

Radius Health, Inc.
Form S-1/A
November 08, 2011

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As filed with the Securities and Exchange Commission on November 8, 2011

Registration No. 333-175091

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**Amendment No. 5 to
FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

Radius Health, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

2834
(Primary Standard Industrial
Classification Code Number)
201 Broadway, 6th Floor. Cambridge, MA, 02139
(617) 551-4700

80-0145732
(I.R.S. Employer
Identification Number)

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

C. Richard Lyttle, Ph.D.
Chief Executive Officer
Radius Health, Inc.
201 Broadway, 6th Floor
Cambridge, MA, 02139
(617) 551-4700

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

Copies to:
Julio E. Vega, Esq.
Matthew J. Cushing, Esq.
Bingham McCutchen LLP
One Federal Street
Boston, Massachusetts 02110

Approximate date of commencement of proposed sale to the public:
Promptly after the effective date of this Registration Statement, subject to applicable contractual lock-up agreements.

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 check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) 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.

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.

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.

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 definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

(Do not check if a
smaller reporting company)

THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(A) OF THE SECURITIES ACT OF 1933 OR UNTIL THE REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE SECURITIES AND EXCHANGE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(A), MAY DETERMINE.

EXPLANATION OF AMENDMENT

The purpose of this Amendment No. 5 to our Registration Statement on Form S-1 filed with the Securities Exchange Commission on June 23, 2011, and amended by Amendment No. 1 thereto, filed on September 1, 2011, Amendment No. 2 thereto, filed on October 6, 2011, Amendment No. 3 thereto, filed on October 28, 2011, and Amendment No. 4 thereto, filed on November 7, 2011 (as amended, the "*Form S-1*"), is to (a) to update the Exhibit Index to change certain cross-references and (b) to incorporate into the Form S-1 exhibits filed with Company's Amendment No. 6 to Form 8-K filed on November 9, 2011.

No other changes have been made to the Form S-1 other than those described above. This Amendment No. 5 does not reflect any subsequent events occurring after the filing date of Amendment No. 4 to the Form S-1, other than described above, or modify or update in any way disclosures made in the prospectus included in the Form S-1 as amended by Amendment No. 4 thereto.

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Exhibits and Financial Statement Schedules**

(a)

Exhibits

| Exhibit No. | Description |
|--------------------|--|
| 2.1(10) | Agreement and Plan of Merger, dated April 25, 2011 |
| 3.1(4) | Certificate of Incorporation, as amended |
| 3.2(9) | By-Laws, as amended |
| 4.1(12) | Amended and Restated Stockholders' Agreement, dated May 17, 2011, by and among the Company, as successor to Radius Health, Inc., and the Stockholders listed therein |
| 4.1.1(11) | Amendment No. 1 to Amended and Restated Stockholders' Agreement dated November 7, 2011 by and among the Company and the Stockholders listed therein. |
| 4.1.2(11) | Amendment No. 2 to Amended and Restated Stockholders' Agreement dated November 7, 2011 by and among the Company and the Stockholders listed therein. |
| 5.1(4) | Opinion of Bingham McCutchen LLP |
| 10.1(8)(12) | Clinical Trial Services Agreement and Work Statement NB-1, dated March 29, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.2(6) | Amended and Restated Stock Issuance Agreement, dated May 16, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.2.1(13) | Stock Issuance Agreement, dated March 29, 2011 by and between Radius Health, Inc. and Nordic BioScience Clinical Development VII A/S. This agreement has been superceded and replaced by The Amended and Restated Stock Issuance Agreement filed as Exhibit 10.2 hereof.(11) |
| 10.3(12) | Side Letter, dated March 29, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.4(8)(13) | License Agreement, dated September 27, 2005, by and between the Company, as successor to Nuvios, Inc., and SCRAS SAS, on behalf of itself and its Affiliates |
| 10.5(8)(12) | Pharmaceutical Development Agreement, dated January 2, 2006, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.6(8)(13) | Amendment No. 1 to Pharmaceutical Development Agreement, dated January 1, 2007, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.7(12) | License Agreement Amendment No. 1, dated September 12, 2007, by and between the Company, as successor to Radius Health, Inc., and SCRAS SAS |
| 10.8(8)(13) | Amendment No. 2 to Pharmaceutical Development Agreement, dated January 1, 2009, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |

