



Ann S. Bowers

Women's Brain Health Initiative



Advancing
women's health
will require
**“a global shift in
science culture.”**

Shansky & Murphy
Nature Neuroscience 2021

UC SANTA BARBARA

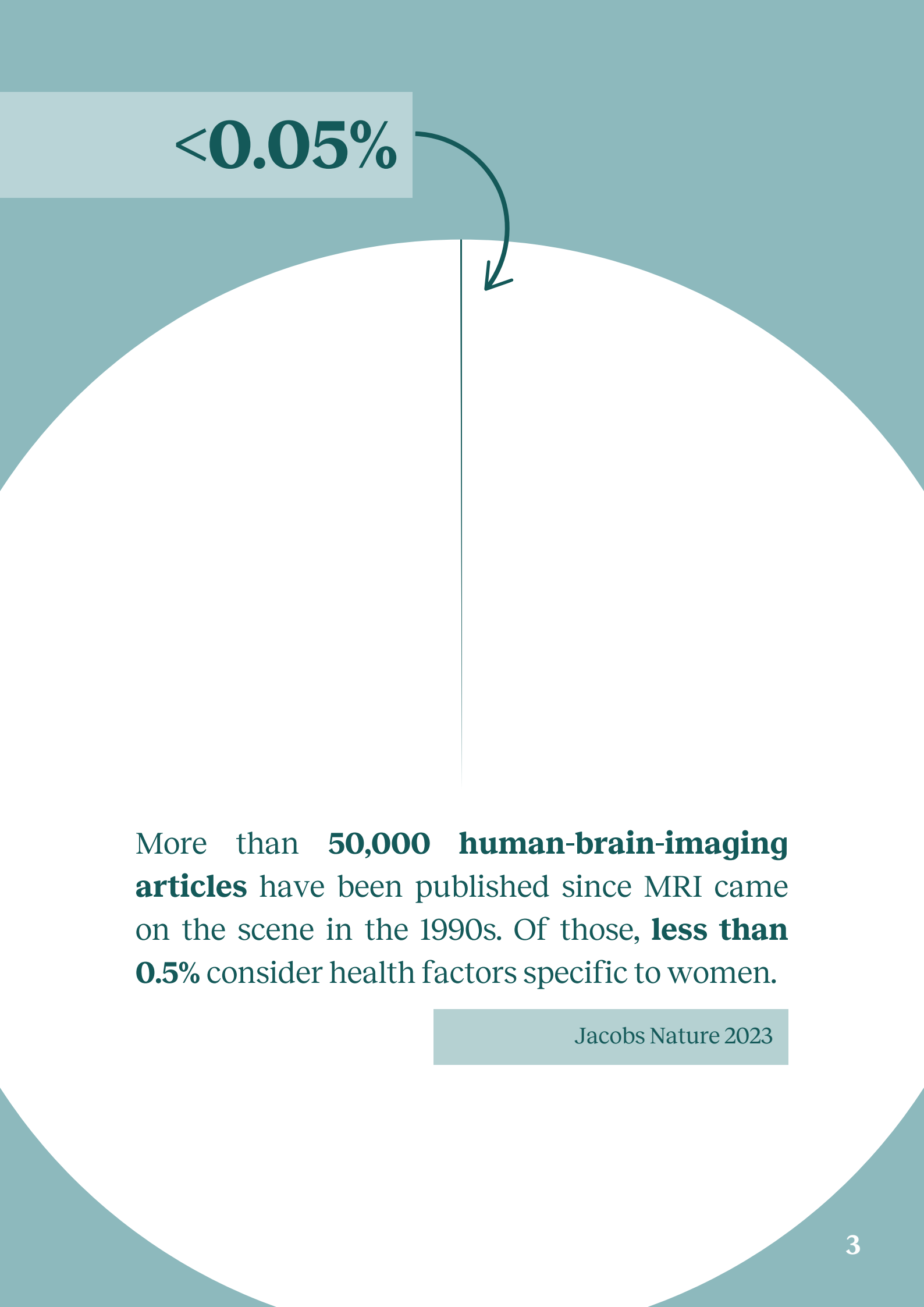
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📞 805 893 2692

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More than **50,000 human-brain-imaging articles** have been published since MRI came on the scene in the 1990s. Of those, **less than 0.5%** consider health factors specific to women.

Jacobs Nature 2023

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Ann S. Bowers

Ann S. Bowers (1937-2024) was an American business executive who served as the first Director of Personnel at Intel and the first Vice President of Human Resources at Apple, Inc. Ann was a trailblazer, serving as one of the few female executives in the semiconductor industry during the founding of the tech industry in the 1960s, where she led Intel's explosive growth from 200 to 2500 employees.



**Cornell Class of '59
Double Major,
English & Psychology**



In 1990, Ann and the Noyce family created the Noyce Foundation in honor of her late husband, Dr. Robert N. Noyce, co-founder of Intel and inventor of the integrated circuit. His creation fueled the personal computer revolution and gave Silicon Valley its name.

Ann and Robert were passionate activists and philanthropists, committed to bolstering education and training opportunities for the next generation. Ann's philosophy was to invest in strong leaders with a clear vision who were willing to dedicate their time and talent to improving the world.

We are indebted to Ann and the Bowers family for their transformative investment in the WBHI and women's health.

“We look at philanthropy the way VC’s look at their investment opportunities. We use the same criteria a VC would: leadership first, idea second, and a well-conceived plan to carry out the idea third.”

— **Ann S. Bowers**

A message from the Director

We are at a pivotal moment for women's health. Historically underfunded and overlooked, the field is rapidly gaining attention across sectors. In December 2024, the first White House Conference on Women's Health Research brought together business and philanthropic leaders, academic researchers, women's health advocates, and government officials. The event was a celebration and a call to action. Recent developments, like Maven Clinic's rise to a \$1.7 billion valuation, underscore the hunger for high quality healthcare for women.

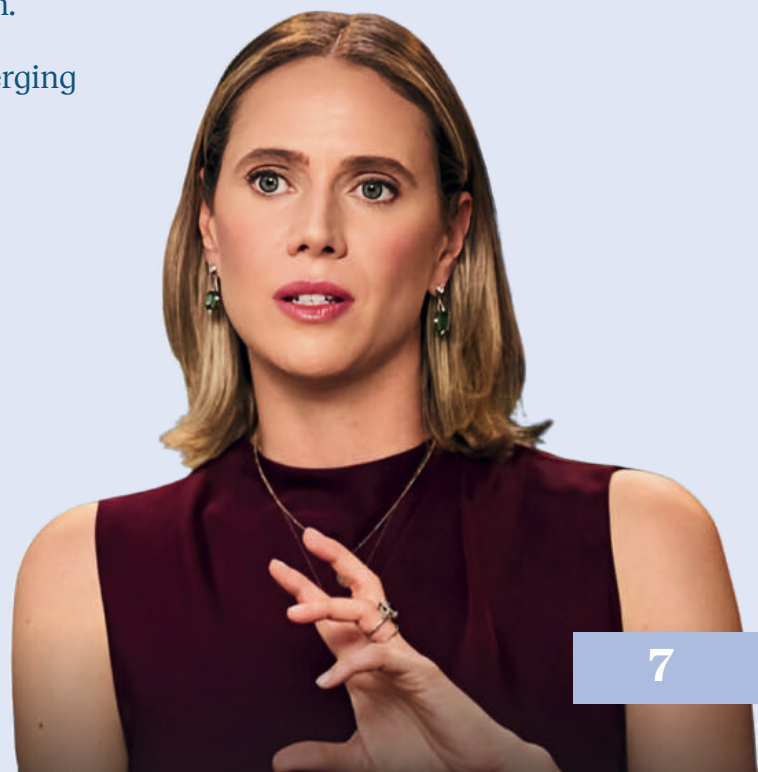
The WBHI is proud to be at the forefront of this shift—advancing research that not only includes women, but centers their unique experiences and health needs. Our flagship program—the WBHI Brain Bank—is building the largest open-access brain imaging consortium dedicated to women's health. In parallel, our moonshot projects zero in on two key transitions, pregnancy and menopause, in exceptional detail. We apply precision imaging, AI-driven modeling, and deep-phenotyping to some of the most pressing and least understood questions in women's health.

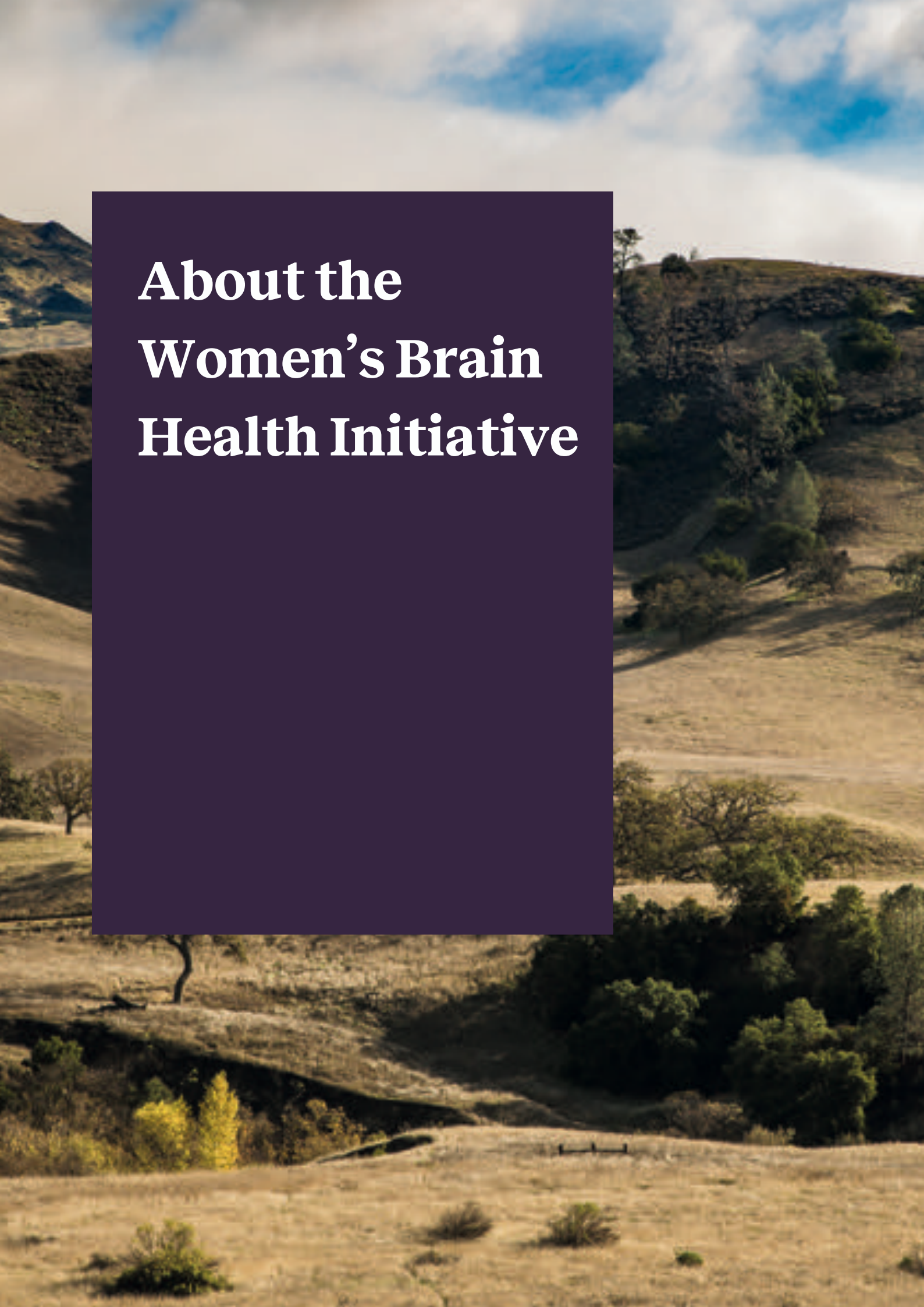
Can a careful examination of the maternal brain give rise to a new class of therapeutics for stroke patients? What are the consequences of preeclampsia on later life brain health? Why do multiple sclerosis symptoms increase post-menopause and will the answer lead us to therapies that improve quality of life for all? Answers to these questions—and hundreds more—are lying just under the surface of our knowledge. How do we unearth them? By studying women.

