Gero

GEROSCIENCE CENTER FOR
BRAIN HEALTH AND METABOLISM

WWW.GEROCHILE.ORG

EDITORIAL

The world is aging fast, and Chile is no exception. Chilean life expectancy in the last 50 years has increased at a rate of 4 years per decade. We now have the second longest life expectancy in America, after Canada. In 2050, one in four Chileans will be over 65 years old. Therefore, our country needs to be prepared for this “Silver Tsunami”. Aging is not merely a biological problem, but is also an economical, ethical and public health challenge. The increase in life expectancy is the main risk factor for the development of chronic diseases that represent a major burden to the economy of Chilean families and our country, including the most prevalent neurodegenerative diseases, such as Alzheimer’s, Parkinson’s, Frontotemporal Dementias amongst others.

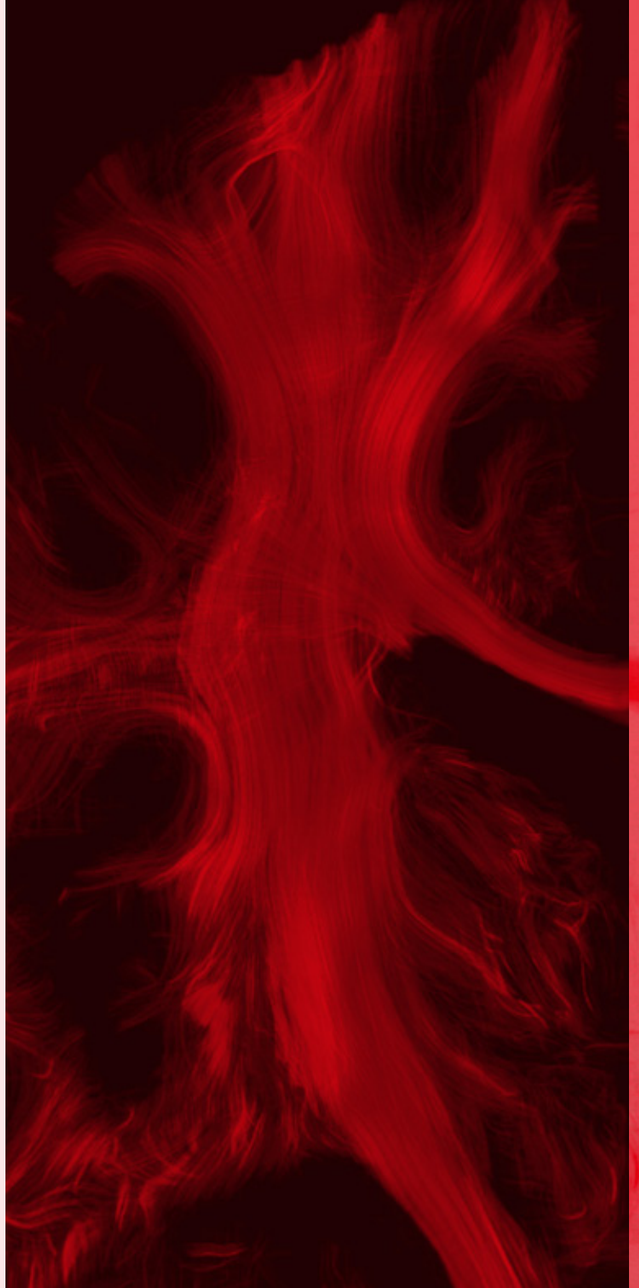
GERO is a FONDAP Center for the Study of Aging and its relationship with brain diseases, funded by the Program for Research Centers in Priority Areas of the National Commission for Scientific and Technological Research (CONICYT). Our Center seeks to understand the aging of the Chilean population using a holistic approach that integrates basic and clinical research, including the pillars of aging, translational research, psychology and sociology. The studies developed in our Center are aimed at understanding the basic principles of aging from molecules to systems. We also seek to unravel whether the Chilean population harbors most of the genetic, molecular and cellular properties that have been described in cohorts from around the world, or whether it has its own unique features. We aim to develop evidence-based interventions to improve the quality of life of older Chileans. Finally, we will raise awareness on how healthy habits can promote a more fulfilling aging experience in the general public.