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| Exhibit No. | Description |
|--------------------|--|
| 10.9(8)(12) | Amendment No. 3 to Pharmaceutical Development Agreement, dated June 16, 2010, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.10(11) | License Agreement Amendment No. 2, dated May 11, 2011, by and between the Company, as successor to Radius Health, Inc., and Ipsen Pharma SAS |
| 10.11(11) | Series A-1 Convertible Preferred Stock Issuance Agreement, dated May 11, 2011, by and between the Company, as successor to Radius Health, Inc., and Ipsen Pharma SAS |
| 10.12(12) | Development and Manufacturing Services Agreement, dated October 16, 2007, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.13(8)(13) | Work Order No. 2, dated January 15, 2010, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.14(8)(13) | Amendment No. 3 to Work Order No.2, dated December 15, 2010, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.15(8)(13) | Development and Clinical Supplies Agreement, dated June 19, 2009, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.16(8)(12) | Amendment No. 1, dated December 31, 2009, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.17(8)(12) | Amendment No. 2, dated September 16, 2010, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.18(12) | Amendment No. 3, dated September 29, 2010, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.19(8)(12) | Change Order Form Amendment No. 5, dated February 4, 2011, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.20(8)(13) | Amendment No. 4, dated March 2, 2011, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.21(8)(13) | Laboratory Services and Confidentiality Agreement, dated March 31, 2004, by and between the Company, as successor to Nuvios, Inc., and Charles River Laboratories, Inc. |
| 10.22(12) | First Amendment to Laboratory Services and Confidentiality Agreement, dated November 7, 2008, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories, Inc. |
| 10.23(8)(13) | Letter of Payment Authorization, dated November 20, 2010, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories Preclinical Services Montréal Inc. |

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| Exhibit No. | Description |
|--------------------|---|
| 10.24(8)(13) | Letter of Payment Authorization, dated February 7, 2011, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories Preclinical Services Montréal Inc. |
| 10.25(8)(13) | License Agreement, dated June 29, 2006, by and between the Company, as successor to Radius Health, Inc., and Eisai Co., Ltd. |
| 10.26(11) | Series A-1 Convertible Preferred Stock Purchase Agreement, dated April 25, 2011, by and among the Company, as successor to Radius Health, Inc., and the Investors listed therein |
| 10.27(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan, assumed in the Merger |
| 10.28(2)(3) | Radius Health, Inc. First Amendment to 2003 Long-Term Incentive Plan effective as of December 15, 2006, assumed in the Merger |
| 10.29(2)(3) | Radius Health, Inc. Second Amendment to 2003 Long-Term Incentive Plan effective as of March 28, 2008, assumed in the Merger |
| 10.30(2)(3) | Radius Health, Inc. Third Amendment to 2003 Long-Term Incentive Plan effective as of November 14, 2008, assumed in the Merger |
| 10.31(2) | Radius Health, Inc. 2003 Long-Term Incentive Plan Form of Stock Option Agreement |
| 10.32(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 28, 2004, by and between the Company, as successor to Nuvios, Inc., and Richard Lyttle for Option No. 04-103 |
| 10.33(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 07-08 |
| 10.34(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 08-09 |
| 10.35(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 08-14 |
| 10.36(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated February 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 06-07 |
| 10.37(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 07-07 |
| 10.38(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 08-05 |
| 10.39(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 08-10 |