In the pages that follow, you'll learn about emerging research programs, public policy changes, and private sector funding opportunities that are opening up new frontiers in women's health.



Emily G. Jacobs, PhD
WBHI Director





About the Women's Brain Health Initiative

Our mission is to
**eliminate the
gender data gap
in neuroscience**
and accelerate the
pace of discovery
for women's health
across the lifespan.

The Ann S. Bowers Women's Brain Health Initiative is a research institute headquartered at the University of California, Santa Barbara. Our mission is to advance the study of women's brain health by bringing together world-class expertise in neuroimaging, computer science/AI and healthcare.

The WBHI is driven by the radically simple idea: progress in neuroscience will flourish when we shine a spotlight on women's health.

The goal of the WBHI is to generate the most comprehensive and inclusive collection of data ever acquired for women's brain health.

**Advancing women's health
will require sustained effort
across sectors and disciplines.**

**The WBHI provides a path
forward.**





Our Focus

We study women's health across the lifespan to understand the impact of hormonal transitions and medications on the brain, mood, cognition, and behaviour.

Endocrine transitions like menarche, pregnancy & menopause are health inflection points. Like a stress test, they can reveal resiliencies or risks for later life health outcomes.

Conditions and experiences that affect women

Exclusively

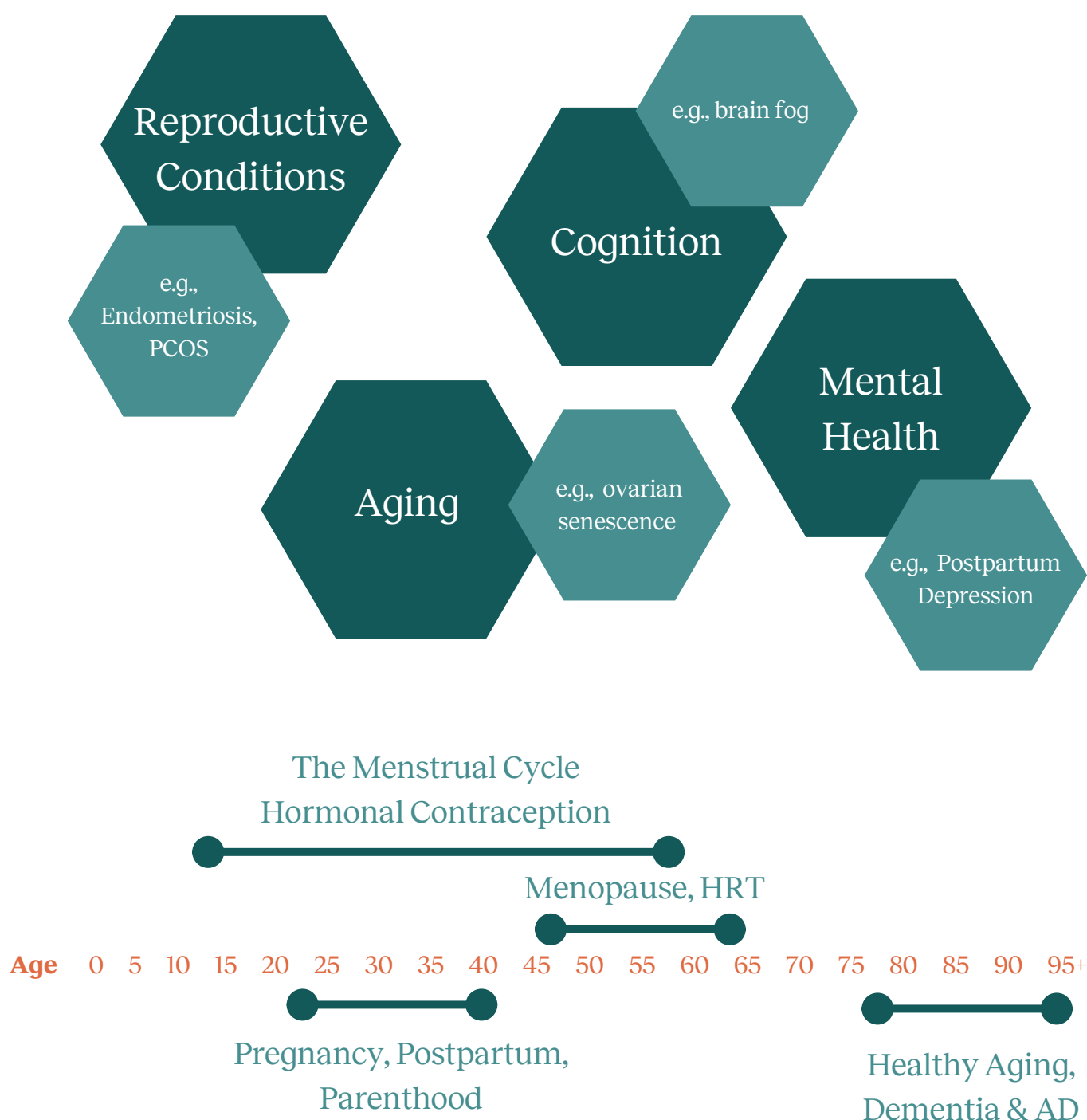
e.g., menstruation, pregnancy, menopause

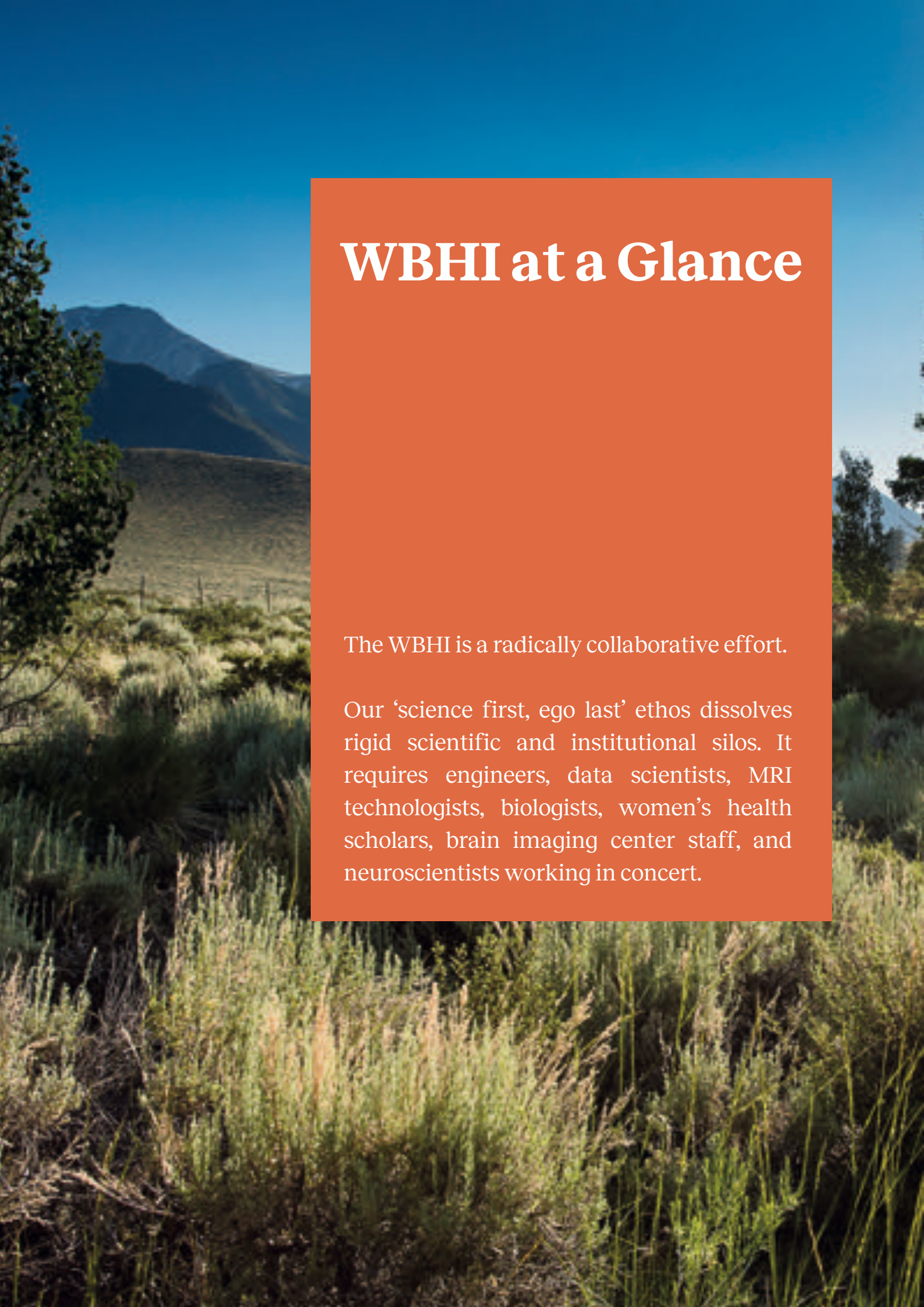
Disproportionately

e.g., depression, dementia, autoimmune disorders

Differently

e.g., cardiovascular disease, stroke





WBHI at a Glance

The WBHI is a radically collaborative effort.

Our ‘science first, ego last’ ethos dissolves rigid scientific and institutional silos. It requires engineers, data scientists, MRI technologists, biologists, women’s health scholars, brain imaging center staff, and neuroscientists working in concert.

Women's Brain Health Initiative

Cores

The infrastructure of the WBHI is built around three Cores, which support program management, data collection and curation, and data analysis.

Research

Our Flagship Studies illuminate understudied areas of women's health, addressing crucial questions unrestricted by traditional academic constraints.

Data

Breakthroughs in women's health depend on generating the right data. As a core principle, WBHI commits to making data available to the global scientific community so the discoveries never stop.

Impact

Generating data to better understand key questions in women's health is only part of the process. To truly advance women's health, we need to effect change across sectors by translating our findings into better educational materials, improving the training of future scientists, and advocating for policies that prioritize women's health research.

Administrative

Our Administrative Core guides the scientific roadmap, oversees regulatory agreements, and leads program development initiatives related to 1) Education and training opportunities in women's brain health, 2) Community outreach, 3) Policy initiatives regarding ethical, legal, social and medical issues vis-a-vis women's health, and 4) Engagement with extramural program officials representing relevant funding bodies.

Maternal Brain

The Maternal Brain Project focuses on the profound neural adaptations that occur during pregnancy and postpartum.

Big Data

WBHI collects data from many participants to detect population tendencies. Big data paired with the computational horsepower of AI will help us understand how certain health factors, like sleep quality or inflammatory conditions like endometriosis, influence the brain.

Training

The WBHI is developing fellowship opportunities to support student and researcher training in areas of women's health.

Data Coordination

The DCC develops and implements optimal strategies for ingesting, managing, curating, processing and distributing data collected via the WBHI Brain Bank. They ensure standardized, high-quality data are made available through our public data-sharing portal. In short, they are creating the critical infrastructure that allows us to pool imaging and health data across campuses and make it available to investigators around the world.

