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

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#### **SCHEDULE 13G**

Under the Securities Exchange Act of 1934

(Amendment No)*
Zafgen, Inc.
(Name of Issuer)
Common Stock, \$0.0001 par value per share
(Title of Class of Securities)
98885E103
(CUSIP Number)
December 31, 2014
(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 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 ("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).

<sup>\*</sup>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.

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CUSIP No. 98885E103	13G	Page 2 of 12

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#### Item 1(a). Name of Issuer:

Zafgen, Inc.

#### Item 1(b). Address of Issuer's Principal Executive Offices:

175 Portland Street, 4th Floor, Boston, MA 02114.

#### Item 2(a). Names of Persons Filing:

This statement is being filed by Third Rock Ventures, L.P. ("TRV"); Third Rock Ventures GP, L.P. ("TRV GP"), which is the sole general partner of TRV; TRV GP, LLC ("TRV GP LLC"), which is the sole general partner of TRV GP; and Mark Levin ("Levin"), Kevin Starr ("Starr"), and Robert Tepper ("Tepper"), each a managing member of TRV GP LLC. TRV, TRV GP, TRV GP LLC, Levin, Starr, and Tepper are sometimes referred to collectively herein as the "Reporting Persons".

#### Item 2(b). Address of Principal Business Office or, if none, Residence:

The address of the principal business office of each Reporting Person is Third Rock Ventures, LLC, 29 Newbury Street, 3<sup>rd</sup> Floor, Boston, MA 02116.

#### Item 2(c). <u>Citizenship:</u>

Each of TRV and TRV GP is a Delaware limited partnership. TRV GP LLC is a Delaware limited liability company. Levin, Tepper, and Starr are United States citizens.

## Item 2(d). <u>Title of Class of Securities:</u>

Common Stock, \$0.0001 par value ("Common Stock").

## Item 2(e). <u>CUSIP Number:</u>

98885E103.

#### Item 3. If this statement is filed pursuant to §§ 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:

Not applicable.

#### Item 4. Ownership.

(a) Amount Beneficially Owned: TRV is the record owner of 5,602,045 shares of Common Stock as of December 31, 2014 (the "Shares"). As the sole general partner of TRV, TRV GP may be deemed to own beneficially the Shares. As the sole general partner of TRV GP, TRV GP LLC likewise may be deemed to own beneficially the Shares. As a managing member of TRV GP LLC, each of Levin, Starr, and Tepper also may be deemed to own beneficially the Shares.

As of December 31, 2014, Starr is the record owner of 8,108 shares of Common Stock (the "Starr Shares"). As a result, Starr may be deemed to own beneficially the Starr Shares in addition to the Shares for a total of 5,610,153 shares of Common Stock.

- (b) Percent of Class: See Line 11 of cover sheets. The percentages set forth on the cover sheet for each Reporting Person are calculated based on 22,707,410 shares of Common Stock reported by the Issuer to be outstanding as of November 11, 2014 on Form 10-Q as filed with the Securities and Exchange Commission on November 13, 2014.
- (c) Number of shares as to which such person has:
  - (i) sole power to vote or to direct the vote: See Line 5 of cover sheets.
  - (ii) shared power to vote or to direct the vote: See Line 6 of cover sheets.
  - (iii) sole power to dispose or to direct the disposition of: See Line 7 of cover sheets.
  - (iv) shared power to dispose or to direct the disposition of: See Line 8 of cover sheets.

Each Reporting Person disclaims beneficial ownership of such Securities except for the shares, if any, such Reporting Person holds of record.

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

Not applicable.

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

Not applicable.

# Item 7. <u>Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company or Control Person.</u>

Not applicable.

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

Not applicable. The Reporting Persons expressly disclaim membership in a "group" as used in Rule 13d-5(b).

#### Item 9. <u>Notice of Dissolution of Group.</u>

Not applicable.

#### Item 10. <u>Certification.</u>

Not applicable. This Schedule 13G is not filed pursuant to Rule 13d-1(b) or Rule 13d-1(c).

#### Material to be Filed as Exhibits.

Exhibit 1 – Agreement regarding filing of joint Schedule 13G.

Exhibit 2 – Power of Attorney regarding filings under the Securities Exchange Act of 1934, as amended.

# **SIGNATURE**

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

February 13, 2015 Date: THIRD ROCK VENTURES, L.P. By: THIRD ROCK VENTURES GP, L.P. General Partner By: TRV GP, LLC General Partner Kevin Gillis Chief Financial Officer THIRD ROCK VENTURES GP, L.P. TRV GP, LLC General Partner By: Kevin Gillis Chief Financial Officer TRV GP, LLC By: Kevin Gillis Chief Financial Officer Mark Levin Kevin P. Starr

Robert I. Tepper

\*By: <u>/s/ Kevin Gillis</u>
Kevin Gillis
As attorney-in-fact

This Schedule 13G was executed by Kevin Gillis on behalf of the individuals listed above pursuant to a Power of Attomey, a copy of which is attached as Exhibit 2.

EXHIBIT 1

# <u>AGREEMENT</u>

Pursuant to Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, the undersigned hereby agree that only one statement containing the information required by Schedule 13G need be filed with respect to the ownership by each of the undersigned of shares of stock of Zafgen, Inc.

EXECUTED this 13th day of February, 2015.

THIRD	ROCK V	ENTURES, L.P.	
Ву:	THIRD ROCK VENTURES GP, L.P. General Partner		
	By:	TRV GP, LLC General Partner  By:   Kevin Gillis Chief Financial Officer	
THIRD	ROCK V	ENTURES GP, L.P.	
By:	TRV GI General		
	By:	* Kevin Gillis Chief Financial Officer	
TRV GI	P, LLC		
Ву:	Kevin C Chief Fi	* iillis nancial Officer	
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Mark L	evin		
Kevin P	* P. Starr		
Robert	* I. Tepper		
		*By: <u>/s/ Kevin Gillis</u> Kevin Gillis As attorney-in-fact	

This Agreement was executed by Kevin Gillis on behalf of the individual listed above pursuant to a Power of Attorney, a copy of which is attached as Exhibit 2.

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**EXHIBIT 2** 

#### POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that the undersigned hereby constitutes and appoints Kevin Gillis his true and lawful attorney-in-fact, with full power of substitution, to sign any and all instruments, certificates and documents that may be necessary, desirable or appropriate to be executed on behalf of himself as an individual or in his capacity as a direct or indirect general partner, director, officer, member or manager of any partnership, corporation or limited liability company, pursuant to section 13 or 16 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and any and all regulations promulgated thereunder, and to file the same, with all exhibits thereto, and any other documents in connection therewith, with the Securities and Exchange Commission, and with any other entity when and if such is mandated by the Exchange Act or by the Financial Industry Regulatory Authority, granting unto said attorney-in-fact full power and authority to do and perform each and every act and thing necessary, desirable or appropriate, fully to all intents and purposes as he might or could do in person, thereby ratifying and confirming all that said attorney-in-fact, or his substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, this Power of Attorney has been signed as of the 16th day of January, 2014.

/s/ Mark Levin Mark Levin

/s/ Kevin P. Starr Kevin P. Starr

/s/ Robert I. Tepper

Robert I. Tepper