Kinexus Launches DrugKiNET KnowledgeBase with 105,000 Experimentally Tested Protein Kinase Drug Interactions

New open-access website also documents over 250,000 predicted protein kinase drug interactions using proprietary algorithms

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VANCOUVER, British Columbia – Kinexus Bioinformatics Corporation, a world-leader in the study of molecular intelligence systems, announced the launch of its DrugKiNET KnowledgeBase (www.drugkinet.ca) for the identification and development of drug candidates that potently and selectively inhibit human protein kinases. This open-access website features quantitative data on the effects of over 800 chemical compounds on more than 400 protein kinases following careful annotation of hundreds of experiments documented in the scientific literature. This data was then used to train two different proprietary algorithms to predict the inhibitory effects of 550 of these compounds on 500 human protein kinases. This information can guide biomedical researchers in the discovery of new therapeutic targets for existing drugs, and aid in the design of promising new drugs.

At least 538 different protein kinases regulate each other and another approximately 21,500 diverse protein targets to coordinate all of the operations in living cells through complex molecular communications and control networks. Kinases are well recognized by the pharmaceutical and biotech industry as highly productive targets for drug development with applications for cancer, diabetes, Alzheimer's disease and many other diseases. In fact, over 400 human disease have been linked to genetic mutations in the genes that encode protein kinases or the direct actions of environmental toxins that target protein kinases. Over the last decade, more than two dozen kinase inhibitors have already been approved for clinical use, primarily for cancer treatment. By targeting inappropriately active kinases, these small molecule drugs essentially re-program cancer cells for their demise.

Over the last year, Kinexus and their collaborators in the Mathematics of Information Technology and Complex Systems (MITACS) groups at the University of British Columbia and Simon Fraser University have worked to identify the specific parts of different protein kinases that are critical for recognition by each of 550 different compounds that have been experimentally shown to inhibit one or more kinases. These parts, termed Inhibitor Determining Residues (IDR's), may be involved in recognizing and binding drugs, and their identification within DrugKiNET can facilitate further optimization of even more potent and specific protein kinase inhibitory drugs. Previously, Kinexus and its partners identified Substrate Determining Residues (SDR's) in protein kinases that were important for recognition of their protein targets and deposited this information in their open-access PhosphoNET Knowledgebase (www.phosphonet.ca).

"We believe that DrugKiNET is an extremely unique and powerful resource for the biomedical research community," commented Dr. Steven Pelech, President and Chief Scientific Officer of Kinexus and a professor in the Department of Medicine at the University of British Columbia. "Over a third of all pharmaceutical drug development is presently focused on protein kinase inhibitory drugs, but we expect this to increase even more, since the vast majority of protein kinases have yet to be pursued as drug targets, and definition of the precise roles of different kinases in non-cancer-related diseases is still in its infancy."

Dr. Pelech added, "We are excited by the prospect that our algorithms can define new protein kinase targets for existing drugs, and that they can identify in the genes that encode protein kinases the specific mutations that may alter their sensitivities to these drugs. As Kinexus has the capability of testing the effects of drug candidates on over 350 different purified protein kinases in-house, we also have the ability to experimentally validate many of our drug predictions for our clients."

Kinexus is a private, biotechnology company engaged in the research and development of innovative methods to map, track and manipulate cellular communication networks. The application of this knowledge positions Kinexus and its clients in drug development, rational drug design, disease diagnosis and personalized therapies to improve human health. Kinexus currently has agreements with over 1700 research laboratories in companies, universities, government institutions and hospitals in over 35 different countries. To learn more about the diverse proteomics and bioinformatics services offered by Kinexus, please visit www.kinexus.ca or call toll-free at 1-866-KINEXUS.

For further information, please contact Kinexus Bioinformatics Corporation toll free at 1-866-KINEXUS or email csutter@kinexus.ca or visit our website at www.kinexus.ca