Menopause

The mission of the Longitudinal Menopause Project is to launch the flagship study of brain health and the menopause transition in the U.S. to understand patterns of risk and resilience that shape later life health outcomes

Deep Phenotyping

Brains don't exist in a vacuum. Deep phenotyping (using novel data modalities and multi-omic profiling) allows us to collect a rich set of data from each person, to zoom in and out to make connections between the micro and the macro.

Education

The WBHI partners with medical residency and graduate programs to translate research findings into actionable curricula, working to ensure women's health becomes an integral part of medical education rather than an elective course.

The Brain Bank

Our flagship program, the WBHI Brain Bank, pools MRI data across participating Brain Imaging Centers within the University of California system, spanning 50+ scientists across 6 UC campuses and Stanford. The Brain Bank is a discovery science incubator that enables novel discovery and provides investigators with data to seed hundreds of ideas.

Dynamics

We collect data over time, capturing the brain as it changes across major physiological transitions (e.g. pregnancy, menopause).

Advocacy

In partnership with local, state, and federal stakeholders, the WBHI enables scientists to explore advocacy work and understand how their research influences policy.

AI

Our AI Core is a joint partnership between UCSB's College of Engineering and Cornell's College of Computing and Information Sciences (Co-Directors: Nina Miolane and Amy Kuceyeski). The east and west coast teams are developing and applying cutting edge AI for women's health and training the next generation of data science scholars in women's health.

Open Science

Data generated by the WBHI will be stored, curated, and released through OpenNeuro.org. Making our data available open-access to the global science community ensures that the discoveries never stop.

WBHI Cores

Administration Core

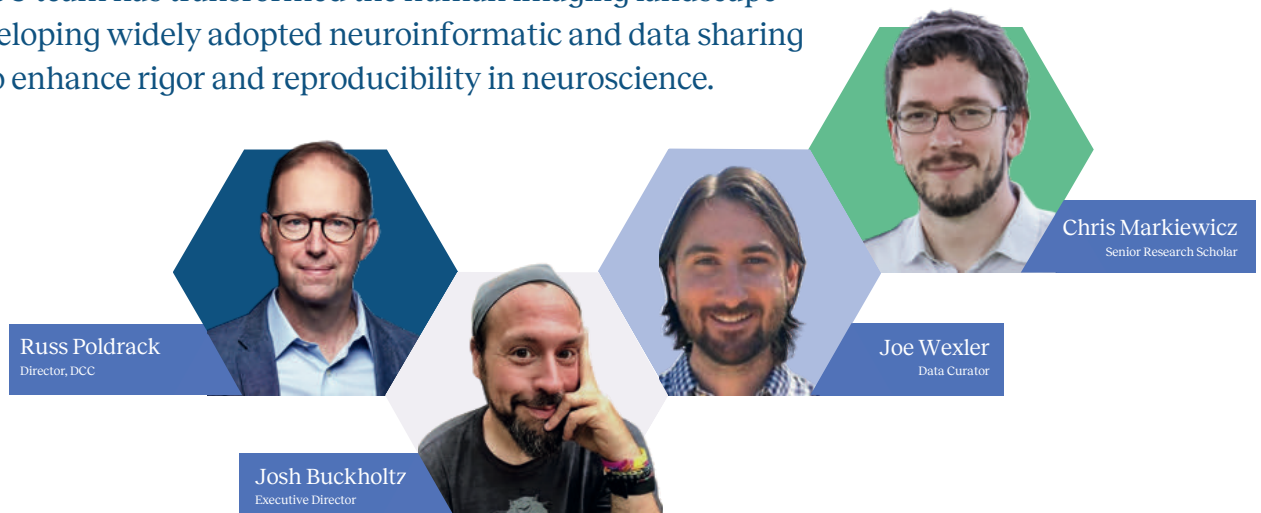
Our Administrative Core provides day to day management of the WBHI, overseeing regulatory agreements between campuses, developing standard operating procedures for research projects, managing protocols, milestones, and accountability, and ensuring overall forward momentum of the institute's flagship projects. The Core also oversees program development related to training opportunities in Women's Brain Health, community outreach, policy initiatives regarding ethical, legal, social and medical issues vis-a-vis Women's Brain Health, and engagement with extramural program officials representing relevant funding bodies.



Data Coordination Core

The Data Coordination Core (DCC) (Directors: Russ Poldrack and Joshua Buckholtz, Stanford University) supports the massive task of automating data processing for the **WBHI Brain Bank**. They optimize strategies for managing, curating, and distributing data collected across participating brain imaging centers. They oversee the implementation of a standard data structure, de-identification pipelines, and manage the public data-sharing portal, OpenNeuro. In short, they do the plumbing work for science, laying the critical pipelines that allow data to pool across sites, while ensuring data are quality controlled, useable, and accessible.

The DCC team has transformed the human imaging landscape by developing widely adopted neuroinformatic and data sharing tools to enhance rigor and reproducibility in neuroscience.



Artificial Intelligence Core

The **WBHI AI Core**, a joint endeavor between the University of California (Director, Nina Miolane) and Cornell (Director, Amy Kuceyeski), brings together leaders in computational science to develop and apply AI for women's health.

We have questions. We are generating the data. Now, we need the best computational scientists and AI leaders to make sense of it.

On the east coast, Cornell University and the Bowers College of Computing and Information Science are leaders in computer science. Dr. Kuceyeski, founder and co-director of Machine Learning in Medicine at Weill-Cornell School of Medicine, has over 14 years of academic medical research expertise in applied AI for radiology and neuroscience.

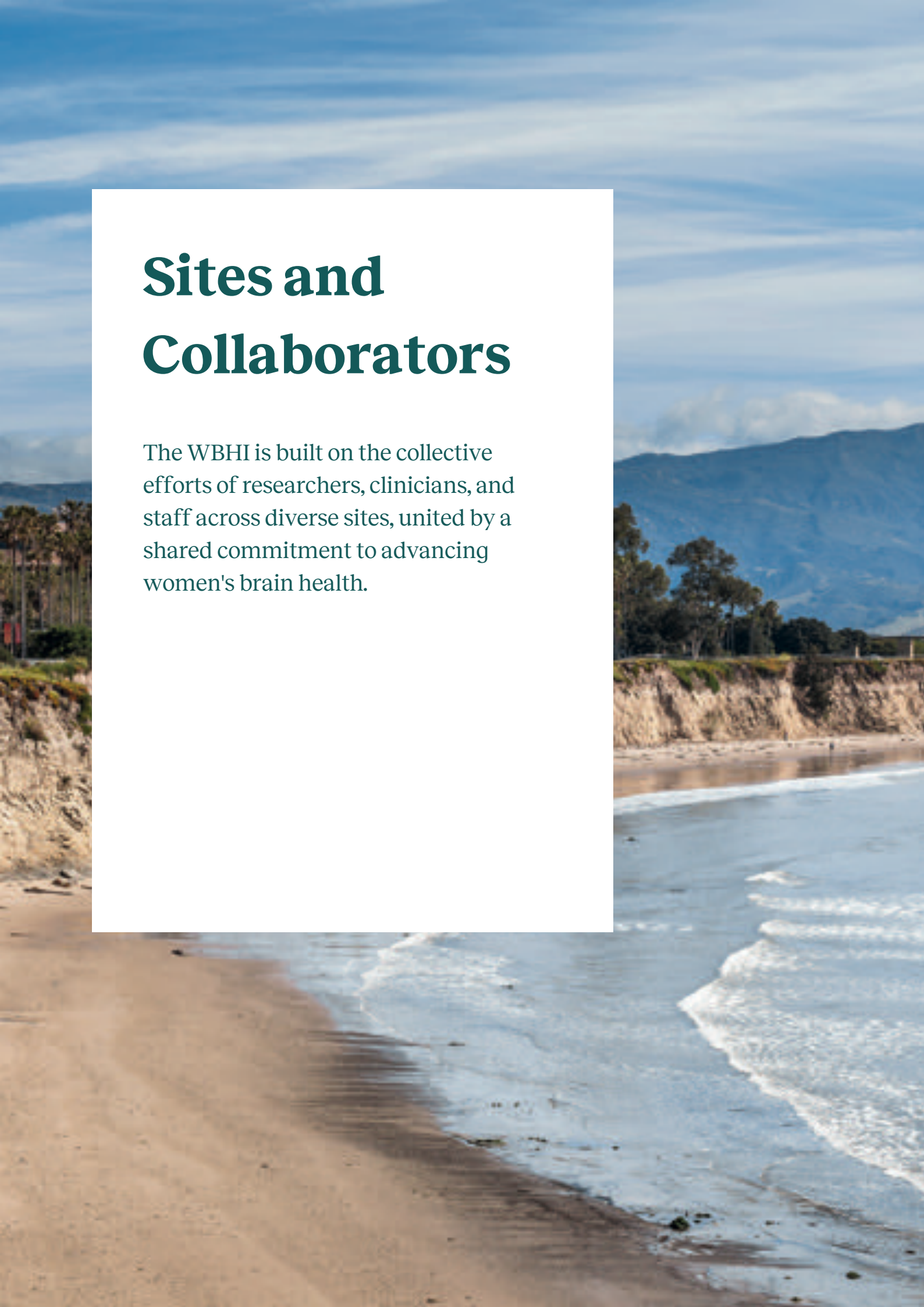
On the west coast, the University of California and Silicon Valley are the beating heart of AI. Dr. Miolane has over 10 years of expertise in reliable AI for science and healthcare across academia and industry.

The AI Core is dedicated to: **creating AI standards** to analyze women's brain health data and support scientists at the WBHI and across the world; **harnessing the power of AI** to mine available women's brain health datasets; **training the next generation of AI scientists** dedicated to women's brain's health; and **engaging the AI community** at large through the organization of annual Bowers WBHI AI data challenges.



Sites and Collaborators

The WBHI is built on the collective efforts of researchers, clinicians, and staff across diverse sites, united by a shared commitment to advancing women's brain health.



United States



Spain



Australia



Faces of the WBHI

We are:

Leading
Experts

Community
Stakeholders

**With a
diversity of
perspective
and identity
across:**

Institutions

Career
Stage

Areas of
Expertise

Lived
Experience



Abby Bertics

PhD Candidate

UC Santa Barbara



Thomas Liu

Brain Imaging Center Director

UC San Diego



Suzanne Baker

Head of Cellular and Tissue Imaging

Lawrence Berkeley National Laboratory





WBHI Data

“Collecting data is the first step in uncovering the drivers that will end inequities in women’s health. Progress is possible. Now is the time for action that will improve lives and strengthen the global economy.” - 2025 World Economic Forum

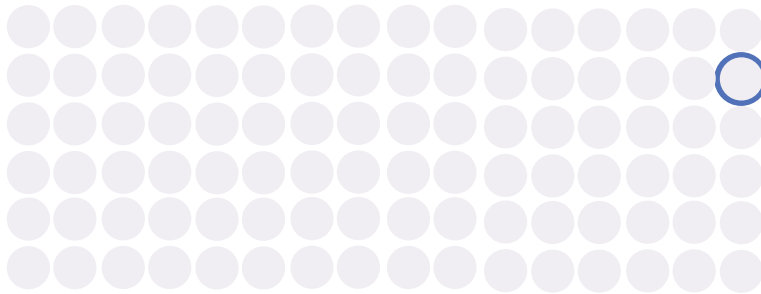
We owe women a century of science.

It all starts with **data**.

A major focus of the Bowers WBHI is generating the most diverse and comprehensive collection of data ever acquired for women’s brain health.

