

# Alzheimer's Disease: Future Prospects

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CNS Innovations



# Disclosures

Dr. Cummings has provided consultation to Abbvie, Acadia, Adamas, Anavex, Avanir, Avid, Axovant, Boehringer-Ingelheim, Bracket, Eisai, Forum, GE Healthcare, Genentech, Lilly, Lundbeck, Medavante, Neurocog, Novartis, Otsuka, Pfizer, Piramal, QR, Roche, Takeda and Toyama pharmaceutical and assessment companies.


Dr. Cummings has stock options in Prana, Neurokos, ADAMAS, MedAvante, QR pharma.

Dr. Cummings owns the copyright of the Neuropsychiatric Inventory.

This lecture will include reference to unapproved medications and diagnostics.

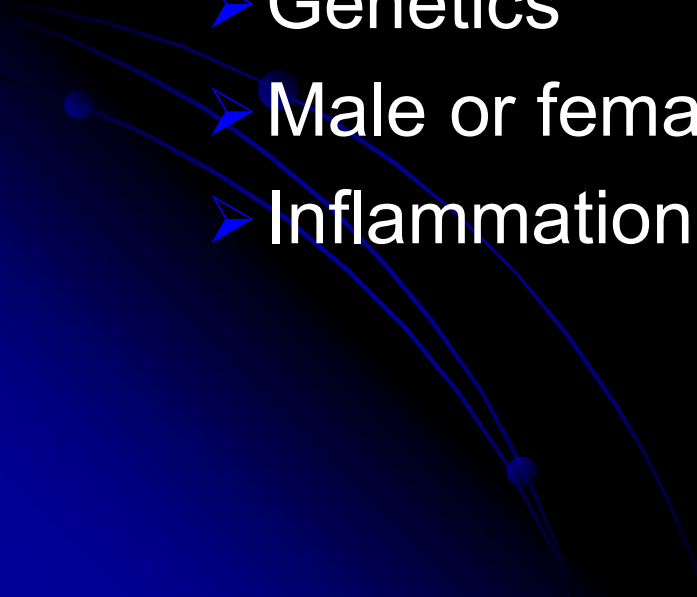
# AD: Future Prospects

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- Precision medicine for AD
  - Patient centricity
  - Prevention and treatment
  - The context of aging
  - Beyond Alzheimer's
  - The expanding context
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# AD: Precision Medicine

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- The right drug, at the right time, for the patient
  - Stage-specific therapeutics chosen by the patient's specific characteristics
    - Genetics
    - Male or female
    - Inflammation
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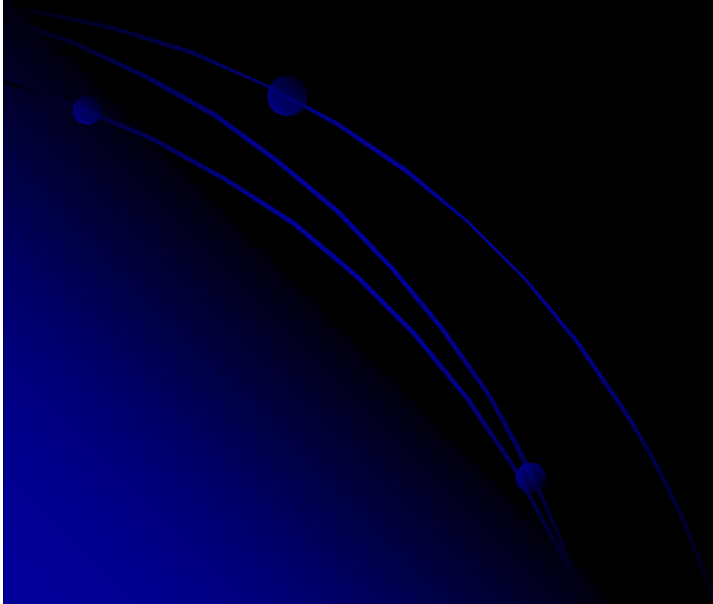
# AD: Patient Centricity

- Drugs – mostly about the disease
- Care – mostly about the person with the disease
  - Voice of the patient
  - Patient experience of care
  - Care partner experience of care
  - Resources for home care
  - Care partner support resources
  - Greater integration of technology

