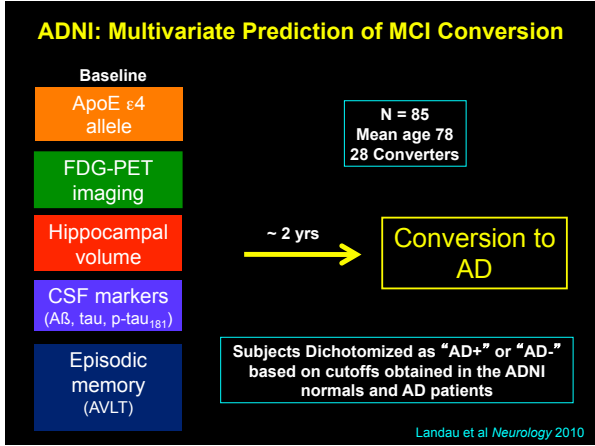
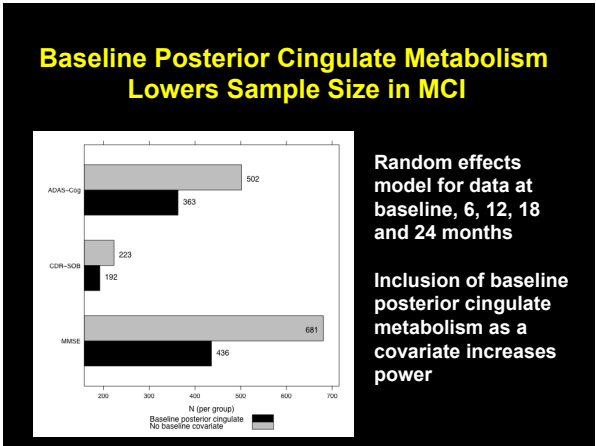
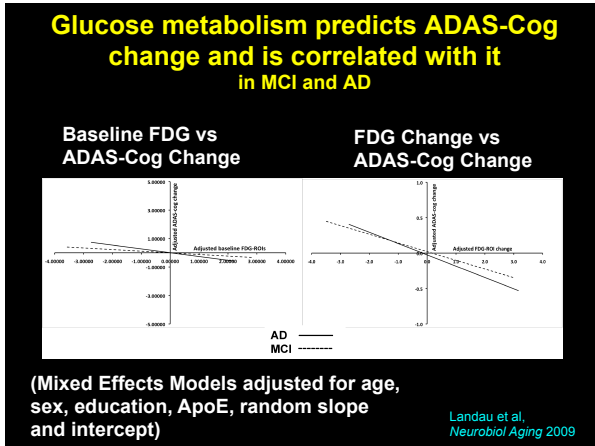


PET vs MRI as Surrogate Outcome in AD (N=38)

Lab	Variable	N / arm	N.S. differ	
Jagust	Avg ROI	364		
Foster	>3SD blw NL	285		
Alexander	L mid temp	228		
Fox	VBSI	101		
Reiman	fROI(mask04)	93		
Schuff-FS	Hippocampus	54		

Sample size to detect 25% reduction in rate of change with 80% power and $\alpha = 0.05$

