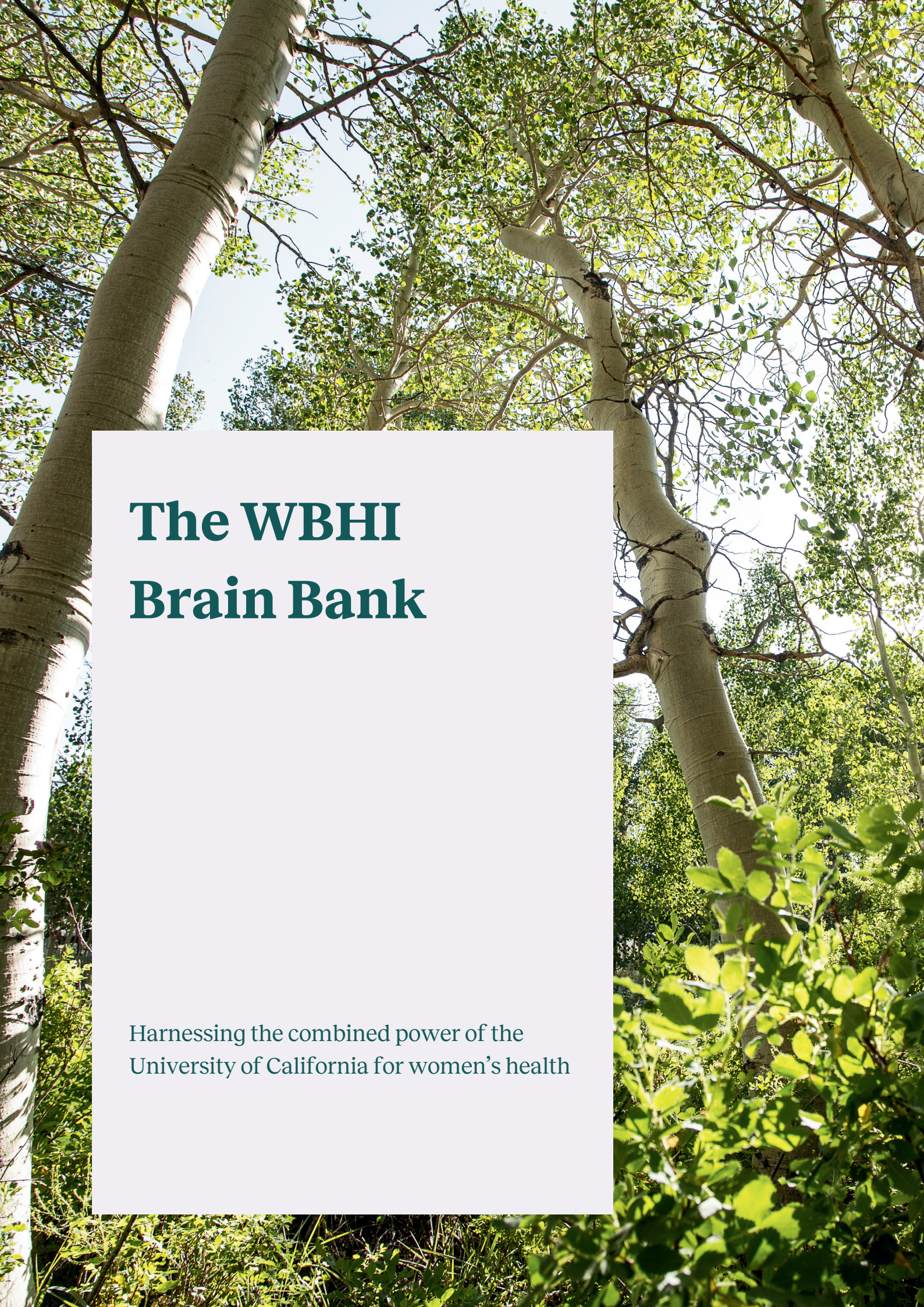




The WBHI Brain Bank

Harnessing the combined power of the
University of California for women's health

The potential of “Big Data”

Big problems require big solutions. The Bowers WBHI is building an open-access brain-imaging incubator that applies AI to the most comprehensive and inclusive collection of brain data acquired for women’s health. The **WBHI Brain Bank** integrates MRI data from six UC Brain Imaging Centers and pairs it with standardized metadata on mood, medical history, and reproductive health.

Through its scalable infrastructure, the WBHI Brain Bank sets a new standard for women’s brain health research and will support hundreds of research questions that can be asked by the broader brain-imaging community. With data housed on OpenNeuro.org, neuroscientists will be able to draw upon this expanding resource to ask questions at the intersection of the brain, health, and behavior.

The team science model embraces the single most important feature of the University of California. Its ten campuses are spread out across a geographically and demographically diverse state — the fifth largest economy in the world and 12% of the U.S. population. On their own, these UC campuses rival other leading institutions. Combined, there is no other university system like it on the planet. Six UC campuses are part of the WBHI Brain Bank.