MISSION

GERO provides leadership, infrastructure, training and resources to link our work with researchers, students and lay people, and seeks to improve the quality of life of Chilean people by increasing their healthspan.

VISION

To become a reference Research Institute for aging in Latin-America connected to an international network of research partners.



VALUES AND GUIDING PRINCIPLES:

ACCOUNTABILITY. We seek to be good stewards of Chilean state funds by following strict ethical and governance principles.

COLLABORATION. We actively pursue the generation of collaborative research between all members of our Center, with research and education institutions all over the world, the government and the community.

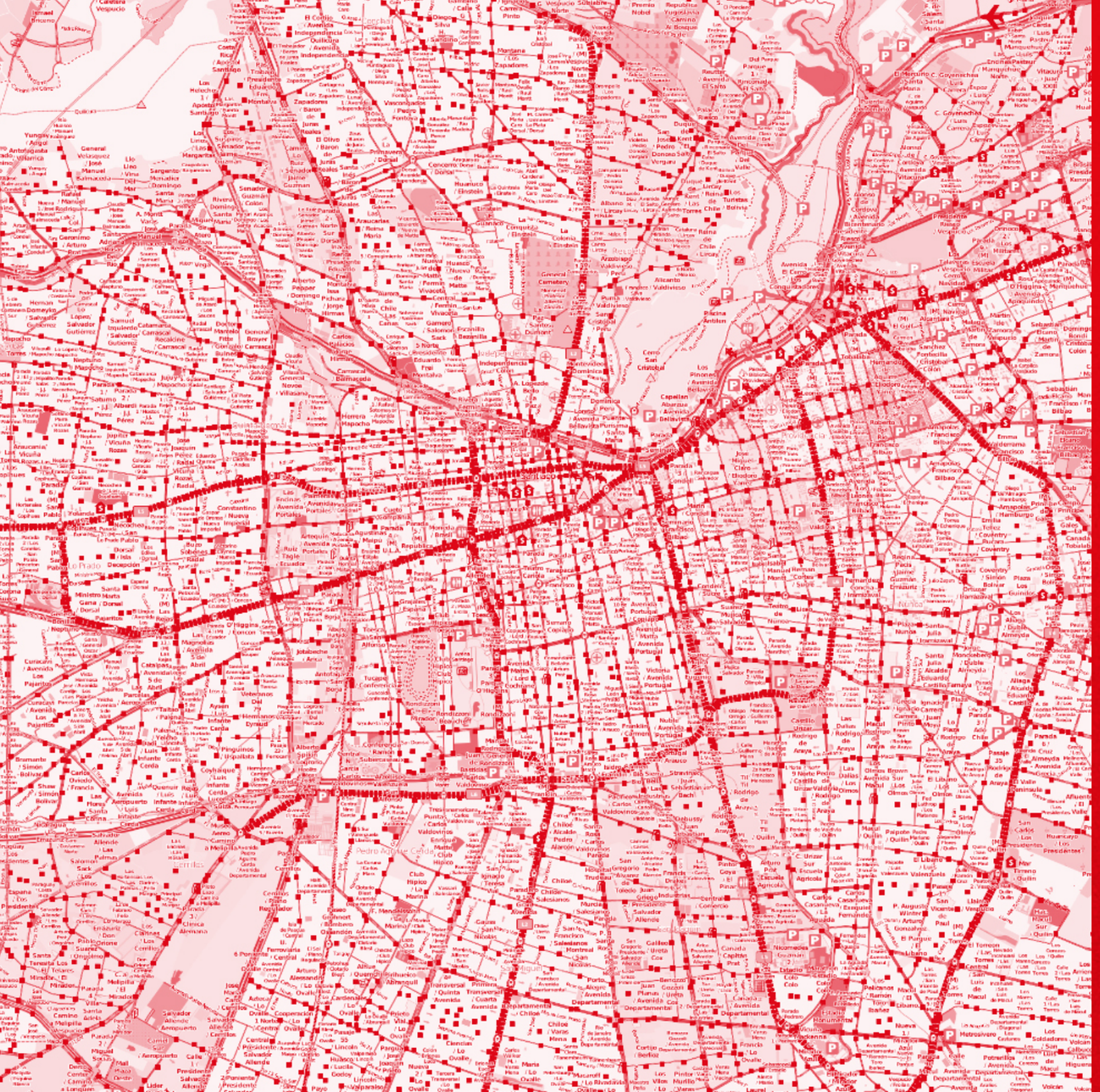
COMMUNICATION. We encourage and promote open communication within GERO, national and international collaborators, funding agencies and the community.