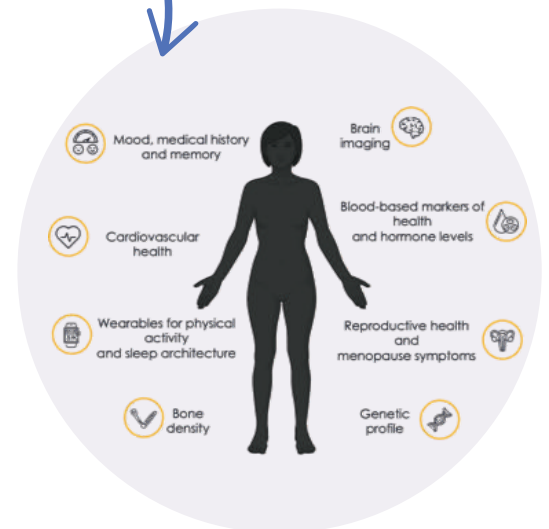
Go Broad: Embrace population diversity

By uniting UC campuses, the **WBHI Brain Bank** is generating a large-scale database of brain imaging and women's health-related phenotypes. This consortium science resource will enable novel discoveries and provide investigators with data to seed hundreds of ideas.

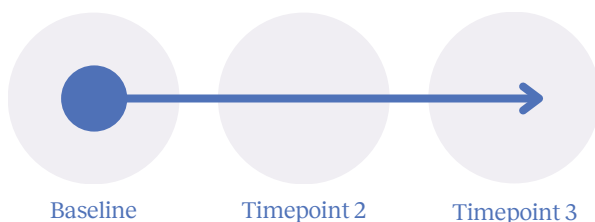


Go Deep: Collect detailed data

In addition to collecting a snapshot of the brain on a massive number of people, deep phenotyping allows us to collect a massive amount of data on individuals. WBHI studies of the menstrual cycle, pregnancy and menopause add **multi-level phenotyping**, including high-throughput proteomics, genomics, vascular health, and advanced multimodal brain imaging



Go Long: Capture dynamic changes



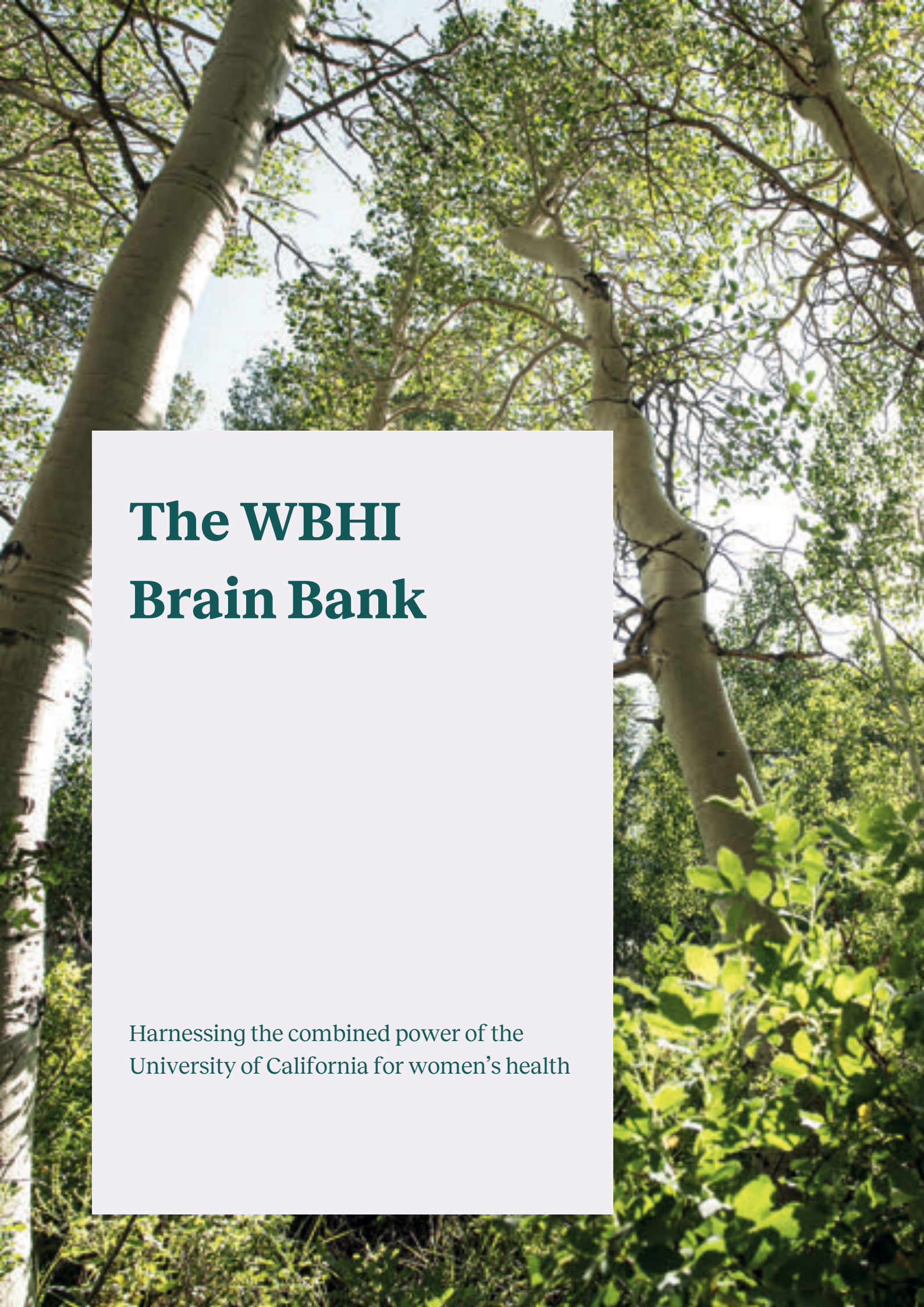
Precision imaging studies that track individuals over extended periods of time are transforming what we know about the dynamic properties of the human brain.

The WBHI oversees **Moonshot Projects** that home in on the neurobiology of pregnancy and menopause to better understand these pronounced physiological transitions. Deep phenotyping and precision imaging data from these projects complement the population data generated by the WBHI Brain Bank.

Go Global: Release data open access

By sharing data with the global neuroscience community, we catapult discovery and spring-board careers.





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

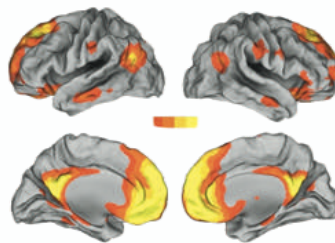


OpenNeuro

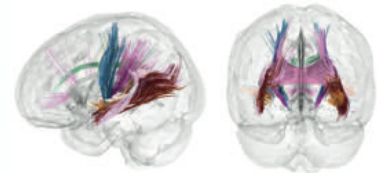
Open-access data repository maintained by DCC



Brain
Structure



Brain
Function



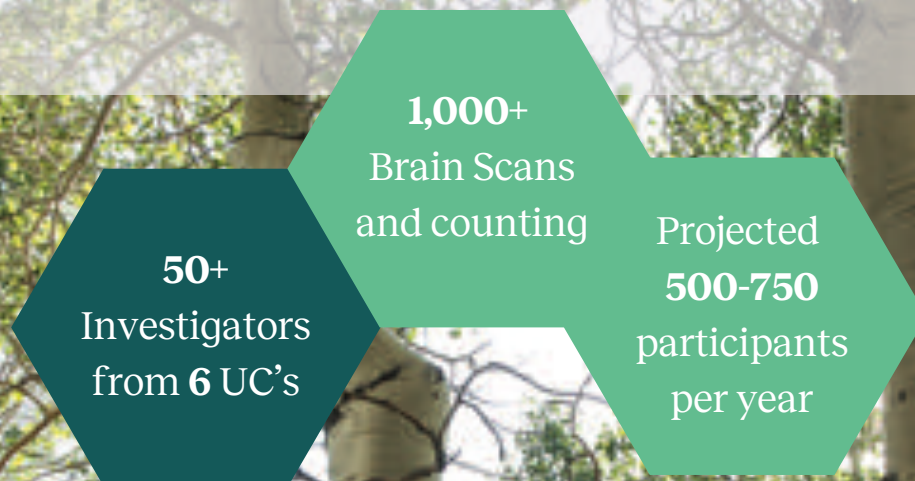
Brain
Connectivity

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



Spotlight on: Open Data

The WBHI recognizes the power of open science. Once the data are in hand, we give it away.

Data are released open access to the global science community so that the discoveries never stop.

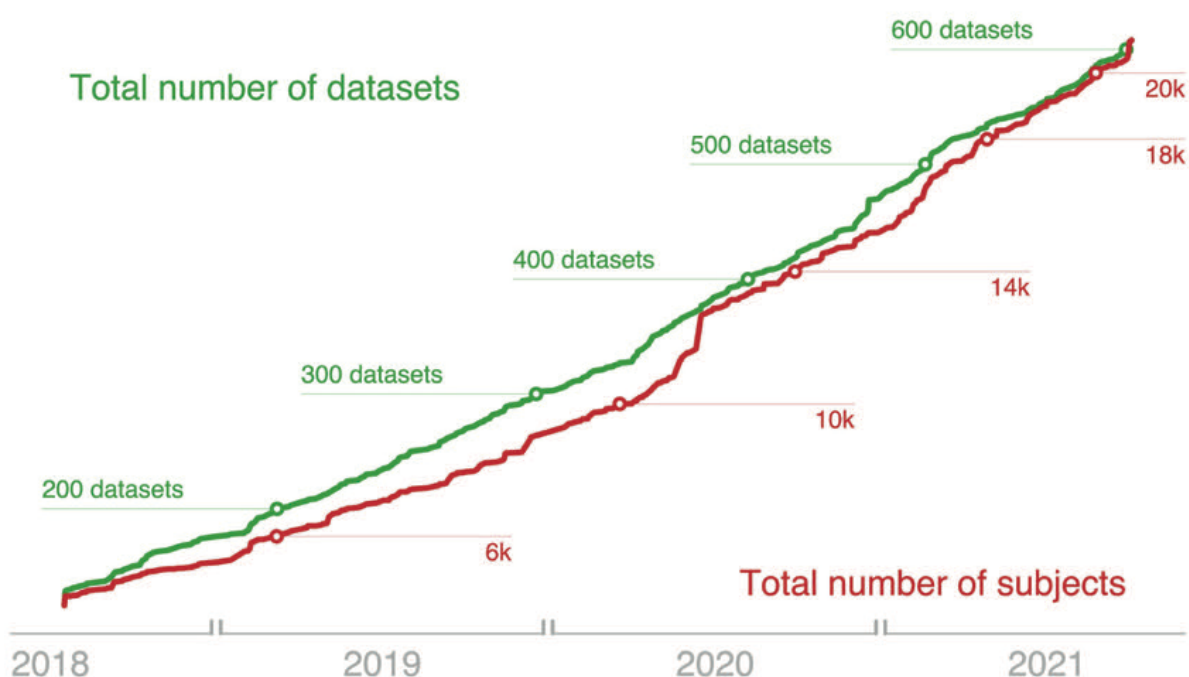
Leading Open Data Practices

The infrastructure and organizational structure of the WBHI Brain Bank is built almost entirely around **scalability**. The initiative has the personnel and systems in place to support rapid growth, made possible because of the world-class tools and resources developed by the WBHI Data Coordination Core at Stanford.

The DCC developed the universal field standard for organizing and sharing MRI data, a system called **Brain Imaging Data Structure (BIDS)**. Creating this organizational standard paved the way toward large-scale data pooling.



