

### Biomedical Computation Review

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# seeing science

## SeeingScience

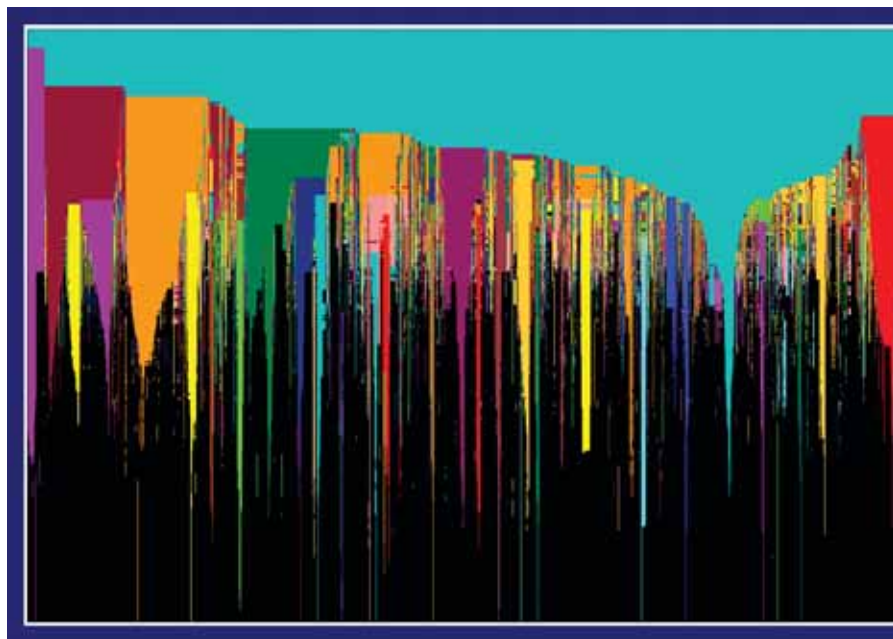
BY KATHARINE MILLER

## Jackson Pollock's Protein Interaction Communities

Splashes of bold color seem to drip down the page, bringing to mind the paintings of Jackson Pollock. Spurred by the beauty of the image she had created, **Anna Lewis**,\* a graduate student studying biological networks and systems biology at the University of Oxford in the United Kingdom, submitted it to the Art and Science Exhibition at the International Conference on Intelligent Systems for Molecular Biology in July 2010.

But the image is more than a pretty picture. It is actually a plot showing how functional communities in yeast protein interaction networks (horizontal axis) change in size and nature at different levels of resolution (vertical axis). Before now, the default method for community detection looked at only one horizontal slice through this image—i.e., a single level of resolution. It therefore tends to miss structures below a certain size relative to the total network size, says **Mason Porter, PhD**, university lecturer of applied mathematics at Oxford and one of Lewis' supervisors. Lewis' approach, Porter says, "lets you tune between the levels." If a new community is identified in this way, "that might be suggestive of further investigations one might do," he says. □

\*Because Lewis is currently attempting to break a group speed record for rowing across the Atlantic Ocean she was unavailable for an interview!



*At the top of this plot, it's as though we're looking at the entire network of yeast protein interactions from a great distance, represented by the continuous solid teal color. But as we move toward the bottom of the image—getting closer and closer—various clusters resolve into smaller and smaller communities. Communities below a certain size are shown in black. Any horizontal slice through the plot provides a view of the communities in the network at a particular resolution. Work related to this image was published in BMC Systems Biology in 2010. Courtesy of Anna Lewis, Nick Jones, Mason Porter and Charlotte Deane, University of Oxford.*