

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

SCHEDULE 13G

Under the Securities Exchange Act of 1934

(Amendment No.)*

Rhythm Pharmaceutica

(Name of Issuer)

Common Stock

(Title of Class of Securities)

76243J105

(CUSIP Number)

December 31, 2019

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

Rule 13d-1(c)

Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 (the "Act") or otherwise subject to the liabilities of that section of the Act, but shall be subject to all other provisions of the Act (however, see the Notes.)

1. NAMES OF REPORTING PERSONS

Wellington Management Group LLP

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Massachusetts

| | | |
|---------------|-----------------------------|-----------|
| NUMBER OF | 5. SOLE VOTING POWER | 0 |
| SHARES | 6. SHARED VOTING POWER | 3,082,138 |
| BENEFICIALLY | 7. SOLE DISPOSITIVE POWER | 0 |
| OWNED BY EACH | 8. SHARED DISPOSITIVE POWER | 3,320,751 |
| REPORTING | | |
| PERSON WITH | | |

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

3,320,751

10. CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

7.56%

12. TYPE OF REPORTING PERSON

HC

1. NAMES OF REPORTING PERSONS

Wellington Group Holdings LLP

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Delaware

| | | |
|---------------|-----------------------------|-----------|
| NUMBER OF | 5. SOLE VOTING POWER | 0 |
| SHARES | 6. SHARED VOTING POWER | 3,082,138 |
| BENEFICIALLY | 7. SOLE DISPOSITIVE POWER | 0 |
| OWNED BY EACH | 8. SHARED DISPOSITIVE POWER | 3,320,751 |
| REPORTING | | |
| PERSON WITH | | |

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

3,320,751

10. CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

7.56%

12. TYPE OF REPORTING PERSON

HC

1. NAMES OF REPORTING PERSONS

Wellington Investment Advisors Holdings LLP

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Delaware

| | | |
|---------------|-----------------------------|-----------|
| NUMBER OF | 5. SOLE VOTING POWER | 0 |
| SHARES | 6. SHARED VOTING POWER | 3,082,138 |
| BENEFICIALLY | 7. SOLE DISPOSITIVE POWER | 0 |
| OWNED BY EACH | 8. SHARED DISPOSITIVE POWER | 3,320,751 |
| REPORTING | | |
| PERSON WITH | | |

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

3,320,751

10. CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

7.56%

12. TYPE OF REPORTING PERSON

HC

1. NAMES OF REPORTING PERSONS

Wellington Management Company LLP

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Delaware

| | | |
|---------------|-----------------------------|-----------|
| NUMBER OF | 5. SOLE VOTING POWER | 0 |
| SHARES | 6. SHARED VOTING POWER | 3,026,983 |
| BENEFICIALLY | 7. SOLE DISPOSITIVE POWER | 0 |
| OWNED BY EACH | 8. SHARED DISPOSITIVE POWER | 3,186,449 |
| REPORTING | | |
| PERSON WITH | | |

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

3,186,449

10. CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

7.25%

12. TYPE OF REPORTING PERSON

IA

Item 1.

- (a) **Name of Issuer**
Rhythm Pharmaceutica
- (b) **Address of Issuer's Principal Executive Offices**
222 Berkeley Street
12th Floor
Boston, MA 02116

Item 2.

- (a) **Name of Person Filing**
Wellington Management Group LLP
Wellington Group Holdings LLP
Wellington Investment Advisors Holdings LLP
Wellington Management Company LLP
- (b) **Address of Principal Business Office or, if None, Residence**
c/o Wellington Management Company LLP
280 Congress Street
Boston, MA 02210
- (c) **Citizenship**
Wellington Management Group LLP - Massachusetts
Wellington Group Holdings LLP - Delaware
Wellington Investment Advisors Holdings LLP - Delaware
Wellington Management Company LLP - Delaware
- (d) **Title of Class of Securities**
Common Stock
- (e) **CUSIP Number**
76243J105

Item 3. If This Statement is Filed Pursuant to Rule 13d-1(b), or 13d-2(b) or (c), Check Whether the Person Filing is a:

- (a) Broker or dealer registered under Section 15 of the Act (15 U.S.C. 78o).
- (b) Bank as defined in Section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c) Insurance Company as defined in Section 3(a)(19) of the Act (15 U.S.C. 78c).
- (d) Investment Company registered under Section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).
- (e) An investment adviser in accordance with Rule 240.13d-1(b)(1)(ii)(E); *
- (f) An employee benefit plan or endowment fund in accordance with Rule 240.13d-1(b)(1)(ii)(F);
- (g) A parent holding company or control person in accordance with Rule 240.13d-1(b)(1)(ii)(G);
- (h) A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i) A church plan that is excluded from the definition of an investment company under Section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j) Group, in accordance with Rule 240.13d-1(b)(1)(ii)(J).