OpenNeuro is a data archive, backed by the NIH Brain Initiative, that provides the ability to openly share brain imaging data following FAIR principles (data are Findable, Accessible, Interoperable, and Reusable). This open-access resource was made feasible and scalable through the DCC's creation of the Brain Imaging Data Structure (BIDS), which facilitates rigor and reproducibility for neuromaging data. In this way, BIDS and OpenNeuro have transformed the scale at which neuroscience research can be conducted.



Scientific Working Groups

Scientific Working Groups will leverage WBHI data to ask and answer pressing questions in Women's Brain Health.



Purpose:

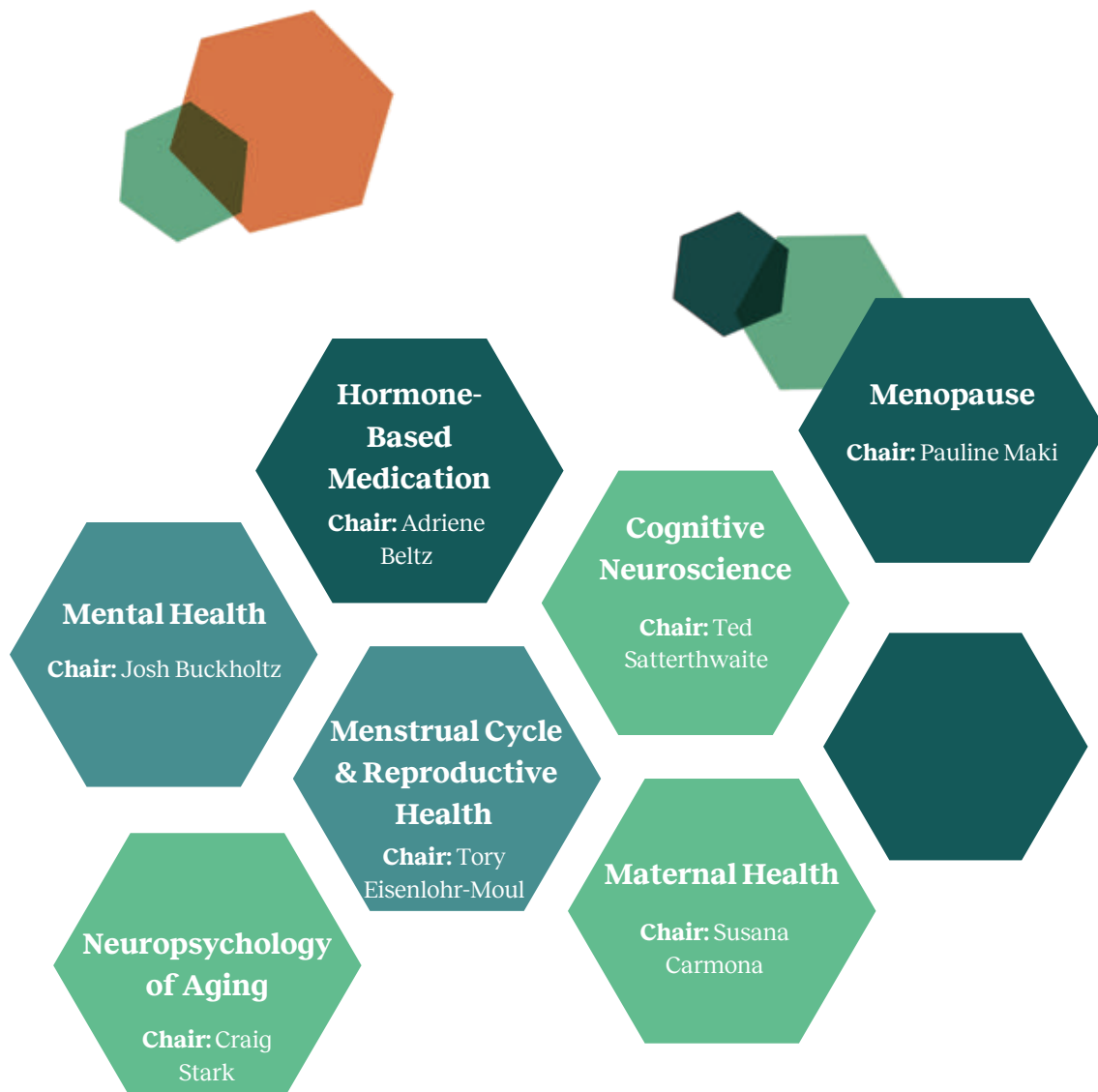
Ensure high-quality research with WBHI Brain Bank data by convening experts in relevant topic areas.

Goals:

- Formalize a set of pressing scientific questions within seven key areas of interest
- Generate analytic plans to answer these questions using WBHI Brain Bank data
- Create a publication roadmap that will ultimately be executed by Scientific Working Group members.



SWG Director,
Josh Buckholtz





The Maternal Brain Project

The Maternal Brain Project focuses on the profound neural adaptations that occur during pregnancy and postpartum.

“This [work] is a **milestone** in the emerging neuroscience of matrescence.”

– Nature

Milestones and Vision

To what extent is the adult human brain capable of extensive neuroplasticity? Could the remarkable remodeling of the maternal brain inspire new treatments for stroke or brain injury? Can we detect early biological signs of postpartum depression before it manifests? And what lasting effects do pregnancy conditions like preeclampsia or gestational diabetes have on brain health? To answer these questions—and many more—a **global team** of experts in **neuroscience, reproductive immunology, proteomics, and AI** have joined forces to chart the unparalleled **maternal brain's** transformation—searching for insights that could enhance brain health not just for mothers, but for everyone.

In 2024 our team generated **the first detailed map of the human brain across pregnancy**. Now we are launching a global expansion of the Maternal Brain Project to generate brain, biofluid, cognitive, and health data from **1,000+ first-time mothers** followed longitudinally, establishing the **largest and most comprehensive maternal neuro-imaging database** to date.



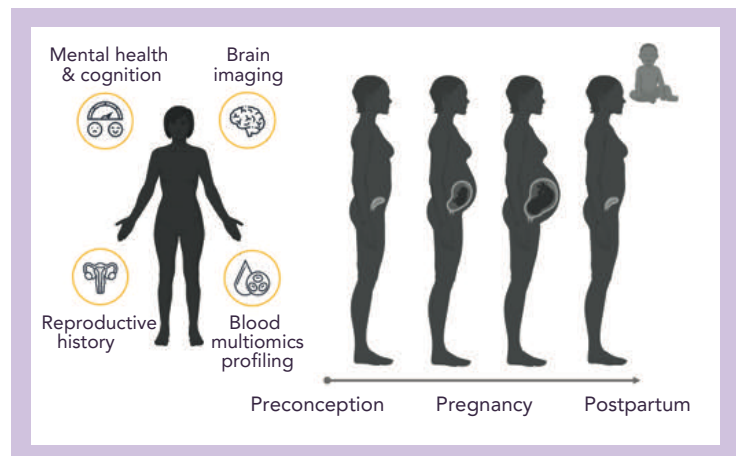
Partners for Growth

Funding for growth | Pending **\$10M** in NIH funding to expand data collection and launch sister hubs.

Global Research Partnerships | Collaboration with the **ENIGMA Neuroendocrinology Initiative** will enable cooperative opportunities with world leaders in maternal neuroscience.

Next-Gen Pregnancy Technology | MBP data could fuel the next wave of pregnancy breakthroughs through partnerships with predictive RNA platforms like **Mirvie**.

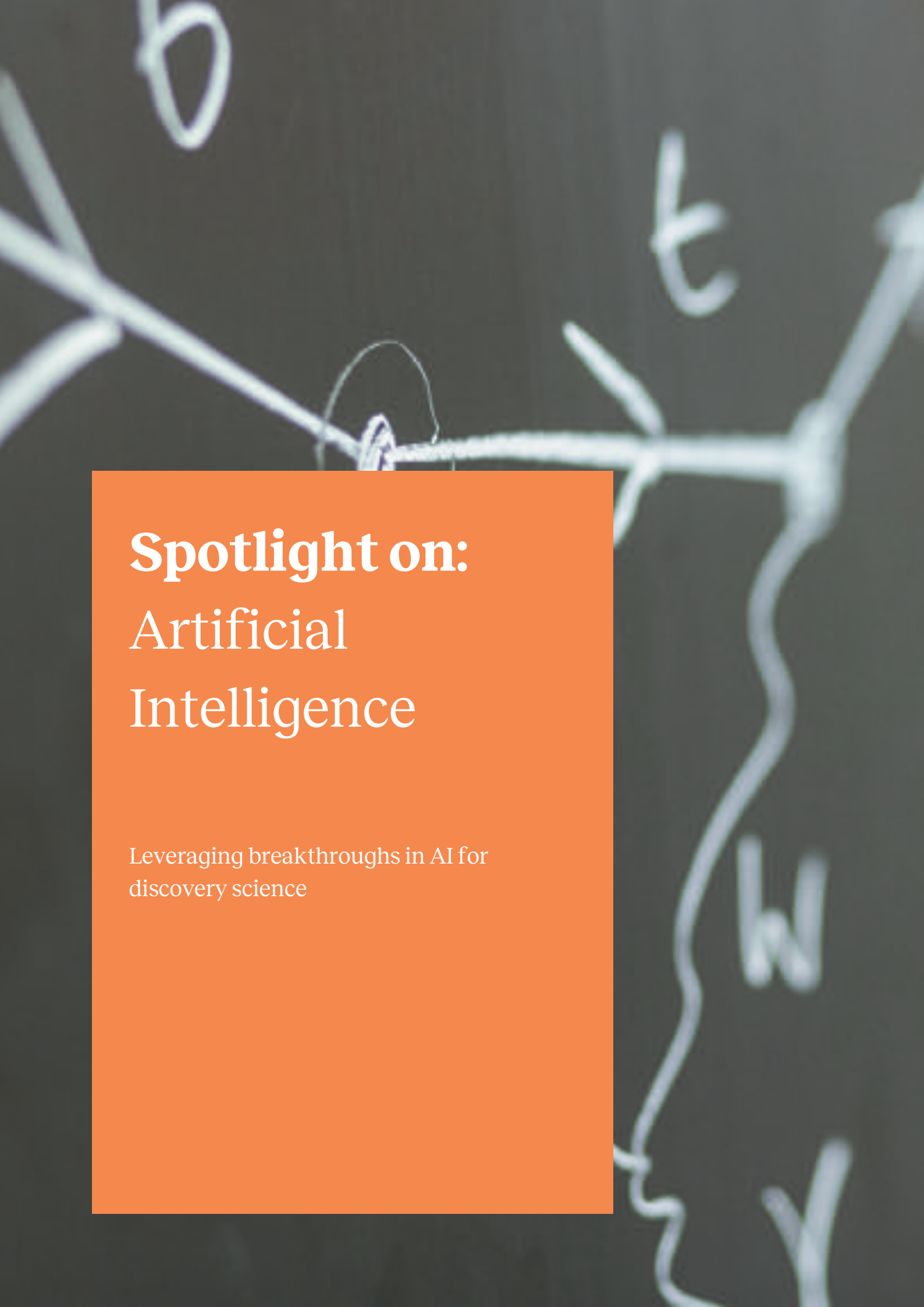
Leading the Way | By sharing our gold-standard data collection protocol, additional **sister sites** will be equipped to join MBP Global, collecting high quality, harmonized data from hubs across cultures.



Data collection is underway in Santa Barbara and Madrid, made possible by a **\$1M** partnership with **Chan Zuckerberg Initiative** to enroll 200 first-time mothers.