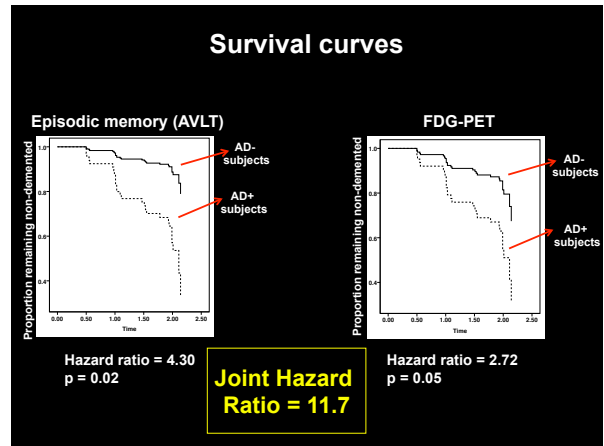
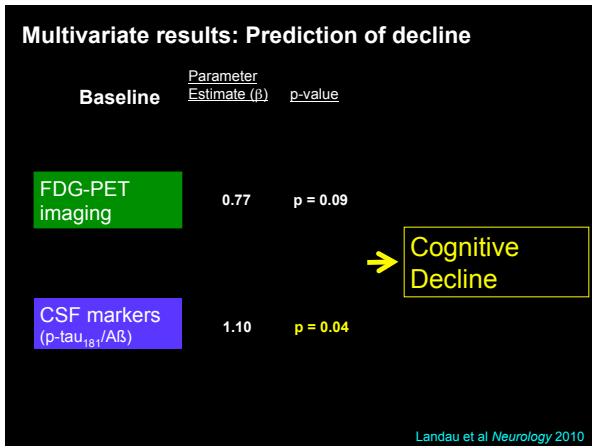
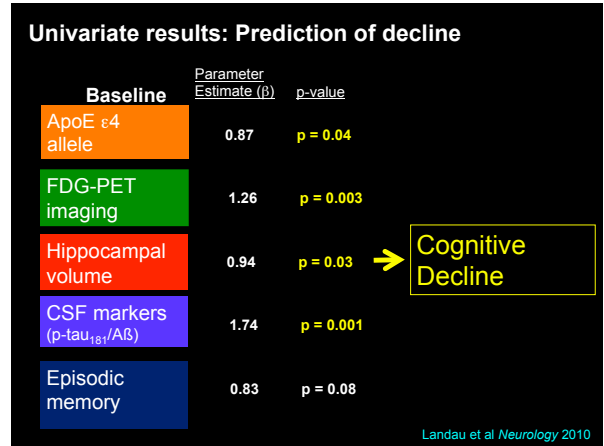
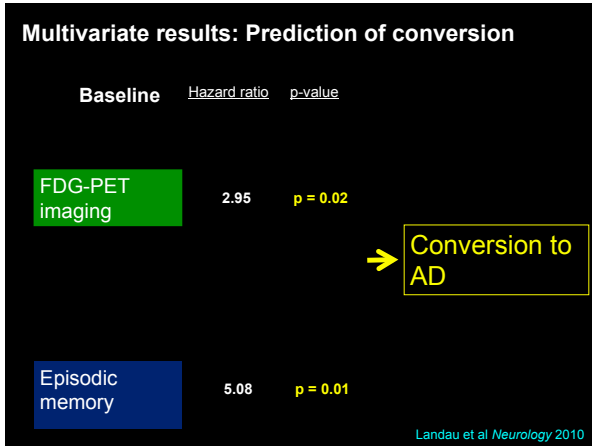


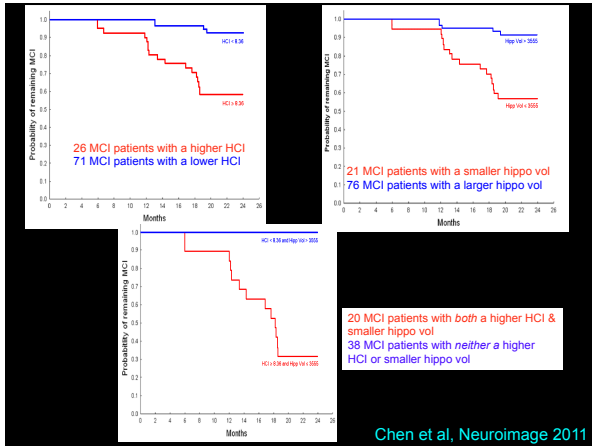
Univariate results: Prediction of conversion

Baseline	Hazard ratio	p-value	
ApoE ϵ 4 allele	1.94	p = 0.10	
FDG-PET imaging	2.94	p = 0.02	
Hippocampal volume	2.49	p = 0.04	→
CSF markers (p-tau ₁₈₁ /A β)	3.99	p = 0.03	
Episodic memory	4.68	p = 0.01	

Conversion to AD

Landau et al *Neurology* 2010





In vivo Amyloid Imaging with Pittsburgh Compound B (PIB)

Amyloid Plaques

CN(C)c1ccc(cc1)C2=CN(C(=O)c3ccccc3S2)C

Histology - Thioflavin T

PET Imaging - ¹¹C-6-OH-BTA-1 (PIB)

