June 17, 2019

Molecular Templates Announces FDA Acceptance of IND Application for TAK-169, An Engineered Toxin Body Targeting CD38

TAK-169 Represents a Novel Mechanism of Action Targeting CD38
Phase I Study to be Conducted in Relapsed/Refractory Multiple Myeloma Patients

AUSTIN, Texas, June 17, 2019 (GLOBE NEWSWIRE) -- Molecular Templates, Inc., (Nasdaq: MTEM, “Molecular,” “Molecular Templates” or “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, announced that the U.S. Food and Drug Administration (FDA) has accepted the Investigational New Drug (IND) application for TAK-169, an ETB targeting CD38.

MTEM and partner Takeda Pharmaceutical Company Limited (Takeda) are co-developing TAK-169 and plan to conduct an open label Phase I dose escalation and expansion study in relapsed/refractory multiple myeloma patients.

“We are excited to continue our collaboration with Takeda advancing the development of TAK-169 for the treatment of multiple myeloma patients,” said Eric Poma, Ph.D., CEO and CSO of Molecular Templates. “It represents a novel CD38 targeted therapy which could provide benefit in patients with multiple myeloma and overcome mechanisms of resistance to existing CD38 targeted therapies.”

About TAK-169
TAK-169 is an ETB consisting of a single chain variable fragment (scFv) with affinity for CD38, fused to the enzymatically active de-immunized Shiga-like toxin-A subunit (SLTA). TAK-169 specifically binds and kills CD38 expressing cells in a manner consistent with SLTA mediated cellular cytotoxicity. TAK-169 has been specifically designed to avoid competition with and to overcome the primary mechanisms of tumor resistance to daratumumab and other monoclonal antibodies targeting CD38. TAK-169 has been shown to be active in the presence of daratumumab. As such, TAK-169 may have the potential to be combined with approved CD38 targeted therapies. TAK-169 mediated ribosomal inhibition and cell death take place intracellularly so changes in the tumor microenvironment, such as CD55/59 upregulation, which inhibit immune-mediated mechanisms such as antibody-dependent cell-mediated cytotoxicity (ADCC) or complement dependent cytotoxicity (CDC) are not expected to inhibit TAK-169 activity.

About the CD38 Co-Development Partnership with Takeda

On September 19, 2018, MTEM announced an agreement with Takeda for the joint development of CD38-targeted ETBs for the treatment of multiple myeloma. TAK-169, the lead development candidate, is a CD38-targeted ETB that resulted from a previous discovery collaboration between the two companies. Under the terms of the agreement, Takeda has made an upfront payment of $30 million and Molecular Templates is eligible to receive development, regulatory and commercial milestone payments of up to $632.5 million if Molecular Templates exercises its co-development option or $337.5 million if Molecular Templates does not exercise or opts out of its co-development option. Takeda has also agreed to pay royalties on sales of the commercial product developed through the collaboration. Molecular Templates and Takeda will share equally in the development costs. MTEM has been awarded a $15.2 million grant from the Cancer Prevention and Research Institute of Texas (CPRIT) to fund development and manufacturing of CD38-targeted ETBs including TAK-169.

About Molecular Templates
Molecular Templates is a clinical-stage oncology company focused on the discovery and development of differentiated, targeted, biologic therapeutics for cancer. We believe our proprietary biologic drug platform technology, referred to as engineered toxin bodies, or ETBs, provides a differentiated mechanism of action that may address some of the limitations associated with currently available cancer therapeutics. ETBs utilize a genetically engineered form of Shiga-like Toxin A subunit, or SLTA, a ribosome inactivating bacterial protein, that can be targeted to specifically destroy cancer cells. Additional information about Molecular Templates can be obtained at http://www.mtem.com.

Forward-Looking Statements
This press release contains forward-looking statements for purposes of the Private Securities Litigation Reform Act of 1995 (the "Act"). Molecular Templates disclaims any intent or obligation to update these forward-looking statements, and claims the protection of the Act's Safe Harbor for forward-looking statements. All statements, other than statements of historical facts, included in this press release regarding strategy, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management are forward-looking statements. In addition, when or if used in this press release, the words "may," "could," "should," "anticipate," "believe," "estimate," "expect," "intend," "plan," "predict" and similar expressions and their variants, as they relate to Molecular Templates may identify forward-looking statements. Examples of such statements include, but are not limited to, statements relating to the development of MT-3724, MT-5111, or TAK-169; the expected timing of submitting various IND applications and conducting studies; and the Company's belief that its proprietary biologic drug platform technology, or ETBs, provides for a differentiated mechanism of action that may address some of the limitations associated with currently available cancer therapeutics.

Forward-looking statements are not guarantees of future performance and involve risks and uncertainties. Actual events or results may differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to, the uncertainties inherent in the preclinical and clinical development process; whether the Company's cash resources will be sufficient to fund its continuing operations for the periods and/or trials anticipated; the ability of the Company to protect its intellectual property rights; and legislative, regulatory, political and economic developments, as well as those risks identified under the heading "Risk Factors" in the Company's filings with the SEC. Any

forward-looking statements contained in this press release speak only as of the date hereof, and the Company specifically disclaims any obligation to update any forward-looking statement, whether because of new information, future events or otherwise.

Investor Contact:

Adam Cutler
Chief Financial Officer
adam.cutler@mtem.com
862-204-4006

Source: Molecular Templates, Inc.

Source: Molecular Templates, Inc.