COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Postdoctoral Position at the Columbia University

The Lab of Dr. Choi in the Department of Pathology and Cell Biology at the Columbia University Medical Center is currently seeking a talented postdoctoral research scientist with interest in molecular-cellular mechanisms related to insulin signaling, trafficking and genome integrity. The candidate will employ a variety of techniques ranging from CRISPR screening, conventional biochemistry, cell biology and mouse genetics to achieve their project goals. The postdoctoral scientist will also be given opportunities to collaborate with experts in cryo-EM to understand the molecular mechanism of receptor tyrosine kinase activation.

Her research goal is to delineate mechanisms underlying the mutual regulation between cell division and metabolism by combining mouse genetics, cell biology, biochemistry and cryo-EM structure. Perturbation of this regulation leads to cancer and metabolic diseases. Dr. Choi has discovered a critical role of cell division regulators in insulin signaling through regulating insulin receptor endocytosis. These findings link aneuploidy-suppressing genes to insulin signaling and suggest a mechanism by which a circulating hormone may regulate genomic stability. Her laboratory will study the role of cell division regulators in insulin signaling and will expand it to other receptor tyrosine kinases to discover how systemic signaling communicates with cell division process to maintain both genomic stability and metabolic homeostasis.

Recently, collaboration with Xiaochen Bai in UTSW, she discovered that large-scale conformational change of insulin receptor driven by insulin binding relieves its auto-inhibition, triggering trans-autophosphorylation of the kinase domain and hence initiation of downstream signaling cascade. How this conformational change induces kinase activation, how the activated kinase selectively provokes the signaling branch, and how the active insulin receptor can be preferentially internalized are not fully understood. Her laboratory will reveal how insulin activates the receptor kinase and insulin signaling, and initiates the receptor endocytosis at the molecular level, and how this process maintains systemic homeostasis in vivo. Along the way, they hope to unravel new molecular targets that will be useful to treat two very prevalent diseases, Diabetes and Cancer.

For this position, general knowledge of molecular biology and cell biology is required. Experience in metabolic studies using mouse is ideal but not required.

Please send CV and the names of three academic references via email to: Eunhee Choi (EC3477@cumc.columbia.edu).