PET Imaging - ¹¹C-6-OH-BTA-1 (PIB)

CN(C)c1ccc(cc1)C2=NC(=O)c3cc(O)ccc3S2

PIB "Add on" Protocol

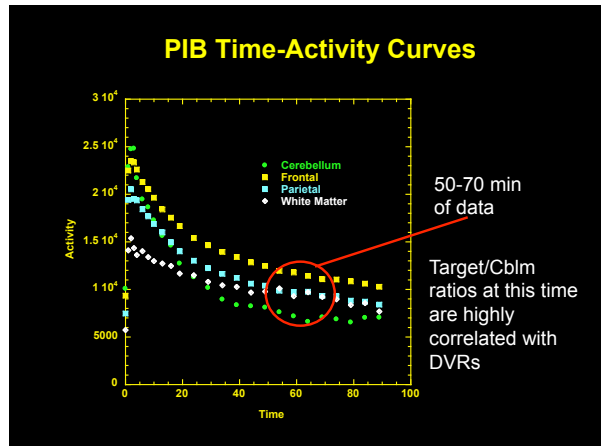
Initiated in 2006

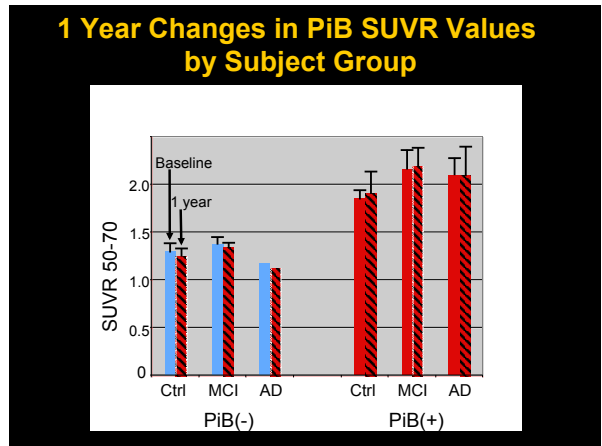
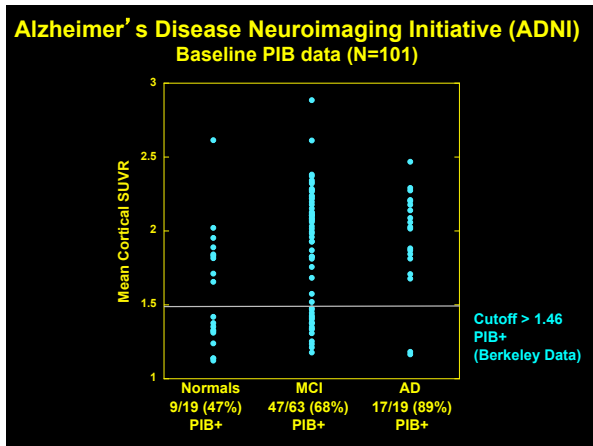
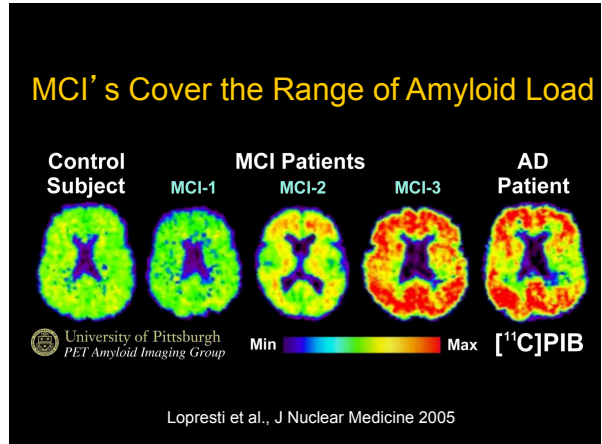
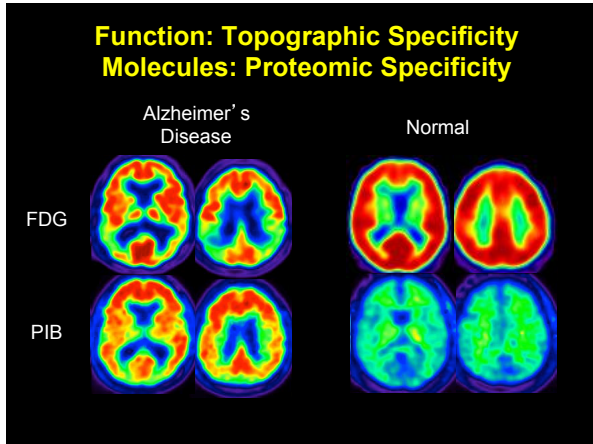
14 Centers, 103 Subjects
19 AD, 19 Normals, 65 MCI

