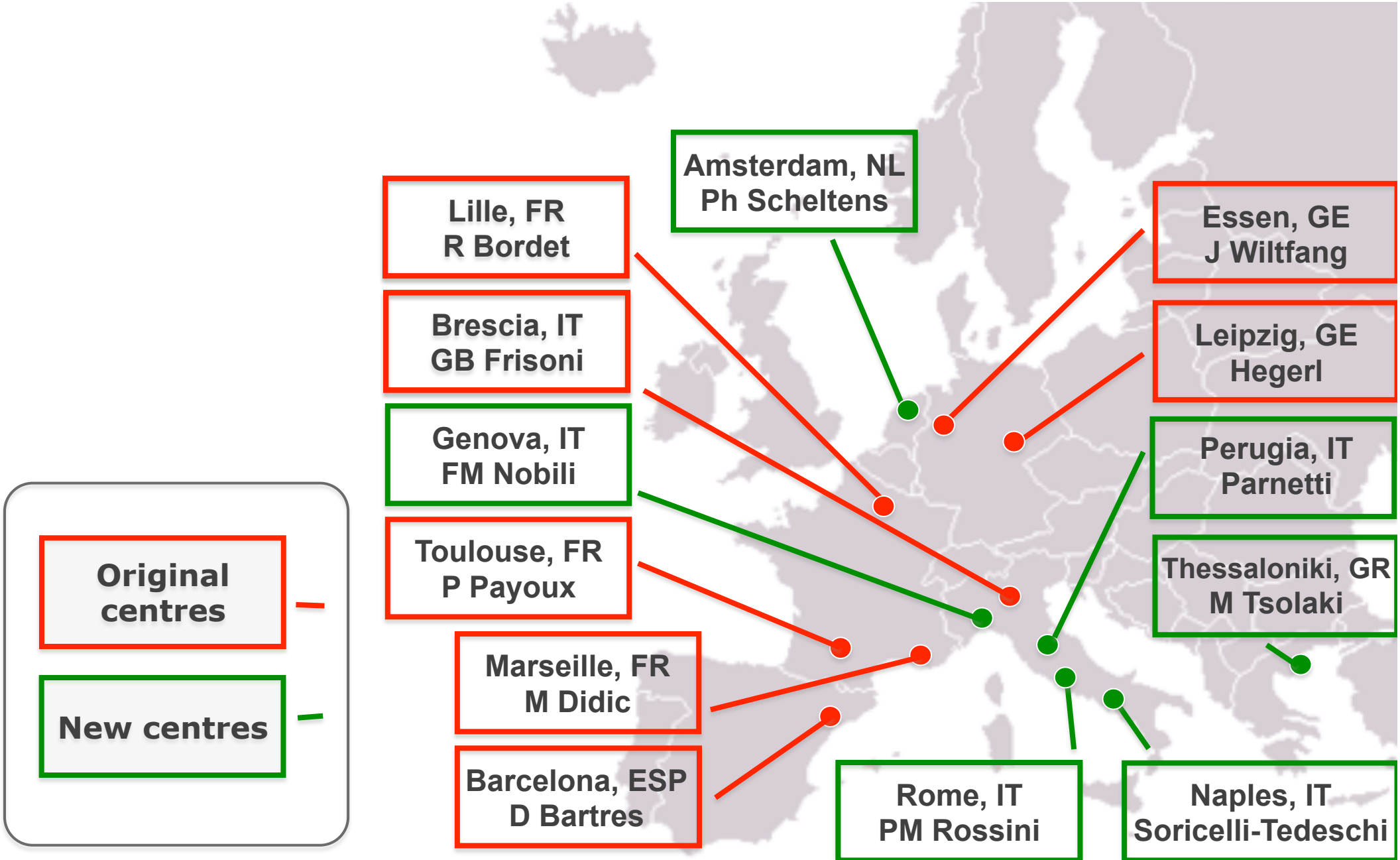
PharmaCog E-ADNI

- **Update on enrollment**
- **Harmonization of scanners**
- **Preliminary results on markers of progression**
  - x-sectional structural
  - x-sectional diffusion
  - Longitudinal structural