If this statement is filed pursuant to Rule 13d-1(c), check this box

Wellington Management Group LLP - HC
Wellington Group Holdings LLP - HC
Wellington Investment Advisors Holdings LLP - HC
Wellington Management Company LLP - IA

Item 4. Ownership.

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

(a) Amount Beneficially Owned:

See the responses to Item 9 on the attached cover pages.

(b) Percent of Class:

See the responses to Item 11 on the attached cover pages.

(c) Number of shares as to which such person has:

- | | |
|--|--|
| (i) sole power to vote or to direct the vote | 0 |
| (ii) shared power to vote or to direct the vote | See the responses to Item 6 on the attached cover pages. |
| (iii) sole power to dispose or to direct the disposition of | 0 |
| (iv) shared power to dispose or to direct the disposition of | See the responses to Item 8 on the attached cover pages. |

Item 5. Ownership of Five Percent or Less of Class.

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following: []

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

The securities as to which this Schedule is filed are owned of record by clients of one or more investment advisers identified in Exhibit A directly or indirectly owned by Wellington Management Group LLP. Those clients have the right to receive, or the power to direct the receipt of, dividends from, or the proceeds from the sale of, such securities. No such client is known to have such right or power with respect to more than five percent of this class of securities, except as follows:

Not Applicable.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company.

See attached Exhibit A.

Item 8. Identification and Classification of Members of the Group.

Not Applicable.

Item 9. Notice of Dissolution of Group.

Not Applicable.

Item 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

By: Wellington Management Group LLP

By: /s/ James Fricano
Name: James Fricano
Title: Authorized Person
Date: February 14, 2020

By: Wellington Group Holdings LLP
By: /s/ James Fricano
Name: James Fricano
Title: Authorized Person
Date: February 14, 2020

By: Wellington Investment Advisors Holdings
LLP
By: /s/ James Fricano
Name: James Fricano
Title: Authorized Person
Date: February 14, 2020

By: Wellington Management Company LLP
By: /s/ James Fricano
Name: James Fricano
Title: Authorized Person
Date: February 14, 2020

Exhibit A

Pursuant to the instructions in Item 7 of Schedule 13G, the following lists the identity and Item 3 classification of each relevant entity that beneficially owns shares of the security class being reported on this Schedule 13G.

Wellington Group Holdings LLP – HC
Wellington Investment Advisors LLP – HC
Wellington Management Global Holdings, Ltd. - HC

One or more of the following investment advisers (the “Wellington Investment Advisers”):

Wellington Management Company LLP – IA
Wellington Management Canada LLC – IA
Wellington Management Singapore Pte Ltd – IA
Wellington Management Hong Kong Ltd – IA
Wellington Management International Ltd – IA
Wellington Management Japan Pte Ltd – IA
Wellington Management Australia Pty Ltd - IA

The securities as to which this Schedule is filed by Wellington Management Group LLP, as parent holding company of certain holding companies and the Wellington Investment Advisers, are owned of record by clients of the Wellington Investment Advisers. Wellington Investment Advisers Holdings LLP controls directly, or indirectly through Wellington Management Global Holdings, Ltd., the Wellington Investment Advisers. Wellington Investment Advisers Holdings LLP is owned by Wellington Group Holdings LLP. Wellington Group Holdings LLP is owned by Wellington Management Group LLP.

EXHIBIT B

JOINT FILING AGREEMENT

The undersigned hereby agree that this Schedule 13G (the "Schedule 13G") with respect to the common stock of Rhythm Pharmaceutica is, and any additional amendment thereto signed by each of the undersigned shall be, filed on behalf of each undersigned pursuant to and in accordance with the provisions of 13d-1(k) under the Securities Exchange Act of 1934, as amended, and that all subsequent amendments to the Schedule 13G shall be filed on behalf of each of the undersigned without the necessity of filing additional joint filing agreements. The undersigned acknowledge that each shall be responsible for the timely filing of such amendments, and for the completeness and accuracy of the information concerning it contained therein, but shall not be responsible for the completeness and accuracy of the information concerning the other, except to the extent that it knows or has reason to believe that such information is inaccurate. It is understood and agreed that the joint filing of the Schedule 13G shall not be construed as an admission that the persons named herein constitute a group for purposes of Regulation 13D-G of the Securities Exchange Act of 1934, nor is a joint venture for purposes of the Investment Company Act of 1940.

By: Wellington Management Group LLP

By: /s/ James Fricano

Name: James Fricano

Title: Authorized Person

Date: February 14, 2020

By: Wellington Group Holdings LLP

By: /s/ James Fricano

Name: James Fricano

Title: Authorized Person

Date: February 14, 2020

By: Wellington Investment Advisers Holdings
LLP

By: /s/ James Fricano

Name: James Fricano

Title: Authorized Person

Date: February 14, 2020

By: Wellington Management Company LLP

By: /s/ James Fricano

Name: James Fricano

Title: Authorized Person

Date: February 14, 2020