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BIOMARKERS

POSTER PRESENTATION

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NEUROIMAGING

Friends with benefits: Sharing large-scale transcontinental brain MRI databases in LatAM-FINGERS and US POINTER

Maria Da Graça Morais Martin[1] | Susan M. Landau[2] | Andres Damian[3] | Prashanthi Vemuri[4] | Yanina Bérgamo[5] | Claudia Kimie Suemoto[6] | Ismael Luis Calandri[7] | Paulo Caramelli[8] | Francisco Lopera[9] | Ricardo Francisco Allegri[7] | Laura Lovato[10] | Carolina Delgado[11] | Ricardo Nitrini[12] | Sonia Maria Dozzi Brucki[13] | Lissette Duque[14] | Ana Charamelo Baieti[15] | Nilton Custodio[16] | Jorge M Leon-Salas[17] | Daisy M Acosta[18] | Ivonne Z. Jimenez Velazquez[19] | María Isabel Cusicanqui[20] | Ana Luisa Sosa-Ortiz[21] | Lin Vellila[9] | Rosa Maria Salinas-Contreras[22] | Mark A. Espeland[10] | Heather M Snyder[23] | Maria C. Carrillo[23] | Miia Kivipelto[24,25] | Laura D Baker[10] | Lucía Crivelli[7] | US POINTER and LatAm-FINGERS[1]

[1]Hospital da Clinicas da Faculdade de Medicina da Universidade de Sao Paulo., São Paulo, Brazil

[2]University of California, Berkeley, CA, USA

[3]Centro Uruguayo de Imagenología Molecular, CUDIM., Montevideo, Montevideo, Uruguay

[4]Mayo Clinic, Rochester, MN, USA

[5]Fleni, Buenos Aires, Argentina

[6]Physiopathology in Aging Laboratory (LIM-22), Department of Internal Medicine, University of Sao Paulo Medical School, São Paulo, São Paulo, Brazil

[7]Fleni, Buenos Aires, CABA, Argentina

[8]Faculty of Medicine - Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

[9]Grupo de Neurociencias de Antioquia, Universidad de Antioquia, Medellin, Colombia

[10]Wake Forest University School of Medicine, Winston-Salem, NC, USA

[11]Hospital Clínico Universidad de Chile, Santiago, Chile

[12]Department of Neurology, University of São Paulo Medical School, São Paulo, Brazil

[13]Cognitive and Behavioural Neurology Unit - University of São Paulo, São Paulo, Brazil

[14]Neuromedicenter, Quito, Ecuador

[15]Centro Uruguayo de Imagenología Molecular - CUDIM, Montevideo, Uruguay

[16]Instituto Peruano de Neurociencias, Lima, Lima, Peru

[17]Clínica Bíblica Hospital, San José, Costa Rica

[18]Universidad Nacional Pedro Henriquez Ureña, Santo Domingo, Distrito Nacional, Dominican Republic

[19]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico, PR, USA

[20]Mente Ativa, la paz, Bolivia (Plurinational State of)

[21]Dementia Laboratory, Instituto Nacional de Neurología y Neurocirugía "Manuel Velasco Suarez", Mexico city, DF, Mexico

[22]Laboratorio de demencias del Instituto Nacional de Neurología y Neurocirugía Manuel Velasco Suárez, Ciudad de Mexico, Mexico

[23]Alzheimer's Association, Chicago, IL, USA

[24]Karolinska University Hospital, Theme Inflammation and Aging, Stockholm, Sweden

[25]FINGERS Brain Health Institute, Stockholm, Sweden

Correspondece
Maria Da Graça Morais Martin, Hospital da Clinicas da Faculdade de Medicina da Universidade de Sao Paulo., São Paulo, Brazil.
Email: maria.martin@hc.fm.usp.br

Abstract

Background: Multicentric initiatives to study brain cognition in the elderly offers us a unique collection of brain imaging data accompanied by detailed neuroclinical and neuropsychological evaluations. U.S. POINTER and LatAm-FINGERS, part of the World Wide FINGERS, are both large-scale investigations of lifestyle interventions and its impact on cognitive function. These large-scale detailed data may offer an unprecedented opportunity to compare diverse populations.

Method: Baseline MRI of subjects from multiple US centers (POINTER-US), distributed in 5 geographical regions, and from 9 latin-american countries (LatAm-FINGERS). The protocols vary from basic (3D T1, 3D FLAIR,T2* GRE, Cor T2 hippocampus, DWI) to advanced which also included ASL, rs-FMRI and DTI. Demographic information and clinical, cognitive and neuropsychological assessment were also included.

Result: MRI data was collected from 662 participants in the United States (about 65% of the total anticipated U.S. POINTER neuroimaging sample) and from 542 subjects from 9 countries in latin-america (about 80% of the total anticipated LatAm-FINGERS neuroimaging sample), with around 1200 participants scanned (table1).

All participants have 3D T1, 3D FLAIR, T2* GRE images and either DWI or DTI images. Comparative demographics from the 2 datasets shows similar mean age, a predominance of females, and slight differences in education (table 2). This will allow us to compare multiethnic and multicultural volumetric and functional brain MRI information, as well as disease markers, associated with thorough neurological and clinical assessment. Reasons for not acquiring MRI were mainly due to claustrophobia or scanner unavailability.

Conclusion: This is an exceptional opportunity to have comparative large-scale databases, with anatomical and functional brain imaging from different populations, allowing us to study real world diverse brain data and better understand its relationships with demographics, health and risk characteristics, and cognition.

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Initiative	Country	protocol	sequences	MR scanner	total number of subjects
LatAm-FINGERS	Argentina	MRIadvanced	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, ASL, rsFMRI, DTI	GE 3T	54
	Chile	MRI basic + ASL	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, DWI, ASL	Phillips 3T and Siemens 3T	60
	Brasil - Sao Paulo	MRI advanced	3D T1, 3D FLAIR, T2* GRE, Cor T2 hypoccamppus, DWI, ASL	Phillips 3T	44
	Brasil - Belo Horizonte	MRI advanced	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, ASL, rsFMRI, DTI	Siemens 3T	24
	Ecuador	MRI basic	3D T1, 3D FLAIR,T2* GRE, Cor T2 hippocampus, DWI	Siemens 3T	94
	Uruguay	MRI advanced	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, ASL, rsFMRI, DTI	GE 3T	76
	Perú	MRI basic	3D T1, 3D FLAIR,T2* GRE, Cor T2 hippocampus, DWI	Siemens 3T	98
	Costa Rica	MRI basic	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, DWI	Phillips 1.5T	18
	Rep. Dominicana	MRI advanced - ASL	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, rsFMRI, DTI)	Phillips 3T	56
	Bolivia	MRI basic	3D T1, 3D FLAIR, T2* GRE, Cor T2 hippocampus, DWI	Siemens 1.5T	18
					542
U.S. POINTER	US (North Carolina, California, Illinois, Texas and Rhode Island)		3D T1, 3D FLAIR, 3D ASL, Diffusion MRI, T2* GRE	3T	662

Initiative	Number	age (mean/ SD/	sex	school years
U.S. POINTER	662	68 +-5 (60 - 79)	male 36%	14.8 +- 3.2 (8-21)
LatAm-FINGERS	542	67 +-4 (59-79)	male 25%	12.6 +- 3.7 (1-16)