

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Perseus-Soros BioPharmaceutical Fund, LP

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3 SEC USE ONLY

4 CITIZENSHIP OR PLACE OF ORGANIZATION

Delaware

5 SOLE VOTING POWER

148,780

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6

SHARED VOTING POWER

-0-

7

SOLE DISPOSITIVE POWER

148,780

8

SHARED DISPOSITIVE POWER

-0-

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

11

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

1.1%

12 TYPE OF REPORTING PERSON

PN

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Perseus-Soros Partners, LLC

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a) O

(b) X

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

5 SOLE VOTING POWER

148,780

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6 SHARED VOTING POWER

-0-

7

SOLE DISPOSITIVE POWER

148,780

8

SHARED DISPOSITIVE POWER

-0-

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

O

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

1.1%

12 TYPE OF REPORTING PERSON

OO

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Perseus BioTech Fund Partners, LLC

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

5 SOLE VOTING POWER

-0-

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6

SHARED VOTING POWER

148,780

7

SOLE DISPOSITIVE POWER

-0-

8

SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

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

1.1%

12 TYPE OF REPORTING PERSON

OO

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

SFM Participation, L.P.

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a) O

(b) X

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

5 SOLE VOTING POWER

-0-

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

O

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

1.1%

12 TYPE OF REPORTING PERSON

PN

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

SFM AH LLC

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a) O

(b) X

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

5 SOLE VOTING POWER

-0-

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

O

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

1.1%

12 TYPE OF REPORTING PERSON

00

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Perseuspur, L.L.C.

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a) O

(b) X

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

5 SOLE VOTING POWER

-0-

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

O

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

1.1%

12 TYPE OF REPORTING PERSON*

00

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Frank H. Pearl (in the capacity described herein)

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3 SEC USE ONLY

4 CITIZENSHIP OR PLACE OF ORGANIZATION

United States

5 SOLE VOTING POWER

-0-

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

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

1.1%

12 TYPE OF REPORTING PERSON

IN

Edgar Filing: Cardiovascular Systems Inc - Form SC 13G/A

CUSIP No. 14161906
SCHEDULE 13G

Page 9 of 19 Pages

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

George Soros (in the capacity described herein)

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a)

(b)

3 SEC USE ONLY

4 CITIZENSHIP OR PLACE OF ORGANIZATION

United States

5 SOLE VOTING POWER

-0-

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

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

1.1%

12 TYPE OF REPORTING PERSON

IA

1 NAME OF REPORTING PERSON S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON

Soros Fund Management LLC

2 CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(a) O

(b) X

3 SEC USE ONLY

4 CITENZSHIP OR PLACE OF ORGANIZATION

Delaware

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON

5 SOLE VOTING POWER

-0-

6 SHARED VOTING POWER

148,780

7 SOLE DISPOSITIVE POWER

-0-

8 SHARED DISPOSITIVE POWER

148,780

9 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

148,780

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

O

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

1.1%

12 TYPE OF REPORTING PERSON

OO, IA

Item 1. (a) Name of Issuer

Cardiovascular Systems, Inc. (f/k/a Replidyne, Inc.) (the "Company").

(b) Address of Issuer's Principal Executive Offices

651 Campus Drive

St. Paul, MN 55112

Item 2. (a) Names of Persons Filing

This Statement is being filed on behalf of each of the following persons (collectively, the "Reporting Persons")

- (i) Perseus-Soros BioPharmaceutical Fund, LP, a Delaware limited partnership ("Perseus-Soros");
 - (ii) Perseus-Soros Partners, LLC, a Delaware limited liability company ("PSP GP" and general partner of Perseus-Soros);
 - (iii) Perseus BioTech Fund Partners, LLC, a Delaware limited liability company ("PBFP Partners" and managing member of PSP GP);
 - (iv) SFM Participation, L.P., a Delaware limited partnership ("SFM Participation" and managing member of PSP GP);
 - (v) SFM AH LLC, a Delaware limited liability company ("SFM AH" and general partner of SFM Participation);
 - (vi) Perseuspur, L.L.C., a Delaware limited liability company ("Perseuspur" and managing member of PBFP Partners);
 - (vii) Mr. Frank H. Pearl ("Mr. Pearl" and managing member of Perseuspur);
 - (viii) Mr. George Soros ("Mr. Soros" and Chairman of SFM LLC); and
 - (ix) Soros Fund Management LLC, a Delaware limited liability company ("SFM LLC" and the sole managing member of SFM AH).
-

(b) Address of Principal Business Office

The address of the principal business offices of (i) Perseus-Soros and (ii) PSP GP is 888 Seventh Avenue, 30th Floor, New York, NY 10106.

The address of the principal business offices of (i) PBFP Partners, (ii) Perseuspur and (iii) Mr. Pearl is 2099 Pennsylvania Ave., N.W., Suite 900, Washington, D.C. 20006.

