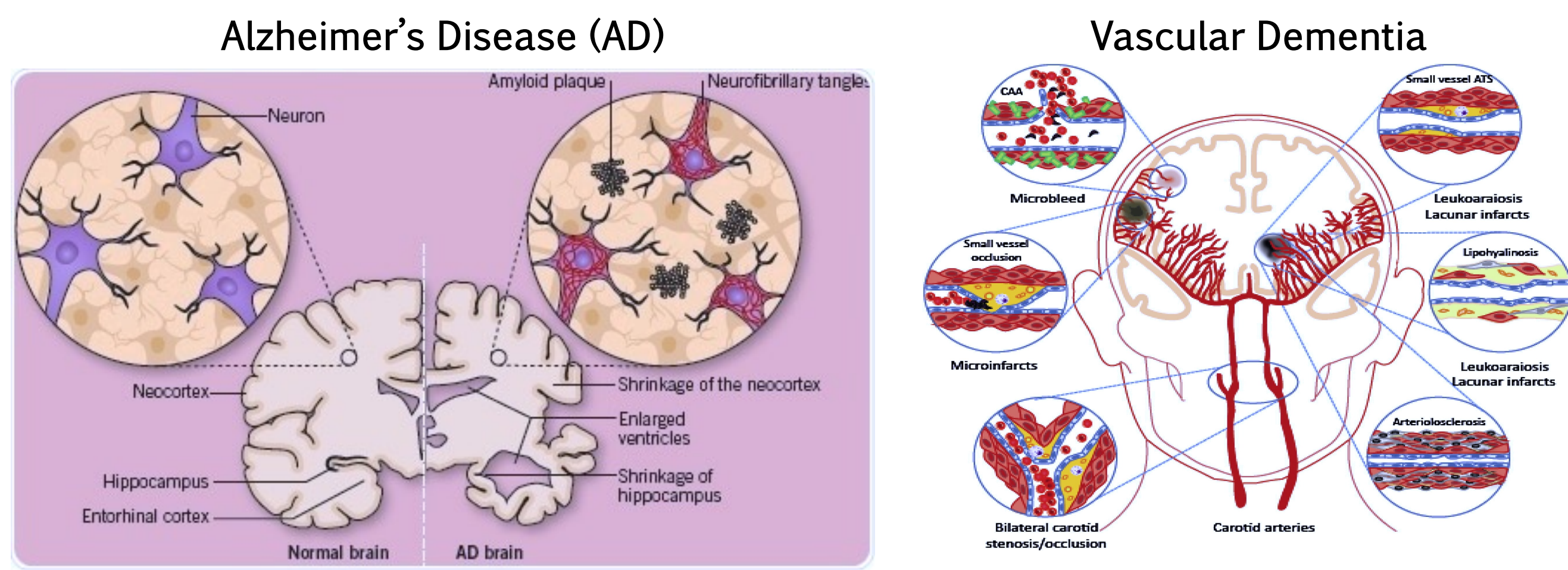


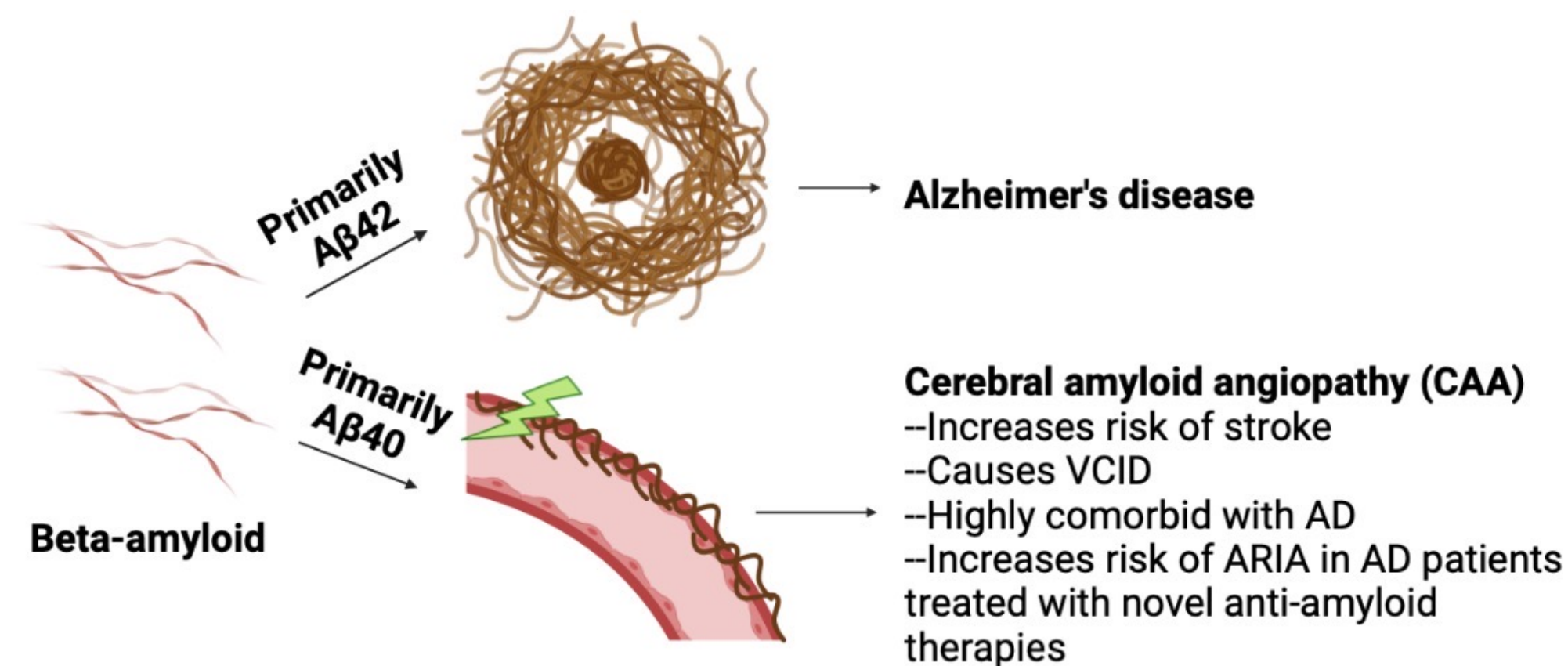
Reproductive Experience Protects Against Cognitive Decline in a Mouse Model of Dementia

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Background