Our team of **world-class experts** are leveraging this rich multimodal data for **breakthrough discoveries in perinatal health and wellbeing**.



The background of the slide is a dark, textured surface, likely a chalkboard, with various white, handwritten letters and symbols scattered across it. A thin, light-colored string is tied in a loop around a horizontal line in the middle of the frame. The overall aesthetic is academic and creative.

Spotlight on: Artificial Intelligence

Leveraging breakthroughs in AI for
discovery science

The AI revolution comes for neuroscience

The application of AI tools to neuroimaging data is generating new insights about the human brain. This year, WBHI investigators at Cornell developed a tool that reveals how the brain's intrinsic functional connections change over the lifespan (Kuceyeski Lab, Nature Methods, 2025)

These AI-driven models are bringing us closer to predicting a person's likelihood of developing a neurological condition and predicting how well a person will respond to a particular treatment.

In a collaboration between UCSB and UCSF, WBHI researchers built an AI model that predicts who will decline most rapidly from frontotemporal dementia. By interrogating the AI model, scientists identified new proteins linked to disease onset that conventional data analysis methods missed. These discoveries could aid early detection and early intervention.

Breakthroughs in AI are starting to improve clinicians' ability to predict a suite of pregnancy complications before they manifest, from gestational diabetes and preeclampsia to postpartum hemorrhage. WBHI scientists are using similar tools to predict maternal brain health outcomes. Combining different types of data, from multimodal MRI to unbiased high-throughput proteomics, the AI Core is developing screening tools to identify individuals at risk for postpartum depression before symptoms appear. This would allow clinicians to intervene early and reduce disease burden.

Geometric Deep Learning

Developing AI models to answer questions in women's health is faced with a unique challenge: scarcity of data. Recognizing this limitation, the AI Core incorporates existing scientific knowledge into the deep learning process. The AI Core draws from the line of research known as **geometric deep learning** and incorporates their expertise in mathematics, generative modeling, and multi-modal learning – ultimately relieving the intensive needs for data and computing resources.

With these tools in hand, the AI team is working alongside neuroscientists to map the evolution of a person's brain across pregnancy, by:

- Leveraging explainable geometric AI methods to analyze typical and atypical patterns of brain trajectories pre- to postpartum
- Building a multi-task, fair supervised learning model that predicts postpartum conditions, such as depression, from early pregnancy features across diverse subpopulations.



Nina Miolane gives Keynote at Chan Zuckerberg Institute



Longitudinal Menopause Project

Half of the world's population will experience menopause, yet researchers lack a fundamental understanding of how menopause influences the brain. We are on a mission to change that.

Goals and Outcomes

The mission of the **Longitudinal Menopause Project** is to launch one of the most detailed studies of brain health and menopause in the US to date. The project, now in its planning phase, will follow a diverse cohort across the menopausal transition, pairing brain, biofluid, cognitive, and health data. This moonshot project will generate the most comprehensive menopause neuroimaging database currently available. The discoveries generated from this flagship study of menopause is poised to optimize clinical decision-making and neurological disease prevention for women worldwide.

Scientific Directors



Suzanne Baker, Ph.D.
Berkeley National Lab



Rachel Buckley, Ph.D.
Harvard-Mass Gen



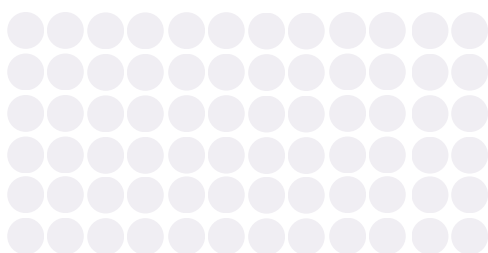
Kaitlin Casaletto, Ph.D.
UC San Francisco



Judy Pa, Ph.D.
UC San Diego

Go Broad

Build a diverse cohort of women from sites across the US



1,000 women from demographically and geographically diverse recruitment sites.

Go Long

Track changes longitudinally across the menopausal transition

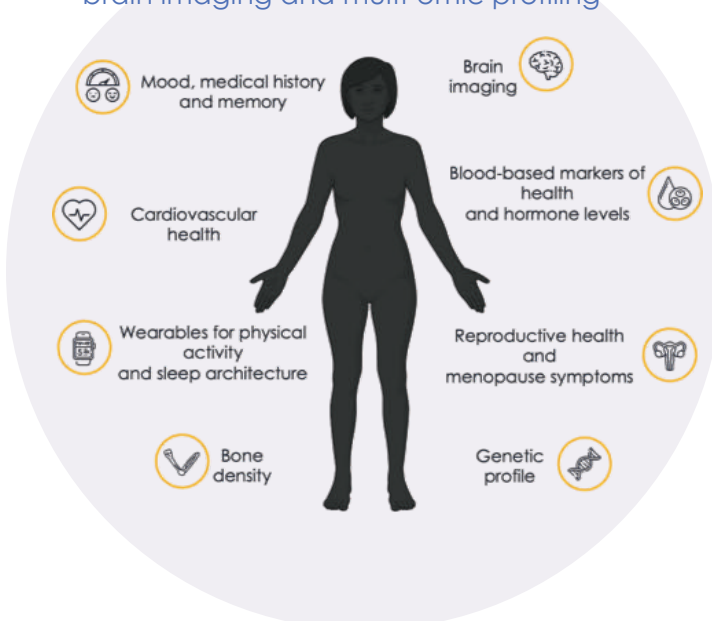


Premenopause

Postmenopause

Go Deep

Apply the most recent advancements in brain imaging and multi-omic profiling



The Longitudinal Menopause Project is poised to 1) Establish a flagship study of the menopause transition and its implications for brain health in the United States that will result in **high impact innovation for the scientific field for decades to come**. 2) Develop fast-track translation of experimental and medical findings to **directly impact the community**. 3) Create a **shared data platform and sample repository** that can be expanded on by scholars across the University of California system. 4) **Educate and empower** the scientific community through direct connections with the leading researchers. 5) Translate findings into policy that ensures **high quality, evidenced-based care** for women.

A background image of yellow daisy flowers against a clear blue sky. The flowers are in various stages of bloom, with some in sharp focus and others blurred in the background. The lighting suggests a bright, sunny day.

The Gold STANDARD

A growing wave of neuroscience research is improving our understanding of how hormonal exposures and reproductive events shape the human brain. Yet, as the field rapidly progresses, a critical challenge remains: how can we measure these factors in a consistent and comprehensive manner?

The Women's Brain Health Initiative is Developing A Standardized Tool for Acquiring Reproductive Health History Data

Goals and Outcomes



Winnie Orchard
Scientific Program Director

Pubertal Development

Gender Affirming Care

Menstruation

Reproductive Conditions

Hormonal Contraception

Fertility/ Conception

Pregnancy

Breastfeeding/ Lactation

Parenthood

Grandparenthood

Menopause

HRT

Reproductive Surgeries

Other Medication

Hormonal Sensitivity

Currently, there is no standardized method to capture women's reproductive health experiences over their lifespan—an issue that limits the reproducibility and scale of research efforts and leaves the field hungry for a universal approach to collecting data relevant for women's brain health. The WBHI is developing a standardized reproductive health history questionnaire, designed with the goal to improve the rigor, reproducibility, and scalability of women's health research.

The survey is built on collaboration, with input from world leaders and field experts in women's brain health, capturing key details across the reproductive lifespan, from the menstrual cycle to hormone-based medications, pregnancy and postpartum health, menopause, and more. A comprehensive piloting process, guided by UI/UX experts, and translation into world languages will ensure increased global accessibility of the survey.

If adopted broadly, this standardized approach could harmonize data collection worldwide, enabling the kind of large-scale, consortium-driven “big data” efforts required to tackle the most pressing and complex questions in women's brain health, in a way that's evidence-based, harmonizable, and poised for global impact.



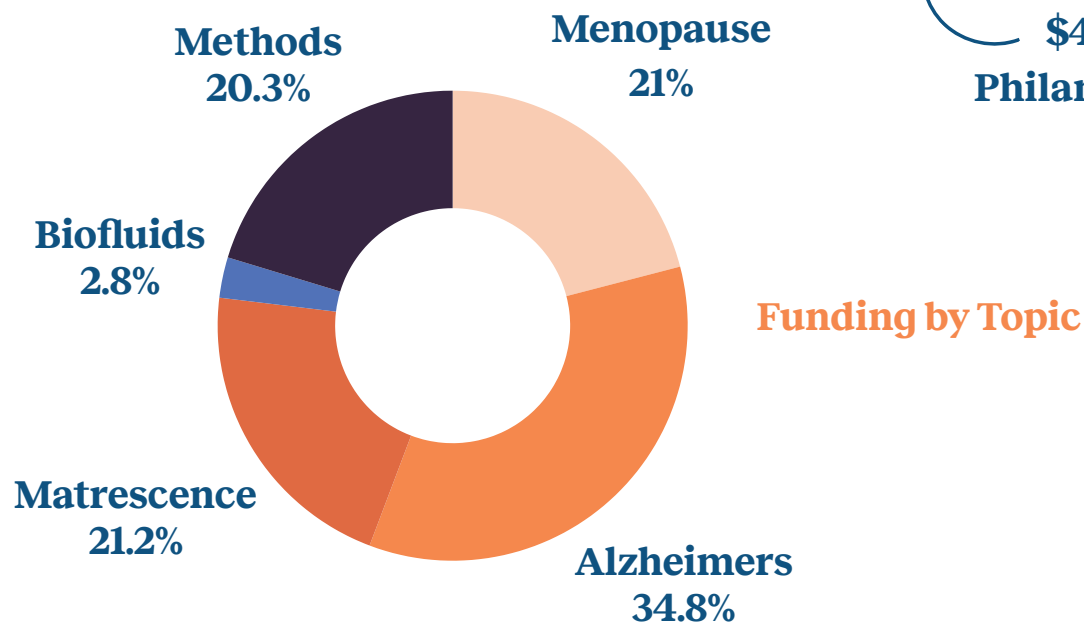
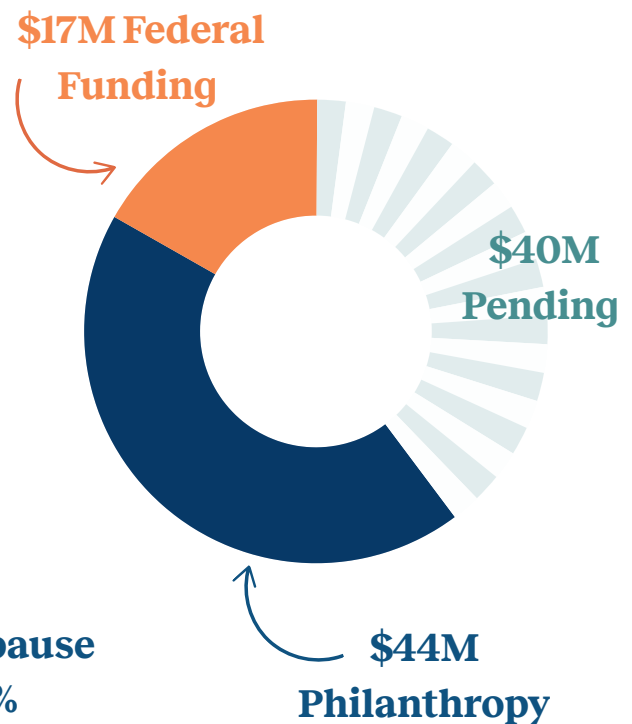


Funding and Awards

Since 2023, WBHI scientists have generated a staggering return on investment, with \$9M in newly awarded grants, \$8M earmarked for funding, and \$40M under review

NIH awards WBHI team from UCSB and UC Irvine

\$6.3M in (earmarked) funding to launch new menopause study, an investment that will kickstart the larger Longitudinal Menopause Project



Five WBHI Scientists selected as finalists for Wellcome Leap's \$50M investment in menopause

Worldwide, someone develops Alzheimer's disease every 3.2 seconds. Nearly two-thirds of all patients are women.