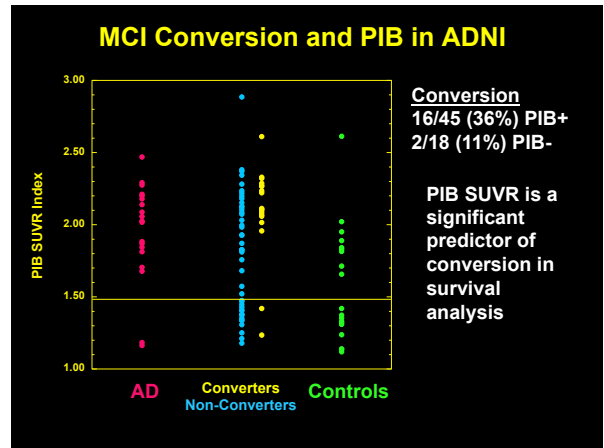
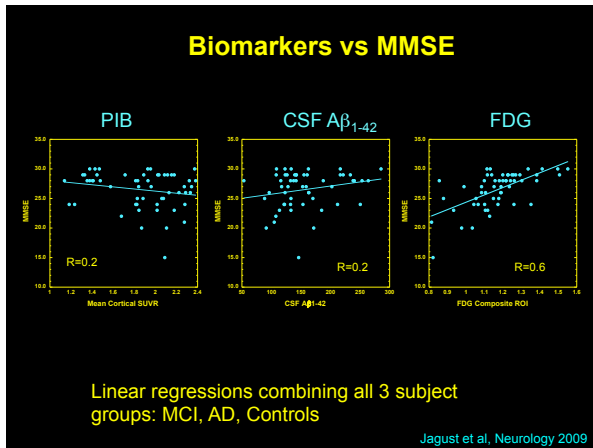
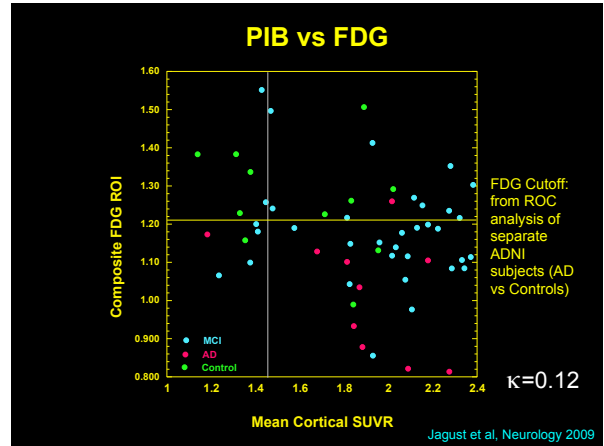
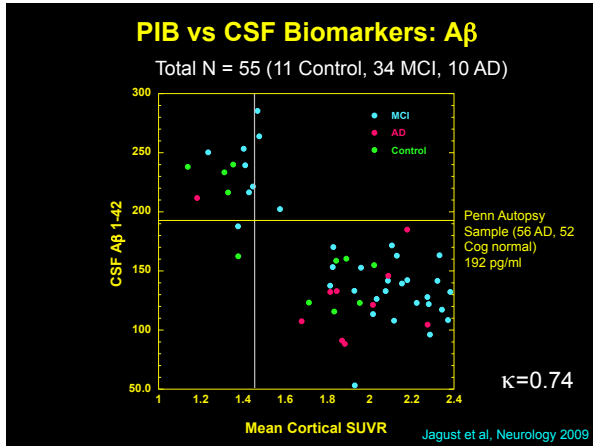
Most subjects recruited at visit 2 (some 1 or 3)

