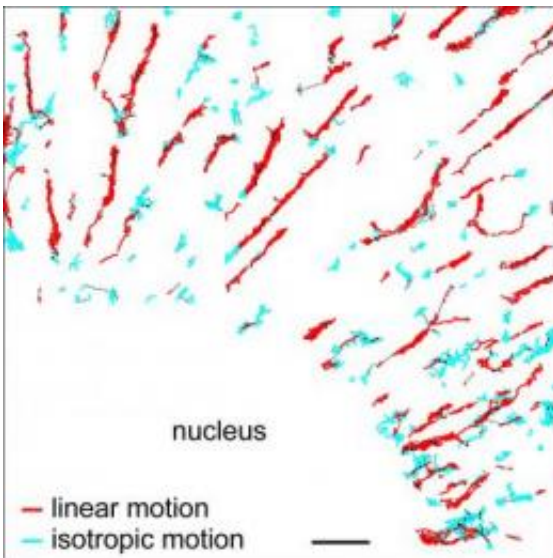


The connection between a cell's cytoskeleton and its surface receptors

March 6 2011



CD36 trajectories in a primary human macrophage from a 10 Hz/10 s single-molecule movie. Scale bar, 2 μm . Red, linear trajectories; cyan, isotropic trajectories. The linear motion of receptors, which depends on the actin meshwork and on microtubules, enhances receptor clustering in the absence of ligand, priming the macrophages to respond when exposed to ligand. Credit: K. Jaqaman/Harvard Medical School.

New findings from researchers at Harvard Medical School in Boston and the Hospital for Sick Children in Toronto may shed light on the mechanisms that regulate the organization of receptors on the cell surface, a critical aspect of cell signaling not well understood at this time.

The group reports on their use of the macrophage protein CD36, a clustering-responsive class B scavenger receptor, as a model for studying the processes governing receptor clustering and organization. The protein is involved in a number of cellular and physiological functions that range from [lipid metabolism](#) to immunity, but it is unknown how the CD36 protein is organized in the cell (as monomers or as oligomers) and how that organization leads to its biological functions.

The researchers employed a combination of powerful tools: quantitative live-cell single-molecule imaging and biochemical/pharmacological approaches to study the dynamics, oligomerization and signaling of CD36 in primary human macrophages.

The group reports that movement of CD36 in the macrophage [plasma membrane](#) is regulated by the sub-membranous actin meshwork and by microtubules, demonstrating that these cytoskeletal components might play a critical role in receptor function, in general.

In terms of the impact of this research, lead researcher Khuloud Jaqaman says: "In the long run, establishing the relationship between receptor organization and cell signaling might aid in the development of drugs since [receptors](#) on the [cell surface](#) are the most accessible to pharmacological manipulation."

More information: The presentation, "CYTOSKELETAL CONTROL OF RECEPTOR DIFFUSION IN MEMBRANE PROMOTES CD36 FUNCTION AND SIGNALING" by Khuloud Jaqaman, Hirotaka Kuwata, Nicolas Touret, Richard Collins, William S. Trimble, Gaudenz Danuser, and Sergio Grinstein is at 11:30 a.m. on Sunday, March 6, 2011 in Room 307 of the Baltimore Convention Center. ABSTRACT: tinyurl.com/4omy687

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