CARE aims to cut the lifetime risk of Alzheimer's among women by half, reducing risk for 330 million women globally.



The Chan Zuckerberg Initiative invests \$2.5M in the Women's Brain Health Initiative, launching two collaborations

Advancing Inclusive AI in Women's Brain Health

The Chan Zuckerberg Initiative awarded **\$1.5M in funding** to the **WBHI Brain Bank** to advance AI by generating large, inclusive multi-modal biomedical datasets. Despite the rapid advancements in AI and biomedical research, large datasets that include phenotypes relevant to women's health remain scarce, contributing to algorithmic bias and limiting breakthroughs in understanding and care.

The WBHI is currently addressing these gaps by generating a large-scale, richly phenotyped dataset targeted to women's health needs. This collaboration allows us to capture a broad suite of blood-derived hormone and proteomic data, complementing our existing MRI and self-report data. Ignoring sex and gender biases AI and limits the reproducibility of biomedical research. We are grateful to partner with CZI to create a more equitable future for women's health worldwide.

Key Personnel: Joshua Buckholtz (Stanford), Emily Jacobs (UCSB), Kaitlin Casaletto (UCSF), Craig Stark (UC Irvine), Russ Poldrack (Stanford), Nina Miolane (UCSB) and Amy Kuceyeski (Cornell).

**Chan
Zuckerberg
Initiative** 

The Maternal Brain Project

The WBHI's Maternal Brain Project received **\$1M in funding** to advance our understanding of the maternal brain. Leveraging AI techniques, we are creating dynamic 3D models of the maternal brain to identify typical and atypical patterns and enhance prediction of perinatal depression. Led by the WBHI AI Core, this project will mine the rich multi-modal data being generated by the Maternal Brain Project team in California and Spain.

Key Personnel: Nina Miolane (UCSB), Susana Carmona (Spain), Emily Jacobs (UCSB), Magdalena Martínez García (UCSB)

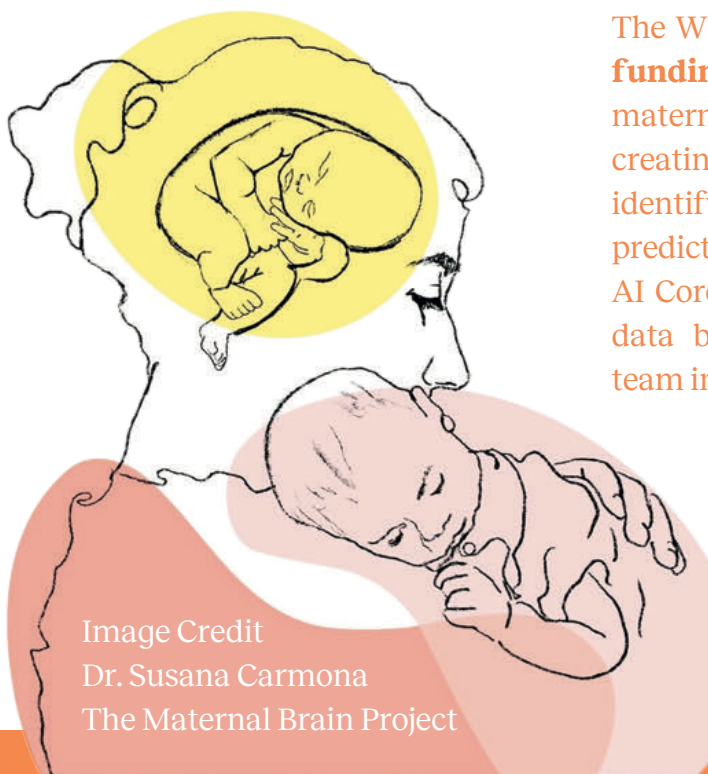


Image Credit
Dr. Susana Carmona
The Maternal Brain Project

Trainee Achievements

Dissemination

WBHI trainees gave 29 invited talks, presenting their research to the world, including conference presentations at the National Institutes of Health in Bethesda, MD, at the Organization for Human Brain Mapping in Brisbane, Australia, and at the Society for Biological Psychiatry in Austin, TX.

Outreach

PhD students and postdoctoral fellows led science nights for middle and high school students at local schools, gave a TED-X talk to a rapt audience, presented their latest findings at academic colloquia, and hosted community events -- all inspiring the next generation of scientists.

Recognition

WBHI trainees were recognized for their outstanding scholarship by local, national, and international bodies, including the National Science Foundation, National Institutes of Health, Society for Women's Health Research, and a Seal of Excellence by the European Commission. Two students were named UCSB Chancellor's Fellows, the highest recognition given to incoming graduate students.



Awards and Honours

Magdalena Martínez-García, WBHI Fellow

- Seal of Excellence by the European Commission, Marie Curie Fellowship (2024 and 2025)
- Society for Reproductive Investigation Award
- Ramon Areces Scholarship for International Studies
- Society for Reproductive Investigation International Training Grant for postdoctoral training in pregnancy neuroimmunology

Sophia Sanborn, WBHI Fellow

- Pacific Institute for Mathematical Sciences and the Simons Foundation (PIMS-Simon) Postdoctoral Fellowship

Hannah Grotzinger, PhD Candidate

- Richard E. Mayer Award for Outstanding Research Contributions in Psychology

Elle Murata, PhD Candidate

- Nassar Graduate Student Memorial Scholarship
- UCSB Research Accelerator Award
- AthenaDao Research Grant
- TEDx Speaker



Career Kickstarters

The first two cohorts of trainees in AI for Women's Brain Health (2023 and 2024) included four students. All four students have already been recognized for their groundbreaking research, starting as a WBHI trainee, and then receiving their own fellowship, showing the power and potential for WBHI fellowships to springboard careers.

Awards and Honours

Allesandra Iadipaolo, PhD Candidate

- UCSB Chancellor's Fellowship
- National Science Foundation GRFP Honorable Mention

Nora Wolcott, PhD Candidate

- NIH F99/K00 Career Development Award
- 2025 Society for Womens Health Research "Emerging Scholar in Women's Health" Award

Adele Myers, PhD Candidate

- NSF Graduate Research Fellowship, the most prestigious award in the U.S. for PhD candidates
- NSF Data Driven Biology Fellowship
- UCSB Dean of Physical Sciences Graduate Fellowship

Louisa Cornelis, PhD Candidate

- NSF Graduate Research Fellowship

Abby Bertics, PhD Candidate

- UCSB Chancellor's Fellowship

Mathilde Papillon, PhD Candidate

- NSERC PhD fellowship, Canada's most prestigious award for PhD candidates
- UCSB Engineering Research Award
- UCSB Dean of Physical Sciences Graduate Fellowship

Christie Gilles, PhD Candidate

- Rita Levi Montalcini Scholarship for Neuroscience, Italian Dompé Foundation

James Kim, Undergraduate

- Honorable mention at the CRA research awards for his summer project through the Cornell Bowers Undergraduate Research Experience



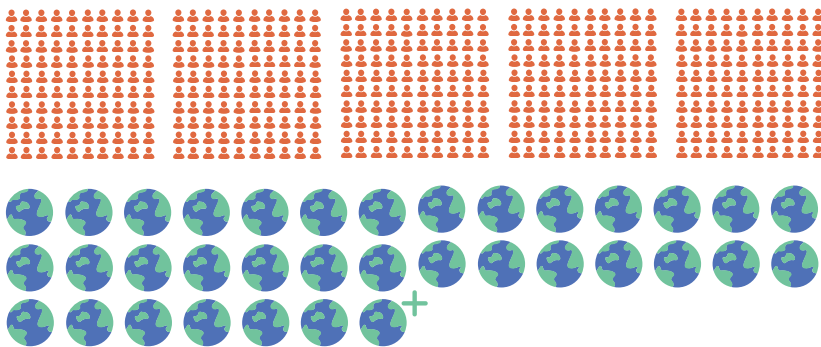
Education and Engagement

The WBHI is committed to sharing new discoveries, generating ideas, breaking boundaries and building connections - both within the scientific community and the broader public.

Seminar Series

The **Ann S. Bowers WBHI Seminar Series** is dedicated to promoting research, awareness, and advocacy for women's brain health. Our global audience includes neuroscientists, computer scientists, clinicians and women's health scholars at all levels of experience—from trainees to faculty. The series provide a lively forum for the women's brain health community to engage with a diverse set of world-class researchers.

The Seminar Series launched in January 2024 and hosts monthly events, amassing an audience of **>500 registrants** from **35+ countries**, and **>12,000 views on YouTube**.



The series provides a space for intellectual cross-pollination among researchers working on women's brain health from multiple perspectives, boosts the voices of researchers to aid in the dissemination of their findings, and creates a training and mentoring network for the next generation of women's health scholars.



Towards Personalized Reproductive Psychiatry: Leveraging Precision Functional Mapping

Director of Research, Penn Center for Women's Behavioral Wellness
Perelman School of Medicine
University of Pennsylvania

Sheila
Shanmugan,
M.D., Ph.D.

Judy Pa,
Ph.D

A sex-specific lens on Alzheimer's Disease: Evidence from Clinical Trials and Big Data

Professor of Neurosciences
Co-Director, AD Cooperative Study



Women's Brain Health Across the Lifespan: From Neurochemical Insights to Precision Imaging and Collaborative Innovation

Professor
Clinic of Cognitive Neurology
University of Leipzig

Julia Sacher,
M.D., Ph.D.

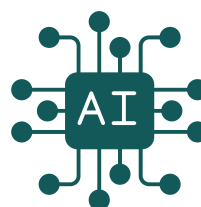
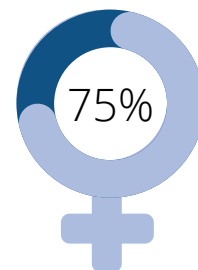
AI Grand Challenge

The WBHI AI Core joined forces with **Women in Data Science** (WiDS) and **Kaggle** to launch an international datathon on women's brain health.

Spanning 5000 competitors and 100 countries, WiDS Datathons provide training opportunities for students (75% women) to discover or hone their data science skills, with \$25,000 in prizes contributed by Kaggle.



WiDS students in Danang, Vietnam



The 2025 Challenge Theme is “**Women’s Brain Health**”

Participants in WiDS Datathons are charged with solving an interesting and critical social impact challenge. This year, using fMRI data, participants are tasked with building a model to predict ADHD diagnosis in girls and boys, a condition where symptoms can vary by sex and girls are often under- or misdiagnosed .

>5,000
entrants

>1,600
participants

>700
teams

>10,000
submissions

The Magic of Menopause

Director Emily Jacobs joined Halle Berry and three other leading women's health experts for a Masterclass discussion on navigating menopause and understanding the transition to this next phase of life.

Together, they share the basics of menopause, spanning topics like how the brain responds to the drop in hormones, how to prepare for menopause symptoms, and how to navigate conversations around mental and physical health.

“
Sleeplessness,
moodswings,
brain fog...
We need to talk
about menopause.
”



Left to right: **Dr. Jen Gunter**, acclaimed OB-GYN and bestselling author of *The Menopause Manifesto*; **Dr. Emily Jacobs**, leading neuroscientist and expert in brain health, hormones and aging; **Halle Berry**, actor and global menopause advocate; **Dr. Lori Brotto**, renowned clinician-scientist in women's sexual health; and **Dr. Judith Joseph**, award-winning psychiatrist and expert in women's mental health and author of *High Functioning*.

