



Reciprocal Akt and MAPK Signaling Acts as a Molecular Switch for Connexin 43/Src Complex Dynamics and Gap Junction Function

Anastasia Thévenin, Ph.D.

Lafayette College

Associate Professor, Department of Chemistry



Abstract: Connexin 43 (Cx43) is best known for forming gap junction channels that mediate direct intercellular communication. Beyond channel gating, its cytoplasmic C-terminus serves as a dynamic signaling hub that sequesters the oncogenic kinase Src—suppressing Src activity while simultaneously driving channel closure. This talk will detail a molecular mechanism in which Akt and Mitogen-Activated Protein Kinase (MAPK) pathways act as reciprocal "ON" and "OFF" switches governing Cx43/Src complex stability.

Using a combination of in vitro kinase assays, co-immunoprecipitations under kinase-activating conditions, co-immunofluorescence, and functional cell-cell communication assays, we show that Akt phosphorylation at S373 acts as an "ON" switch that promotes Src recruitment, whereas a cluster of five MAPK sites acts as an "OFF" switch that destabilizes the complex. Crucially, we demonstrate that ERK serves as the primary disruptor of this interaction compared to JNK and p38. Finally, we will examine how Cx43-derived peptides function as targeted biochemical probes to sequester Src in living cells, offering new insights into fundamental gap junction regulation and Src signaling.

Wednesday, October 7th | 2:00pm–3:15pm | Science Hall 126 & Zoom

For more information, visit our website: go.rowan.edu/sciencehallseminars