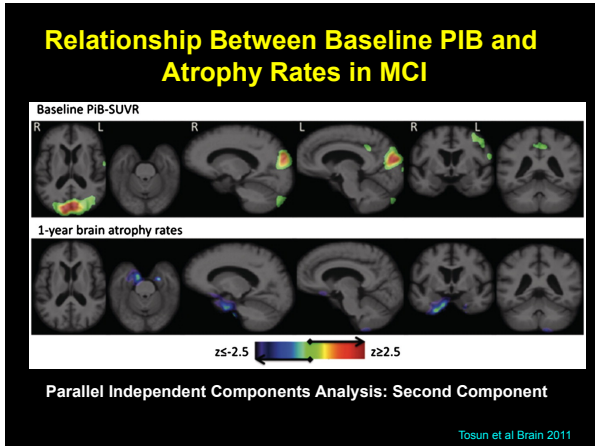
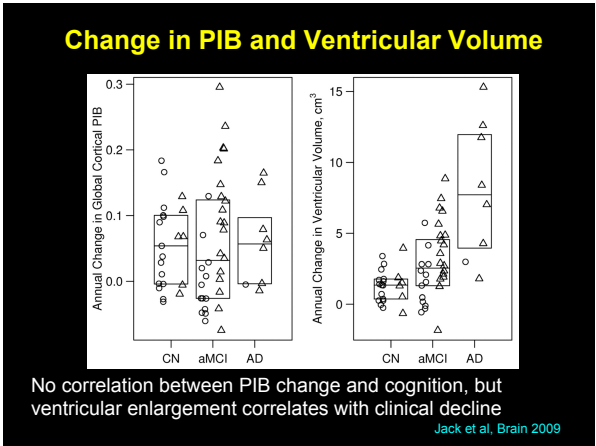
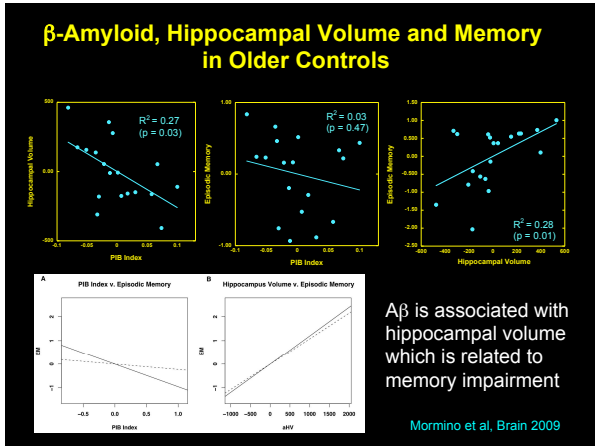
Up to 3 scans/subject

ROI analysis – average cortical uptake









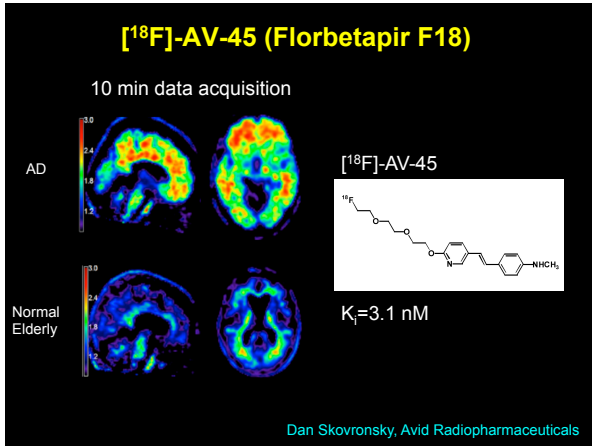
Amyloid Imaging in ADNI2 and GO

[¹¹C]PIB has a short half-life (20 min)

[¹⁸F] has a 2-hour half-life and is used clinically with FDG in cancer imaging

Currently 4 [¹⁸F] Aβ imaging agents are available

ADNI has partnered with Avid radiopharmaceuticals to utilize AV-45 or Flortbetapir