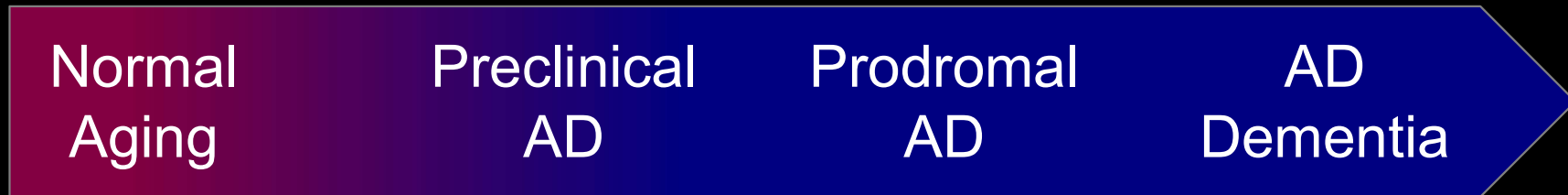
# AD: Prevention and Treatment

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- Biomarkers; plaques and tangles
  - Alzheimer pathology in the brain 15 years before onset of symptoms
  - Opportunity for prevention



# Phases of Alzheimer's Disease: Overview



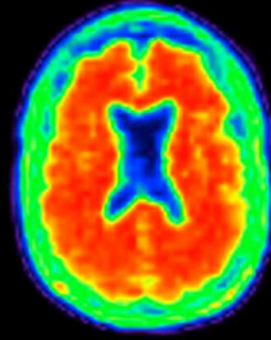
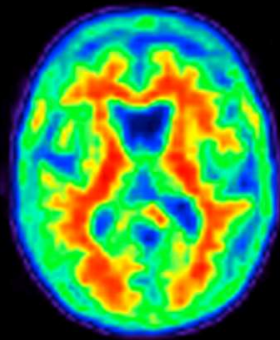
Normal cognition	Normal cognition	Memory decline	Dementia
Normal function	Normal function	Normal function	Impaired function

Normal  
Aging

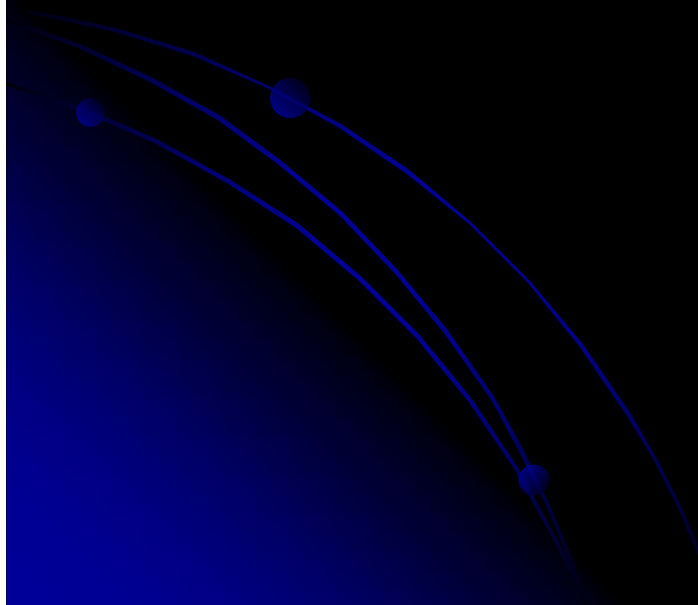
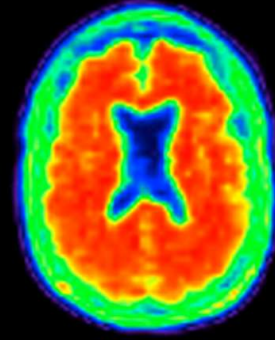
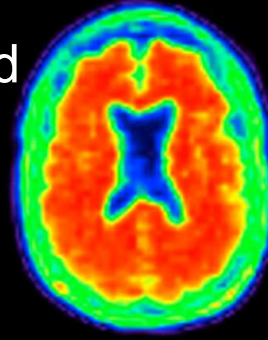
Preclinical  
AD

Prodromal  
AD

AD  
Dementia



Amyloid



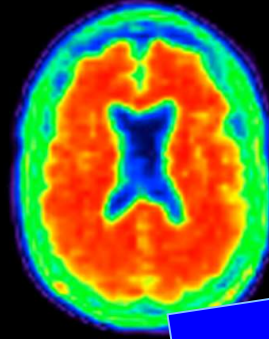
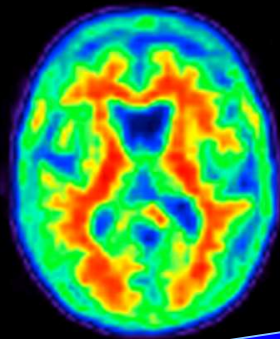