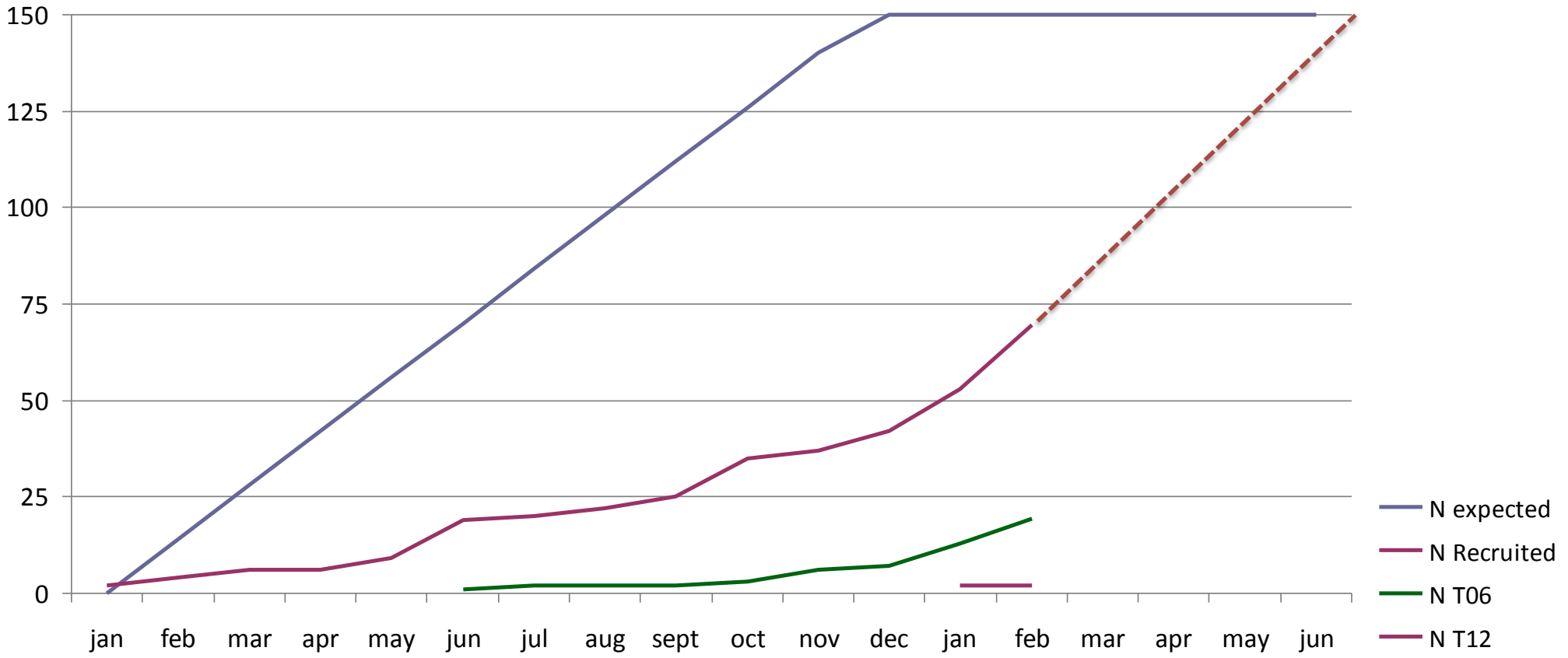
PharmaCog E-ADNI
Markers of disease modification

WP5		WP6
75 MCI Ab42 pos. and 75 neg.		**APP, APP/PS1, Tau, APP/ Tau/PS2 mouse and lemur monkeys**
Serial ass.t: 6 mos x 3 yrs	⟷	Serial ass.t: 3 mos x 2 yrs
ADNI cogn. tests	⟷	Homol. cogn. tests
ADNI struct 3T MRI	⟷	Homol. struct MRI
ADNI2 diffusion MRI, rest fMRI	⟷	Homol. diff func MRI
EEG & ERPs	⟷	Homol. EEG & ERPs
CSF & Blood	⟷	Blood & Histology