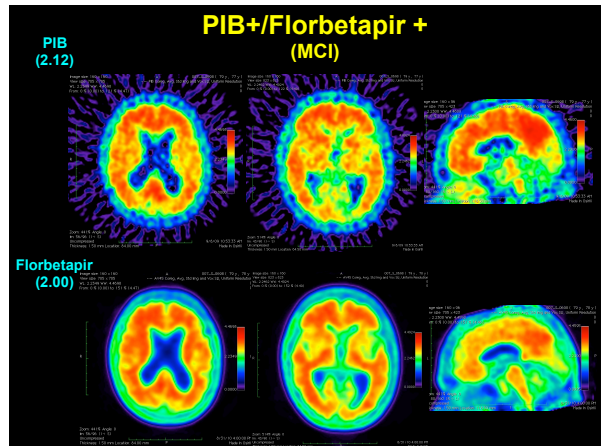
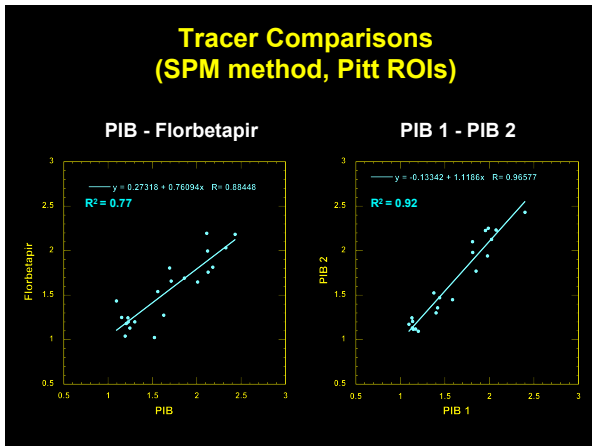


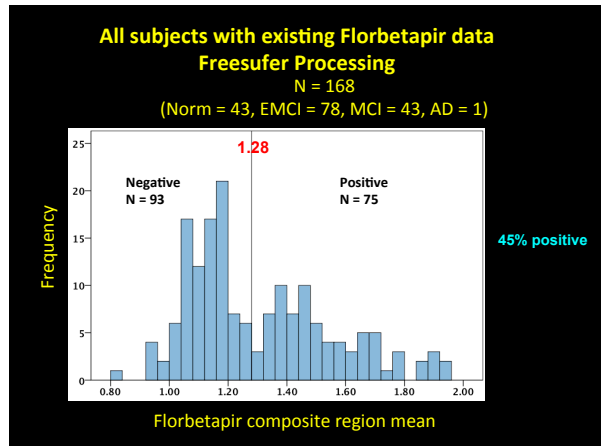
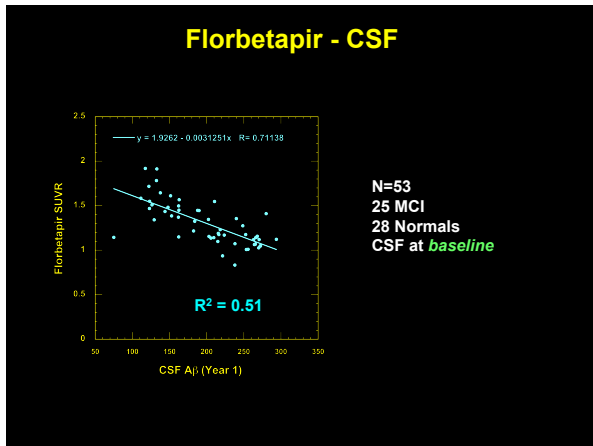
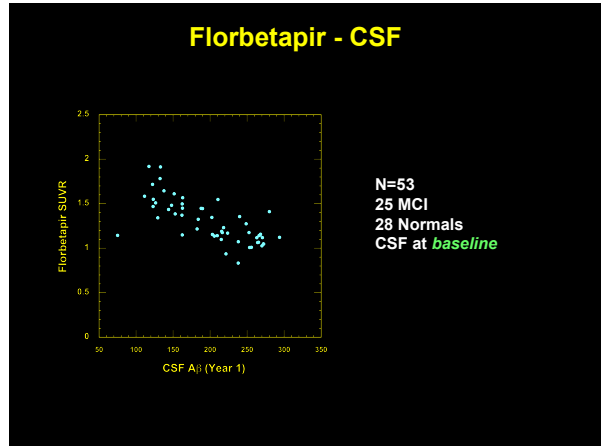
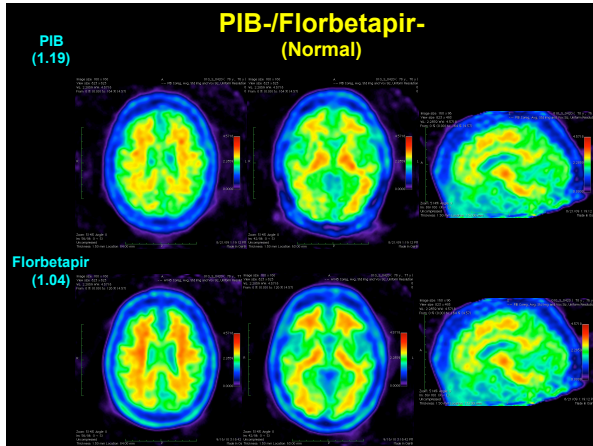
PIB/Florbetapir Comparisons