Normal  
Aging

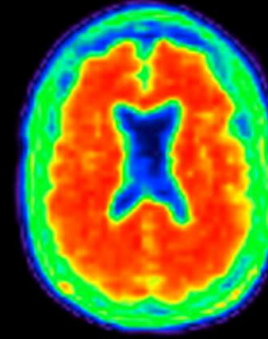
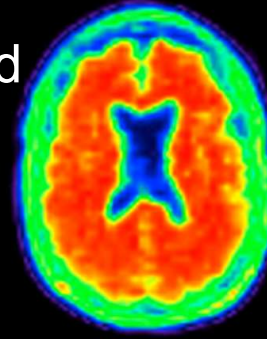
Preclinical  
AD

Prodromal  
AD

AD  
Dementia



Amyloid



Primary Prevention

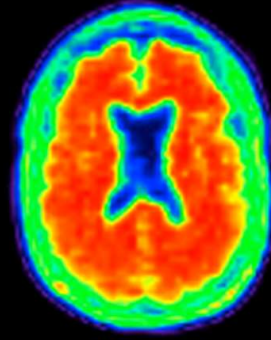
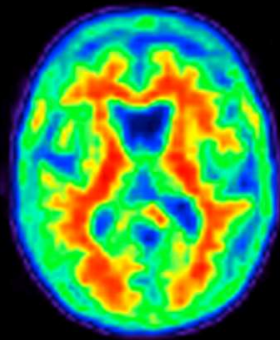
Secondary Prevention

Normal  
Aging

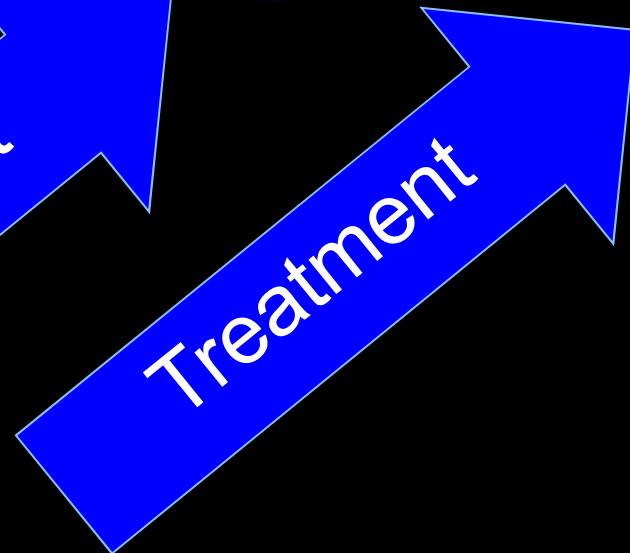
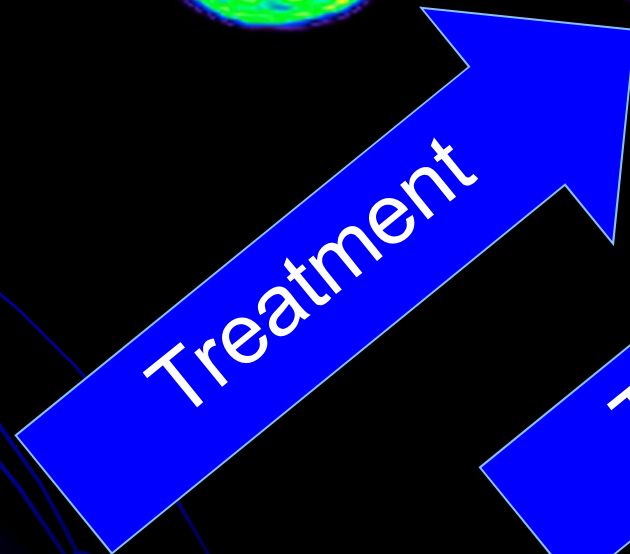
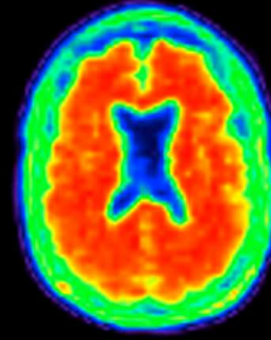
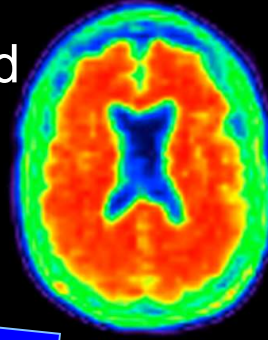
Preclinical  
AD

