



October 29, 2014

ONO PHARMACEUTICAL CO., LTD.

Corporate Communications

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Establishment of GPCR Consortium, a New International Partnership, to Advance Structural Information about G-protein Coupled Receptors

The GPCR Consortium announced its establishment on October 28, 2014. The consortium forms an international partnership of industries and academia across three continents with aims to comprehensively determine three-dimensional structures of G-protein coupled receptors (GPCRs), a family of proteins implicated in pathogenesis and progression of many types of diseases.

ONO PHARMACEUTICAL CO., LTD. (Osaka, Japan; “ONO”) is one of the founding members of the GPCR Consortium. Other founding members from the industry include Amgen (U.S.A.), Sanofi (France). ONO will contribute to the consortium mainly in access to compounds. ONO anticipates that rapid access to the novel structural information of GPCRs solved by the consortium will accelerate its drug discovery research and generation of new medications for cancer, metabolic diseases, central nervous system diseases, and other disorders.

About GPCRs

GPCRs are members of a family of cell surface receptors conjugated with a G-protein, which signaling pathway is initiated by binding between the receptor and a hormone or bioactive molecule. GPCR targeted therapeutics comprise major drug classes in many disease areas, including CNS, metabolic, cardiovascular, respiratory, urinary and gastrointestinal.

Attached from the following page is the press release made by The GPCR Consortium for your information.

New International GPCR Consortium Formed with Pharma and Academia to Advance Structural Information about G-protein Coupled Receptors

Los Angeles (USA) and Shanghai (China), Oct. 28. 2014 -- The generation of high-resolution pictures of hundreds of medically important proteins known as G-protein coupled receptors (GPCRs) will be the goal of an ambitious new international partnership. Called the **GPCR Consortium**, this non-profit initiative brings together major pharmaceutical companies and leading research institutes from three continents to advance GPCR research for drug development. The human body is controlled by 826 GPCRs, which are involved in a wide variety of human physiology and are implicated in many diseases. As a drug target, GPCRs are highly valuable but mechanistically poorly understood and with limited structural information that could greatly aid in finding new drug candidates.

The GPCR Consortium was started by **Professor Raymond Stevens**, who is focused on the structure and function of GPCRs and human cell signaling, and is coordinated by **Dr. Michael Hanson**, a leader in GPCR structural biology. All research outputs such as three-dimensional structures of GPCRs and constructs will be compiled and placed in the public domain. The consortium is data-centric, with the primary objective being dissemination of protein structural coordinates, reagents and supporting data to both the consortium members and the broader scientific community.

Amgen (United States), **Sanofi** (Europe) and **ONO** (Japan) are the founding industry members of the GPCR Consortium. The research is currently planned to be conducted, but not limited to three leading academic sites: [iHuman Institute at ShanghaiTech University](#), [Shanghai Institute of Materia Medica](#) a member of the Chinese Academy of Sciences, and the [University of Southern California](#) in Los Angeles. The GPCR Consortium hopes to attract up to five additional industry members to achieve the initiative's goal of determining structures of 200 of the 826 known human GPCRs, prioritized in disease areas that initially include diabetes, cancer, and mental disorders.

"Industry and academic consortia like the not for profit Structural Genomics Consortium are becoming a more common model to support scientific research on the international scale, including the open exchange of data and reagents, including compounds," says Professor Raymond Stevens, founding director of the iHuman Institute at ShanghaiTech University and Provost Professor of Biology and Chemistry at University of Southern California. "By working together, we can maximize the impact of our research on human health and disease while providing a means to support early stage basic research and bring together academic and industry scientists in a productive working relationship."

"The academic groups involved in the consortium have published both the first human GPCR structure and the majority of GPCR structure-function and discovery data, including structures from the major classes of the GPCR family," said Dr. Michael Hanson, President of the GPCR Consortium. "The importance of this family

of proteins for human health cannot be overstated as communication with the environment is a hallmark of higher functioning organisms and GPCRs play a central role in this process."

"ShanghaiTech University is a new international university at the cutting edge of science, and we are very pleased to work at the boundary of industry and academia in the basic science area of G-protein coupled receptor research as part of this consortium. By accessing compounds from industry and making the data that emerges from this effort public, we expect tremendous impact that will help mankind," said Vice President Yin Jie, ShanghaiTech University.

Dr. Mingqiang Zhang, Head of Amgen Asia R&D Center, stated, "We are very pleased to be one of the founding industry members of this prestigious consortium. By working together with the leading academics in GPCR structural biology, many of whom are co-located with our Asia R&D Center in Shanghai, we can better synergize our efforts in understanding human biology at molecular level and advancing drug discovery in diseases where GPCRs play significant roles, including cancer, metabolic and CNS disorders."

"USC is committed to innovation in biomedical research that requires large consortia of academic and industrial partners. We can only begin to imagine the breakthroughs in the treatment of diseases that will be a direct outcome of the work done by GPCR scientists, right here in Los Angeles and across the world," said University of Southern California Dornsife Dean Steve Kay.

"We believe the advances we will make with the GPCR Consortium and share with the scientific community will speed the development of better healthcare to prevent, detect, diagnose and treat human diseases," added Dr. Kazuhito Kawabata, Member of the Board of Directors, Executive Officer and Executive Director, Discovery and Research of ONO.