Enrolling centres in E-ADNI/PharmaCOG WP5

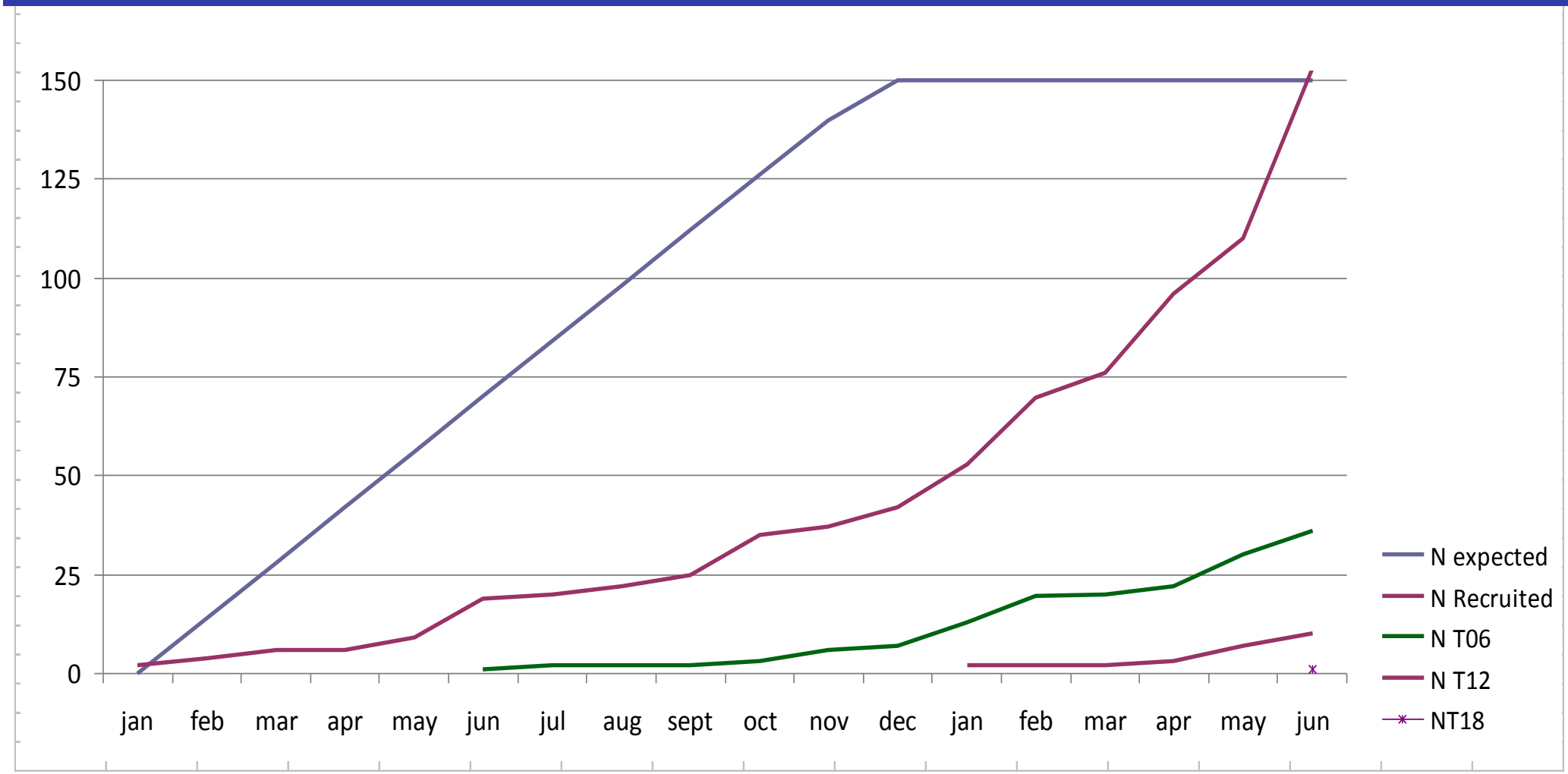


Patient recruitment as of March 30 2013



End of March 2013	150 pats expected	70 pats enrolled

Patient recruitment as of June 30 2013



End of June 2013	150 pats expected	151 pats enrolled

Advancing science and treatment of Alzheimer's Disease

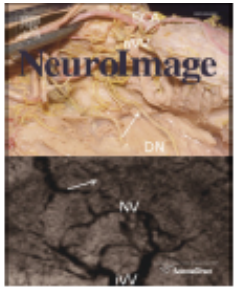
Innovative Medicines Initiative

Structural harmonization paper
NeuroImage, 2013 in press

Contents lists available at SciVerse ScienceDirect

NeuroImage

journal homepage: www.elsevier.com/locate/ynimg



Brain morphometry reproducibility in multi-center 3 T MRI studies: A comparison of cross-sectional and longitudinal segmentations

Jorge Jovicich [a,*,1], Moira Marizzoni [b,1], Roser Sala-Llonch [c], Beatriz Bosch [c], David Bartrés-Faz [c], Jennifer Arnold [d], Jens Benninghoff [d], Jens Wiltfang [d], Luca Roccatagliata [e,f], Flavio Nobili [g], Tilmann Hensch [h], Anja Tränkner [h], Peter Schönknecht [h], Melanie Leroy [i], Renaud Lopes [i], Régis Bordet [i], Valérie Chanoine [j], Jean-Philippe Ranjeva [j], Mira Didic [k,l], Hélène Gros-Dagnac [m], Pierre Payoux [m], Giada Zoccatelli [n], Franco Alessandrini [n], Alberto Beltramello [n], Núria Bargalló [o], Oliver Blin [i], Giovanni B. Frisoni [b]The PharmaCog Consortium

In preparation: diffusion and rest fMRI

Clinical characteristics of aMCI patients (results on 151 ss)