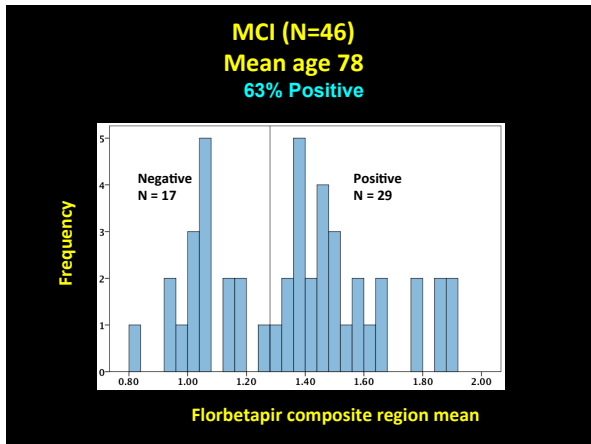
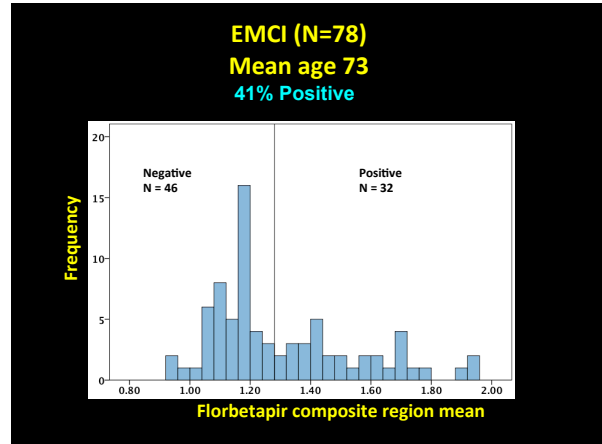
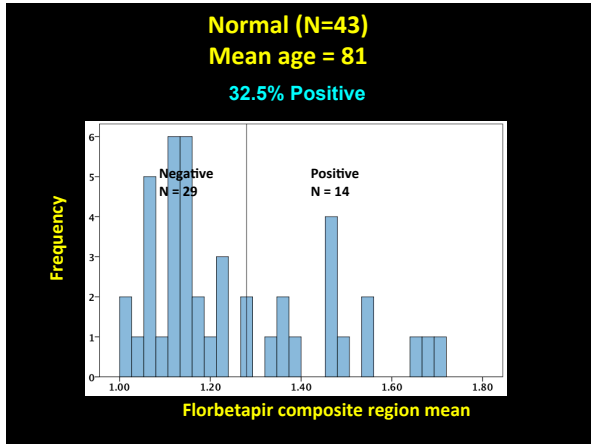
Subjects
 N = 21
 6 Normal
 15 MCI

All have Florbetapir
 16 have PIB 1 year prior
 5 have PIB 2 years prior

Cerebellar (gray matter) normalization
 Mean Cortical ROI = Frontal, Lat temporal,
 Anterior cingulate, precuneus, parietal







Acknowledgements

ADNI PET	ADNI Core Leaders
Chet Mathis	Mike Weiner
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	Arthur Toga
	Laurel Beckett
	Andy Saykin
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Berkeley	
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