CREATIVITY. We promote creative and innovative thinking aligned with our mission to potentiate our teaching, research and outreach activities.

EXCELLENCE. We are committed to developing basic and clinical research programs involving outstanding young and consolidated researchers.

INTEGRITY. We promote a culture for responsible research practices that meet ethical principles and local/international regulations. We are committed to treating everyone in GERO as valued colleagues.

SUPPORT. We are committed to supporting everyone in GERO by cultivating an environment that is stimulating for all members of the Center.



UNIVERSIDAD MAYOR
Campus Huechuraba

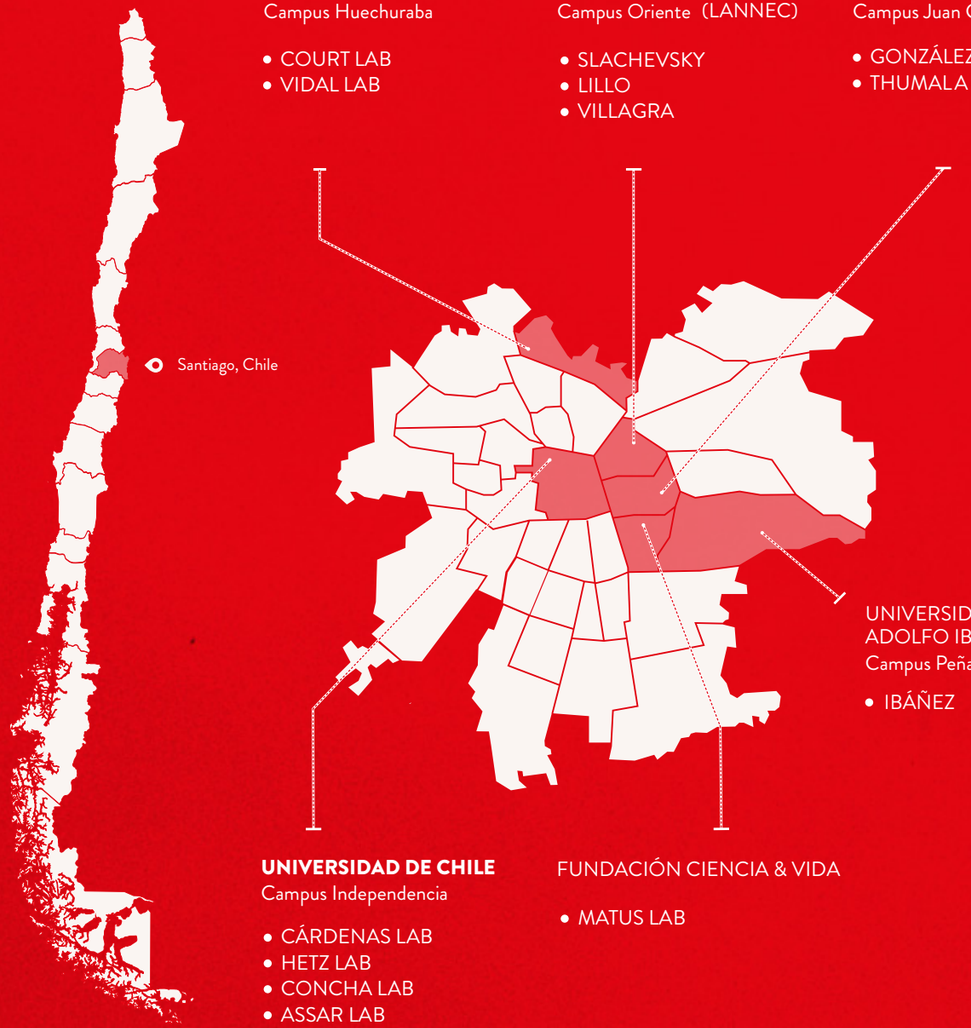
- COURT LAB
- VIDAL LAB

UNIVERSIDAD DE CHILE
Campus Oriente (LANNEC)

- SLACHEVSKY
- LILLO
- VILLAGRA

UNIVERSIDAD DE CHILE
Campus Juan Gómez Millas

- GONZÁLEZ LAB
- THUMALA



UNIVERSIDAD
ADOLFO IBÁÑEZ
Campus Peñalolén

- IBÁÑEZ

UNIVERSIDAD DE CHILE
Campus Independencia

- CÁRDENAS LAB
- HETZ LAB
- CONCHA LAB
- ASSAR LAB

FUNDACIÓN CIENCIA & VIDA

- MATUS LAB

PRECLINICAL TEAM

Christian González-Billault
Director

Biochemist
PhD in Cell
and Molecular Biology
University of Chile

Felipe Court
Principal Investigator

Biologist
PhD in Neurosciences
Universidad Mayor

Julio César Cárdenas
Principal Investigator

Medical Technologist
PhD in Biomedical Sciences
University of Chile

Claudio Hetz
Associated Investigator

Molecular Biotechnology Engineer
PhD in Biomedical Sciences
University of Chile

Soledad Matus
Associated Investigator

Biochemist
PhD in Cellular and
Molecular Biology
Fundación Ciencia & Vida

Miguel Concha
Associated Investigator

Physician
PhD in Biomedical Sciences
University of Chile

René Vidal
Associated Investigator

Biochemist
PhD in Sciences
Universidad Mayor

CLINICAL TEAM

Andrea Slachevsky
Deputy Director

Cognitive Neurologist
PhD in Neuroscience
University of Chile

Daniela Thumala
Associated Investigator

Clinical Psychologist
PhD in Psychology