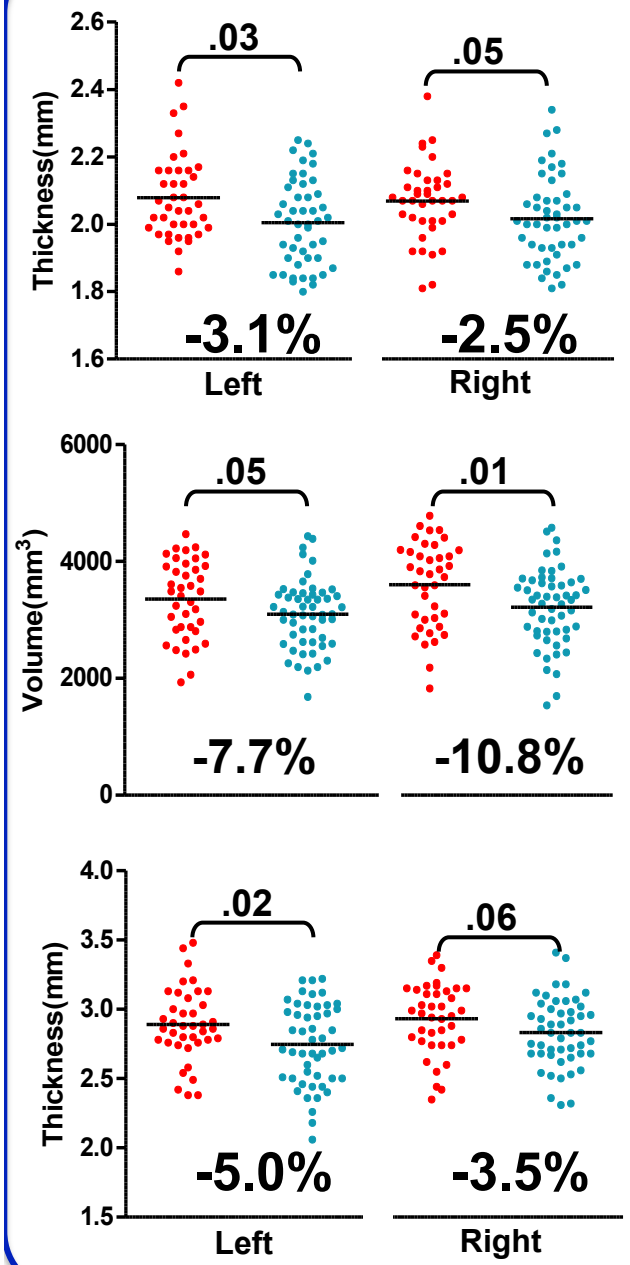
	n=151
Sociodemographics	
Age	69.3±7.4
Education	10.6±4.3
Sex (F)	85 (56%)
Cognitive history	
Onset of cognitive symptoms (years)	2.9±2.0
Family history of dementia	59 (39%)
Cognition, function, mood, and behaviour	
Mini Mental State Examination	26.7±1.8
Functional Assessment Questionnaire	2.6±2.5
Geriatric Depression scale	2.4±1.8
Neuropsychiatric Inventory	8.4±10.4

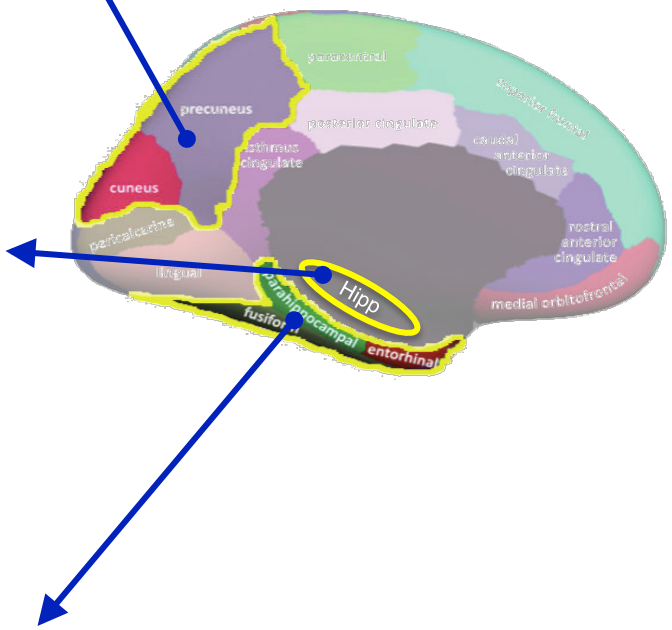
Clinical characteristics of aMCI patients by CSF Aβ42 status (preliminary results on 94 ss)

	Abeta POS (n=53)	Abeta NEG (n=41)	p
Sociodemographics			
Age	68.7±8.1	70.8±6.0	.17
Education	11.0±4.5	10.5±4.7	.55
Sex (F)	30 (57%)	25 (61%)	.67
Cognition, function, mood, and behaviour			
Mini Mental State Examination	26.0±1.7	27.2±2.0	.003
Functional Assessment Questionnaire	2.6±2.9	2.0±2.1	.29
Geriatric Depression scale	2.1±1.7	2.4±1.6	.38
Neuropsychiatric Inventory	6.4±7.4	6.2±8.9	.90

Structural correlates of Aβ42 abnormality
(preliminary results on 94 ss)