Prodromal  
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AD  
Dementia

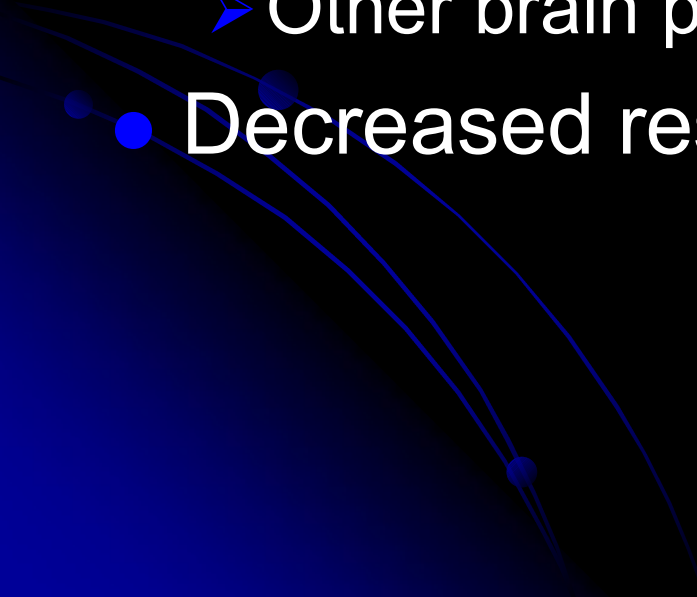


Amyloid

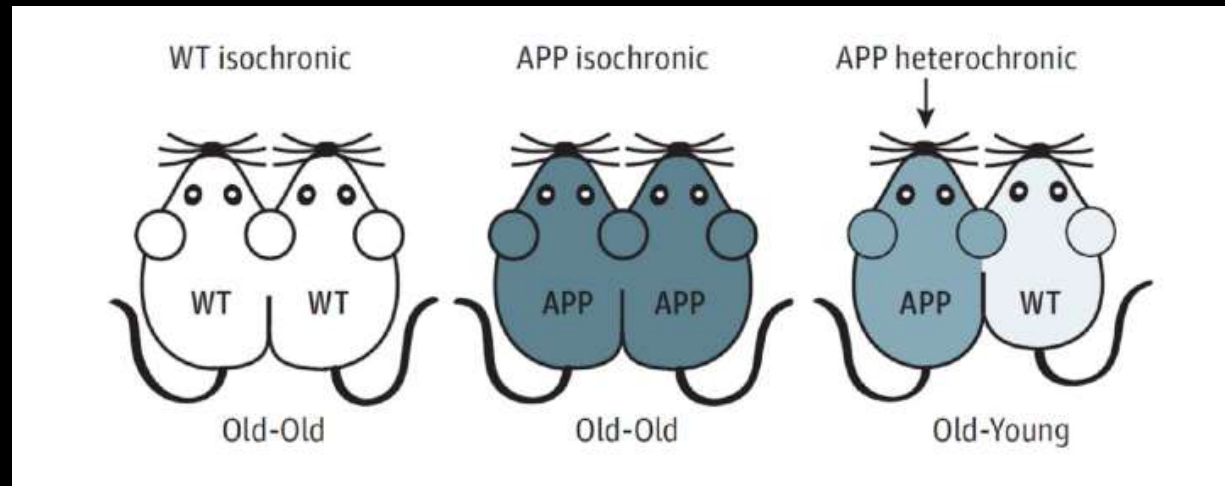


# AD: The Context of Aging

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- Aging is the greatest risk factor of AD
  - Brain biology is increasingly complex with aging
    - Cerebrovascular disease
    - Other brain proteins
  - Decreased resilience