University of Chile

Patricia Lillo
Associated Investigator

Cognitive Neurologist
PhD in Clinical Neuroscience
University of Chile

Rodrigo Assar
Associated Investigator

Mathematician Civil Engineer
PhD in Computer Science
University of Chile

Roque Villagra
Associated Investigator

Cognitive Neurologist
Clinical Researcher
University of Chile

Agustín Ibáñez
Associated Investigator

Psychologist
PhD in Psychology
Universidad Adolfo Ibáñez

CHRISTIAN GONZÁLEZ

Director

Biochemist, PhD in Cell and Molecular Biology, Center for Molecular Biology Severo Ochoa, Universidad Autónoma de Madrid, Spain. Chilean neurobiologist leader in cytoskeleton dynamics and cell signalling with a strong background in neuronal functions and disease. He is currently a Full Professor at the Department of Biology, Faculty of Sciences, University of Chile, with more than 10 years of experience in the design, execution and management of research grants.

Cytoskeleton and membrane dynamics
Redox Biology
Glia-neuron unit

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Cell plasticity in normal and pathological aging that includes neuron-glia coupling, changes in redox biology, and cytoskeleton and organelle/membrane dynamics.

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✉ chrgonza@uchile.cl

ANDREA SLACHEVSKY

Deputy Director

Neurologist, PhD in Sciences, Université Pierre et Marie Curie, France. Leading neurologist in Chile and a scientist who has dedicated her career to research and teaching in neuropsychology, neuropsychiatry and . She is an Associate Professor in the University of Chile and leads the Clinic of Memory and Neuropsychiatry (CMYN) - Faculty of Medicine and Salvador Hospital, which houses one of the first Memory Units of the Chilean Dementia Plan. She is the vice president of the Corporación Profesional de Alzheimer y Otras Demencias (COPRAD), a non-profit, non-governmental organization devoted to raising public awareness of Alzheimer's disease and other dementias in Chile.