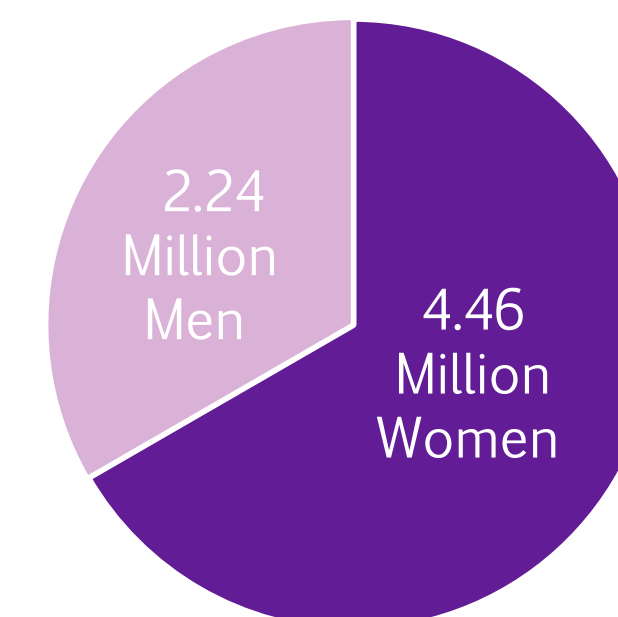
Cerebral Amyloid Angiopathy (CAA)



AD Statistics

- Around 6.7 million Americans are living with Alzheimer's in 2023.¹
- Almost two-thirds of Americans with AD are women.¹