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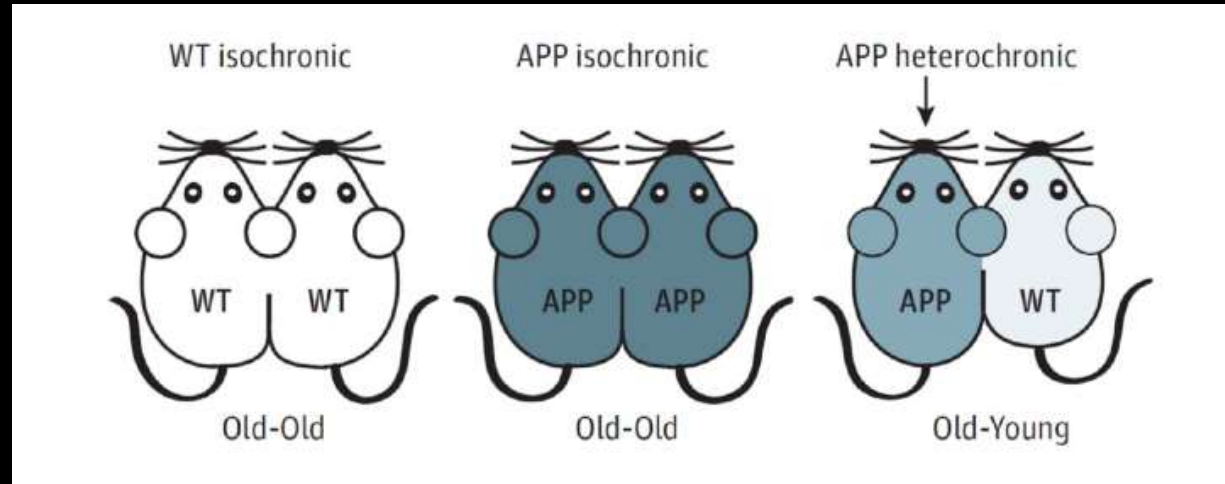
# AD: The Context of Aging



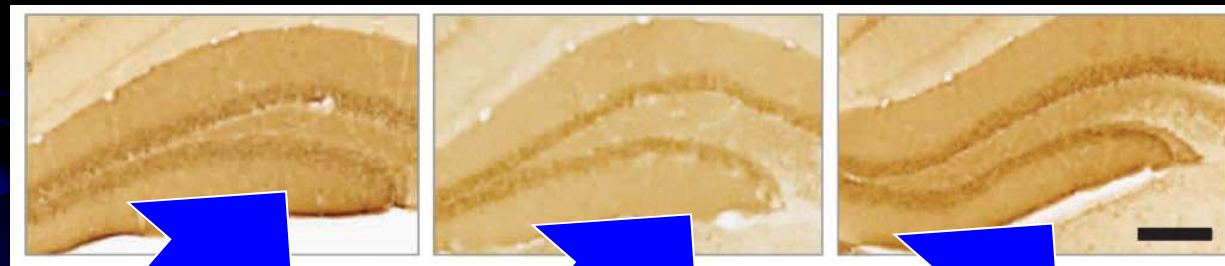
Parabiosis: fused circulations

Middeldorp J et al.  
JAMA Neurol 2016;  
73: 1325-1333

# AD: The Context of Aging



Parabiosis: fused circulations




Calbindin:  
synaptic integrity

Middeldorp J et al.  
JAMA Neurol 2016;  
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# AD: The Context of Aging

