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South Korea firm emerges as R&D force

April 12, 2012 | News | By BioSpectrum Bureau

South Korea firm CrystalGenomics emerges as R&D force



According to the Global Burden of Disease and Risk Factors (World Bank Publications, 2006), infectious diseases are one of the leading causes of deaths worldwide. Deaths caused by bacterial infections have reached more than 10 million annually and bacterial resistance is a growing problem. To overcome this issue, leading companies are working on developing antibacterial agents.

AstraZeneca, a major international healthcare company has entered into research collaboration with CrystalGenomics, a publicly-held South Korean company to discover and develop a novel anti-infective for use as a potential antibacterial agent. This is the first such infection research collaboration AstraZeneca has entered into with a Korea-based company.

CrystalGenomics, headquartered in Seoul, South Korea, has emerged as a leading structural chemoproteomics-based drug R&D company. Started in 2000 by Dr Joong Myung Cho, along with other scientists namely Dr Seonggu Ro and Dr Ho-Jin Chang, all employed with LG Life Sciences (formerly LG Chem). Now, CrystalGenomics has 65 staff with 23 PhD holders.

CrystalGenomics won the BioSpectrum Asia Pacific Emerging Company of the Year Award for 2010.

Under the terms of this agreement, CrystalGenomics will receive research funding from AstraZeneca for two years. CrystalGenomics will also be eligible to receive future milestones and royalty payments associated with development and commercialization of a drug candidate. AstraZeneca and CrystalGenomics will perform in-vitro enzyme and cell-based assays, structure determination, medicinal chemistry, pharmacokinetic studies, toxicology tests and pharmacological evaluations under this collaboration. AstraZeneca will be responsible for preclinical and clinical development, and commercialization.

"This partnership leverages the innovation capabilities of CrystalGenomics and AstraZeneca in creating a world-class drug discovery and development network. We believe this collaboration is a validation of CrystalGenomics' ability to discover novel drugs on a global standard," says Dr Joong Myung Cho, President and CEO of CrystalGenomics.

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Areas of focus

CrystalGenomics has been dedicated to the discovery and development of novel pharmaceuticals with innovative platform technologies, so as to address significant unmet medical needs in the areas of anti-infective, cancer, metabolic, and inflammatory diseases.

The company's lead developmental candidate in its novel product pipeline is a next generation NSAID, CG100649 with a mechanism of suppressing COX-2 as well as carbonic anhydrase for improved cardiovascular, gastrointestinal, and renal safety profile that has recently completed a phase IIa clinical trial in Europe with 248 osteoarthritis patients. Additionally, its novel HDAC inhibitor, CG200745, for cancer has successfully completed its IND-enabling toxicology studies in Europe and is anticipated for 1Q 2010 IND filing. The other novel antibiotics, CG400549 for MRSA and VRSA have just entered phase I study in Europe. This compound interrupts fatty acid synthesis process that is found in bacteria and seems to be an excellent drug candidate for the 'superbugs'.

CrystalGenomics formed a consortium with Asan Medical Center for cancer research has established a US subsidiary called, CG Pharmaceuticals, for clinical development. The company has also established many drug discovery collaborations with leading pharmas and venture capital groups, including Daiichi-Sankyo, SBI-Biotech, Carna Biosciences, Yuyu Pharma, AmorePacific, Hanmi Pharmaceuticals and ProQuest Investments.

CrystalGenomics that became public limited in 2006 by listing it on KOSDAQ exchange attracted leading names in Korean pharma industry with Hanmi Pharmaceutical, the third largest pharma in Korea, acquiring minority stakes for $30.6 million.

CrystalGenomics entered into an alliance with a leading US-based venture capital firm, ProQuest Investments to identify and develop orally administered drugs that modulate the HIF prolyl hydroxylase enzyme system. Under this agreement, it received up to $6 million in upfront and initial research funding from Palkion, in addition to development and sales milestone payments of more than $200 million.

Over a decade, CrystalGenomics has created total assets of $50.1 million (as in 2008) and generated sales of $4.4 million and CG Pharmaceuticals, its subsidiary company, has generated $4.1 million.

Future plans

CrystalGenomics has set both short and long-term goals to achieve a mission to provide patients with highest quality products through innovations that will improve patients' quality of life.

Sharing his future plans, Dr Joong Myung Cho, says, "Our short-term goal is to become a leading drug discovery and development company beyond SouthKorea. We plan to accomplish this through successful partnering for our lead candidates that have reached phase II stage. We believe that partnerships in the form of either out-licensing or co-development with global players will result in significant improvement of timelines and therefore, will ensure steady stream of revenues through milestones and royalties."

CrystalGenomics has already secured several partnership deals where it would be eligible to receive milestones and royalties. The notable cases include a joint venture deal with ProQuest Investments in 2008 based on an oral anemia treatment

program which is worth up to $200 million, and recent research collaboration and license agreement with AstraZeneca.

Commenting on long-term goal, Dr Joong Myung Cho says, "Our ultimate goal is to become a full-spectrum pharmaceutical company with our own products in the market without losing competitiveness in the discovery area that has played a crucial part in propelling CrystalGenomics' phenomenal growth so far."

Sharing his views on receiving the BioSpectrum Asia Pacific Emerging Company of the Year 2010 Award, Dr Joong Myung Cho, says, "We are honored to be one of the recipients of this prestigious award and believe that this is another validation of our capabilities and potential. Although we are satisfied with our track record so far, there is still a long way to go and we will strive to be the best company that we can be."

"Our competitors include companies outside Asia, and therefore, we view this industry as being highly competitive. The fact that CrystalGenomics has been able to thrive in this recently depressed industry may have demonstrated our competitiveness, however, we plan to raise the bar even higher moving forward," he concludes on a positive note.