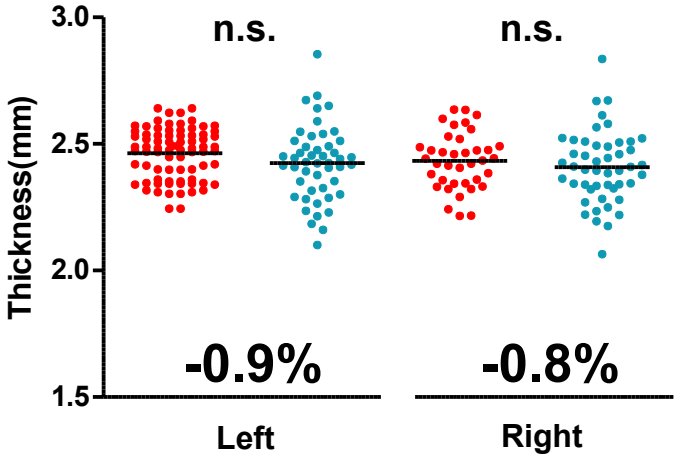
AD-specific ROIs

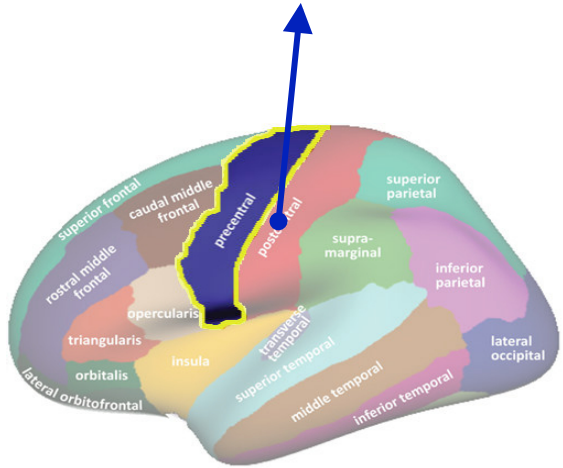




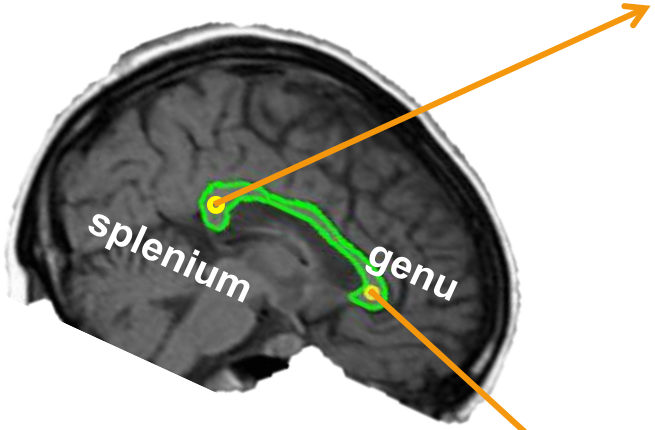
● Aβ POS
● Aβ NEG

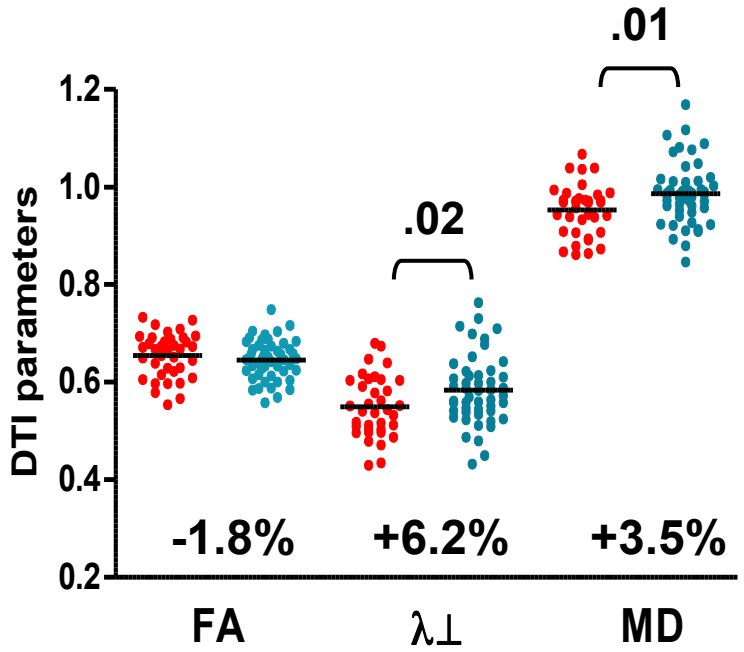
