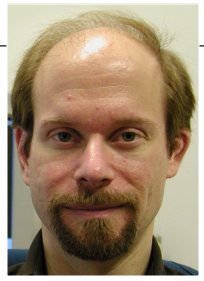

Seeing the Signaling Forest and the Trees

Michael B. Yaffe is Chief Scientific Editor of *Science Signaling* and associate professor of biology at the David H. Koch Institute for Integrative Cancer Research at the Massachusetts Institute of Technology.

Cite as:
M. B. Yaffe, Seeing the signaling forest and the trees. *Sci. Signal.* **1**, eg5 (2008).

10.1126/scisignal.135eg5

WHY IS THERE A VITAL NEED FOR A JOURNAL FOCUSED ON CELL SIGNALING? BECAUSE SIGNAL transduction mechanisms are the natural control circuits that regulate biological systems, they provide potent targets for the development of therapeutic agents to combat disease or alter the behavior of biological systems. Even researchers whose work is not directly focused on signaling mechanisms need to understand the molecular mechanisms that control the physiological processes that they study. Cellular signal transduction refers to the biochemical processes by which cells respond to cues in their internal or external environment. Similar biochemical pathways control the functions of amphibian oocytes, insect neurons, mammalian cells of the gut, heart, skeleton, immune system, and so on. Cell signaling is equally critical to the physiology of bacteria and plants. Consequently, an understanding of these regulatory systems is essential to the work of many biologists, those in the basic life sciences—such as neurobiology, immunology, cell biology, and developmental biology—and those whose research concerns the applied life sciences—in fields such as pharmacology, cancer biology, and toxicology. Many Nobel Prizes have been awarded for discoveries in the general area of cell signaling.

The study of cell signaling is inherently multidisciplinary, using tools from biochemistry, cell biology, structural biology, bioinformatics, and computational biology, together with in vivo studies in model organisms spanning the plant and animal kingdoms, to address a wide range of questions in medicine, agriculture, and evolution—indeed, to probe into some of the core processes that define and regulate life itself. Consequently, a journal devoted to the study of cell signaling should bridge fields not often covered together, while simultaneously covering each discovery in depth. The goal of *Science Signaling* is to provide its readers with a view of both the forest and the trees in this complex multidisciplinary arena.

The incredible volume of new information and data currently emerging means that no one can be an expert on all aspects of cell signaling. To make this information readily accessible to our readers, it is vitally important that *Science Signaling* continue to invest heavily in state-of-the-art Reviews and Perspectives, our Connections Maps and pathway overviews, and Teaching Resources contributed by cutting-edge researchers. These resources provide a broad view of the forest of cell signaling, perhaps enabling researchers to explore regions of this forest into which they have not previously ventured. However, an up-close look at the individual trees is equally crucial. Thus, *Science Signaling* embraces what was formerly *Science*'s STKE, and is now extending that venue with a heavy dose of primary research papers.

Science Signaling will feature primary literature from scientists working at the forefront and interfaces of all fields that involve signal transduction. We plan to publish *Science*-quality manuscripts that advance new fundamental concepts, and connect cellular events and pathways that were previously studied largely in isolation, as well as research demonstrating new techniques, or applying quantitative methods including computational approaches and bioinformatics to uncover how the flow of biological information is mediated in biochemical and biophysical terms. Only recently have researchers had sufficient information, tools, and understanding to take a "systems-level" view of signaling pathways, which bring concepts from engineering, computer science, and mathematical modeling to bear on the complicated networks that control biological events. Along with more traditional studies that continue to elucidate biochemical signaling mechanisms, we hope that these types of analyses will shed new light on signaling issues in health and disease, help translate that research into drug discovery, generate computational models of signaling circuits that suggest new hypotheses that can then be tested experimentally, and explore network properties and systems-level performance of signaling systems.

By providing both "close-up" and "long-range" views, *Science Signaling* enables current and future generations of scientists, researchers, students, and educators to find, organize, and use all of the information about interactions between biomolecules, transforming these data into detailed practical knowledge about mechanisms of cell regulation at the cell, tissue, and organismal level. Find all the information you will need to contribute at http://stke.sciencemag.org/about/ifora.dtl.

–Michael B. Yaffe

Seeing the Signaling Forest and the Trees

Michael B. Yaffe

Sci. Signal. **1** (35), eg5.
DOI: 10.1126/scisignal.135eg5