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| Exhibit No. | Description |
|--------------------|---|
| 10.40(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan Stock Option Agreement, dated December 16, 2003, by and between the Company, as successor to Nuvios, Inc., and Gary Hattersley for Option No. 03-001 |
| 10.41(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated February 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 06-02 |
| 10.42(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 07-06 |
| 10.43(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 08-08 |
| 10.44(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 08-13 |
| 10.45(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 07-09 |
| 10.46(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 08-06 |
| 10.47(2) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 08-11 |
| 10.48(2) | Employment Letter Agreement, dated July 2, 2004, by and between the Company, as successor to Nuvios, Inc., and C. Richard Edmund Lyttle |
| 10.49(2) | Employment Letter Agreement, November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Gary Hattersley |
| 10.50(2) | Employment Letter Agreement, dated January 30, 2006, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea |
| 10.51(9) | Employment Letter Agreement, dated November 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey |
| 10.52(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Ansbert K. Gadicke |
| 10.53(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and C. Richard Edmund Lyttle |
| 10.54(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Martin Muenchbach |
| 10.55(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Jonathan Fleming |
| 10.56(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Kurt Graves |

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| Exhibit No. | Description |
|-------------|--|
| 10.57(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Elizabeth Stoner |
| 10.58(2) | Indemnification Agreement, dated October 12, 2010, by and between the Company, as successor to Radius Health, Inc., and Alan Auerbach |
| 10.59(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Michael Rosenblatt, M.D. |
| 10.60(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Christopher Mirabelli |
| 10.61(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Augustine Lawlor |
| 10.62(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Edward Mascioli, M.D. |
| 10.63(9) | Consent to Sublease, dated January 14, 2011, by and among the Company, as successor to Radius Health, Inc., Sonos, Inc., and Broadway/Hampshire Associates Limited Partnership |
| 10.64(9) | Sublease, dated January 14, 2011, by and between the Company, as successor to Radius Health, Inc., and Sonos, Inc. |
| 10.65(2) | Amended and Restated Warrant to Purchase Common Stock, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and SVB Financial Group |
| 10.66(2) | Warrant to Purchase Series A-1 Convertible Preferred Stock, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Leerink Swann LLC |
| 10.67(4) | Amendment No. 1 to Series A-1 Convertible Preferred Stock Purchase Agreement, dated May 11, 2011 |
| 10.68(1) | Redemption Agreement, by and between MPM Acquisition Corp. and MPM Asset Management LLC, dated April 25, 2011 |
| 10.69(5) | Loan and Security Agreement, dated May 23, 2011, with General Electric Capital Corporation as agent and a lender, and Oxford Finance LLC as a lender |
| 10.70(5) | Promissory Note, dated May 23, 2011, issued by the Company to General Electric Capital Corporation in the principal amount of \$12,500,000 |
| 10.71(5) | Promissory Note, dated May 23, 2011, issued by the Company to Oxford Finance LLC in the principal amount of \$3,125,000 |
| 10.72(5) | Promissory Note, dated May 23, 2011, issued by the Company to Oxford Finance LLC in the principal amount of \$9,375,000 |
| 10.73(5) | Warrant to Purchase Shares of Series A-1 Convertible Preferred Stock, dated May 23, 2011, issued by the Company to GE Capital Equity Investments |
| 10.74(5) | Warrant to Purchase Shares of Series A-1 Convertible Preferred Stock, dated May 23, 2011, issued by the Company to Oxford Finance LLC |
| 10.75(13) | Lease by and between Broadway Hampshire Associates Limited Partnership and Radius Health, Inc. 201 Broadway Cambridge, Massachusetts, dated July 15, 2011 |