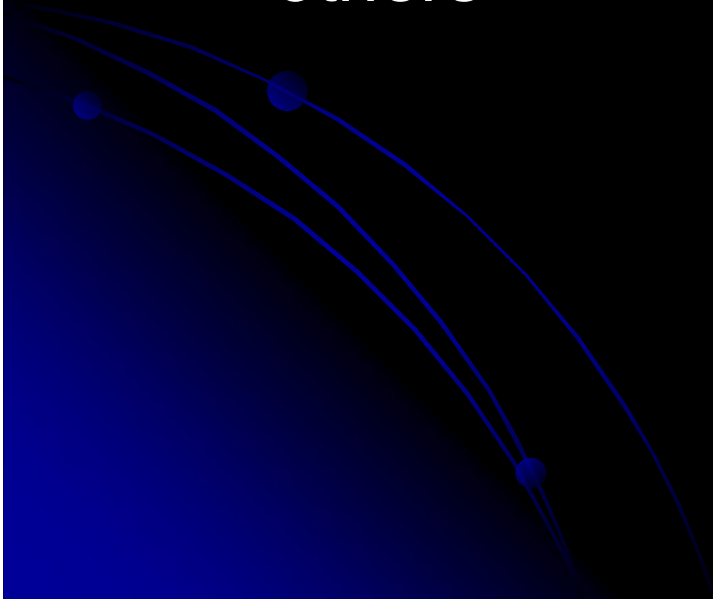
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- Treatments addressing the processes of aging will impact AD
  - Enhancing brain resilience is critical
    - Brain healthy lifestyles
    - Resilience enhancing agents
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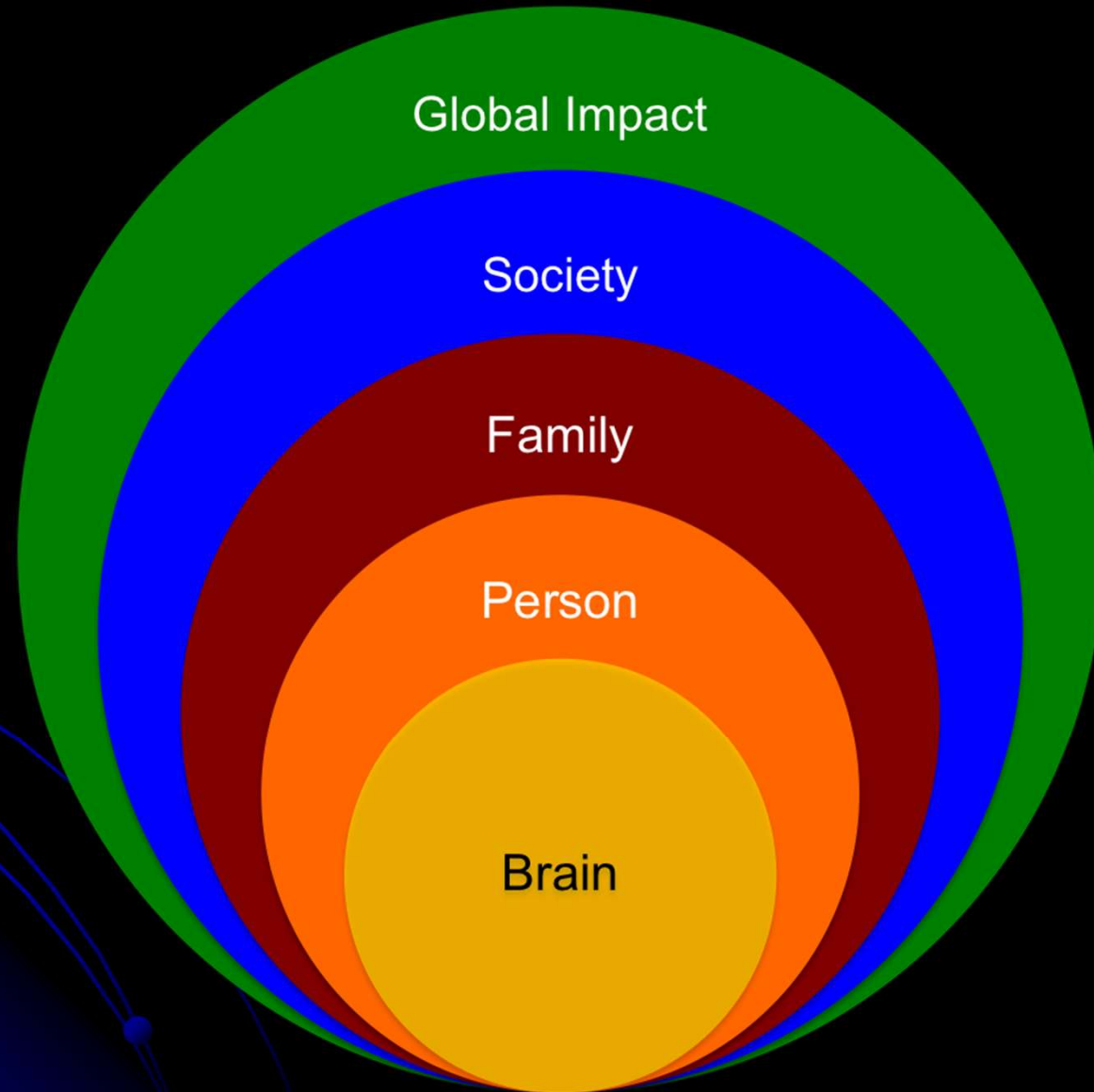
# AD: Beyond Alzheimer's

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- Dementias of different types share many features at the cell level
  - Shared interventions
  - Advances in one will inform advances in others