Control ROI

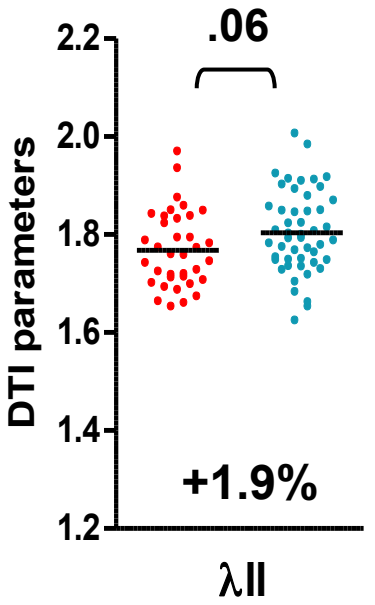


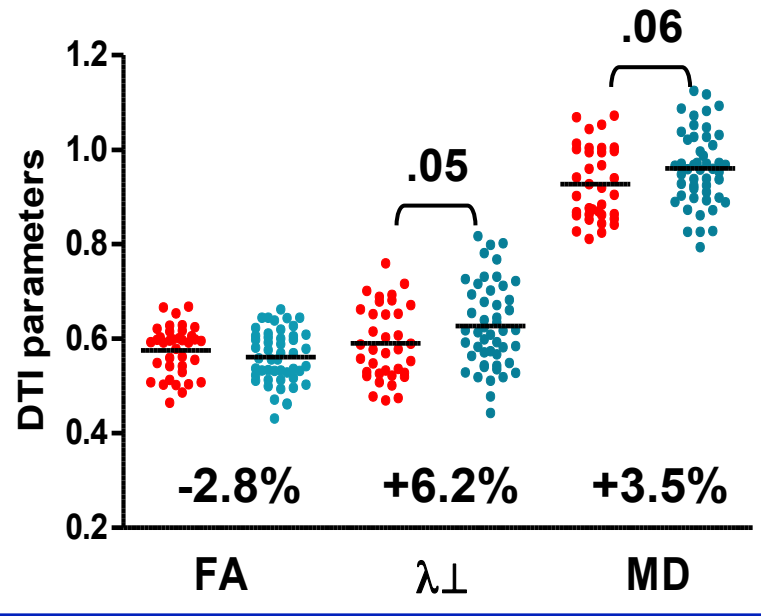


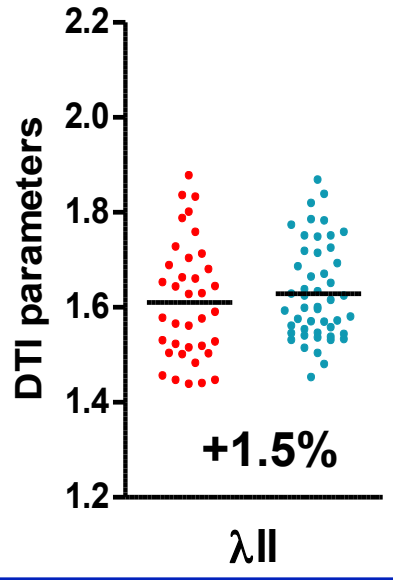
Diffusion correlates of Aβ42 abnormality
(preliminary results on 94 ss)