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| Exhibit No. | Description |
|--------------|--|
| 10.76(8)(13) | Change Order Form #6, dated June 20, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.77(8)(12) | Change Order Form #7, dated August 2, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.78(8)(12) | Change Order Form #8, dated July 28, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.79(8)(12) | Addendum to Change Order Form #8, dated August 16, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.80(8)(13) | Change Order Form #9, dated August 12, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.81(8)(12) | Change Order Form #10, dated October 3, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.82(14) | Radius Health, Inc. 2011 Equity Incentive Plan |
| 10.83(14) | Form of Radius Health, Inc. 2011 Equity Incentive Plan Stock Option Agreement |
| 10.84(14) | Radius Health, Inc. 2011 Equity Incentive Plan Stock Option Agreement, dated November 7, 2011, by and between the Company and Kurt C. Graves for Option No. 11-01. |
| 10.85(14) | Radius Health, Inc. 2011 Equity Incentive Plan Statutory Stock Option Agreement, dated November 7, 2011, by and between the Company and Kurt C. Graves for Option No. 11-02. |
| 10.86(3)(11) | Radius Health, Inc. 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 12, 2010, by and between the Company and Alan Auerbach for Option No. 10-01. |
| 10.87(3)(11) | Radius Health, Inc. 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 12, 2010, by and between the Company and Alan Auerbach for Option No. 10-02. |
| 16.1(4) | Letter from Raich Ende Malter & Co. LLP as to the change in certifying accountant, dated as of September 28, 2011 |
| 23.1(4) | Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm |
| 23.2(4) | Consent of Bingham McCutchen (included in Exhibit 5.1) |
| 24.1(4) | Power of Attorney |
| 101.INS(4) | XBRL Instance Document |
| 101.SCH(4) | XBRL Taxonomy Extension Schema Document |
| 101.CAL(4) | XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.LAB(4) | XBRL Taxonomy Extension Label Linkbase Document |
| 101.PRE(4) | XBRL Taxonomy Extension Presentation Linkbase Document |
| 101.DEF(4) | XBRL Taxonomy Extension Definition Linkbase Document |

(1) Incorporated by reference to the Company's Current Report on Form 8-K filed on April 29, 2011.

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- (2) Incorporated by reference to the Company's Current Report on Form 8-K filed on May 23, 2011.
- (3) Share numbers and per share prices are presented pre-Reverse Split completed by Radius Health, Inc. on May 17, 2011.
- (4) Previously Filed.
- (5) Incorporated by reference to the Company's Current Report on Form 8-K filed on May 27, 2011.
- (6) Incorporated by reference to the Company's Periodic Report on Form 10-Q/A filed on October 24, 2011.
- (7) Incorporated by reference to the Company's Current Report on Form 8-K filed on September 30, 2011.
- (8) Confidential Treatment Requested by the Registrant. Redacted Portion Filed Separately with the Commission.
- (9) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on September 30, 2011.
- (10) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on October 24, 2011.
- (11) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on November 7, 2011.
- (12) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on October 24, 2011.
- (13) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on November 8, 2011.
- (14) Incorporated by reference to the Company's Registration Statement on Form S-1/A filed on November 7, 2011.

Undertakings

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) (§ 230.424(b) of this chapter) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

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(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§ 230.424 of this chapter);

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

EXHIBIT INDEX

| Exhibit No. | Description |
|--------------------|--|
| 2.1(10) | Agreement and Plan of Merger, dated April 25, 2011 |
| 3.1(4) | Certificate of Incorporation, as amended |
| 3.2(9) | By-Laws, as amended |
| 4.1(12) | Amended and Restated Stockholders' Agreement, dated May 17, 2011, by and among the Company, as successor to Radius Health, Inc., and the Stockholders listed therein |
| 4.1.1(11) | Amendment No. 1 to Amended and Restated Stockholders' Agreement dated November 7, 2011 by and among the Company and the Stockholders listed therein. |
| 4.1.2(11) | Amendment No. 2 to Amended and Restated Stockholders' Agreement dated November 7, 2011 by and among the Company and the Stockholders listed therein. |
| 5.1(4) | Opinion of Bingham McCutchen LLP |
| 10.1(8)(12) | Clinical Trial Services Agreement and Work Statement NB-1, dated March 29, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.2(6) | Amended and Restated Stock Issuance Agreement, dated May 16, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.2.1(13) | Stock Issuance Agreement, dated March 29, 2011 by and between Radius Health, Inc. and Nordic BioScience Clinical Development VII A/S. This agreement has been superceded and replaced by The Amended and Restated Stock Issuance Agreement filed as Exhibit 10.2 hereof.(11) |
| 10.3(12) | Side Letter, dated March 29, 2011, by and between the Company, as successor to Radius Health, Inc., and Nordic BioScience Clinical Development VII A/S |
| 10.4(8)(13) | License Agreement, dated September 27, 2005, by and between the Company, as successor to Nuvios, Inc., and SCRAS SAS, on behalf of itself and its Affiliates |
| 10.5(8)(12) | Pharmaceutical Development Agreement, dated January 2, 2006, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.6(8)(13) | Amendment No. 1 to Pharmaceutical Development Agreement, dated January 1, 2007, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.7(12) | License Agreement Amendment No. 1, dated September 12, 2007, by and between the Company, as successor to Radius Health, Inc., and SCRAS SAS |
| 10.8(8)(13) | Amendment No. 2 to Pharmaceutical Development Agreement, dated January 1, 2009, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.9(8)(12) | Amendment No. 3 to Pharmaceutical Development Agreement, dated June 16, 2010, by and between the Company, as successor to Radius Health, Inc., and Beaufour Ipsen Industrie SAS |
| 10.10(11) | License Agreement Amendment No. 2, dated May 11, 2011, by and between the Company, as successor to Radius Health, Inc., and Ipsen Pharma SAS |

