



## **Kinexus Identifies Over 650,000 Phosphorylation Sites in the Human Proteome**

*Prediction of over 30 million human kinase-substrate interactions now available at PhosphoNET website*

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VANCOUVER, British Columbia – Kinexus Bioinformatics Corporation, a world-leader in molecular intelligence research, announced another major expansion in its PhosphoNET KnowledgeBase ([www.phosphonet.ca](http://www.phosphonet.ca)) for the study of cell communication systems. This open access, online resource for the scientific community now features data on over 93,000 experimentally-confirmed human phosphorylation sites (P-sites) and 560,000 additional P-sites predicted with a new algorithm. PhosphoNET also includes prediction of which kinases individually target each of over 650,000 human P-sites, and how well these P-sites are conserved in over 20 other different organisms.

The human genome encodes at least 516 protein kinases that regulate each other and over 22,500 other diverse proteins to coordinate all cellular operations. These kinases are unique networking enzymes that function by tagging target proteins at specific P-sites with phosphates, which act as molecular on/off switches. Protein kinases are well recognized by the pharmaceutical and biotech industry as highly productive targets for drug development with application to over 400 human diseases. Cancer, diabetes, Alzheimer's disease are just a few of many examples of disorders that arise from cellular miscommunication.

Last year, scientists at 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 cracked the substrate specificity codes for about 500 human protein kinases. Building on this earlier success, the team then developed another algorithm that now accurately predicts the locations of putative P-sites in all of the proteins encoded by the human genome. This major advancement has permitted Kinexus to draft the first high resolution map of the molecular intelligence system of human cells. Further, through application of evolutionary analyses of highly conserved P-sites in very different organisms, Kinexus has been able to define those connections that are the most critical to the functioning of cells. The company is using this information to produce novel antibody probes for tracking key P-sites with its protein microarray technology for application in disease biomarker identification.

“After the sequencing of the human genome a decade ago, the next major challenge was to identify how the various proteins are regulated and how they interact,” 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.

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“Progress on this front has been very slow, but PhosphoNET can serve as a valuable tool to guide biomedical researchers in more fruitful directions to define biomarkers for disease diagnosis and kinase drug targets for development of new treatments.” Dr. Pelech added, “We believe that the approaches taken at Kinexus to establish protein kinase specificities and the identification of their targets in humans can be applied broadly to rapidly elucidate the complex architectures of protein kinase-based communications systems for any animal, plant or microbe for which the complete genome sequence is known. Our next goal is to develop an atlas of protein phosphorylation network maps that are tissue and cell specific. These cell signalling maps could guide a significant portion of biomedical research over the next decade.”

For more than 11 years, Kinexus has been a unique provider of proteomics services to academic and industrial laboratories to track protein kinases and their phosphoprotein targets in experimental tissue and cell specimens. The company has developed a diverse panel of microarrays that can monitor the presence and activity levels of hundreds of kinases and their targets, their interactions, and the effects of promising drug candidates. Kinexus is a private, biotechnology company engaged in the research and development of innovative technologies to track and control signalling proteins in molecular communication networks. The application of this knowledge positions Kinexus and its clients for improved disease diagnosis and personalized drug therapies to improve human health.

**For further information, please contact Kinexus Bioinformatics Corporation  
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