Science Communication



Science Advances Special issue on women's health featured 9 WBHI scientists publishing 8 articles on:

- menopause
- hormone therapy
- sex differences in Alzheimer's
- pregnancy immunology
- precision MRI
- perinatal depression

Ph.D Student Elle Murata Gives Public Lecture on PCOS

Elle presented at the 2023 TEDxLagunaBlanca event. In her talk, she shared her dual experience as a woman in science and a woman underserved by the biomedical sciences.



WBHI In the News



The body transforms in remarkable ways during pregnancy. So does the brain



Pregnancy changes the brain more than previously known, study finds

The Washington Post
Democracy Dies in Darkness

We're Finally Starting to Understand the Pregnant Brain

The body's most complex organ undergoes an incredible transformation during pregnancy, possibly becoming more efficient.

The New York Times

How Does Pregnancy Change the Brain? Clues Are Emerging.

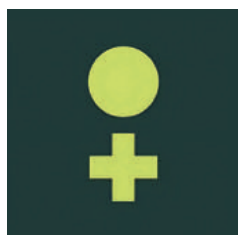
As hormones surge, some brain areas shrink in what scientists say may be a fine-tuning that helps mothers bond with and care for their babies.

nature

Impact and Partnerships



The WBHI partnered with the American Association for the Advancement of Science (AAAS)'s flagship open-access journal **Science Advances** to guest edit a Special Issue on Women's Health, released on **International Women's Day 2025**.



The WBHI joined the non-profit **51Foundation** to launch a women's health track for **MIT's DHIVE program for aspiring entrepreneurs**. The DHIVE program provides an opportunity for students to learn about challenging healthcare problems that need solutions. The goal of the Women's Health track is to provide an on-ramp for some of the best young minds in science, health, and technology to generate innovative solutions to pressing questions in women's health.



WBHI Director, Emily Jacobs, serves on the **Coalition for Women's Brain Health Steering Committee** and Education and Policy subcommittee. The coalition - a joint endeavor between the Women's Alzheimer's Movement, Genentech, Cleveland Clinic, AARP, and the Society for Women's Health Research - was formed to address gender- and sex-based disparities, improve access to care, and reduce caregiver and family burden as it relates to women's brain health.



WBHI has joined forces with the **Women's Health Access Matters Consortium**, a preeminent group of scientists, physicians, and luminaries committed to advancing women's health research.



For local impact, WBHI is advising Cottage Hospital on the development of a **women's health service line** and co-hosting a 2026 research symposium on women's health, bringing together the medical and research communities in Santa Barbara.



Dubbed "The Olympics of Science" the X Prize oversees grand challenges to catalyze research on issues with societal-level implications. The WBHI team is weighing in on the design of a new X Prize focused on ovarian health and mechanisms to promote overall health in women across the lifespan.

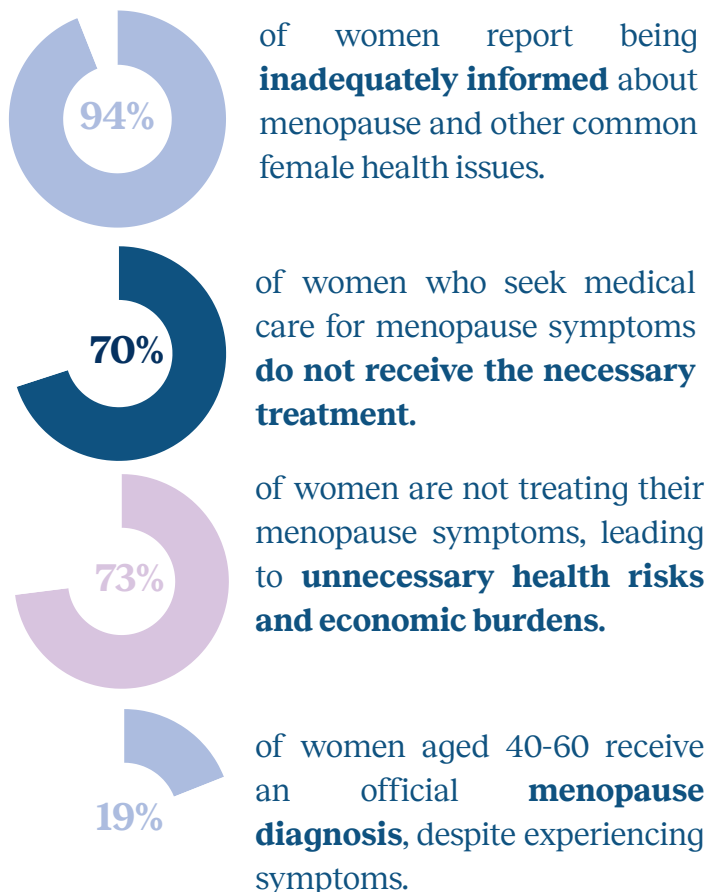
Policy and Advocacy

The WBHI is committed to translating scientific discovery to real-world impact, to improve lives and increase wellbeing.

The Menopause Care Equity Act (AB 432)

Menopause has long been overlooked in healthcare policy, but the conversation is finally changing. High-profile figures, like Halle Berry, have spoken out about the challenges of navigating menopause without proper medical guidance, highlighting the widespread need for better care. With growing public awareness and support, it's time for policy to catch up.

The consequences of this lack of medical attention are staggering:



What the Act (AB 432) Does

AB 432 takes critical steps to ensure that all women receive the care they need by:

1. Mandating comprehensive insurance coverage for medically necessary menopause and perimenopause treatments, eliminating restrictive utilization management practices that have historically blocked access to care.
2. Requiring physicians to complete menopause-specific Continuing Medical Education (CME) if more than 25% of their patient population consists of women, ensuring providers have the knowledge to properly diagnose and treat menopause.
3. Directing the Medical Board to develop Continuing Medical Education curriculum to ensure physicians receive up-to-date and standardized training for treating menopause.

Current CME requirements mandate education on topics such as pain management and care for terminally ill patients, but menopause education remains optional—leaving many doctors ill-equipped to support their patients.

“Women should not have to fight for access to medically necessary care simply because menopause is under-researched and misunderstood,” said Assemblymember Bauer-Kahan. **“This bill ensures that menopause is treated as a priority in our healthcare system, not as a taboo.”**

AB 432 is a crucial step toward recognizing menopause as a significant healthcare issue and ensuring that millions of women receive the coverage, treatment, and respect they deserve



WBHI at the White House

President Biden, Dr. Jill Biden and guests celebrate the launch of the first-ever White House Initiative on Women's Health Research.

WBHI leadership visited the White House in the Spring and Winter 2024 to honor the incredible gains made over the past year and help lay plans for the future. We are optimistic that progress will continue to accelerate at break-neck speed across sectors.

Growth and Vision

A photograph of a park scene. In the foreground, a light-colored paved path curves from the bottom left towards the center. To the right of the path is a dark mulch bed. The middle ground features a green lawn with several large, mature trees with thick trunks and dense green foliage. A black lamp post with a white globe stands on the lawn. In the background, a white building and more trees are visible under a clear sky. The text "Growth and Vision" is overlaid in the upper left quadrant.

Catalyst for discovery

Since its public launch in November 2023, the rapid growth of the Bowers WBHI offers two insights: there is a clear demand for rigorous research on women's brain health, and the University of California is uniquely positioned to meet that need. This year, WBHI researchers gathered for town halls at UCSF, UC Irvine, UC Berkeley, UCSB and more—coming together to build the WBHI Brain Bank and redefine how science is done. Data fuels discovery, and when it's open and shared, it becomes a catalyst.

When the Protein Data Bank first launched in June 1971, establishing a repository for data on the 3D structure of proteins, few could have foreseen its transformative impact. In 2024, the Nobel Prize in Chemistry was awarded for breakthroughs made possible by the database. The PDB built a community of stakeholders to accomplish together what they couldn't do separately— a testament to the power of scientific consortia and a 'science first, ego last' ethos.

'We dwell in possibility'

-E. Dickinson, 1862

WBHI discoveries are already expanding our understanding of the human brain, demonstrating its capacity for remodeling well into adulthood. Building on this momentum, the coming years will focus on scaling data collection for WBHI's moonshot projects and sharing our reproductive health survey for global impact. Continued breakthroughs depend on **training and supporting the next generation of scientists**, ensuring they have clear pathways to independence. As we build on the success of our seminar series and AI Grand Challenges, we will focus on **expanding our commitment to public science communication**—an increasingly vital part of our mission. Policy opportunities are also emerging, and we're ready to lead, including support for a bipartisan **federal bill to expand menopause research** and strengthen professional training. We look forward to deepening collaborations with visionary partners like Gates Ventures' Global Neurodegeneration Proteomics Consortium and Wellcome Leap. We owe women a century of science and we can't afford to wait. A 2025 World Economic Forum report estimates that closing the women's health gap would unlock a \$1 trillion return on investment by improving lives and economies. Whether driven by moral urgency or economic reality, the message is clear: investing in women's health is overdue, and **the time to act is now**.

WBHI by the numbers

Since 2023:

10,000 YouTube streams



5,000 datathon participants
from 100 countries



500+ registrants from 35+ countries

for the monthly Seminar Series

40 million dollars
under review

300 news articles

Women With Postpartum Depression Experienced Brain Changes During Pregnancy, Study Finds

The research constitutes some of the first evidence that the condition is associated with modifications in the brain before childbirth.

60+ Scientists

contributing to
the Brain Bank

32 publications



9 million dollars
in new grants



+8 million dollars
earmarked
for funding

23

student awards and fellowships



4 journal covers



5 women's brain health fellows

2 public voices fellows



for the OpEd Project,
whose mission is to
change who writes
history.



2 visits
to the White House

4 Townhalls

One Mission



Ann S. Bowers

Women's Brain Health Initiative

Join us to accelerate discovery

Women's brain health is understudied —
Together we can fill the void

Gifts to the Ann S. Bowers Women's Brain Health Initiative are deeply appreciated. By joining in our efforts, your gift, large or small, helps advance the study of women's health. With the link below, you can provide immediate funding to support current needs and emerging opportunities for the WBHI.

Your gift can help our mission by supporting specific areas of research, by providing trainee fellowships to develop the next generation of leaders, or by helping us expand our educational initiatives.

For any questions regarding your philanthropic support, please contact **Lynn Hawks** at **(805) 450-8599**.

Checks can be mailed to:

UC Santa Barbara Foundation
Attn: Women's Brain Health Initiative
4219 Cheadle Hall
UC Santa Barbara
Santa Barbara, CA 93106-2013

Your gift to the Bowers
WBHI can be completed
through our **secure
giving portal**.



“Together, you are propelling **research collaboration** in critical areas... The **Ann S. Bowers Women’s Brain Health Initiative** is a prime example. Collaborative science like this gives me hope for a **healthier**, more **equitable future** for all.”

- UC President Michael Drake



Study Women.



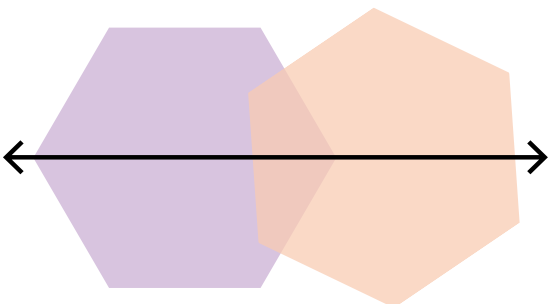
for more info visit
wbhi.ucsb.edu



Accelerating



Discovery



Together



Ann S. Bowers

Women's Brain Health Initiative