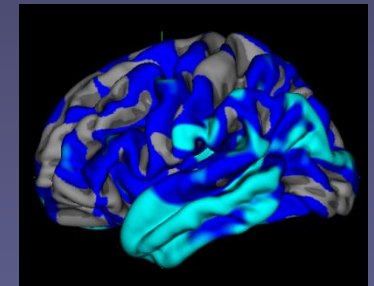


AddNeuroMed Imaging Update

WW-ADNI : July 2013



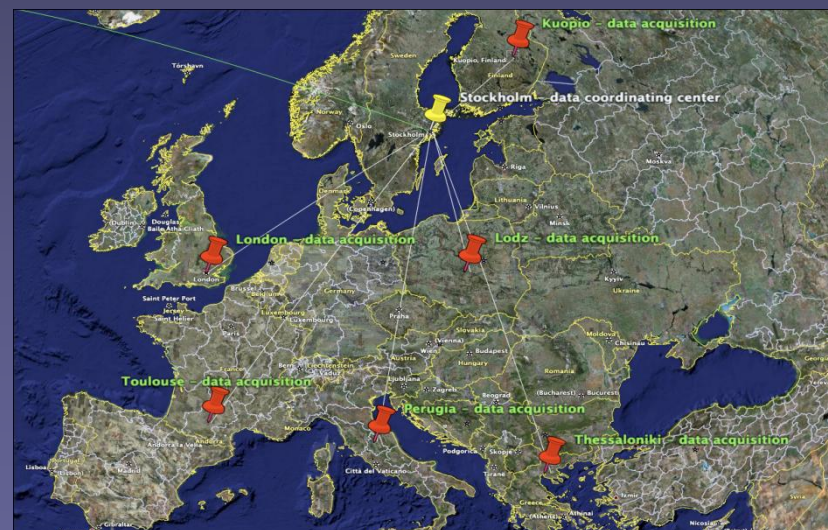
Andy Simmons, Simon Lovestone
for the AddNeuroMed Group



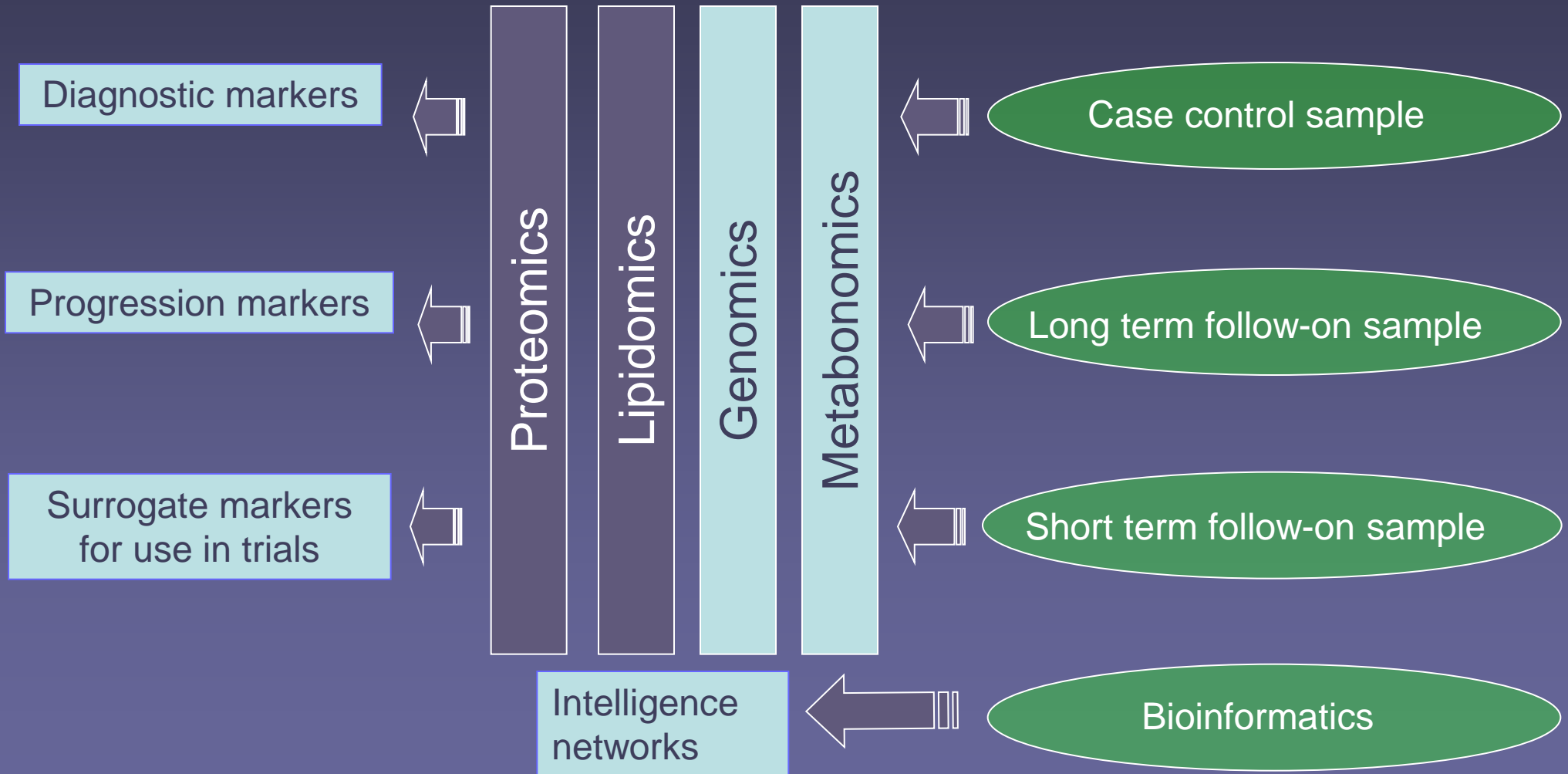
European Federation of Pharmaceutical Industries and Associations, Pharmidex Pharmaceutical Services, Capsant Neurotechnologies LTD, Università degli Studi di Perugia, Aristotle University of Thessaloniki, Roskilde University, AstraZeneca, Kungl Tekniska Högskolan, Karolinska Institutet, King's College, London, Centre Hospitalier Universitaire de Toulouse, GlaxoSmithKline Research & Development Ltd, Proteome Sciences PLC, University College London, University of Southampton, Hunter Fleming Limited, BioWisdom, Cerebricon Ltd.

