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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934
Date of Report (Date of earliest event reported): May 12, 2016

Mirna Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**001-37566**	**26-1824804**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification Number)**

2150 Woodward Street, Suite 100
Austin, TX 78744
(Address of principal executive offices, including Zip Code)

Registrant's telephone number, including area code: (512) 901-0900

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

¨ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
¨ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
¨ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
¨ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 2.02 Results of Operations and Financial Condition.

On May 12, 2016, Mirna Therapeutics, Inc. ("Mirna") issued a press release announcing its financial results for the three months ended March 31, 2016. The press release is attached hereto as Exhibit 99.1.

The information in this Item 2.02 of this Form 8-K and the Exhibit 99.1 attached hereto shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that Section or Sections 11 and 12(a)(2) of the Securities Act of 1933, as amended (the "Securities Act"), or incorporated by reference in any filing of Mirna under the Securities Act or the Exchange Act, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

Item 9.01 Financial Statements and Exhibits.

Exhibit No.	Description
99.1	Press release dated May 12, 2016.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

MIRNA THERAPEUTICS, INC.

Date: May 12, 2016

By: /s/ Alan Fuhrman
Alan Fuhrman
Chief Financial Officer

Exhibit 99.1

Mirna Therapeutics Reports First Quarter 2016 Financial Results and Program Updates

AUSTIN, TX—May 12, 2016—Mirna Therapeutics, Inc. (Nasdaq: MIRN), a clinical stage biopharmaceutical company developing a broad pipeline of microRNA-based oncology therapeutics, today reported financial results for the first quarter of 2016 and provided an update on recent developments.

“During the first quarter we continued to make progress advancing our lead product candidate MRX34, the first microRNA therapeutic in clinical development in cancer,” commented Paul Lammers, M.D., M.Sc., Mirna's President and CEO. “To date, MRX34 has produced clinically significant responses in patients with various types of late-stage cancers, demonstrating its ability to affect multiple pathways involved in cancer growth and immune evasion. We are continuing to advance MRX34 toward Phase 2 in late 2016 and also pushing ahead with our preclinical program to study its potential in combination with other cancer drugs.”

Dr. Lammers continued, “On the corporate front, we were pleased to welcome Peter Greenleaf, Chief Executive Officer of Sucampo Pharmaceuticals, to our Board of Directors, and Dr. Vincent J. O’Neill as our new Chief Medical Officer. We look forward to their unique contributions as we advance our clinical development strategy in the promising new field of microRNA therapeutics.”

FIRST QUARTER AND MRX34 PROGRAM UPDATES

- **Update from MRX34 Phase 1 trial planned at ASCO.** The Company expects to present additional clinical data from the ongoing Phase 1 trial at the American Society of Clinical Oncology (ASCO) annual meeting in early June. To date, MRX34 has demonstrated compelling clinical results as a single agent therapy, including confirmed partial responses in patients with renal cell carcinoma, acral melanoma, and hepatocellular carcinoma. Additionally, several patients with solid tumors have achieved long-term stable disease during treatment with MRX34. These responses were observed in cancer patients with advanced Stage 4 metastatic disease, whose cancer had progressed after previously receiving multiple rounds of therapy. Top-line data from this study are expected in 2017.

- **Phase 1b translational medicine trial on track to begin in late 2016.** This study will include serial tumor biopsies and is intended to develop deeper insights into the mechanism of action of MRX34 in melanoma patients and identify potential biomarkers of drug activity and treatment response.

- **MRX34 expected to begin Phase 2 by end of 2016.** Studies in renal cell carcinoma and melanoma patients are being planned based on the responses observed to date in the ongoing Phase 1 trial, and on the high unmet medical need despite the availability of new therapies.

- **Preclinical studies ongoing of combination regimens with potential to enhance effectiveness of standard cancer therapies**. At the American Association for Cancer Research (AACR) in April, Mirna researchers presented *in vitro* findings that demonstrated the synergistic anticancer effects between MRX34 and platinum and other commonly used cytotoxic chemotherapy drugs across a range of non-small cell lung cancer (NSCLC) cell lines. Synergistic anticancer effects were also shown between MRX34 and tyrosine kinase inhibitors. These results suggest a broad potential for combination of MRX34 with other standard of care drug classes.

  Preclinical studies are also ongoing to support selection of a second microRNA product candidate from the Company's pipeline, with an Investigational New Drug (IND) application planned in late 2017.

CORPORATE UPDATES

- **Further strengthened management with** the appointments of Peter Greenleaf to the Company's Board of Directors and Dr. Vincent J. O'Neill to the role of Chief Medical Officer. Mr. Greenleaf, an industry veteran with over 20 years of experience in drug development and commercialization, including three years as President of Medimmune, currently serves as the Chief Executive Officer of Sucampo Pharmaceuticals. Dr. O'Neill is a medical oncologist with 15 years of therapeutic and diagnostic product development experience, and has held senior leadership roles at several global pharmaceutical companies, including Sanofi, Genentech and GlaxoSmithKline.