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| Exhibit No. | Description |
|--------------------|--|
| 10.11(11) | Series A-1 Convertible Preferred Stock Issuance Agreement, dated May 11, 2011, by and between the Company, as successor to Radius Health, Inc., and Ipsen Pharma SAS |
| 10.12(12) | Development and Manufacturing Services Agreement, dated October 16, 2007, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.13(8)(13) | Work Order No. 2, dated January 15, 2010, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.14(8)(13) | Amendment No. 3 to Work Order No.2, dated December 15, 2010, by and between the Company, as successor to Radius Health, Inc., and LONZA Sales Ltd. |
| 10.15(8)(13) | Development and Clinical Supplies Agreement, dated June 19, 2009, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.16(8)(12) | Amendment No. 1, dated December 31, 2009, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.17(8)(12) | Amendment No. 2, dated September 16, 2010, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.18(12) | Amendment No. 3, dated September 29, 2010, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.19(8)(12) | Change Order Form Amendment No. 5, dated February 4, 2011, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.20(8)(13) | Amendment No. 4, dated March 2, 2011, to the 3M Development Agreement, by and among the Company, as successor to Radius Health, Inc., and 3M Co. and 3M Innovative Properties Co. |
| 10.21(8)(13) | Laboratory Services and Confidentiality Agreement, dated March 31, 2004, by and between the Company, as successor to Nuvios, Inc., and Charles River Laboratories, Inc. |
| 10.22(12) | First Amendment to Laboratory Services and Confidentiality Agreement, dated November 7, 2008, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories, Inc. |
| 10.23(8)(13) | Letter of Payment Authorization, dated November 20, 2010, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories Preclinical Services Montréal Inc. |
| 10.24(8)(13) | Letter of Payment Authorization, dated February 7, 2011, by and between the Company, as successor to Radius Health, Inc., and Charles River Laboratories Preclinical Services Montréal Inc. |
| 10.25(8)(13) | License Agreement, dated June 29, 2006, by and between the Company, as successor to Radius Health, Inc., and Eisai Co., Ltd. |
| 10.26(11) | Series A-1 Convertible Preferred Stock Purchase Agreement, dated April 25, 2011, by and among the Company, as successor to Radius Health, Inc., and the Investors listed therein |

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| Exhibit No. | Description |
|--------------------|---|
| 10.27(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan, assumed in the Merger |
| 10.28(2)(3) | Radius Health, Inc. First Amendment to 2003 Long-Term Incentive Plan effective as of December 15, 2006, assumed in the Merger |
| 10.29(2)(3) | Radius Health, Inc. Second Amendment to 2003 Long-Term Incentive Plan effective as of March 28, 2008, assumed in the Merger |
| 10.30(2)(3) | Radius Health, Inc. Third Amendment to 2003 Long-Term Incentive Plan effective as of November 14, 2008, assumed in the Merger |
| 10.31(2) | Radius Health, Inc. 2003 Long-Term Incentive Plan Form of Stock Option Agreement |
| 10.32(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 28, 2004, by and between the Company, as successor to Nuvios, Inc., and Richard Lyttle for Option No. 04-103 |
| 10.33(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 07-08 |
| 10.34(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 08-09 |
| 10.35(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Richard Lyttle for Option No. 08-14 |
| 10.36(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated February 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 06-07 |
| 10.37(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 07-07 |
| 10.38(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 08-05 |
| 10.39(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea for Option No. 08-10 |
| 10.40(2)(3) | Radius Health, Inc. (f/k/a Nuvios, Inc.) 2003 Long-Term Incentive Plan Stock Option Agreement, dated December 16, 2003, by and between the Company, as successor to Nuvios, Inc., and Gary Hattersley for Option No. 03-001 |
| 10.41(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated February 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 06-02 |
| 10.42(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 07-06 |