AddNeuroMed Study

- Six European sites
- 385 subjects with MRI (of total > 700 subjects)
 - 133 AD, 134 MCI, 118 Controls
- All subjects
 - Clinical / cognitive assessments
 - Blood / plasma / RNA
 - 1.5 T structural MRI
- Imaging time points
 - Baseline, 3 months, 1 year
- Approximately 40 papers to date



AddNeuroMed Study



Imaging database

Data Coordinating Center Date: January 26 2007

Site	DCCID	PSCID	Visit Label	DOB	EDC	Gender	Subproject	QC Status	QC Pending	Scanner	Output Type
Az Ospedaliera Perugia	325022	scanner	PRGPHA002_PRG_1				MRI	Pass	No	GE MEDICAL SYSTEMS GENESIS_SIGNA 0000000CS123605	native

Save

Link to visit-level feedback

7 file(s) displayed.

Link to comments	Link to comments
Protocol	t2
Coordinate Space	native
Classification Algorithm	
Selected	T2
QC Status	Pass

325022.PRGPHA002_PRG_1.t2

325022.PRGPHA002_PRG_1.t1

325022.PRGPHA002_PRG_1.t2

JIV
innomed_325022_PRGPHA002_PRG_1_t1_1.mnc

X: -11.90; Y: -30.02; Z: 35.242; 9.91

13.6 68.8

385 AddNeuroMed

- 0, 3, 12m

821 ADNI 1

- 0, 6, 12, 18, 24, 36, 48m

ADNI-2/GO

- Currently uploading

288 AIBL

- 0, 18,

250 London cohort

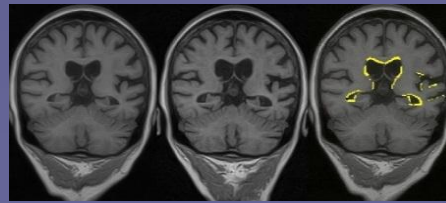
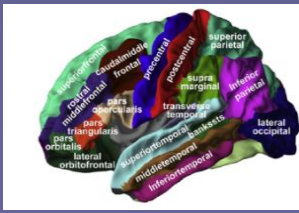
- 0, 12, 24, 36m

750 London memory clinic

- 0m

2000 Young controls

- 0m



Imaging Database

The screenshot shows the main interface of the Imaging Database. At the top, there are navigation tabs for 'assets', 'mri', 'management', 'projects', and 'scalar data'. Below the navigation is a header with the user's email 'maehiboeck@gmail.com' and links for 'sign out' and 'preferences'. The main content area is titled 'IMAGE LIST' and contains a table with the following columns: Guid, Project, Individual, Time Point, Scan Type, Rating, Download, Action, and Activity history. The table lists several entries, each with a unique GUID, project name (ppmi), individual ID, time point (0), scan type (T1), and download link. The 'Action' column contains a 'Choose activity' dropdown menu, and the 'Activity history' column shows the activity used for each entry, which is 'freesurfer - version: 5.1.0'. Below the table is a gallery of brain MRI slices, with a central image selected and a navigation bar below it showing 'Previous', '1', '2', '3', '4', '5', '6', '7', '8', '9', '10', '...', '33', and 'Next'. The footer of the interface reads 'the hive collaboration system - © 2013'.

