

# Characterizing sleep-wake activity patterns across the spectrum of AD/ADRD

PI: Joseph Winer, PhD

*Department of Neurology and Neurological Sciences*

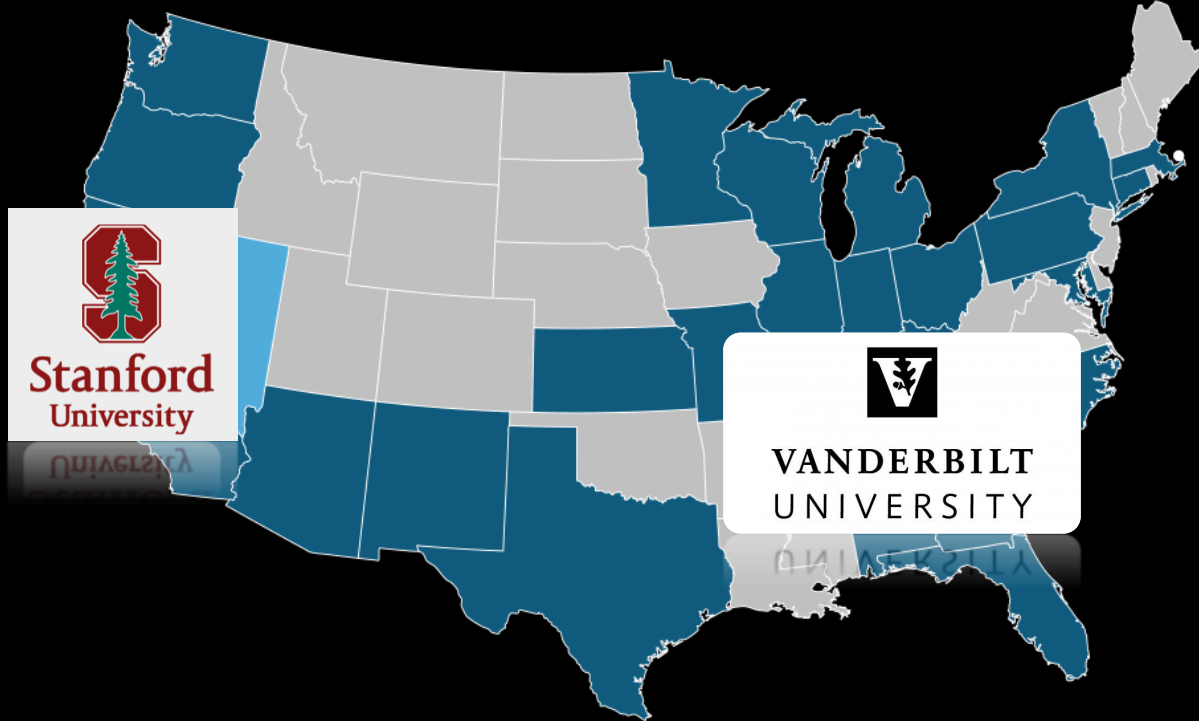
*Center for Sleep and Circadian Sciences*