AD Patients in the US²



Pregnancy & Postpartum in Spatial Learning

Pregnancy	Early Postpartum	Late Postpartum	Middle Age
<ul style="list-style-type: none"> ↓ Volume ↓ Neurogenesis ↑ Dendritic spine density ↓ Dendritic morphology ↓ Number of microglia 	<ul style="list-style-type: none"> ↓ Neurogenesis ↓ Number of microglia & length of processes 	<ul style="list-style-type: none"> ↓ Neurogenesis ↓ Basal branch points and shorter processes 	<ul style="list-style-type: none"> ↓ Neurogenesis ↑ BDNF ↑ Synaptic Proteins
↓ Impaired spatial learning		↓ Improved spatial learning	

Mixed Findings in Humans But Links are Consistently Found

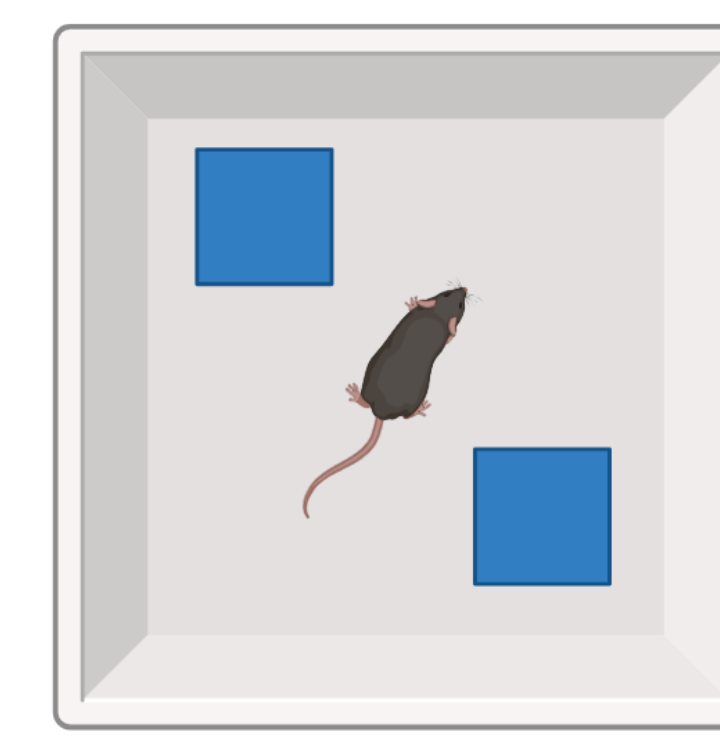
Model	Dementia	AD	NAD
Numbers of parity ^a	1.07 (1.02–1.13)	1.05 (0.99–1.11)	1.12 (1.03–1.23)
Parity group ^a			
1–4 parities	Referent	Referent	Referent
Nulliparity	0.84 (0.63–1.12)	0.87 (0.61–1.24)	0.80 (0.49–1.30)
Grand multiparity	1.30 (1.02–1.67)	1.20 (0.90–1.61)	1.60 (1.00–1.55)

For each pregnancy, the risk of AD increased by 7% and the risk of non-Alzheimer's disease increased by 12%.³

