

July 30, 2012

**Tokyo Institute of Technology and Astellas:
Start of Joint Drug Discovery Research for Neglected Tropical Diseases
caused by Protozoan Parasites**

- Through use of Tokyo-Tech's Supercomputer TSUBAME2.0 -

Tokyo, Japan, July 30, 2012 – Tokyo Institute of Technology (“Tokyo-Tech”) and Astellas Pharma Inc. (Tokyo:4503, “Astellas”) announced on July 30 that they have signed a joint research agreement for drug discovery research utilizing Tokyo-Tech’s TSUBAME2.0 supercomputer to efficiently discover candidates for the treatment of diseases caused by protozoan parasites.

Worldwide, many therapeutic areas with high unmet medical needs still remain that patients cannot be treated satisfactorily, such as neglected tropical diseases (“NTDs”) which pose public health problems on a global scale. International efforts are ongoing against NTDs, and this joint research aims to contribute to the drug discovery for the treatment of diseases caused by protozoan parasites, such as leishmaniasis, chagas disease and sleeping sickness in NTDs.

Under this agreement, a research group led by Masakazu Sekijima, Ph.D., associate professor at the Global Scientific Information and Computing Center, Tokyo-Tech and Astellas will cooperate in drug discovery for the treatment of diseases caused by protozoan parasites. This research will be conducted in two steps. In the first step, data mining of public information such as patents and published articles will be carried out to obtain useful and effective knowledge about the drug discovery for the treatments for diseases caused by protozoan parasites. In the second step, *in-silico* screening will be performed to identify compounds which are predicted to have anti-protozoan activities. Tokyo-Tech boasts Japan’s first petaflop class supercomputer TSUBAME2.0, and will assume responsibility for data mining and for *in-silico* screening calculations of commercially available compounds. Astellas will be responsible for preparing input data for data mining, selecting, and listing of compounds to be evaluated based on the *in-silico* screening calculations, thereby implementing efficient drug discovery in a short time period.

Tokyo-Tech and Astellas will work together to discover drugs in a short time period for patients suffering from NTDs caused by protozoan parasites, through their joint research efforts aiming to contribute to improve global public health problems.

Ends

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Neglected Tropical Diseases (NTDs)

NTDs are tropical infections caused by parasitic worm and bacteria, which are mainly endemic in tropical areas of developing countries. It is estimated that over 1 billion people are affected worldwide with the 17 diseases* of NTDs on which currently WHO is focusing on. Since these patients do not have enough access to needed medicines and healthcare, NTDs are not only a global health challenge but are said to affect economic growth and poverty in developing countries.

*: Buruli Ulcer, Chagas disease (American trypanosomiasis), Cysticercosis, Dengue/Severe dengue, Dracunculiasis (guinea-worm disease), Echinococcosis, Fascioliasis, Human African trypanosomiasis, Leishmaniasis, Leprosy, Lymphatic filariasis, Onchocerciasis, Rabies, Schistosomiasis, Soil transmitted helminthiasis, Trachoma, Yaws

Tokyo Institute of Technology (Tokyo Tech)

Tokyo Institute of Technology established as Tokyo-Technical School in 1881, became Tokyo-Technical High School in 1929, and then acquired the university status in 1929. Tokyo-Tech is the largest national university of science and technology in Japan with a 130-year history. The creative education at Tokyo-Tech has resulted in fostering a great number of excellent alumni, including Dr. Hideki Shirakawa, Nobel laureate in chemistry, and in sending them to science fields and Japanese major companies which have helped support Japan's economy. Tokyo-Tech has three schools (Science, Engineering, and Bioscience and Biotechnology), six graduate schools (Science and Engineering, Bioscience and Biotechnology, Interdisciplinary Graduate School of Science and Engineering, Information Science and Engineering, Decision Science and Technology and Innovation Management), five research laboratories under the Integrated Research Institute, and numerous other Research and Service Centers. For further information on Tokyo-Tech please see the university website at www.titech.ac.jp/english/index.html.

Astellas Pharma Inc. (Astellas)

Astellas Pharma Inc.'s raison d'être is to contribute toward improving the health of people around the world through the provision of innovative and reliable pharmaceutical products. Astellas has approximately 17,000 employees worldwide. The organization is committed to becoming a global category leader in Urology, Immunology (including Transplantation) and Infectious Diseases, Oncology, Neuroscience and DM Complications and Kidney Diseases. For more information on Astellas Pharma Inc., please visit the company website at www.astellas.com/en.

Astellas is committed to improving "Access to Health**" in developing countries through its partnership initiatives. As part of the contribution to Access to Health, Astellas is committed to undertake an initiative of drug discovery for patients infected with and suffering from NTDs in the world by utilizing its know-how and assets of drug discovery research.

** : Unmet medical needs remain in many therapeutic areas. Furthermore, there are many people who are unable to access adequate medical care due to poverty or weak health systems. Astellas recognized these remaining issues as "Access to Health" and proactively addresses them as responsible corporate citizen.

TSUBAME2.0 supercomputer

TSUBAME2.0 is a production supercomputer operated by Global Scientific Information and Computing Center (GSIC), Tokyo Institute of Technology in corporation with our industrial partners, including NEC, HP, NVIDIA, Microsoft among others. Since Fall 2010, it has been one of the fastest and greenest supercomputers in the world, boasting 2.4 PFlops peak performance by aggressive GPU acceleration, which allows scientists to enjoy significantly faster, larger computing than ever. This is the second instantiation of our TSUBAME-series supercomputers with the first being, as you might guess, TSUBAME1. It also employed various cutting-edge HPC acceleration technologies, such as ClearSpeed and NVIDIA GPUs, where we had learned many important technical lessons that eventually played a crucial role in designing and constructing our latest supercomputer. Compared to its predecessor, TSUBAME2, while keeping its power consumption nearly the same as before, achieves 30x performance boost by inheriting and further enhancing the successful architectural designs.

data mining

Data mining is a technology that applies statistics, artificial intelligence and machine learning technology to massive amounts of data comprehensively to extract useful knowledge.

in-silico screening

In-silico screening is a technology that identifies the most useful chemical compound that binds to the macromolecular target of interest via high performance computers such as a supercomputer. *In-silico* means "in the silicon chip" or "with computers."

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