

# Amyloid imaging radioligands for the diagnosis of Alzheimer's Disease

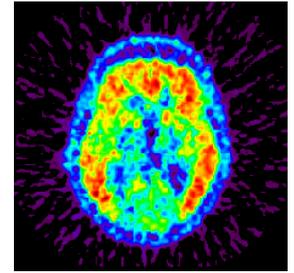
**Samantha L. Budd, PhD**

Director, Neurology Disease Area Leader  
CNS & Pain Research Area, AstraZeneca

**AstraZeneca with patients in mind**

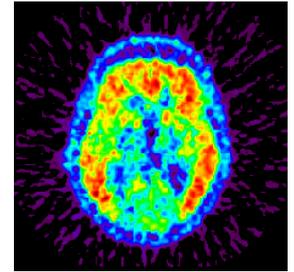
AstraZeneca 

# Benefits of Biomarkers in Alzheimer's disease



- Measure effectiveness of therapeutic intervention
- Provide definitive diagnosis
  - Earlier intervention with right treatment to the right patient
  - Personalized Health Care
- Improve knowledge on disease pathophysiology
  - Monitor disease progression

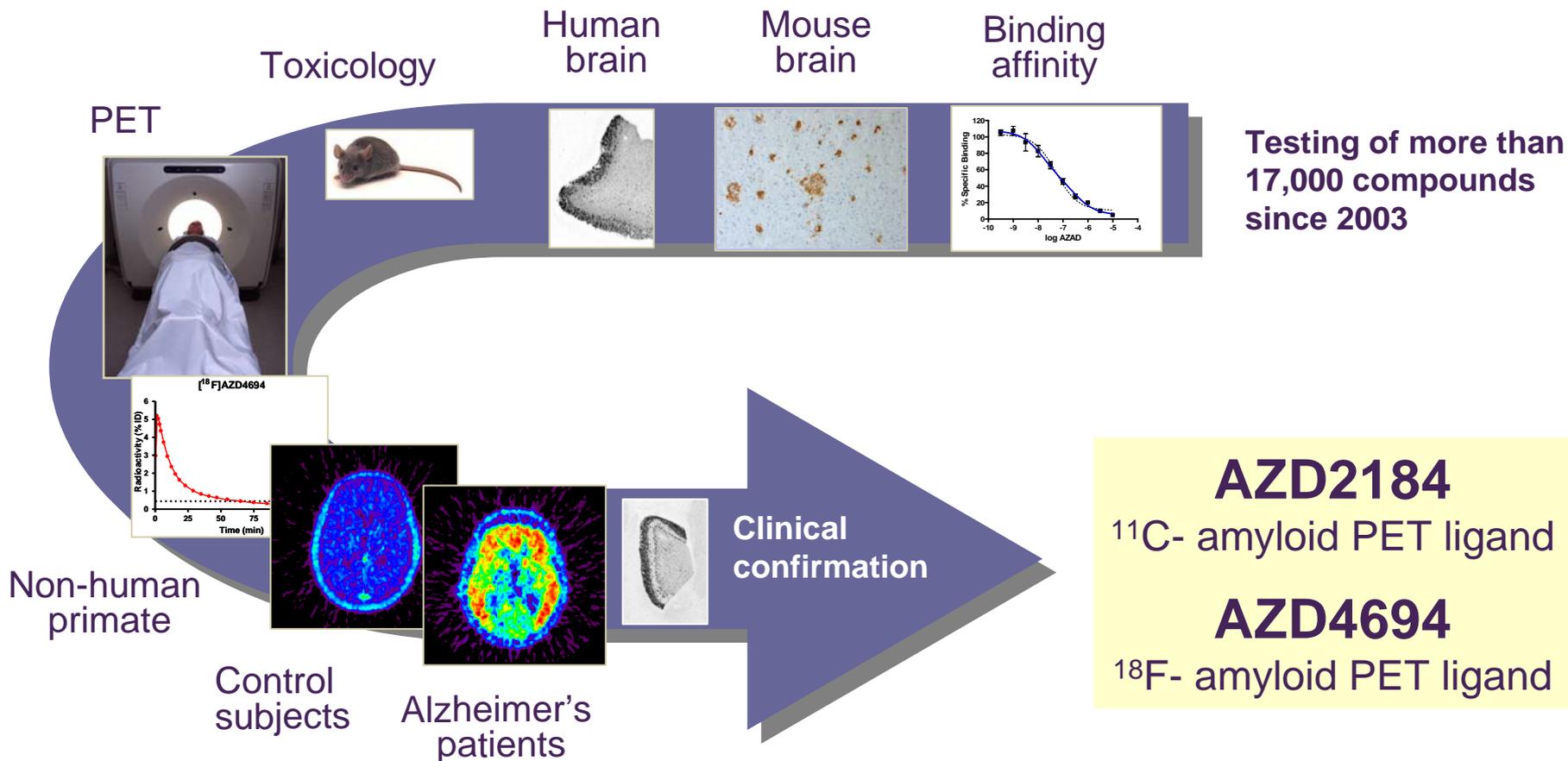