Methods



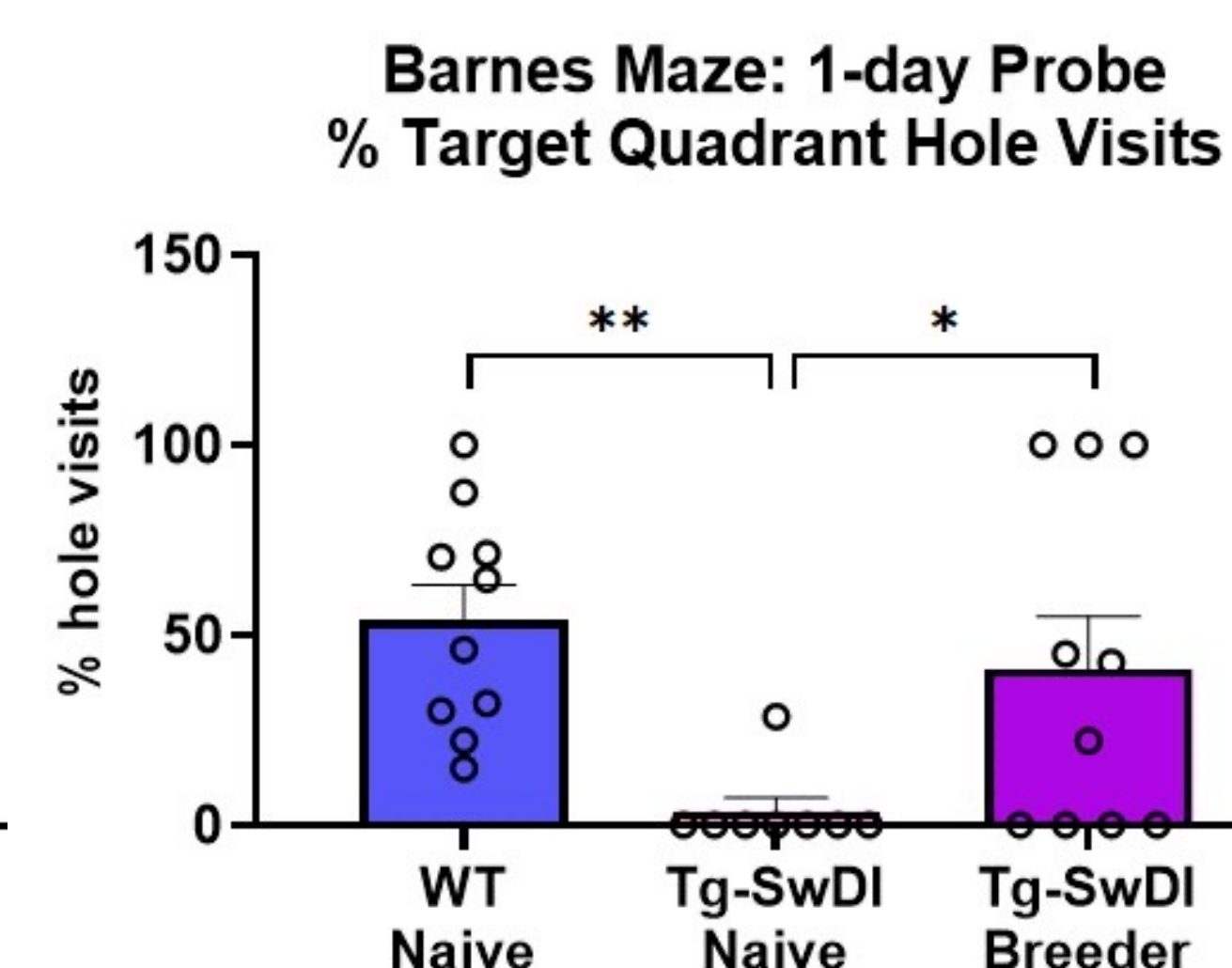
