March 28, 2019

Molecular Templates Announces Initiation of Phase II Monotherapy Study of MT-3724 in Relapsed/Refractory Diffuse Large B-Cell Lymphoma Patients

Study Update Expected in 2H19 with Final Data Expected in 2020

AUSTIN, Texas, March 28, 2019 (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 announced the initiation of a single-agent Phase II study of MT-3724, a CD20-targeted ETB, in relapsed/refractory diffuse large B-cell lymphoma (DLBCL) patients. This multicenter study will enroll up to 100 patients, in a staged manner, who have received at least two standard of care treatment regimens for DLBCL. As a monotherapy study in heavily pretreated patients, this study has the potential to be pivotal.

“We have been highly encouraged by the responses observed in the Phase I/Ib study of MT-3724 in heavily pretreated DLBCL patients,” said Eric Poma, Ph.D., CEO and CSO of Molecular Templates. “This Phase II study largely replicates the Phase Ib expansion cohort, but with more clinical sites for enrollment, an independent data safety monitoring board, and independent central review for efficacy. Given the high level of unmet need in advanced DLBCL, we hope that this study will confirm that MT-3724 provides a meaningful benefit for this difficult to treat patient population.”

The Phase II study will initially enroll patients at sites in the United States, Canada and Europe. MT-3724 will be given as 50 mcg/kg intravenous (IV) infusions, with a maximal per dose limit of 6,000 mcg. The primary outcome measure is tumor response, while secondary objectives include safety and other efficacy measures. The Phase II dose of 50 mcg/kg was selected based on safety data, tumor responses observed at dose levels as low as 5 and 20 mcg/kg, and pharmacodynamic effects of CD20+ B-cell clearance observed at various doses in the Phase I/Ib study. The Phase II study will exclude patients with high levels of serum rituximab, given CD20 binding competition of rituximab with MT-3724.

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 the Company's lead program, MT-3724; 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

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