# AD: The Expanding Context





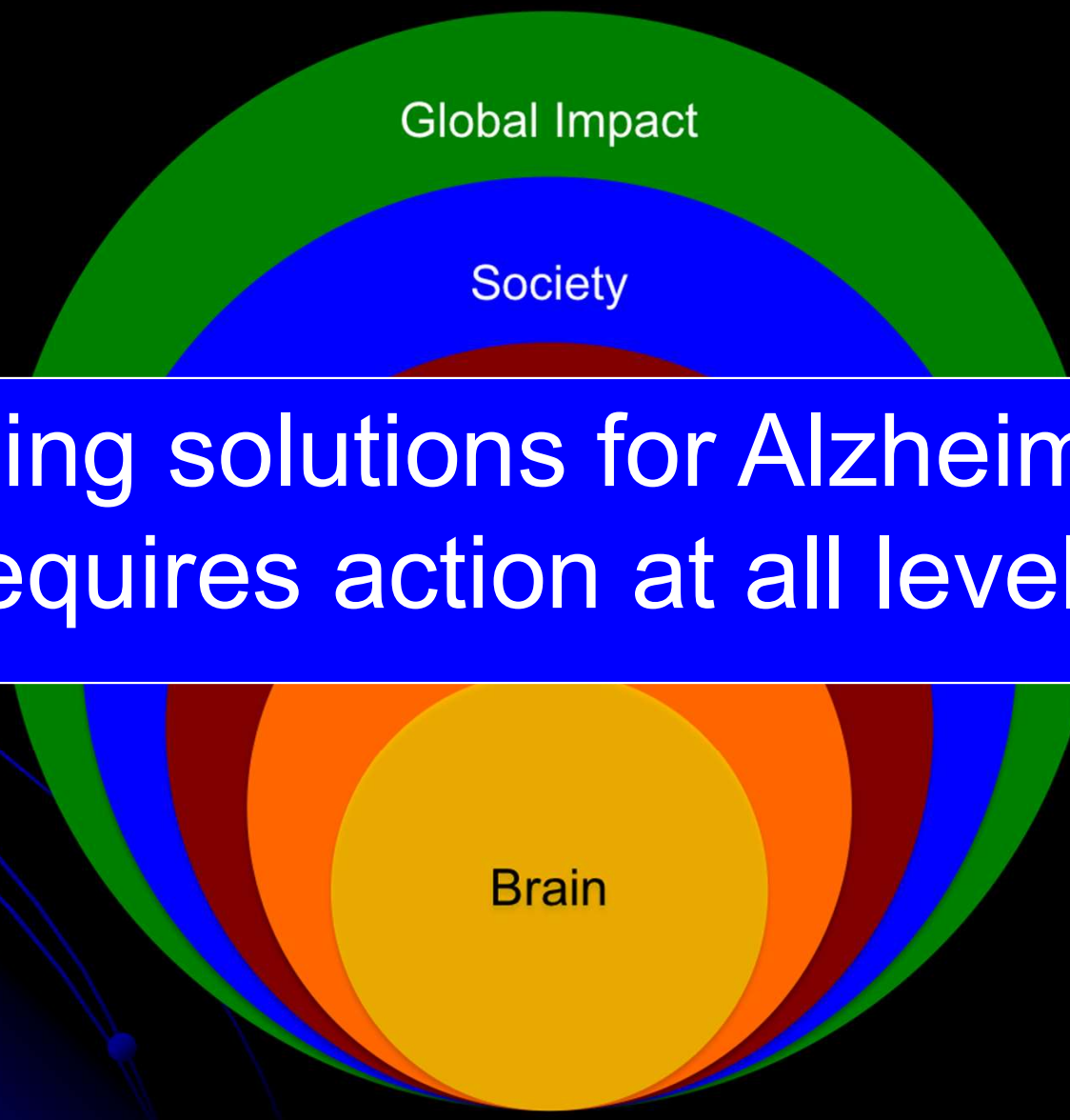
# AD: The Expanding Context

Global Impact

Society

Finding solutions for Alzheimer's  
requires action at all levels

Brain



# Summary

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- Precision medicine for AD is progressing
- Patient centricity is an organizing principle for care
- Prevention AND treatment are required
- Aging influences AD and many disorders
- AD shares features other other neurodegenerative disorders
- AD must be considered in a global context

THANK YOU!