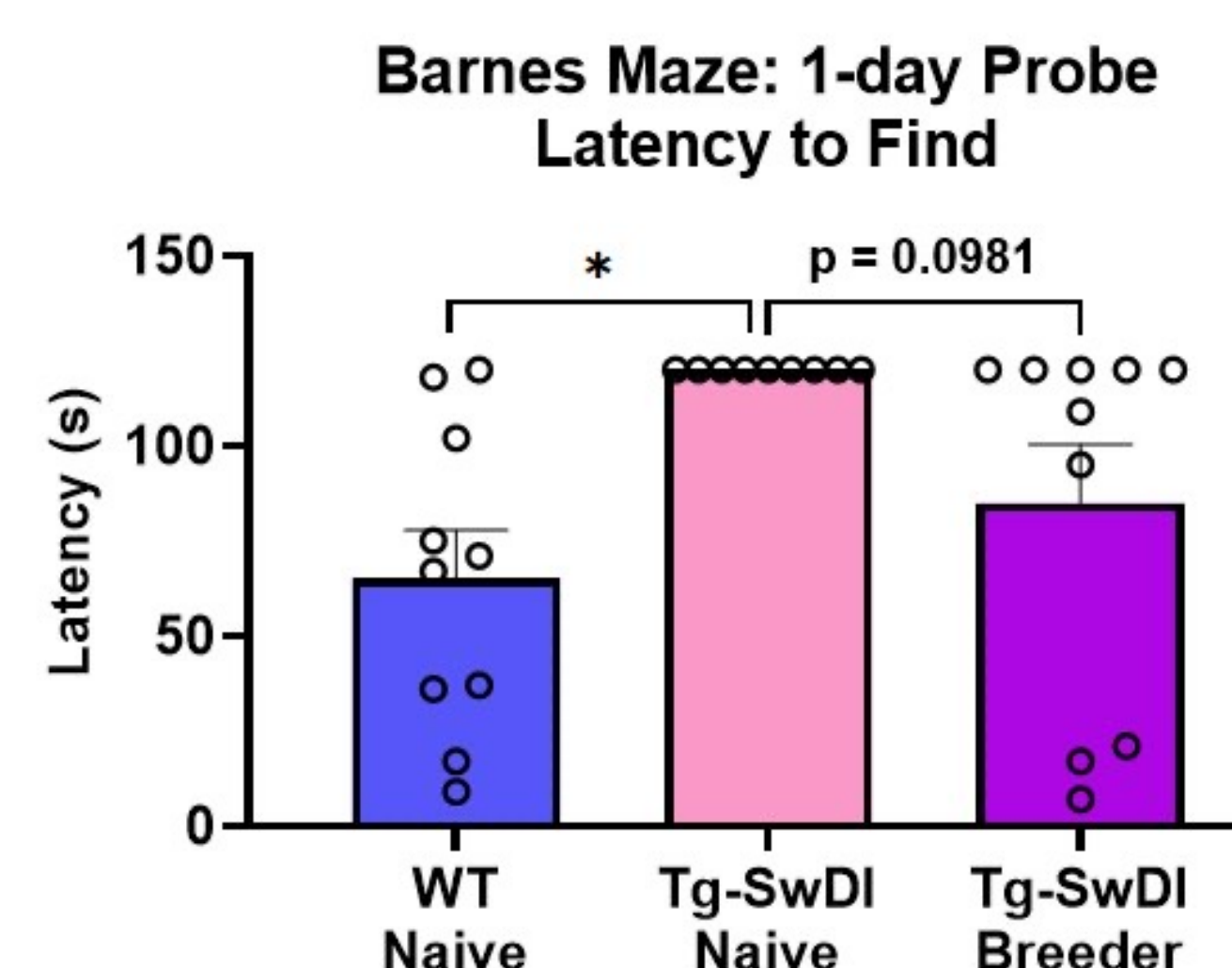
Barnes Maze Test