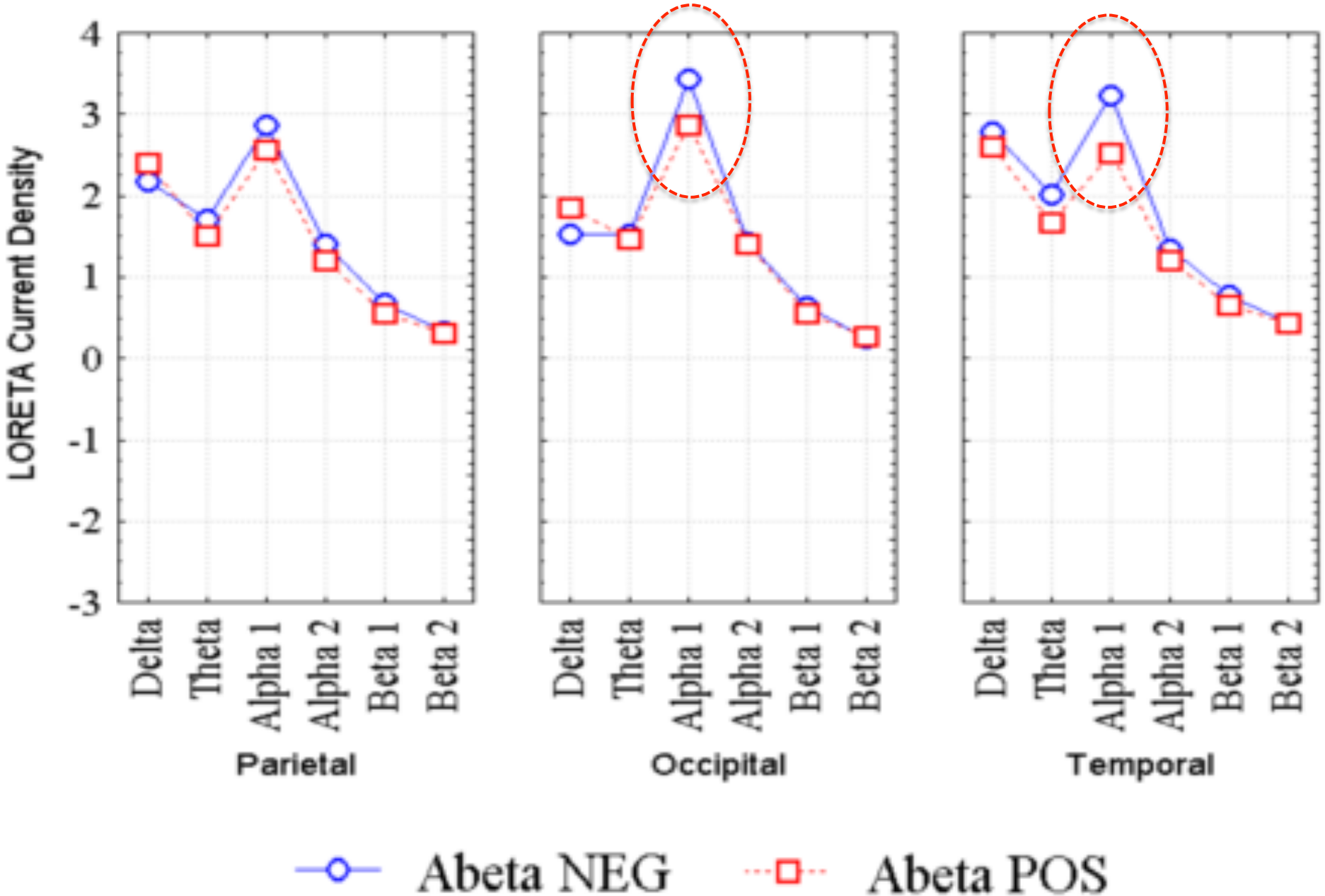






- Aβ POS
- Aβ NEG

EEG power density correlates of Aβ42 abnormality
(preliminary results on 72 ss)



Poster by Galluzzi *et al.*

Cross-sectional clinical, neuropsychological, neuroimaging, and neurophysiological characterization of mild cognitive impairment patients in WP5 PharmaCog/E-ADNI study: preliminary data.

Galluzzi S,[1] Marizzoni M,[1] Babiloni C, [1] Marzano N, Vecchio F, Bartres-Faz D,[2] Bosch B,[2] Molinuevo JL,[2] Bordet R,[3] Didic M,[4] Ranjeva J-P,[5] de Anna F,[6] Forloni G,[7] Jovicich J,[8] Nobili F,[9] Roccatagliata L,[9] Picco A,[9] Parnetti L,[10] Farotti L,[10], Salvadori N,[10] Payoux P,[11] Pariente J,[11] Rossini PM,[12] Marra C,[12] Quaranta D,[12] Schonknecht P,[13] Soricelli A,[14] Tsolaki M,[15] Visser PJ,[16] Wiltfang J,[17] Blin O,[18] Frisoni GB,[1]; on behalf of the PharmaCog Consortium.

[1]Laboratory of Epidemiology, Neuroimaging and Telemedicine, IRCCS Istituto Centro San Giovanni di Dio Fatebenefratelli, Brescia, Italy; [2]Institut d'Investigacions Biomèdiques August Pi I Sunyer, IDIBAPS, and Unitat d'Alzheimer i altres Trastorns cognitius, Barcelona, Catalunya, Spain; [3]Department of Pharmacology, EA1046, University of Lille Nord de France, 59045 Lille Cedex, France; [4]Aix-Marseille Université, INSERM, Institut des Neurosciences des Systèmes (INS) UMR 1106, [5]CNRS, CRMBM UMR 7339, 13385, and [6]Service de Neurologie et Neuropsychologie, APHM Hôpital Timone Adultes, Marseille, France; [7]Department of Neuroscience, Mario Negri Institute for Pharmacological Research, Milano, Italy; [8]Center for Mind Brain Sciences, Dept. of Cognitive and Education Sciences, University of Trento, Trento, Italy; [9]Clinical Neurophysiology, Dept. of Neuroscience, Ophthalmology and Genetics, University of Genoa, Genoa, Italy; [10]Clinica Neurologica, Università di Perugia, Ospedale Santa Maria della Misericordia, Perugia, Italy; [11]INSERM; Imagerie cérébrale et handicaps neurologiques UMR 825; F-31059 Toulouse, France Université de Toulouse; UPS; Imagerie cérébrale et handicaps neurologiques UMR 825; CHU Purpan, Place du Dr Baylac, F-31059 Toulouse Cedex 9, France; [12]Department of Neurology, Catholic University, Rome, Italy; [13]Universitätsklinikum Leipzig, Department of Psychiatry and Nuclear M… heimer Centre, VU Medical Cent… iversity, Marseille,

Date: Sunday, July 14, 2013
Location: Exhibit Hall A
Time: 11:45 a.m. - 2:15 p.m.
Session Type: AAIC Featured Research Session
Poster Number: P1-151

Table 1. C…

Sociodemogr			
Age			
Education			
Sex (F)			
Cognition, fu			
Mini Mental S			
Functional As			
Geriatric Depr			
Neuropsychia			

…opocampal …nd brain …(B) …ouping the …CSF …el.

