

A new model of institutionalizing interdisciplinary research encouraged by scientists

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Collegiate researchers from a variety of disciplines, communication, neuroscience, psychology, population studies, statistics, biomedical engineering, and pediatrics, to name just a few, have formed a collaboration of social and life scientists to formalize the process of cross-disciplinary scientific collaboration. This collaboration is meant to be a model of how to incorporate often disparate groups of researchers that study genes, brain, and environmental factors that matter to the outcomes of population. Critical to this collaboration is the acknowledgement that future research needs to focus on the examination of the broader population to provide better science on the lives of all individuals in our society.

This collaboration began as part of an initiative from the University of Michigan's Office of Research that urged scientists to step outside of their disciplines and think of ways to expand current research paradigms through interdisciplinary collaboration. With the support of the Survey Research Center in the Institute of Social Research at the University of Michigan, the group's first effort is a paper titled "Neuroscience meets population science: What is a representative brain?" and it appears this week in the *Proceedings of the National Academy of Sciences*, one of the world's most-cited multidisciplinary scientific journals. The paper explains the process of "Population Neuroscience" as a means to take advantage of multiple disciplines and synergy to understand how neural processes can inform large-scale effects at the population level and to

ensure that neuroscience findings can be generalized to larger groups.

The paper is led by Luke Hyde, Ph.D., Assistant Professor, University of Michigan, Department of Psychology; Colter Mitchell, Ph.D., a Faculty Research Fellow at the University of Michigan Survey Research Center, Institute for Social Research; Emily B. Falk, Ph.D., Assistant Professor of Communication, Annenberg School for Communication, University of Pennsylvania; and additional scientists and faculty from the University of Michigan and Wayne State University.

"What we have tried to do is take advantage of the disciplines and synergy of the group to answer questions that couldn't be answered without input from multiple disciplines," the team explains. "We think that this could produce new insights on the scale that other movements toward larger team-based science, such as recent work in high energy physics on the Higgs Boson and the human genome project."

The *PNAS* paper outlines steps to encourage the type of collaboration this collaboration of scientists regularly strives to achieve. These include systematically "piggybacking" research methodologies within the represented disciplines, use more strategic sampling methodologies when recruiting for brain imaging tests, and remain focused on changing the culture of [neuroscience](#) and population research to make collegiality second nature.

"Our work encourages new research directions – bringing together groups of scientists from across social and life sciences to deal with the complexities of the environment and the person as well as represent the population. We push each other to look beyond our disciplinary boundaries to better understand a given problem from multiple directions. And we're looking to push our science past the usual focus on one topic area," the team explained.

"Nearly all social science disciplines, including social demography, sociology, political science, economics, communication science, and psychology make assumptions about processes that involve the brain, but have incorporated neural measures to differing, and often limited degrees; many still treat the brain as a black box," the authors write. "We are in the midst of a new era in [brain](#) and population sciences. The only way to stay at the front of this explosion will be to work together."

Provided by University of Pennsylvania

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