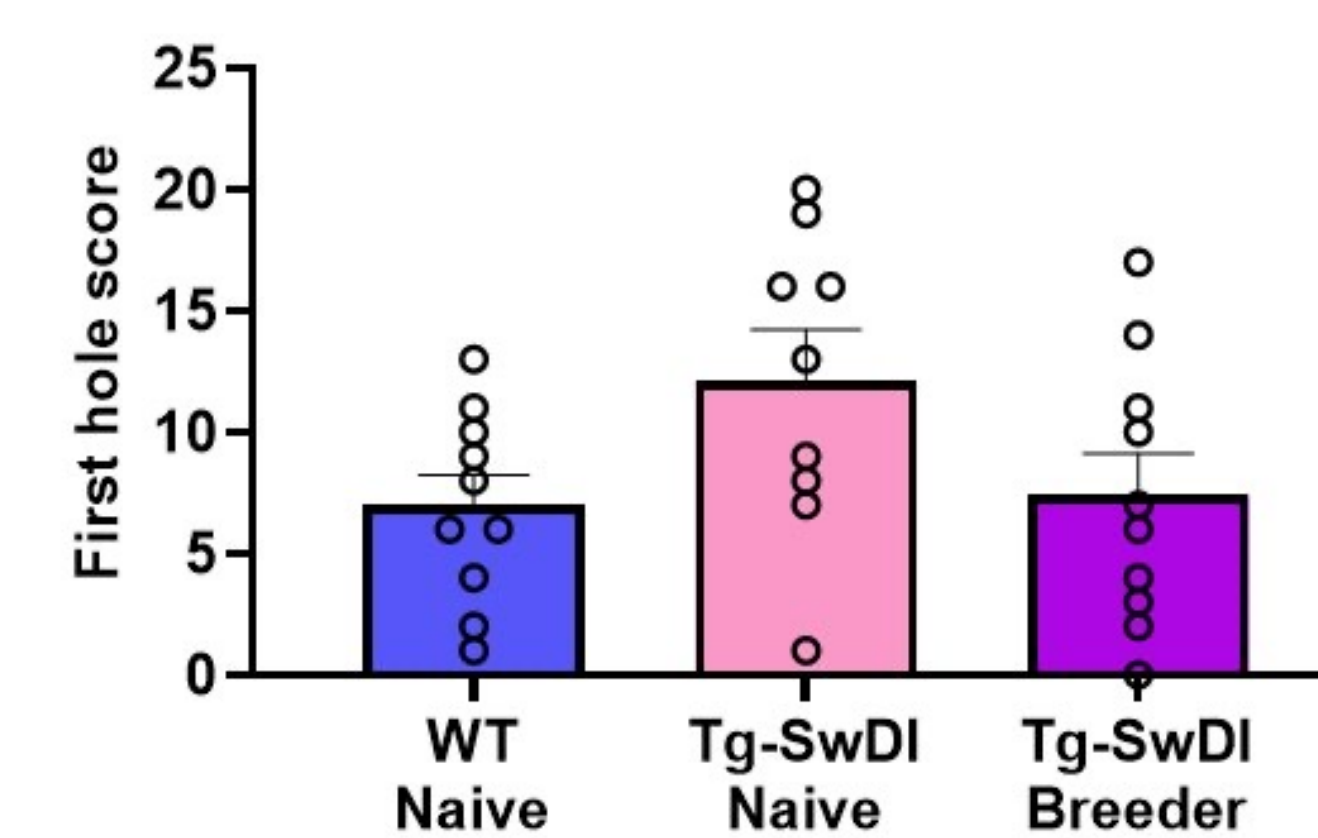
Object Placement Test

Created with BioRender.com