Neuropsychology
Alzheimer's Disease
Neurodegeneration

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Clinical Cohort Study - Clinical Intervention Study – Biobank development and coordination of research with basic neuroscientist.

✉ aslachevsky@gmail.com

FELIPE COURT

Principal Investigator

Biologist, PhD in Neurosciences, Edinburgh University, UK. Leading Chilean scientist in studies concerning the relationship between glial cells and neurons in the nervous system during axonal degeneration and regeneration, as well as in neurodegenerative conditions. For his research, he uses in vivo and in vitro models of axonal degeneration and regeneration. He is currently a Full Professor and Director of the Center for Integrative Biology in the Universidad Mayor, Chile.

Neuronal degeneration
Axonal regeneration
Glia-neuron unit

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Molecular mechanisms of axonal degeneration and regeneration in the aging nervous system.

✉ felipe.court@umayor.cl

JULIO CÉSAR CÁRDENAS

Principal Investigator

Medical Technologist, PhD in Biomedical Sciences, University of Chile. Leading Chilean scientist in the field of metabolism, cancer, aging, mitochondria and calcium signals. He is currently an Assistant Professor at the Institute of Biomedical Sciences, Faculty of Medicine, University of Chile.

Cancer biology
Mitochondrial functions
Metabolism and senescence

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Impact of ER- mitochondrial communication on metabolism and bioenergetics.

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CLAUDIO HETZ

Associated Investigator

Molecular Biotechnology Engineer, PhD in Biomedical Sciences, Serono Pharmaceutical Research Institute, Switzerland and the University of Chile. Leading Chilean scientist in the field of stress responses that are initiated in the ER in diseases such as amyotrophic lateral sclerosis (ALS), Parkinson's disease, and Alzheimer's disease. He is currently a Full Professor at the Faculty of Medicine, University of Chile and Deputy Director of the Biomedical Neuroscience Institute.

Neurodegeneration
Loss of Proteostasis in aging
Gene therapy

RESEARCH ACTIVITY ASSOCIATED WHIT THE CENTER

Adaptation to stress and loss of Proteostasis in aging and neurodegenerative diseases.

✉ chetz@med.uchile.cl

SOLEDAD MATUS

Associated Investigator

Biochemist, PhD in Cellular and Molecular Biology, Pontifical Catholic University of Chile. Leading Chilean scientist in the field of neuronal alterations, and how the adaptive mechanisms present in cells are activated in response to stress stimuli and contribute to neurodegeneration and aging. She currently leads the Laboratory of Biology of Neurodegeneration at the Fundación Ciencia & Vida.

Neurodegeneration
Integrated Stress Response
Nutrient Sensing Pathways

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Integrated Stress Response in Neurodegeneration and Aging.

✉ smatus@cienciavida.org

DANIELA THUMALA

Associated Investigator

Clinical Psychologist, PhD in Psychology and Master in Anthropology, University of Chile. She participates in diverse projects and publications in aging, contributing to the installation of the field of psychogerontology in Chile. She focuses on the training of researchers and professionals for the promotion of the mental health of the elderly population, from a systemic preferential perspective. She is currently a professor at the Department of Psychology in the University of Chile.

Psychology
Psychogerontology
Systemic perspective

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Participation in the Clinic Cohort, responsible for the psychosocial evaluations.

✉ dthumala@uchile.cl

MIGUEL CONCHA

Associated Investigator

Physician, PhD in Biomedical Sciences, University of Chile. Leading Chilean scientist in the field of development and morphogenesis, studies how form, structure and functional organization emerges during ontogenetic development, by using a multidisciplinary approach in teleost fish combining developmental genetics, neuroanatomy, cell biology, in vivo microscopy and image analysis. He is currently a Full Professor at the University of Chile.