FIRST QUARTER 2016 FINANCIAL RESULTS

- **Cash Position and Guidance**: Cash, cash equivalents, and marketable securities totaled $80.6 million as of March 31, 2016, compared to $89.7 million as of December 31, 2015. The Company has no debt. Based on the current operating plan, the Company expects that current cash resources will be sufficient to meet operating requirements into 2018.

- **Research and Development Expenses**: Research and development expenses were approximately $4.5 million for the three months ended March 31, 2016 as compared to $3.4 million for the same period in 2015. The increase was primarily attributable to increased employee compensation expense due to a higher headcount to support the advancement of the Company's clinical and preclinical development programs, as well as increases in manufacturing, clinical, and intellectual property costs.

- **General and Administrative Expenses**: General and administrative expenses were approximately $2.1 million for the three months ended March 31, 2016 as compared to approximately $0.9 million for the same period in 2015. The increase in general and administrative expenses was primarily attributable to increased employee compensation expense due to a higher headcount and higher outside professional and consulting costs, the majority of which were costs to comply with public company operating and reporting requirements.

- **Net Loss:** Net loss was approximately $6.6 million for the first quarter of 2016 compared to $4.3 million in the comparable period in 2015. The results included non-cash, stock-based compensation charges of approximately $447,000 in the three months ended March 31, 2016 and approximately $134,000 in the same period in 2015.

About Mirna Therapeutics, Inc.

Mirna is a clinical stage biopharmaceutical company developing a broad pipeline of microRNA-based oncology therapeutics and is the first to establish clinical proof-of-concept for a microRNA replacement therapy for cancer. Mirna's lead product candidate, MRX34, a mimic of naturally occurring microRNA-34 (miR-34), is currently being studied in a Phase 1 clinical trial in patients with primary liver cancer, advanced solid tumors and hematological malignancies. miR-34 is one of the most widely published microRNAs and is considered a key regulator of multiple oncogenes across key oncogenic pathways, with the capacity to regulate more than 30 different oncogenes and repress the immune checkpoint signaling molecule PD-L1. The potential capacity to simultaneously affect multiple pathways and processes that are critical to cancer cell viability may make mimics of tumor suppressor microRNAs potent anti-cancer agents and less susceptible to drug resistance. Mirna plans to develop MRX34 as a monotherapy and in combination with other therapeutic modalities, such as targeted therapies and immuno-oncology agents. The Company was founded in 2007 and is located in Austin, Texas.

For more information, visit www.mirnarx.com.

Forward-Looking Statements

To the extent that statements contained in this press release are not descriptions of historical facts regarding Mirna, they are forward-looking statements reflecting the current beliefs and expectations of management made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, including statements regarding our pre-clinical and clinical activity, including regarding our current or potential Phase 1, 1b and 2 studies of MRX34, and the selection of a second product candidate; and our beliefs regarding the sufficiency of our current cash resources. Such forward-looking statements involve substantial risks and uncertainties that could cause our clinical development program, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the clinical drug development process, including the outcomes of clinical trials, the regulatory approval process, our substantial dependence on MRX34, our commercialization plans and efforts and other matters that could affect the availability or commercial potential of our product candidates. We undertake no obligation to update or revise any forward-looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to our business in general, see our Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission (SEC) on March 30, 2016 and our Quarterly Report on Form 10-Q, expected to be filed with the SEC on or about May 12, 2016.

Mirna Therapeutics, Inc.
Condensed Balance Sheets
(in thousands, except per share data)

	March 31, 2016 (unaudited)	December 31, 2015
Assets		
Current Assets:		
Cash and cash equivalents	$ 52,875	$ 89,713
Marketable securities	27,713	—
Grant reimbursement and other receivables	168	36
Prepaid expenses and other current assets	853	793
Total current assets	81,609	90,542
Property and equipment, net	516	375
Total assets	$ 82,125	$ 90,917
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable	$ 1,239	$ 3,687
Accrued expenses	1,985	2,214
Total liabilities	3,224	5,901
Commitments and contingencies		
Stockholders' Equity (Deficit):		
Preferred stock, $0.001 par value, 5,000,000 shares authorized at March 31, 2016 and December 31, 2015; 0 shares outstanding at March 31, 2016 and December 31, 2015	—	—
Common stock, $0.001 par value; 250,000,000 shares authorized at March 31, 2016 and December 31, 2015; 20,830,555 shares issued and outstanding at March 31, 2016 and December 31, 2015	21	21
Additional paid in capital	161,965	161,518
Accumulated other comprehensive income	9	—
Accumulated deficit	(83,094)	(76,523)
Total stockholders' equity	78,901	85,016
Total liabilities and stockholders' equity	$ 82,125	$ 90,917

Mirna Therapeutics, Inc.
Condensed Statements of Operations and Comprehensive Loss (unaudited)
(in thousands, except per share data)

	Three Months Ended March 31,	
	2016	2015
Operating expenses:		
Research and development	$ 4,523	$ 3,402
General and administrative	2,130	877
Total operating expenses	6,653	4,279
Other income:		
Interest income	82	—
Total other income	82	—
Net loss	$ (6,571)	$ (4,279)
Less: Accretion and dividends on convertible preferred stock	—	(1,118)
Net loss attributable to common stockholders	$ (6,571)	$ (5,397)

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Source: Mirna Therapeutics, Inc.