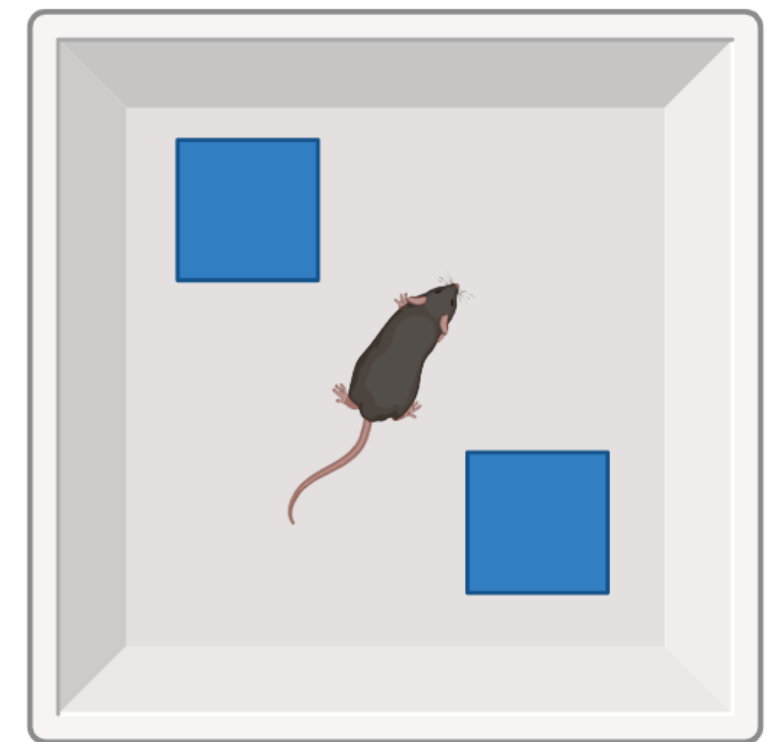
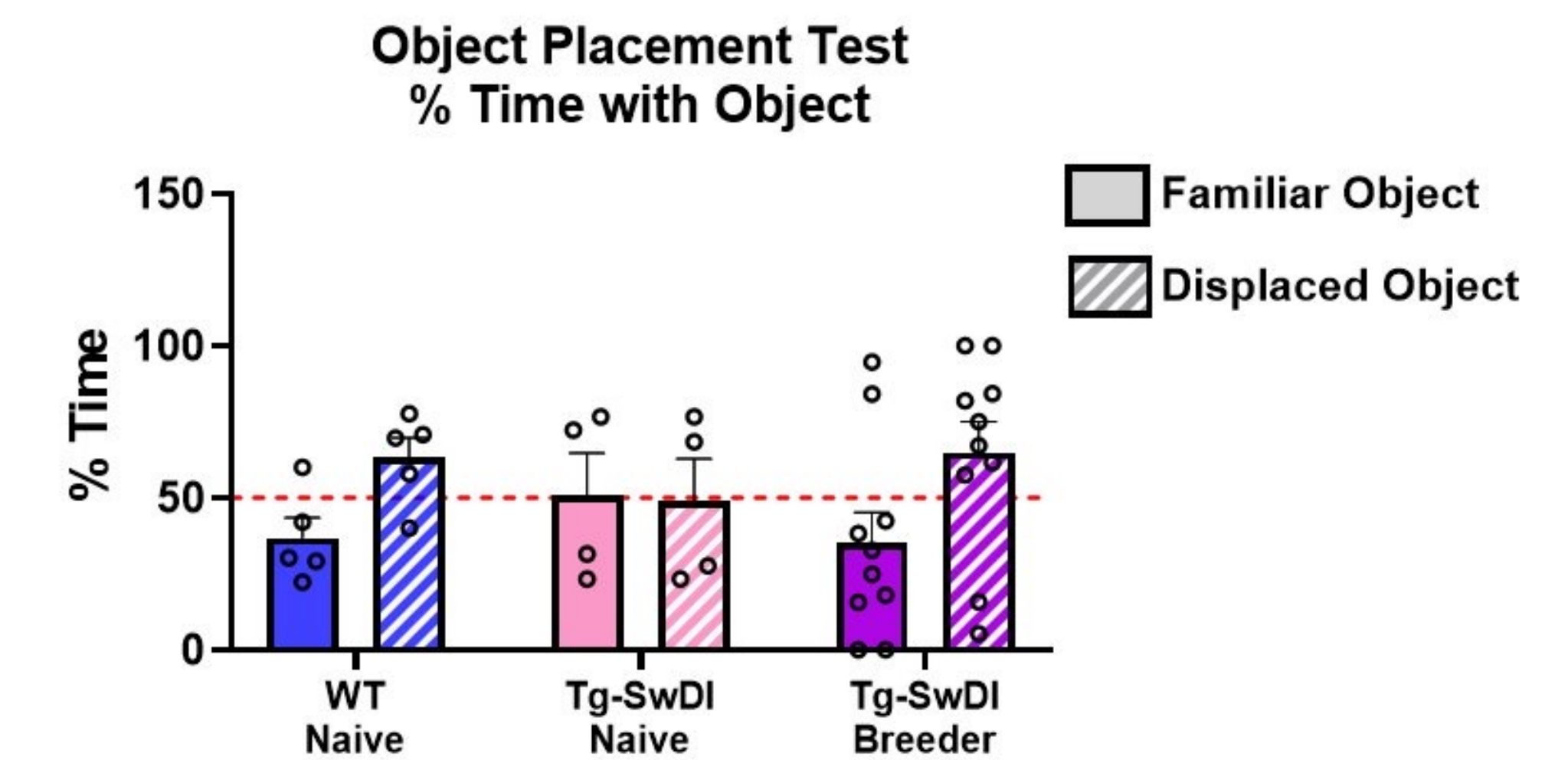
Results