…a NEG
…a POS

Table 2. Neu…

Learning			
AVLT, immediat			
AVLT, delayed recall	3.5±2.6	4.1±2.7	.38
Working memory			
Digit Span forward	5.0±.8	5.6±1.3	.03
Digit Span backward	3.8±1.0	3.9±1.0	.67
Executive functions			
Trail Making test B	198.9±75.3	218.7±112.9	.58
Language			
Letter fluency	32.8±10.9	29.0±14.2	.24
Category fluency	32.1±11.5	32.2±14.4	.98
Processing speed			
Digit Symbol Substitution test	27.1±11.7	32.1±20.3	.22
Visual memory*			
Paired associates learning test (n. of errors)	90.6±59.7	76.8±40.7	.36
Delayed matching to sample (% correct all delays)	63.5±17.4	73.7±13.7	.03
Pattern recognition memory test (% correct)			
immediate	75.7±16.8	78.1±15.3	.60
delayed	62.1±18.3	62.9±15.6	.86
Spatial recognition memory test (% correct)	60.0±14.8	66.0±11.0	.11
Spatial working memory test (n. of errors)	43.7±19.4	44.8±22.6	.85

*from the CANTAB battery.

…in diffusion …uping the …SF …isotropy; λ⊥, …ean and radial …ctively.

Regional LORETA solutions in eyes-closed condition show a slight trend to higher alpha power in 24 Abeta NEG than in 38 Abeta POS, which however fails to attain statistical significance (p=0.50) possibly due to small group size in this preliminary analysis (Figure 3).

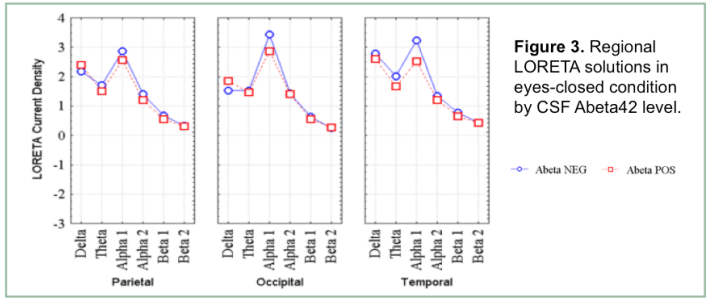
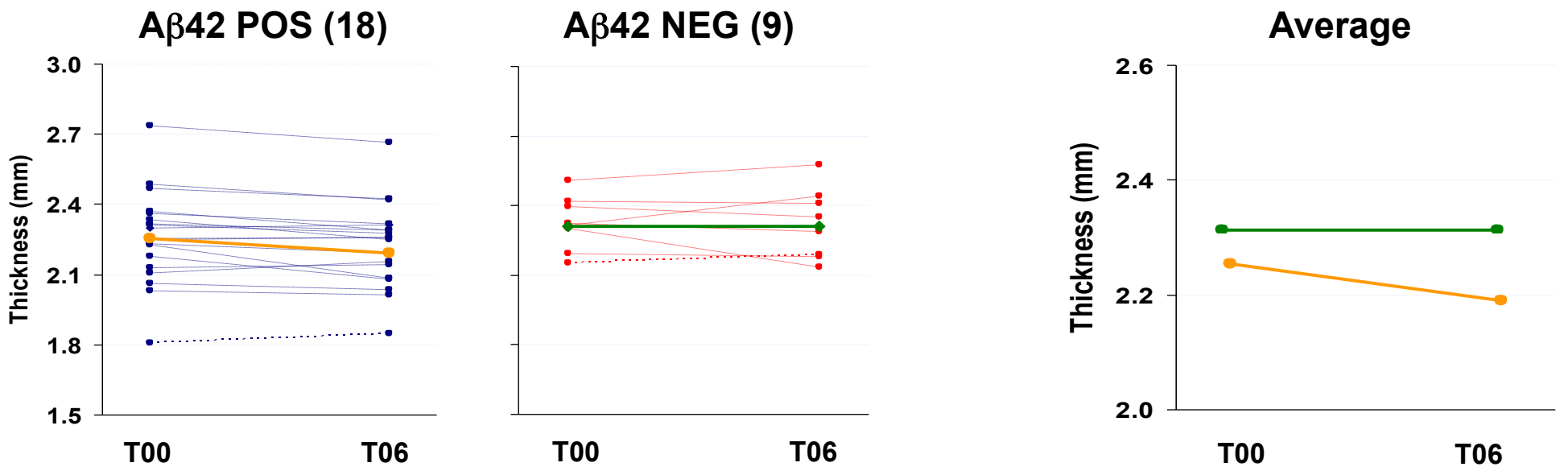


Figure 3. Regional LORETA solutions in eyes-closed condition by CSF Abeta42 level.

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) for the Innovative Medicine Initiative under Grant Agreement n°115009.

Longitudinal Results (preliminar on 27 ss)

Cortical thinning in the precuneus ROI



Upcoming

- X sectional rest fMRI results
- X sectional peripheral markers results
- Imaging longitudinal markers results
- Animal structural/diffusion MR imaging + histology
- Extension to F18 amyloid PET