Biophysical Society

Biophysical Society 62nd Meeting, Feb. 17-21, 2018, San Francisco, California

Ras Protein's Role in Spreading Cancer

Researchers at the University of Illinois discovered how Ras protein binding to cell membranes impact the signaling pathways that cause cancer's uncontrolled growth.

EMBARGOED for release until 8 a.m. EST on Sunday, Feb. 18, 2018

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WASHINGTON, D.C., February 18, 2018 -- Protein systems, such as Ras, make up the complex signaling pathways that control whether a cell divides or, in some cases, becomes cancerous and metastasizes into other regions of the body. For example, 98 percent of pancreatic cancers show Ras protein mutations.

Ras proteins have long been the focus of cancer research because of their role as "on/off switch" signaling pathways that control cell division and failure to die like normal, healthy cells do. In order for Ras proteins to do their job, they need to bind to a membrane surface. Scientists have tried to pharmaceutically "turn off" the Ras protein, or prevent it from being "turned on", without much success. Now, a team of researchers at the University of Illinois at Urbana-Champaign has been able to study precisely how Ras proteins interact with cell membrane surfaces.

Stephen Sligar and his team have found that the KRas4b form of Ras protein binds more tightly to the cell membrane, but it needs to attach on the correct side.

One side of the KRas4b protein associates with signaling partners; if this side binds to the membrane, then it's not able to interact with its partners, but if the inactive side binds to the membrane, then the active side is available to engage in the downstream signaling process that could enable cancer. Sligar' s team discovered that fatty acids in KRas4b help control which side attaches to the cell membrane.

"The membrane is playing a very critical role in controlling the activity of very complex signaling networks that involve many different protein molecules, Sligar said. "It is now becoming appreciated how much the membrane composition can dictate how these molecules are recruited to the membrane surface, and then how they go about their business."

In the long term, the revitalized interest in the biophysics of KRas4b, and its interaction with the membrane, will hopefully guide the discovery and design of pharmaceuticals for the treatment of cancer.

167-Plat - "Mechanisms in cancer signaling: The role of the membrane in the recruitment of the oncogene KRas4b" is authored by Stephen G. Sligar, Michael C. Gregory and Mark A. McLean. It will be presented at 10:45 a.m. PST, Sunday, Feb. 18, 2018 in Esplanade, Room 156 of the Moscone Center, South. Abstract: https://plan.core-apps.com/bpsam2018/abstract/ea4b4250733473141a814abfbdb4d6d6

MORE MEETING INFORMATION

ABOUT THE MEETING

Each year, the Biophysical Society Annual Meeting brings together more than 6,000 researchers working in the multidisciplinary fields representing biophysics. With more than 3,600 poster presentations, over 200 exhibits, and more than 20 symposia, the BPS Annual Meeting is the largest meeting of biophysicists in the world. Despite its size, the meeting retains its small-meeting flavor through its subgroup symposia, platform sessions, social activities and committee programs. The 62nd Annual Meeting will be held at the Moscone Center (South) in San Francisco, California.

PRESS REGISTRATION

The Biophysical Society invites professional journalists, freelance science writers and public information officers to attend its Annual Meeting free of charge. For press registration, contact Ellen Weiss at EWeiss@biophysics.org or the Media Line at the American Institute of Physics at media@aip.org or 301-209-3090.

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NEWS RELEASES

Embargoed press releases describing in detail some of the breakthroughs to be discussed at the meeting are available on EurekAlert!, Newswise and Alpha Galileo or by contacting the Media Line at the American Institute of Physics at media@aip.org or 301-209-3090.

QUICK LINKS

Main Meeting Page: https://www.biophysics.org/2018meeting/Home/tabid/7117/Default.aspx
Symposia:
https://www.biophysics.org/2018meeting/Program/ScientificSessions/Symposia/tabid/7192/Default.aspx
Desktop Planner:
http://www.biophysics.org/2018meeting/GeneralInfo/MobileApp/tabid/7473/Default.aspx

ABOUT THE SOCIETY

The Biophysical Society, founded in 1958, 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 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 2018 Annual Meeting, visit http://www.biophysics.org.

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