April 6, 2016

Molecular Templates to Present Clinical and Preclinical Data for MT-3724 and Next Generation Engineered Toxin Bodies (ETBs) at the 2016 American Association for Cancer Research (AACR) Annual Meeting

GEORGETOWN, TX -- (Marketwired) -- 04/06/16 --

- *First report from an ongoing Phase I clinical trial for MT-3724, a CD20 targeting ribosome inactivating fusion protein, in the treatment of non-Hodgkin's lymphoma (NHL)*
- *Updated preclinical data for MT-3724 highlighting its unique mechanism of action of direct cell-kill via enzymatic ribosome inactivation and the potential for use in combination with small molecule approaches*
- *Preclinical data highlighting the novel mechanism of action, de-immunized scaffold, and immuno-oncology capabilities of the next generation of Engineered Toxin Bodies (ETBs) targeting CD38, PD-L1, and HER2*

Molecular Templates, Inc. ("MTEM"), a clinical stage biopharmaceutical company focused on the discovery and development of a new class of targeted biologic therapies that possess unique mechanisms of action to address cancer and autoimmune diseases, today announced that it will be presenting three abstracts at the 2016 American Association of Cancer Research (AACR) Annual Meeting, being held April 16-20, 2016, in New Orleans, Louisiana.

Clinical data from the ongoing first-in-human Phase I study for MT-3724 will be presented by Dr. Michelle Fanale from The University of Texas MD Anderson Cancer Center. Preclinical data will be presented to highlight the unique mechanism of action of MT-3724 and the next generation of Engineered Toxin Bodies (ETBs) that include data on the de-immunized ETB scaffolds and MTEM's Antigen Seeding Technology representing a next generation immuno-oncology approach distinct from checkpoint inhibition or chimeric antigen receptor approaches.

Below are details of the three poster presentations at the 2016 AACR conference:

Phase I/Ib study of the novel CD20-targeted immunotoxin MT-3724 in relapsed/refractory non-Hodgkin's B-cell lymphoma (Poster Number CT049)

Presenting Author: Dr. Michelle Fanale, The University of Texas MD Anderson Cancer Center

Session Title: Phase I Clinical Trials 1
Session Date & Time: Monday, April 18th, 2016, 1:00 PM - 5:00 PM CT
Location: Section 13

MT-3724, an engineered toxin body targeting CD20 for non-Hodgkin's lymphoma (Poster Number 1483)

Presenting Author: Lee Robinson, Molecular Templates
Session Title: Immune Modulating Agents and Therapeutic Antibodies
Session Date & Time: Monday, April 18th, 2016, 8:00 AM - 12:00 PM CT
Location: Section 25

Next-generation engineered toxin bodies: CD38, PD-L1 and HER2 targeted ETBs (Poster Number 595)

Presenting Author: Sangeetha Rajagopalan, Molecular Templates
Session Title: Therapeutic Antibodies
Session Date & Time: Sunday, April 17th, 2016, 1:00 PM - 5:00 PM CT
Location: Section 27

"We are excited to present interim clinical data from our ongoing first-in-human study of MT-3724. These data demonstrate promising safety and efficacy at this early stage in the Phase I study. MT-3724 represents the first successful immunotoxin approach that targets and internalizes against CD20 to directly kills cells via an irreversible and enzymatic shut-down of protein synthesis." said Eric Poma, CEO and CSO, Molecular Templates. "We will also present data on our next generation of Engineered Toxin Bodies (ETBs) including our proprietary de-immunization technology and our novel immuno-oncology approach of Antigen Seeding. We have exciting new ETB programs targeting CD38, PD-L1, HER2, and others and we look forward to moving these drug candidates toward clinical trials."

About MT-3724

MT-3724 is a fusion protein comprised of a single-chain variable fragment fused to a proprietarily engineered Shiga-like Toxin scaffold. MT-3724 specifically binds and targets CD20 receptor and is able to force its own internalization into the cell subsequent to receptor binding. Once inside the target cell, MT-3724 self-routes to the cytosol where it enzymatically and permanently shuts down ribosome function leading to cell-death. This mechanism of action is unique in oncology and may allow MT-3724 to have activity in chemo and antibody resistant settings or work in combination with other treatment regiments. MT-3724 is currently in Phase I clinical trials. MTEM has received a $10.6M grant from the Cancer Prevention and Research Initiative of Texas (CPRIT) to fund development of MT-3724.

About Molecular Templates

Molecular Templates is a clinical stage biopharmaceutical company focused on the discovery and development of a new class of targeted biologic therapeutics that possess unique mechanisms of action. Engineered Toxin Bodies (ETBs) are fusion proteins that have been created to specifically bind targets and exert profound intracellular effects that make them distinct from existing therapeutic modalities like small molecules and antibodies. MTEM's lead program MT-3724 is currently in clinical trials and additional ETB

drug candidates are planned to enter clinical trials next year. For more information, please visit www.moleculartemplates.com.

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Source: Molecular Templates, Inc.