuroMetrix, Inc.'s Current Report on Form 8-K filed on March 3, 2011 (File No. 001-33351).
 - (20) Incorporated herein by reference to NeuroMetrix, Inc.'s Registration Statement on Form S-8 filed on June 3, 2009 (File No. 333-159712).
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February 8, 2012

NeuroMetrix, Inc.
62 Fourth Avenue
Waltham, Massachusetts 02451

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Registration Statement on Form S-1, Registration No. 333-178165 (as amended through and including the date hereof, the "Registration Statement"), filed by NeuroMetrix, Inc., a Delaware corporation (the "Company"), with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), with respect to (A) the offer and sale of up to an aggregate of 10,500,000 units (the "Units"), each Unit consisting of (i) one share of the Company's common stock, \$0.0001 par value per share (the "Common Stock"), and (ii) one warrant (each, a "Unit Warrant") to purchase one half of a share of Common Stock and (B) the offer and sale of warrants to purchase up to an additional 525,000 shares of Common Stock to the placement agent in the proposed offering (the "Placement Agent Warrants" and together with the Unit Warrants, the "Warrants"). The Units and Placement Agent Warrants are being offered and sold pursuant to an Engagement Letter Agreement dated December 30, 2011 between the Company and Dawson James Securities Inc., as amended (the "Engagement Letter Agreement"), which Engagement Letter Agreement, together with the forms of the Warrants, were filed as exhibits to the Registration Statement. The shares of Common Stock to be issued by the Company as components of the Units are hereinafter collectively referred to as the "Unit Shares" and the shares of Common Stock to be issued by the Company upon the exercise of the Warrants are hereinafter collectively referred to as the "Warrant Shares" (together with the Unit Shares, the "Shares"). The Shares also include share purchase rights (the "Share Purchase Rights") under the Company's Shareholder Rights Agreement dated March 7, 2007, as amended, between the Company and American Stock Transfer & Trust Company, as Rights Agent (the "Shareholder Rights Agreement") that may be issued at a future date in accordance with the terms of the Shareholder Rights Agreement.

In connection with this opinion, we have examined the Company's Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws, both as currently in effect; the Shareholder Rights Agreement; the minutes of all pertinent meetings of the directors of the Company relating to the Registration Statement, the Engagement Letter Agreement and the transactions contemplated thereby; such other records of the corporate proceedings of the Company and certificates of the Company's officers as we have deemed relevant; and the Registration Statement and the exhibits thereto.

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

BOSTON | WASHINGTON | NEW YORK | STAMFORD | LOS ANGELES | PALO ALTO | SAN DIEGO | LONDON

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In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies and the authenticity of the originals of such copies.

Based upon the foregoing, and subject to the limitations set forth below, we are of the opinion that (i) the Units, when issued and delivered by the Company against payment therefor, will be duly and validly issued; (ii) the Unit Shares, when issued and delivered by the Company against payment therefor, will be duly and validly issued, fully paid and non-assessable; (iii) the Warrants, when issued and delivered by the Company against payment therefor, will be duly and validly issued, and will represent binding obligations of the Company pursuant to the laws of the State of Delaware; (iv) the Warrant Shares, when issued and delivered by the Company against payment therefor as contemplated by the Warrants, will be duly and validly issued, fully paid and non-assessable; and (v) the Share Purchase Rights will be duly and validly issued.

In rendering our opinion regarding the Share Purchase Rights, we have assumed that the Board of Directors of the Company has acted and will act in accordance with its fiduciary duties with respect to the administration of the Shareholder Rights Agreement and the issuance of the Share Purchase Rights thereunder. In connection with the foregoing, our opinion does not address the determination a court of competent jurisdiction may make regarding whether the Board of Directors of the Company would be required to redeem or terminate, or take other action with respect to, the Share Purchase Rights at some future time. Further, our opinion addresses the Shareholder Rights Agreement and the Share Purchase Rights in their entirety and not any particular provision of them, and it is not settled whether the invalidity of any particular provision would invalidate the Share Purchase Rights in their entirety.

Our opinion is limited to the General Corporation Law of the State of Delaware (including the applicable provisions of the Delaware Constitution and the reported judicial decisions interpreting such laws) and the United States Federal Laws, and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Shares under the securities or blue sky laws of any state or any foreign jurisdiction. To the extent that any applicable document is stated to be governed by the laws of another jurisdiction, we have assumed for purposes of this opinion that the laws of such jurisdiction are identical to the state laws of the State of Delaware.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon statutes, rules, regulations and judicial decisions existing on the date hereof, and we disclaim any obligation to advise you of any change in any of these sources of law or legal or factual developments after the date hereof which might affect any matters or opinions set forth herein.

February 8, 2012

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We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act and to the use of this Firm's name therein and in the related prospectus under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.