Spatiotemporal Control of Ras Signal Transduction

John F. Hancock
Professor and Chair, Integrative Biology and Pharmacology, UT Houston Medical School

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Abstract:
Ras proteins are small, lipid anchored GTPases that are tethered to the inner surface of the plasma membrane. Ras proteins operate in key signaling circuits that are frequently targeted by oncogenic mutations in human malignancies. My laboratory is interested in how Ras proteins interact with the complex, dynamic, proteo-lipid media that we call the plasma membrane. In particular we are investigating how Ras proteins organize nanoscale signaling domains and in turn what emergent signaling system properties flow from the unique spatial constraints imposed on Ras distributions by the plasma membrane.