January 5, 2018

Molecular Templates Provides Corporate Update and Outlines 2018 Milestones

Takeda Nominated Two Targets Under Research Collaboration in Dec. 2017

Updated MT-3724 Clinical Results Expected in 1H18

At Least Two New MTEM Products to Enter the Clinic in 2018

AUSTIN, Texas, Jan. 05, 2018 (GLOBE NEWSWIRE) -- Molecular Templates, Inc., (Nasdaq:MTEM) a clinical stage biopharmaceutical company focused on the discovery and development of Engineered Toxin Bodies (ETBs), a new class of targeted biologic therapies that possess unique mechanisms of action in oncology, today provided a review of 2017 company progress as well as an update on expected 2018 milestones.

“2017 was a transformational year for Molecular Templates as we became a publicly traded company, raised $60 million from institutional investors and our partner Takeda Pharmaceuticals, made important clinical progress with our lead pipeline program MT-3724, and expanded and advanced our collaboration with Takeda,” said Eric Poma Ph.D., Chief Executive and Chief Scientific Officer of Molecular Templates. “We expect multiple value enhancing events throughout 2018, with our team focused on generating more data for our lead product candidate MT-3724, advancing additional products into the clinic, making continued progress with our partner Takeda, and exploring additional business development opportunities.”

Corporate Updates

Summary of Key 2017 Accomplishments

- **Reverse merger and financing.** Completed reverse merger with Threshold Pharmaceuticals and concurrent $40 million equity financing and $20 million private placement to Millennium Pharmaceuticals (a wholly owned subsidiary of Takeda Pharmaceuticals).
- **Takeda collaboration expansion and progress.** Expanded Takeda collaboration in June 2017 with multi-target research and licensing collaboration agreement, followed by nomination of two biological targets by Takeda in December 2017.
- **MT-3724 development advanced.** Established maximum tolerated dose (MTD) for MT-3724 and began dosing in an expansion cohort of the ongoing Phase 1 study focused on relapsed/refractory diffuse large B-cell lymphoma (DLBCL) patients. The goal of the expansion cohort is to better define the overall response rate of MT-3724 in heavily pre-treated DLBCL patients.
- **Pipeline expanded and progressed.** Pipeline of several other ETB candidates in preclinical development targeting both solid and hematological cancers expected to yield 2-3 INDs in 2018.

Expected 2018 Milestones

MT-3724 (targeting CD20)

- 1H18: Initial results from expansion cohort in DLBCL
- 1H18: Initiation of chemo combination study
- 1H18: Initiation of non-chemo combination study
- 2H18: Initial results from the combination studies
- 2H18: Initiation of Phase 2 study (potential pivotal)

MT-4019 (targeting CD38)

- 3Q18: Initiation of Phase 1 study in multiple myeloma in the United States

Pipeline

- 1H18: Presentation of preclinical data at medical and/or scientific meetings
- 4Q18: File IND for HER2 and/or PD-L1 programs

Business development

- 2018: Continued progress with Takeda partnership
- 2018: Potential new research partnerships

About Molecular Templates
Molecular Templates is focused on the discovery, development and commercialization of next-generation immunotoxins called Engineered Toxin Bodies (ETBs) for the treatment of cancers and other serious diseases. For additional information, please visit Molecular Templates' website at www.mtem.com.

Forward-Looking Statements
This press release contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statement of historical facts, included in this press release regarding Molecular Templates' strategy, future operations and plans are forward-looking statements. Examples of such statements include, but are not limited to, statements relating to the development, potential benefits and uses of and markets for Molecular Templates' product candidates, including MT-3724, MT-4019 and evofosfamide, and anticipated clinical trials, including timing and potential results. Actual results or events could differ materially from the plans, intentions, expectations and projections disclosed in the forward-looking statements. Various important factors could cause actual results or events to differ materially from the forward-looking statements that Molecular Templates makes, including, but not limited to, the risk that trials and studies may be delayed and may not have satisfactory outcomes, potential adverse effects arising from the testing or use of MT-3724, MT-4019 and evofosfamide and other risks described in the "Risk Factors" section of Molecular Templates' most recent 10-K, 10-Q, and other reports on file with the SEC. Molecular Templates does not assume any obligation to update any forward-looking statements, except as required by law.

Investor Contact:
Andrew McDonald, Ph.D.
andrew@lifesciadvisors.com

646-597-6987

Adam Cutler
Chief Financial Officer
adam.cutler@mtem.com
862-304-4006

Source: Molecular Templates, Inc.