The address of the principal business offices of (i) SFM Participation, (ii) SFM AH, (iii) SFM LLC and (iv) Mr. Soros is 888 Seventh Avenue, 33rd Floor, New York, NY 10106.

(c) Citizenship

- (i) Perseus-Soros – a Delaware limited partnership
- (ii) PSP GP – a Delaware limited liability company
- (iii) PBFP Partners – a Delaware limited liability company
- (iv) SFM Participation – a Delaware limited partnership
- (v) SFM AH – a Delaware limited liability company
- (vi) Perseuspur – a Delaware limited liability company
- (vii) Mr. Pearl – United States
- (viii) Mr. Soros – United States
- (ix) SFM LLC – a Delaware limited liability company

(d) Title of Class of Securities

Common Stock, par value \$0.001 per share (the “Common Stock” or “Shares”)

(e) CUSIP Number

14161906

Information contained herein concerning SFM Participation, SFM AH, SFM LLC and Mr. Soros has been provided by SFM LLC. Perseus-Soros, PSP GP, PBFP Partners, Perseuspur and Mr. Pearl assume no responsibility for such information. Information contained herein concerning PBFP Partners, Perseuspur and Mr. Pearl has been provided by each such Reporting Person. Perseus-Soros, PSP GP, SFM Participation, SFM AH, SFM LLC and Mr. Soros assume no responsibility for such information.

Item 3. This statement is not being filed pursuant to either Rule 13d-1(b) or 13d-2(b) or (c).

Item 4. Ownership.

(a) Amount Beneficially Owned:

As of February 25, 2009, each of the Reporting Persons may be deemed to beneficially own 148,780 Shares.

(b) Percentage Owned:

Based on calculations made in accordance with Rule 13d-3(d), and there being 13,738,660 Shares outstanding as of March 10, 2009, each of the Reporting Persons may be deemed to beneficially own approximately 1.1% of the outstanding Common Stock, as of February 25, 2009.

(c) Number of Shares as to Which Such Person Has:

(i) Each of Perseus-Soros and PSP GP may be deemed to have sole power to direct the voting and disposition of the 148,780 Shares beneficially owned by Perseus-Soros.

(ii) By virtue of the relationships between and among the Reporting Persons as described in Item 2, each of the Reporting Persons other than Perseus-Soros and PSP GP may be deemed to share the power to direct the voting and disposition of 148,780 Shares beneficially owned by Perseus-Soros.

Item 5. Ownership of Five Percent or Less of a 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 box .

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

Not applicable.

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

Not applicable.

Item 8. Identification and Classification of Members of the Group

Not applicable.

Item 9. Notice of Dissolution of Group

Not applicable.

Item 10. Certification

Not applicable.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

SIGNATURES

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

Dated March 17, 2009

PERSEUS-SOROS BIOPHARMACEUTICAL FUND, LP

By: Perseus-Soros Partners, LLC
General Partner

By: SFM Participation, L.P.
Managing Member

By: SFM AH LLC
General Partner

By: Soros Fund Management LLC
Managing Member

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Assistant General Counsel

PERSEUS-SOROS PARTNERS, LLC

By: SFM Participation, L.P.
Managing Member

By: SFM AH LLC
General Partner

By: Soros Fund Management LLC
Managing Member

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Assistant General Counsel

PERSEUS BIOTECH FUND PARTNERS, LLC

By: Perseuspur, L.L.C.
Managing Member

By: Frank H. Pearl
Managing Member

By: /s/ Kenneth M. Socha
Name: Kenneth M. Socha

Title: Attorney-in-Fact for Mr. Pearl

SFM PARTICIPATION, L.P.

By: SFM AH LLC
General Partner

By: Soros Fund Management LLC
Managing Member

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Assistant General Counsel

SFM AH LLC

By: Soros Fund Management LLC
Managing Member

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Assistant General Counsel

PERSEUSPUR, L.L.C.

By: Frank H. Pearl
Managing Member

By: /s/ Kenneth M. Socha
Name: Kenneth M. Socha

Title: Attorney-in-Fact for Mr. Pearl

MR. FRANK H. PEARL

By: /s/ Kenneth M. Socha
Name: Kenneth M. Socha

Title: Attorney-in-Fact for Mr. Pearl

MR. GEORGE SOROS

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Attorney-in-Fact for Mr. Soros

SOROS FUND MANAGEMENT LLC

By: /s/ Jay Schoenfarber
Name: Jay Schoenfarber

Title: Assistant General Counsel

Exhibit Index

- Exhibit 1. Joint Filing Agreement as required by Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended (previously filed).
- Exhibit 2. Power of Attorney, dated June 16, 2005 appointing each of Armando T. Belly, Jodye Anzalotta, Maryann Canfield, Jay Schoenfarber and Robert Soros as Attorney-In-Fact for George Soros (previously filed).
- Exhibit 3. Power of Attorney, dated December 6, 2007, appointing each of Kenneth M. Socha and Teresa Y. Bernstein as Attorney-in-Fact for Frank H. Pearl (previously filed).