# Ideal Amyloid PET Ligand



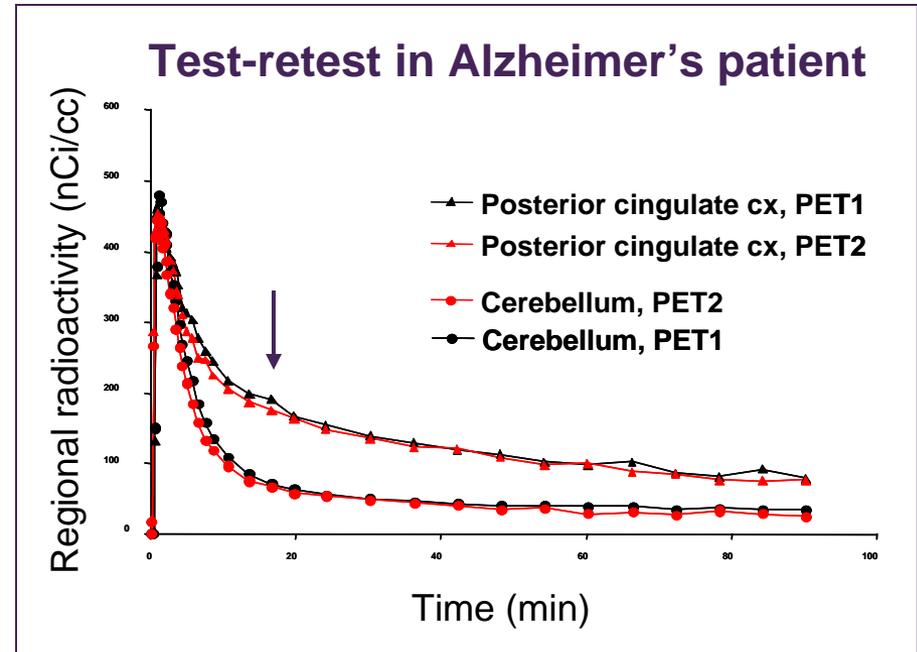
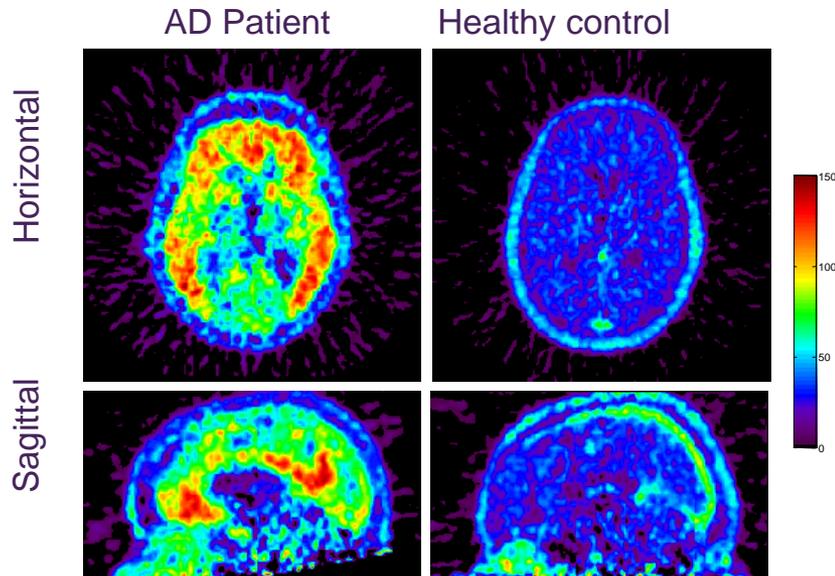
- High sensitivity & specificity for amyloid detection
  - High contrast, (signal to noise ratio)
  - Detect low levels of and changes in amyloid burden
- Properties supporting quantification & ease of use
  - Reversible binding to amyloid
  - Binding kinetics suitable for reliable quantification
  - Short imaging times
- Good reproducibility
  - Reliable, repeated measurements with low variability
- Safe to use and ease of distribution

# Ideal Amyloid PET Ligand for AD Patients

Optimise for binding to amyloid:



