



# Harnessing the Power of the Brain

## Supporting MindCORE

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Complex challenges demand a collaborative approach, a willingness to break boundaries, and an openness to new ideas. That is why MindCORE—the Mind Center for Outreach, Research, and Education—exists, to bring together faculty, fellows, and students from across Penn to explore the science of the human mind. United by their interest in human brains, behavior, and the cognitive sciences, MindCORE-affiliated researchers and students come from disciplines including psychology, linguistics, biology, neuroscience, and others.

Under the direction of Joseph Kable, Jean-Marie Kneeley President's Distinguished Professor of Psychology, everything that MindCORE does, from providing seed funding to researchers to hosting postdoctoral fellows and training students is guided by the belief that understanding human behavior can make the world a better place, and that collaborative, cross-disciplinary research is key to making progress.

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## Pieces of the Puzzle

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MindCORE researchers pursue insights into phenomena ranging from brain abnormalities, decision-making, and risk tolerance to linguistic acquisition and the fundamental nature of human intelligence and creativity. In order to cultivate scientifically rigorous, nuanced understandings of the mind's inner workings, scientists must work together and recognize that different disciplines can hold different pieces of the puzzle.

MindCORE research emphasizes collaboration, providing labs with shared instrumentation and laboratory facilities, awarding seed funding, hosting postdoctoral fellows, and helping recruit faculty who foster meaningful connections between departments and programs. The collaborative, cross-lab approach enables the use of technology and methodology that no single lab could support on its own.

## MRI Research

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One of the most exciting, unique aspects of MindCORE's research initiative is the use of magnetic resonance imaging (MRI). MRI allows researchers to see brain activity in action, as people make decisions, solve problems, or even read poetry or create music, allowing greater insight into the complexity at work in the human brain.

With MRI, MindCORE scientists have studied the development of spatial recognition over time, discovering the part of the brain that acts as an internal GPS and allows us to successfully navigate our environment. MRI is also used to study brain responses in different scenarios: can a brain response predict how information will be shared, if a decision will be altruistic, if a child has the potential to excel at math?

## A Network of Scientists

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Postdoctoral fellows are key to MindCORE's approach. As early career scientists with a track record of cross-disciplinary thinking, they ask innovative questions. By pairing fellows with faculty members from different departments and providing research funding, MindCORE empowers them to answer those new questions and propel the field forward. Because they work across labs, fellows reinforce MindCORE's collaborative structure. Though the fellowship program is relatively new, its alums have already gone on to prestigious positions at other institutions, bringing the MindCORE ethos with them and creating stronger networks within the Penn community and across the scientific community more broadly.



Joe Kable, Jean-Marie Kneeley President's Distinguished Professor of Psychology, is the director of MindCORE. He studies the cognitive and neurophysiological mechanisms of human decision making, using an integrated empirical approach that borrows from economics, the psychology of judgment and decision making, and social and cognitive neuroscience.

## Education and Outreach

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MindCORE supports students interested in studying human brains and behavior, instilling the importance of cross-disciplinary approaches from the start. At the undergraduate level, MindCORE facilitates interaction between College majors related to the study of the mind and sponsors research opportunities for undergraduate students, including summer research fellowships for Penn and non-Penn students. Both allow students to work closely with faculty, as well as share processes and findings with their fellow students.

The Center supports and participates in a variety of public programs on- and off-campus to share neuroscience knowledge and demonstrate real-world implications. This programming, including seminar series, public lectures, and other events such as demonstrations at the Academy of Natural Science, aims to broaden participation of young scientists from groups typically underrepresented in cognitive and brain science.



Quentin Wedderburn, C'20, (right) studied the relationship between traumatic deprivation in childhood, brain development, and observable behaviors during his MindCORE undergraduate summer fellowship. "For someone like me, who intends to go to grad school, this program has been really helpful. It's demystified the whole process of research," he says.

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## Giving Opportunities

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The giving opportunities described here support MindCORE's efforts to investigate the complex relationship between brain activity and the vastness of human intelligence and behavior.

### **Endow and name the MindCORE imaging center with a gift of \$4 million**

A center for magnetic resonance imaging (MRI) has enormous potential to accelerate discovery in human behavior, including how our brains help us navigate space and whether capacity for empathy is a neurological function. A dedicated imaging center will help scholars at every level understand how the brain gives rise to human action, thought, and behavior. The imaging center, located in the state-of-the-art Pennovation Works campus, will be Penn's home for cutting-edge, interdisciplinary research on the mind. Gifts of \$50,000 to \$200,000 support undergraduate courses that give students hands-on MRI research experience and teach them to design their own studies.

### **Endow and name the MindCORE directorship with a gift of \$2 million**

A gift to endow the MindCORE directorship will associate the donor's name with the Center's academic leadership in perpetuity. The director provides the overall vision for the Center, oversees research collaborations and educational initiatives, and drives outreach efforts.

## Endow and name the MindCORE postdoctoral fellowship

MindCORE postdoctoral fellows, chosen for their emerging academic talent, have a unique opportunity to work with faculty across disciplines and gain experience with cutting-edge technology. A gift of \$9 million provides endowment support for a full cohort of six fellows; \$1.5 million endows one fellowship.

## Support a MindCORE seed fund

Seed grants incentivize multidisciplinary faculty teams to tackle new ideas that are too early-stage to garner funding from national scientific organizations. Recent MindCORE research has explored areas including social and behavioral science, language science and technology, and cultural evolution. A gift of \$1 million provides term funding for five years.

## Support undergraduate research

Summer research fellowships for undergraduates allow Penn undergraduates to do research with Penn faculty and gain experience using advanced research technologies. MindCORE aims to expand its fellowship opportunities so that more students and faculty can participate in these partnerships. A gift of \$150,000 endows one fellowship per summer. A summer research experience for non-Penn undergraduates allows underrepresented students with an interest in brain science to have a research experiences at a top-tier research university, positioning them competitively to pursue graduate education to become our nation's future scientists. These competitive fellowships open up possibilities for students who may not attend research universities. An endowed gift of \$2 million names the summer fellowship; a term gift of \$300,000 supports students for five years.

## Endow and name the MindCORE public outreach and research fund

MindCORE outreach involves the Living Labs program, as well as collaboration with on- and off-campus organizations on events related to brain science research and education. Recent partners include the Neuroscience Graduate Group at Penn and the Franklin Institute. An endowed gift of \$400,000 names the public program outreach and research fund; a term gift of \$100,000 supports the fund for five years.

## Endow and name the MindCORE workshops and bootcamp series

Using neuroscience tools requires the ability to work with large datasets. Workshops and bootcamps for graduate and undergraduate students studying brain science teach the programming languages that will allow them to get the most out of their data. An endowed gift of \$200,000 names the workshop and bootcamp fund; a term gift of \$50,000 supports the fund for five years.

## Endow and name the MindCORE professional development fund

Professional development events include panels and networking nights for women and underrepresented minorities, connecting young scientists to leaders in the field to discuss challenges like publishing and gender disparities in the sciences. An endowed gift of \$200,000 names the professional development fund; a term gift of \$50,000 supports the fund for five years.

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To learn more about supporting MindCORE please contact Deb Rhebergen, Vice Dean for Advancement, at 215-898-9942 or [drheberg@sas.upenn.edu](mailto:drheberg@sas.upenn.edu).

