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Merck and Threshold Announce Global Agreement to Co-Develop and Commercialize Phase III Hypoxia-Targeted Drug TH-302

Merck KGaA announced that a global agreement was signed with Threshold Pharmaceuticals, Inc., South San Francisco, to co-develop and commercialize TH-302, Threshold's small molecule hypoxia-targeted drug.



TH-302 is currently being investigated in a global Phase III clinical trial in patients with soft tissue sarcoma, a randomized Phase II trial in patients with advanced pancreatic cancer from which top-line results are expected in February, as well as additional clinical studies in other solid tumors and hematological malignancies.

Under the terms of the agreement, Merck will receive co-development rights, exclusive global commercialization rights and will provide Threshold an option to co-commercialize the therapeutic in the United States. In exchange, Threshold will receive an upfront payment of 19 million (\$ 25 million) and could receive up to 26.5 million (\$ 35 million) in additional development milestones during 2012. Threshold is also eligible to receive a 15 million (\$ 20 million) milestone payment based on positive results from its randomized Phase II trial in pancreatic cancer.

In the United States, Threshold will have primary responsibility for development of TH-302 in the soft tissue sarcoma indication. Threshold and Merck will jointly develop TH-302 in all other cancer indications being pursued. Merck will pay 70% of worldwide development costs for TH-302.

Subject to FDA approval in the United States, Merck will initially be responsible for commercialization of TH-302 with Threshold receiving a tiered, double-digit royalty on sales. Under the royalty-bearing portion of the agreement, Threshold retains the option to co-promote TH-302 in the United States. Additionally, Threshold retains the option to co-commercialize TH-302 allowing the company to participate in up to 50% of the profits in the United States, based on certain revenue tiers. Outside of the United States, Merck will be solely responsible for the commercialization of TH-302 with Threshold receiving a tiered, double-digit royalty on sales in these territories.

The addition of TH-302 to our pipeline provides an important opportunity in several different tumor types to expand our oncology development program, said Susan Jane Herbert, Head of Global Business Development and Strategy at the Merck Serono division.

Given the fact that pancreatic cancer is a very difficult to treat indication, successful Phase II results could represent important upside for our company.

We are excited by the new resources that our partnership is going to bring to the development of TH-302, and the expertise in clinical development and commercialization that Merck will contribute to this program, said Barry Selick, President and CEO of Threshold. This collaboration provides Threshold a strong and committed partner with a shared vision for TH-302.

TH-302 is a hypoxia-targeted drug that is thought to be activated under tumor hypoxic conditions, a hallmark for many cancer indications. Areas of low oxygen levels (hypoxia) within tissues are common in many solid tumors due to insufficient blood vessel growth. Similarly, the bone marrow of patients with hematological malignancies has also been shown, in some cases, to be extremely hypoxic.

TH-302 has been investigated in over 550 patients in Phase I/II clinical trials to date in a broad spectrum of tumor types, both as a monotherapy and in combination with chemotherapy treatments and other targeted cancer drugs.

Threshold has several ongoing clinical trials including, but not limited to: a controlled Phase II trial of TH-302 in combination with gemcitabine versus gemcitabine alone in patients with advanced pancreatic cancer and a Phase III study evaluating TH-302 in combination with doxorubicin versus doxorubicin alone in patients with soft tissue sarcoma.

TH-302 development in soft tissue sarcoma

A Phase III trial of TH-302 in patients with first-line advanced soft tissue sarcoma (STS) was initiated in September, 2011, based on results from a Phase I/II trial investigating its use in combination with the chemotherapeutic doxorubicin. This randomized, multi-center Phase III trial will investigate the use of TH-302 plus doxorubicin compared with doxorubicin alone. The primary efficacy endpoint is overall survival. The study is conducted under a Special Protocol Assessment with the U.S. Food and Drug Administration. It is being run in partnership with the Sarcoma Alliance for Research through Collaboration (SARC) and aims to enroll 450 patients with metastatic or locally advanced unresectable STS.

TH-302 development in pancreatic cancer

Results from a randomized, controlled, multi-center Phase II trial of TH-302 in patients with first-line pancreatic cancer are expected to be announced in February, 2012. This trial of 214 previously untreated patients with locally advanced unresectable or metastatic pancreatic adenocarcinoma started in June, 2010, and completed enrollment in June, 2011. Two different doses of TH-302 in combination with the chemotherapeutic gemcitabine were compared to gemcitabine alone, with progression free survival (PFS) as the primary endpoint.

Soft tissue sarcoma

STS refers to a heterogeneous and relatively rare group of tumors that develops in the soft, supporting tissues of the body. It can occur in any of the tissues that support, surround or protect the organs of the body, such as muscle, fat, nerves, tendons and ligaments or blood vessels. It can also develop in specific organs including, for example, the uterus, stomach, skin and small bowel. Occasionally it occurs in the head and neck. Adult STS is rare, with an estimated average incidence of 4 in 100,000 cases in Europe annually. In the United States, there were

an estimated 10,980 new cases and 3,920 deaths from STS in 2011. STS tends to occur in people over the age of 30, although certain types of sarcoma can develop more commonly in children and teenagers. Current treatment options for STS include surgery, chemotherapy and radiotherapy, although response rates are generally low and side effects can be significant.

Pancreatic cancer

Pancreatic cancer is considered fairly rare, particularly in younger people. The most common symptoms are pain in the upper abdomen, weight loss, and jaundice. Current treatment options include surgery, radiotherapy and chemotherapy. It is estimated that approximately 279,000 cases of pancreatic cancer were diagnosed worldwide in 2008.