Guid	Project	Individual	Time Point	Scan Type	Rating	Download	Action	Activity history
1f113fc5-2477-4970-998b-894b68b1bc10	ppmi	3119 - ppmi	0	T1		nil mnc dcm	Choose activity ...	• freesurfer - version: 5.1.0
055d046-8ff-4570-9069-20631fa900	ppmi	3120 - ppmi	0	T1		nil mnc dcm	Choose activity ...	• freesurfer - version: 5.1.0
025ba96c-c6e4-44c3-9540-e30171c17671	ppmi	3124 - ppmi	0	T1		nil mnc dcm	Choose activity ...	• freesurfer - version: 5.1.0
7200b32b-97e-403a-9512-180714348524	ppmi	3126 - ppmi	0	T1		nil mnc dcm	Choose activity ...	• freesurfer - version: 5.1.0
a2466e49-6729-4f7e-970c-9a107a908eb1	ppmi	3125 - ppmi	0	T1		nil mnc dcm	Choose activity ...	• freesurfer - version: 5.1.0

- New database design in progress
- Scalable to tens of thousands of subjects
- Flexible integration with imaging pipelines
- Automated data upload
- Upload from multiple centres

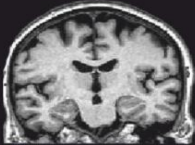

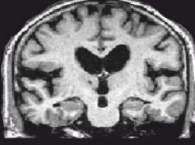
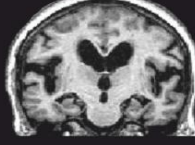
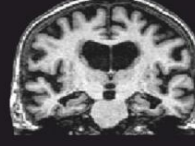
This screenshot shows the 'Edit Activity' form. It has a header with navigation tabs and a sub-header 'Activity List | New Activity'. The form is titled 'EDIT ACTIVITY' and contains several input fields: 'Activity Name' (freesurfer), 'Activity Command' (fsdev-all), 'Activity Version' (5.1.0), 'Activity Parameters' (-qcache -dppp-subfields), 'Applicable To' (image), 'Required Format' (dcm), 'Scan Type' (T1), 'Service Call' (freesurfer), 'Variable Collection' (fs), and 'Activity Description' (run freesurfer stable v5.1.0). There is also a 'Processing Resource Purposes' section at the bottom.

This screenshot shows the 'Edit ComputerResource' form. It has a header with navigation tabs and a sub-header 'ComputerResource List | New ComputerResource'. The form is titled 'EDIT COMPUTERRESOURCE' and contains several input fields: 'Resource Name' (image processing cluster), 'Host Name' (study.jam.scripps.net), 'Host IP' (192.168.0.6), 'Host Description' (an enabled processing cluster head node), 'Site Port' (22), 'User Name' (fsdev), 'Password' (freesurfer), 'User' (maehiboeck@gmail.com), and 'User' (Add ComputerResourcePurpose). There are 'Update' and 'Delete' buttons at the bottom.

Imaging - AddNeuroMed + ADNI

- 1150 subjects in total
- Freesurfer regional volumes/cortical thickness
- MNI Civet regional volumes/cortical thickness
- Scheltens MTL atrophy
- Manual hippocampal measures
- Range of automated hippocampal measures
- Automated WMH measures – **in progress**
- Fazekas scale – **in progress**

Influence of Age, Disease Onset and ApoE4 on Visual Medial Temporal Atrophy cut-offs in 1150 subjects

	Score	Width of Choroid fissure	Width of Temporal horn	Hippocampal thickness
	0	Normal	Normal	Normal
	1	↑	Normal	Normal
	2	↑↑	↑	↓
	3	↑↑↑	↑↑	↓↓
	4	↓↓↓	↑↑↑	↓↓↓

A critical issue for visual MTA assessment is the cut-off score that determines deviance from normality.

Age-dependent MTA cutoff

: < 75 years, a MTA score of ≥ 2 is considered abnormal; >75 years, a MTA score of ≥ 3 is considered abnormal.

MTA ≥ 1.5 cutoff:

based on average of MTA ratings of both hemispheres, ≥ 1.5 is considered abnormal.