Barnes Maze: 1-day Probe First Hole Score



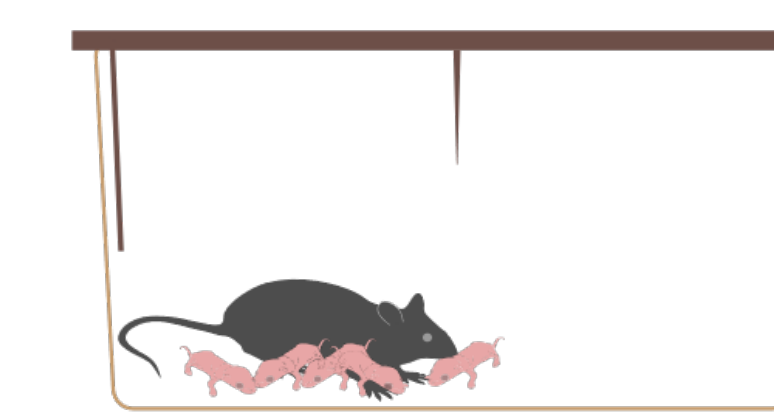
Results



Conclusions & Future Work

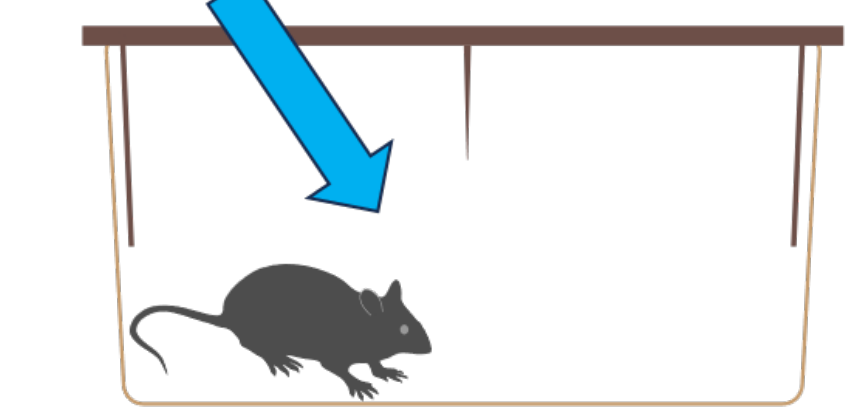
- Reproductive/maternal experience attenuates cognitive impairment in a transgenic mouse model of dementia.
- Further studies using rodent models of dementia will help determine causation and identify mechanisms linking parity and disease outcomes.
- Further studies controlling for various aspects of reproduction and parental experience in rodents will allow for the isolation of variables.

Aim 1

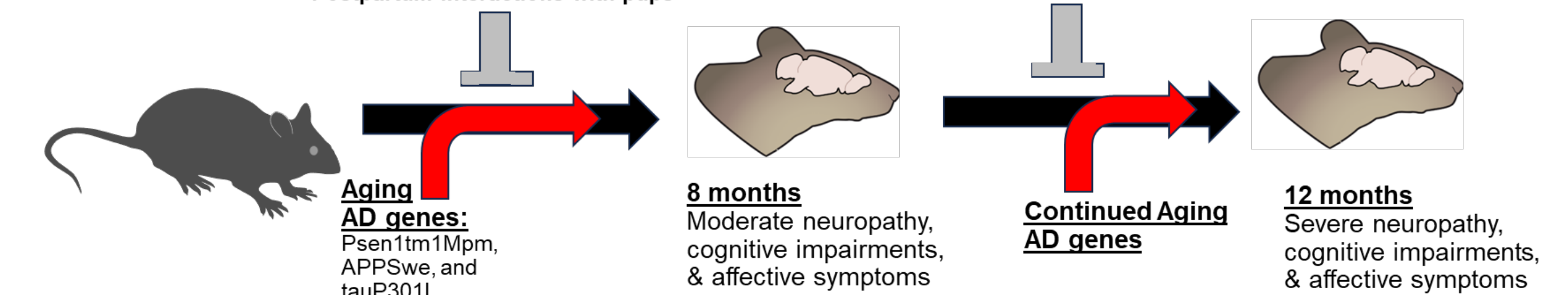


Matrescence (motherhood):
Pregnancy & parturition
Lactation
Postpartum interactions with pups

Aim 2



Later pup contact:
No pregnancy or parturition
No lactation
Interactions with foster pups



References

1. Guerchet et al., *AD International*, 2020.
2. Nebel et al., *Alzheimers Dement.*, 2019.
3. Bae et al., *Epidemiol Psychiatr Sci*, 2020.

Acknowledgements



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