Developmental biology
Fish models
Neurodegeneration

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Development of experimental models of aging and neurodegeneration in the African Turquoise killifish.

✉ mconcha@med.uchile.cl

RODRIGO ASSAR

Associated Investigator

Mathematical Civil Engineer, PhD in Computer Science, University of Bordeaux. Leading Chilean scientist in the field of modeling and simulations in Biomedicine and Biotechnology, working at the interface of biology, mathematics and computer science, in order to understand biological processes through mathematical modeling, statistical analysis, and computer simulation. He is currently an Assistant Professor in the Institute of Biomedical Sciences in the Faculty of Medicine, University of Chile.

Data analytics in Health
Computational statistics
Hybrid modeling

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Participation in the Clinic Cohort study. Responsible for database management and data analysis.

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ROQUE VILLAGRA

Associated Investigator

Cognitive Neurologist, Clinical Researcher, University of Chile. Leading Chilean researcher in the field of Parkinson's disease. He is currently an Assistant Professor in the Department of Neurological Sciences in the Faculty of Medicine, University of Chile and Medical Director of the Integral Care Center for Parkinson's Disease (Cenpar).

Parkinson's Disease
Movement disorders
Cognitive impairment

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Participation in the Clinic Cohort study and the clinical intervention study. Co-direction of the clinic study. Responsible for the motor evaluation protocol.

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PATRICIA LILLO

Associated Investigator

Cognitive Neurologist, PhD in Clinical Neuroscience, University of New South Wales, Australia. Leading clinical investigator in the field of neurodegenerative conditions such as frontotemporal dementia and amyotrophic lateral sclerosis. She is currently an Assistant Professor in the Department of Neuroscience and Deputy Director of the Southern Department of Neurology, Faculty of Medicine, University of Chile.

Neurodegenerative diseases
Dementia
Aging

RESEARCH ACTIVITY ASSOCIATED TO WITH CENTER

Design of clinical protocols, and the clinical evaluation of subjects of the Clinical Cohort. Analysis of methods and results.

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RENÉ VIDAL

Associated Investigator

Biochemist, PhD in Sciences, Universidad Austral de Chile. Leading Chilean scientist in the field of neuroscience, trafficking receptors, neurodegenerative diseases, the unfolded protein response (UPR), ER stress, neurodegenerative disorders, and Parkinson's and Huntington's diseases. He is currently an Assistant Professor in the Universidad Mayor.

Parkinson's Disease
Neurodegeneration
Gene Therapy

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Gene and pharmacological therapies to restore proteostasis in aging and Parkinson's disease.

✉ rene.vidal@mayor.cl

AGUSTÍN IBÁÑEZ

Associated Investigator

Psychologist, PhD in Psychology. Leading Chilean scientist in the field of neurocognitive network approaches to dementia and other disorders. He is a Full Professor at the Center for Social and Cognitive Neuroscience (CSCN), Universidad Adolfo Ibáñez, Director of the Institute of Cognitive and Translational Neuroscience (INCYT, CONICET-INECO-Favaloro, Argentina), associated researcher of the ARC Centre of Excellence in Cognition and its Disorders (Australia), and Atlantic Fellow for Equity in Brain Health at The Global Brain Health Institute (GBHI, University of California, San Francisco).

Cognitive neuroscience
Cognitive disorders
Dementia

RESEARCH ACTIVITY ASSOCIATED WITH THE CENTER

Participation in the Clinic Cohort. Responsible for the neuroimaging evaluation protocol and neuroimaging analysis.

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COLLABORATIVE STRATEGY AND SCIENTIFIC

BUCK INSTITUTE FOR RESEARCH ON AGING

- **California, USA**
  Center of world class in research on Aging, to promote frontier and multidisciplinary research on Aging.

ERIBA – EUROPEAN RESEARCH INSTITUTE FOR THE BIOLOGY OF AGEING

- **Groningen, Netherlands**
  Research Institute which focus on fundamental biological problems.