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THE CONNECTION BETWEEN A CELL'S CYTOSKELETON  
AND ITS SURFACE RECEPTORS

Critical Aspect of Cell Signaling Described  
Today at Biophysical Society Meeting in Baltimore.

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EMBARGOED FOR RELEASE until 11:30 am. Sunday, March 6, 2011.

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WASHINGTON, D.C. (March 6, 2011) -- 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."

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: <http://tinyurl.com/4omy687>

NOTE TO EDITORS: An image is available to accompany this story.

IMAGE CAPTION: CD36 trajectories in a primary human macrophage from a 10 Hz/10 s single-molecule movie. Scale bar, 2  $\mu$ m. 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.

IMAGE CREDIT: Reporters and editors may freely use this image so long as they credit: K. Jaqaman/Harvard Medical School.

This work was funded by the National Institutes of Health, the Center for Cell Decision Processes (NIH P50), the Heart and Stroke Foundation of Ontario, and the Canadian Institutes of Health.

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#### MORE MEETING INFORMATION

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Each year, the Biophysical Society Annual Meeting brings together more than 6,000 scientists and hosts more than 4,000 poster presentations, 200 exhibits, and more than 20 symposia. The largest meeting of its type in the world, the Biophysical Society Annual Meeting retains its small-meeting flavor through its subgroup meetings, platform sessions, social activities, and committee programs.

#### QUICK LINKS

Meeting Home Page:

<http://www.biophysics.org/2011meeting>

General Meeting Information:

<http://www.biophysics.org/GeneralInfo/Overview/tabid/2062/Default.aspx>

Search abstracts:

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#### PRESS REGISTRATION

The Biophysical Society invites credentialed journalists, freelance reporters working on assignment, and public information officers to attend its Annual Meeting for free. For more information on registering as a member of the press, please contact Ellen Weiss at [eweiss@biophysics.org](mailto:eweiss@biophysics.org) or 240-290-5606. Also see:

<http://www.biophysics.org/Registration/Press/tabid/2148/Default.aspx>

#### ABOUT THE BIOPHYSICAL SOCIETY

The Biophysical Society, founded in 1956, is a professional, scientific society established to encourage development and dissemination of knowledge in biophysics. The society promotes growth in this expanding field through its annual meeting, monthly journal, and committee and outreach activities. Its over 9,000 members are located throughout the U.S. and the world, where they teach and conduct research in colleges, universities, laboratories, government agencies, and industry. For more information on the society or the 2011 Annual Meeting, visit [www.biophysics.org](http://www.biophysics.org)

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