Leveraging the power of the UC system



The consortium science approach was first adopted by astronomy, genomics and particle physics, where massive amounts of data are collected through joint endeavors. Embracing big data ushered in major discoveries for those fields. We can do the same for women’s health, by studying thousands of women in ways no one else thought was possible. The University of California is leading the way.

Creating a unified University of California Brain Imaging Database, with a set of standardized metrics pooled across sites, represents a **watershed moment for the UC system.**



WBHI Brain Bank Data



All sexes and ages (18-100)



Brain imaging



Mood, medical history



Lifespan reproductive health



REDCap

Online survey portal for standardized metadata



Flywheel

Secure cloud-based MRI data management

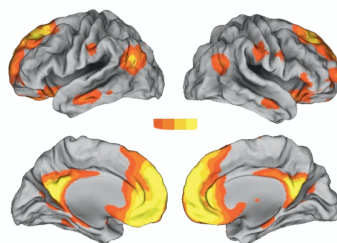


OpenNeuro

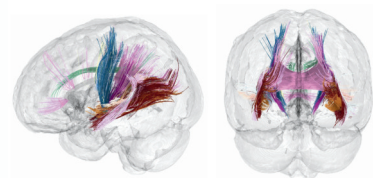
Open-access data repository maintained by DCC



Brain
Structure

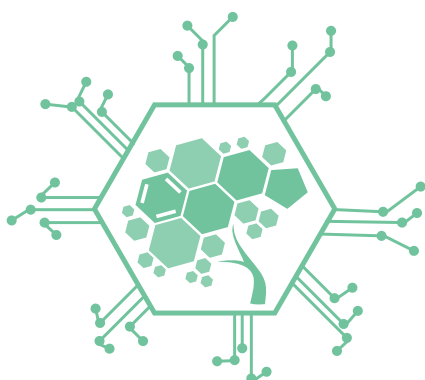


Brain
Function



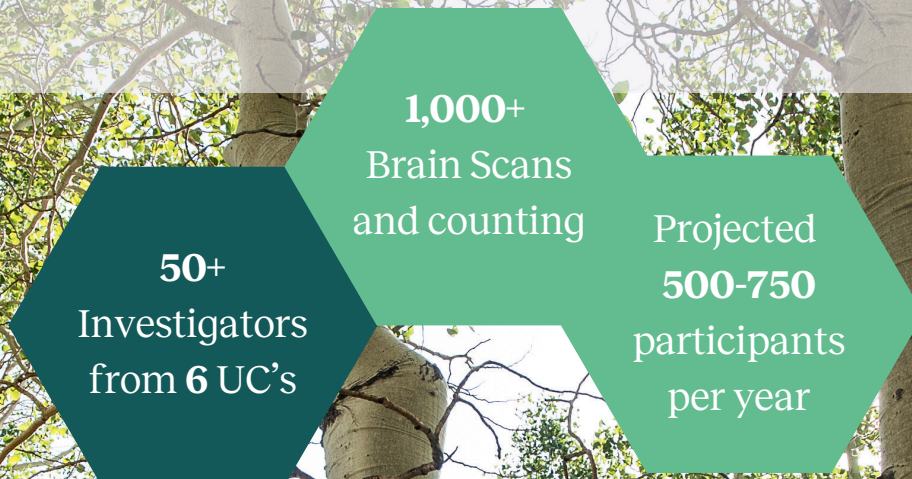
Brain
Connectivity

Big Data consortia require a robust and flexible infrastructure to support scalability. The WBHI's Data Coordination Core at Stanford develops and maintains the informatics architecture of the Brain Bank, creating pipelines for data storage, processing, and sharing on OpenNeuro.org



Another major goal of the Brain Bank is to accelerate efforts to bridge cognitive neuroscience with artificial intelligence (AI). The Brain Bank's large-scale database enables the deployment of supervised and unsupervised deep learning models that have led to ground-breaking discoveries in a wide range of applied fields, including structural biology and astrophysics, but are still under-exploited in neuroimaging due to an historically limited amount of data.

An incubator for women's brain health research



Brain Bank Roadmap

- 1 Assemble.** Establish the regulatory and informatics infrastructure across UC campuses and designate key personnel at each site
- 2 Build.** Construct and beta-test the data workflow with local Site Champions
- 3 Grow.** Expand the user-base to early adopters at each site. Hold town halls to drive awareness within local imaging communities and connect to power users
- 4 Strengthen.** Establish a Common Acquisition Protocol to enhance scientific rigor and reproducibility across the consortium
- 5 Enhance.** Expand the scientific scope by adding biofluids and investigator-led additions to survey
- 6 Share.** Share blueprint with global partners to form 'Sister Hubs' modeled on the WBHI