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| Exhibit No. | Description |
|--------------------|---|
| 10.43(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 08-08 |
| 10.44(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Gary Hattersley for Option No. 08-13 |
| 10.45(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated July 12, 2007, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 07-09 |
| 10.46(2)(3) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated May 8, 2008, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 08-06 |
| 10.47(2) | Radius Health, Inc. 2003 Long-Term Incentive Plan Incentive Stock Option Agreement, dated December 3, 2008, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey for Option No. 08-11 |
| 10.48(2) | Employment Letter Agreement, dated July 2, 2004, by and between the Company, as successor to Nuvios, Inc., and C. Richard Edmund Lyttle |
| 10.49(2) | Employment Letter Agreement, November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Gary Hattersley |
| 10.50(2) | Employment Letter Agreement, dated January 30, 2006, by and between the Company, as successor to Radius Health, Inc., and Louis O'Dea |
| 10.51(9) | Employment Letter Agreement, dated November 15, 2006, by and between the Company, as successor to Radius Health, Inc., and Nick Harvey |
| 10.52(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Ansbert K. Gadicke |
| 10.53(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and C. Richard Edmund Lyttle |
| 10.54(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Martin Muenchbach |
| 10.55(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Jonathan Fleming |
| 10.56(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Kurt Graves |
| 10.57(2) | Indemnification Agreement, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Elizabeth Stoner |
| 10.58(2) | Indemnification Agreement, dated October 12, 2010, by and between the Company, as successor to Radius Health, Inc., and Alan Auerbach |
| 10.59(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Michael Rosenblatt, M.D. |
| 10.60(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Christopher Mirabelli |

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| Exhibit No. | Description |
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| 10.61(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Augustine Lawlor |
| 10.62(2) | Indemnification Agreement, dated November 14, 2003, by and between the Company, as successor to Nuvios, Inc., and Edward Mascioli, M.D. |
| 10.63(9) | Consent to Sublease, dated January 14, 2011, by and among the Company, as successor to Radius Health, Inc., Sonos, Inc., and Broadway/Hampshire Associates Limited Partnership |
| 10.64(9) | Sublease, dated January 14, 2011, by and between the Company, as successor to Radius Health, Inc., and Sonos, Inc. |
| 10.65(2) | Amended and Restated Warrant to Purchase Common Stock, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and SVB Financial Group |
| 10.66(2) | Warrant to Purchase Series A-1 Convertible Preferred Stock, dated May 17, 2011, by and between the Company, as successor to Radius Health, Inc., and Leerink Swann LLC |
| 10.67(4) | Amendment No. 1 to Series A-1 Convertible Preferred Stock Purchase Agreement, dated May 11, 2011 |
| 10.68(1) | Redemption Agreement, by and between MPM Acquisition Corp. and MPM Asset Management LLC, dated April 25, 2011 |
| 10.69(5) | Loan and Security Agreement, dated May 23, 2011, with General Electric Capital Corporation as agent and a lender, and Oxford Finance LLC as a lender |
| 10.70(5) | Promissory Note, dated May 23, 2011, issued by the Company to General Electric Capital Corporation in the principal amount of \$12,500,000 |
| 10.71(5) | Promissory Note, dated May 23, 2011, issued by the Company to Oxford Finance LLC in the principal amount of \$3,125,000 |
| 10.72(5) | Promissory Note, dated May 23, 2011, issued by the Company to Oxford Finance LLC in the principal amount of \$9,375,000 |
| 10.73(5) | Warrant to Purchase Shares of Series A-1 Convertible Preferred Stock, dated May 23, 2011, issued by the Company to GE Capital Equity Investments |
| 10.74(5) | Warrant to Purchase Shares of Series A-1 Convertible Preferred Stock, dated May 23, 2011, issued by the Company to Oxford Finance LLC |
| 10.75(13) | Lease by and between Broadway Hampshire Associates Limited Partnership and Radius Health, Inc. 201 Broadway Cambridge, Massachusetts, dated July 15, 2011 |
| 10.76(8)(13) | Change Order Form #6, dated June 20, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.77(8)(12) | Change Order Form #7, dated August 2, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.78(8)(12) | Change Order Form #8, dated July 28, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.79(8)(12) | Addendum to Change Order Form #8, dated August 16, 2011, to the 3M Development Agreement, by and between the Company and 3M |