Hualiang Jiang, Director of the Chinese Academy of Sciences Shanghai Institute of Materia Medica, added, "Indeed, the GPCR consortium will greatly enhance the collaboration between industry and academia and will produce valuable data around GPCR structure and function. I am sure that this consortium will attract more and more attention from both industry and academic communities alike."

"Sanofi is passionate about improving health worldwide and to deliver on that, we are committed to collaborating with the world's best researchers and scientists. With global diabetes sufferers expected to increase to 592 million before 2035, and the rates in Asia Pacific region set to soar, I am confident that our partnership with the GPCR Consortium will combine our strengths and insights and bring us one step closer to a breakthrough in treatment benefiting the regional and global diabetes patients," said Dr. Frank Jiang, Head of Asia Pacific R&D Hub, Sanofi.

About iHuman Institute, ShanghaiTech University

ShanghaiTech University was approved to open on September 30th 2013 by China's Ministry of Education. The research university of academic excellence was jointly established by Shanghai Municipal Government and Chinese Academy of Sciences (CAS). ShanghaiTech is committed to serving the national development strategy. ShanghaiTech seeks innovative solutions to address the challenges that China is facing in the field of energy, material, environment, human health, thus to improve productivity driven by innovation, and contribute to the restructuring and development of China. http://www.shanghaitech.edu.cn/en/en_index.asp

The iHuman Institute is a new international effort established as a research institute located on the campus of ShanghaiTech University. The institute is a gateway to the world of Shanghai life science research and is focused exclusively on the basic and applied science of human cell signaling, integrating multiple tools for scientific discovery, and bringing together leading researchers throughout the world.

iHuman Institute has a collection of highly interdisciplinary research groups and provides a team environment to combine efforts working closely together to decipher the mysteries in human cell signaling. <http://ihuman.shanghaitech.edu.cn>

About University of Southern California

The University of Southern California is one of the world's leading private research universities and one of a small number of premier research institutions that deliver a steady stream of new knowledge, art and technology. USC has more than \$650 million in annual research expenditures, and has ranked among the top 10 private universities in federally supported research activity. With a strong tradition of integrating liberal and professional education, USC fosters a vibrant culture of public service and encourages students to cross academic as well as geographic boundaries in their pursuit of knowledge. <http://www.usc.edu>

About Shanghai Institute of Materia Medica

Shanghai Institute of Materia Medica (SIMM) a member of the Chinese Academy of Sciences has the longest history as a comprehensive research institution for drug discovery in China. In line with its mission of "Discovering new drugs to relieve patients suffering from various diseases", SIMM has developed and commercialized over 100 new drugs in the past 60 years. In line with frontiers in life sciences and aiming at solving key scientific problems in drug discovery, SIMM carries out both basic and applied studies and develops new theories, methods and technologies. Through several generations' efforts, SIMM has become one of the leading interdisciplinary centers of excellence in China and is recognized worldwide by its outstanding achievements and distinguished research team.

<http://www.simm.ac.cn>

About Amgen

Amgen is committed to unlocking the potential of biology for patients suffering from serious illnesses by discovering, developing, manufacturing and delivering innovative human therapeutics. This approach begins by using tools like advanced human genetics to unravel the complexities of disease and understand the fundamentals of human biology. Amgen focuses on areas of high unmet medical

need and leverages its biologics manufacturing expertise to strive for solutions that improve health outcomes and dramatically improve people's lives. A biotechnology pioneer since 1980, Amgen has grown to be the world's largest independent biotechnology company, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential. For more information, visit <http://www.amgen.com>.

About Ono Pharmaceutical Co., Ltd. (ONO)

Ono Pharmaceutical Co., Ltd., headquartered in Osaka, Japan, is an R&D-oriented pharmaceutical company committed to creating innovative medicines that meet unmet medical needs at the frontline of healthcare, focusing especially on the areas of diabetes and oncology. It pursues an original path in its drug discovery under "Compound-Orient" approach. For more information, please visit the company's website at <http://www.ono.co.jp/eng/>

About Sanofi

Sanofi, a global and integrated health care leader, discovers, develops and distributes therapeutic solutions focused on patients' needs. Sanofi has core strengths in the field of health care with seven growth platforms: diabetes solutions, human vaccines, innovative drugs, consumer health care, emerging markets, animal health and the new Genzyme. Sanofi is listed in Paris (EURONEXT: SAN) and in New York (NYSE: SNY). In commemoration of the 50th anniversary of diplomatic relations between France and the People's Republic of China, Sanofi affirms its commitment to economic development and public health in China. As one of the commemoration's major sponsors, Sanofi will participate in scientific events throughout the year in France and China. <http://www.sanofi.com>

About GPCR Consortium

The GPCR Consortium is a not for profit entity started in June 2014 to bring together industry and academic scientists with the goal of providing pre-competitive access to structural information, materials and related data, which will be generated at academic sites. That data generated will be compiled and deposited in the public domain. The consortium members contribute chemical compounds and nominate GPCR targets prioritized in disease areas that initially include diabetes, cancer, and mental disorders in order to maximize the impact on human health.

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