# Improved $^{11}\text{C}$ -amyloid PET ligand: AZD2184

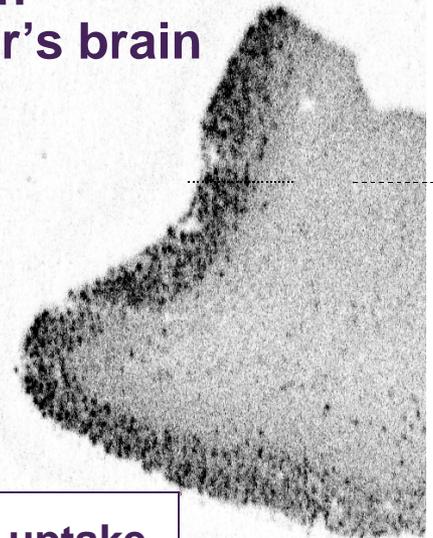


- High contrast
- Low background in regions not associated with amyloid plaques
- Specific binding peaks < 30 min, = short imaging time
- Good reproducibility in clinical trials

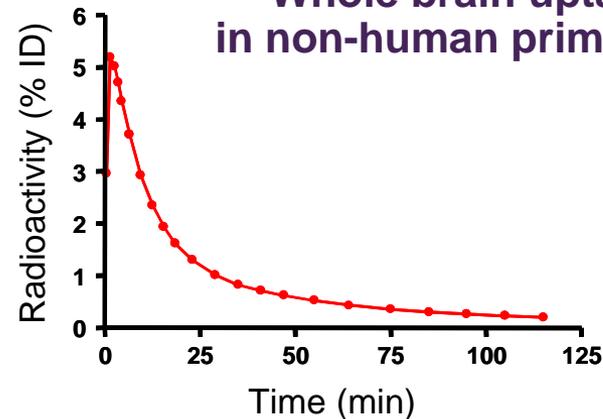
# New $^{18}\text{F}$ -amyloid PET ligand: AZD4694

- As with the  $^{11}\text{C}$ -ligand, AZD4694 shows good preclinical properties
- Detects amyloid with high specificity and low background
- Good brain uptake, with rapid wash-out
- To be validated as a diagnostic in Alzheimer's patients

Binding in Alzheimer's brain



Whole brain uptake in non-human primate

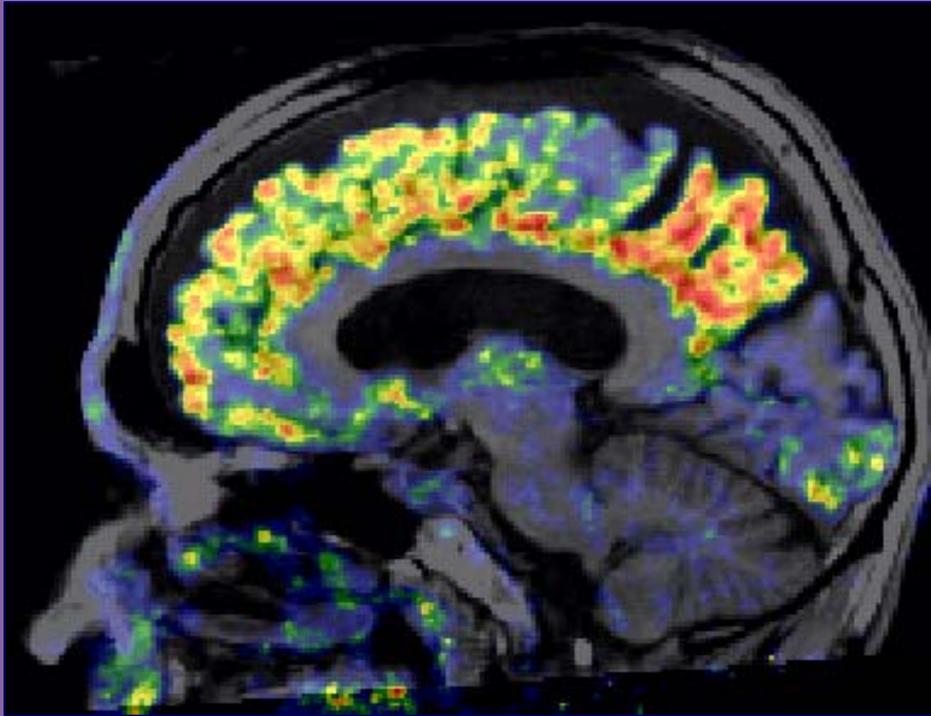


# Importance of diagnostic agents



- Currently amyloid detection is a post mortem diagnostic criterion
- Amyloid imaging in living patients is crucial for
  - Early identification of the right patients
  - Early and appropriate treatment intervention
- AstraZeneca is committed to bringing new medicines to Alzheimer's patients & making early diagnosis a reality
  - Collaborative efforts in public and private sectors:  
ADNI, Innomed, Karolinska Inst, Banner Alzheimer's Inst.
  - AstraZeneca amyloid PET ligands in the clinic

Parametric Images showing AZD2184 Binding Potential  
in an AD patient. (HRRT PET system)



**Right therapeutic intervention to  
the right patients at the right time**