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| Exhibit No. | Description |
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| 10.80(8)(13) | Change Order Form #9, dated August 12, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.81(8)(12) | Change Order Form #10, dated October 3, 2011, to the 3M Development Agreement, by and between the Company and 3M |
| 10.82(14) | Radius Health, Inc. 2011 Equity Incentive Plan |
| 10.83(14) | Form of Radius Health, Inc. 2011 Equity Incentive Plan Stock Option Agreement |
| 10.84(14) | Radius Health, Inc. 2011 Equity Incentive Plan Stock Option Agreement, dated November 7, 2011, by and between the Company and Kurt C. Graves for Option No. 11-01. |
| 10.85(14) | Radius Health, Inc. 2011 Equity Incentive Plan Statutory Stock Option Agreement, dated November 7, 2011, by and between the Company and Kurt C. Graves for Option No. 11-02. |
| 10.86(3)(11) | Radius Health, Inc. 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 12, 2010, by and between the Company and Alan Auerbach for Option No. 10-01. |
| 10.87(3)(11) | Radius Health, Inc. 2003 Long-Term Incentive Plan Stock Option Agreement, dated October 12, 2010, by and between the Company and Alan Auerbach for Option No. 10-02. |
| 16.1(4) | Letter from Raich Ende Malter & Co. LLP as to the change in certifying accountant, dated as of September 28, 2011 |
| 23.1(4) | Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm |
| 23.2(4) | Consent of Bingham McCutchen (included in Exhibit 5.1) |
| 24.1(4) | Power of Attorney |
| 101.INS(4) | XBRL Instance Document |
| 101.SCH(4) | XBRL Taxonomy Extension Schema Document |
| 101.CAL(4) | XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.LAB(4) | XBRL Taxonomy Extension Label Linkbase Document |
| 101.PRE(4) | XBRL Taxonomy Extension Presentation Linkbase Document |
| 101.DEF(4) | XBRL Taxonomy Extension Definition Linkbase Document |

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- (1) Incorporated by reference to the Company's Current Report on Form 8-K filed on April 29, 2011.
- (2) Incorporated by reference to the Company's Current Report on Form 8-K filed on May 23, 2011.
- (3) Share numbers and per share prices are presented pre-Reverse Split completed by Radius Health, Inc. on May 17, 2011.
- (4) Previously Filed.
- (5) Incorporated by reference to the Company's Current Report on Form 8-K filed on May 27, 2011.
- (6) Incorporated by reference to the Company's Periodic Report on Form 10-Q/A filed on October 24, 2011.
- (7) Incorporated by reference to the Company's Current Report on Form 8-K filed on September 30, 2011.

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- (8) Confidential Treatment Requested by the Registrant. Redacted Portion Filed Separately with the Commission.
- (9) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on September 30, 2011.
- (10) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on October 24, 2011.
- (11) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on November 7, 2011.
- (12) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on October 24, 2011.
- (13) Incorporated by reference to the Company's Current Report on Form 8-K/A filed on November 8, 2011.
- (14) Incorporated by reference to the Company's Registration Statement on Form S-1/A filed on November 7, 2011.

QuickLinks

EXPLANATION OF AMENDMENT

PART II INFORMATION NOT REQUIRED IN PROSPECTUS

SIGNATURES

SIGNATURES AND POWER OF ATTORNEY

EXHIBIT INDEX