Influence of Age, Disease Onset and ApoE4 on Visual Medial Temporal Atrophy cut-offs in 1150 subjects

- Significant MTA differences between ApoE4 and non-ApoE4 using both ≥ 1.5 and age-dependent cut-offs in younger AD patients.
- Both cut-offs influenced by increasing age

	Number	≥ 1.5 cut-off		Age cut-off	
		AD-like	CTR-like	AD-like	CTR-like
Age range 50 - 69					
AD patients	63	42 (66.7%)	21 (33.3%)	42 (66.7%)	21 (33.3%)
CTR	45	7 (15.6%)	38 (84.4%)	8 (17.8%)	37 (82.2%)
Age range 70 - 79					
AD patients	165	146 (88.5%)	19 (11.5%)	122 (73.9%)	43 (26.1%)
CTR	241	67 (27.8%)	174 (72.2%)	38 (15.8%)	203 (84.2%)
Age range 80 - 90					
AD patients	94	84 (88.4%)	10 (10.6%)	61 (64.9%)	33 (35.1%)
CTR	59	36 (61.0%)	23 (39%)	12 (20.3%)	47 (79.7%)

Impact of ApoE4 and ApoE2 on Hippocampal Volume in > 1400 European 14 year olds

- European IMAGEN study carried out at 11 European sites
- 3T ADNI-1 MPRAGE
- GWAS available
- Imaging at baseline (complete) and 4 year follow up (in progress)

Impact of ApoE4 and ApoE2 on Hippocampal Volume in > 1400 European 14 year olds

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	ApoE E4 carriers (n= 343)	ApoE E4 non-carriers (n=1069)	t-value	p	ApoE E2 carriers (n= 212)	ApoE E2 non-carriers (n=1200)	t-value	p
Age (years)	14.44 ± 0.40	14.45 ± 0.41	-0.104	0.917	14.41 ± 0.39	14.45 ± 0.41	-1.248	0.212
Gender (Male/Female)	169/174	534/535	--	0.852	114/98	589/611	--	0.233
BMI	20.86 ± 3.27	20.71 ± 3.56	0.673	0.501	20.72 ± 3.26	20.75 ± 3.53	-0.126	0.900
Verbal IQ	111.29 ± 14.84	111.29 ± 15.51	-0.003	0.997	110.26 ± 15.56	111.48 ± 15.31	-1.06	0.289
Performance IQ	107.84 ± 13.93	107.54 ± 14.47	0.336	0.737	106.89 ± 14.58	107.74 ± 14.30	-0.80	0.424
CANTAB SWM strategy	31.10 ± 5.41	31.22 ± 5.42	-0.336	0.737	31.36 ± 5.20	31.16 ± 5.46	0.490	0.367
Normalised R Hippocampus*	4351.8 ± 436.9	4305.1 ± 474.4	--	0.289	4332.4 ± 504.9	4313.6 ± 458.8	--	0.103
Normalised L Hippocampus*	4226.0 ± 504.1	4224.2 ± 475.3	--	0.406	4232.4 ± 518.2	4234.7 ± 476.3	--	0.357

Sharing AddNeuroMed data

[Your] Database Network >

POWERED BY THE **DataVerse Network** PROJECT v 3.0

KHP-UCSF data-sharing initiative DataVerse

Search Studies [Go] Advanced Search Tips

Sort By: [v] Studies: 3

Study Title	Downloads	Last Released
AddNeuroMed-OCR Genome-wide Expression data by Conrad Huegle	1 download	Last Released: Jul 8, 2013
AddNeuroMed - Dementia Case Register Clinical databases by Conrad	1 download	Last Released: Jul 8, 2013
White Matter Hypointensity test by Dr Andy Simmons, Professor Simon Lovestone	0 downloads	Last Released: Jul 8, 2013

assets | mri | management | projects | scalar data

muehlboeck@gmail.com | sign out | preferences

New image from dicom DicomArchiveList

IMAGE LIST

Guid	Project	Individual	Time Point	Scan Type	Rating	Download	Action	Activity history
1f113fc5-2477-4970-998b-894b68b1bc10	ppmi	3119 - ppmi	0	T1	nil nnc dcm	Choose activity ...	• freesurfer - version: 5.1.0	
055d0d46-8ff-4570-9069-2f631fa900	ppmi	3120 - ppmi	0	T1	nil nnc dcm	Choose activity ...	• freesurfer - version: 5.1.0	
025ba99c-c6e4-44c3-9540-e30171c17671	ppmi	3124 - ppmi	0	T1	nil nnc dcm	Choose activity ...	• freesurfer - version: 5.1.0	
7200b32b-97e-403a-9512-180714348524	ppmi	3126 - ppmi	0	T1	nil nnc dcm	Choose activity ...	• freesurfer - version: 5.1.0	
a2466e49-6729-47e-970c-9a107a908eb1	ppmi	3125 - ppmi	0	T1	nil nnc dcm	Choose activity ...	• freesurfer - version: 5.1.0	

>

1f113fc5-2477-4970-998b-894b68b1bc10 - ppmi - 3119 - ppmi

Previous 1 2 3 4 5 6 7 8 9 10 ... 33 Next

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andy.simmons@kcl.ac.uk