*Stanford University*

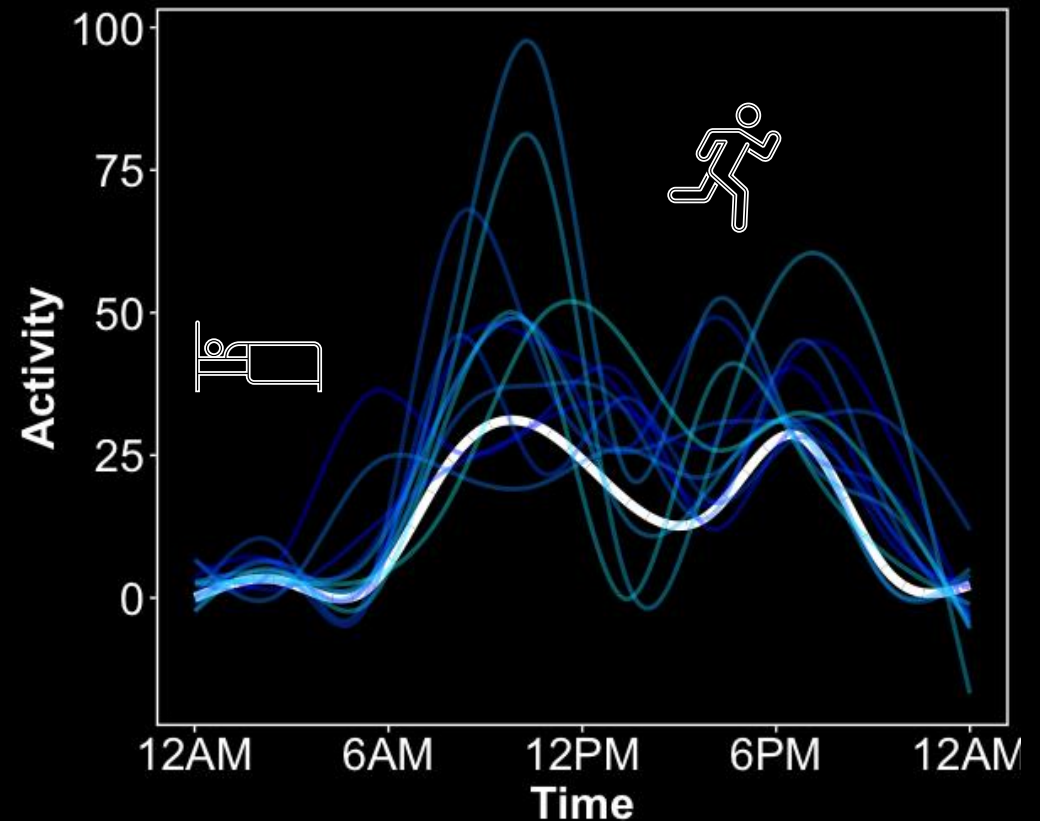


# Our Aim: develop a platform to collect and share 24hr activity data across the NACC/ADRC network

## The ADRCs



## Actigraphy



# Team expertise in actigraphy and multimodal harmonization



Stanford ADRC



Joseph Winer, PhD (PI)  
Postdoctoral Fellow  
Sleep & 24hr in ADRC  
ADRC REC Scholar



Jamie Zeitzer, PhD (Co-I)  
Professor  
Sleep & Circadian Biology



Elizabeth Mormino, PhD  
Assistant Professor  
ADRC Imaging Core Lead  
CLARiTI PI



Vanderbilt ADRC



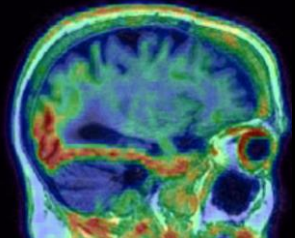
Kelsie Full, PhD (Co-I)  
Assistant Professor  
Sleep, Physical Activity Epidemiology  
ADRC Outreach Core Lead



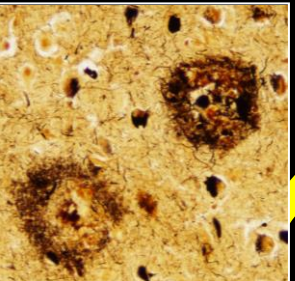
Timothy Hohman, PhD  
Professor  
ADRC Biomarker Core Lead  
ADSP-PHC PI

# Real life sleep and physical activity represents high impact science

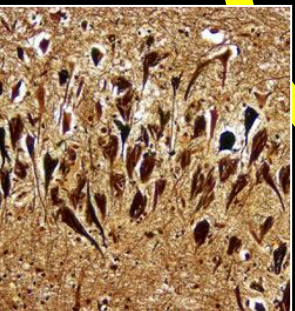
Biomarkers



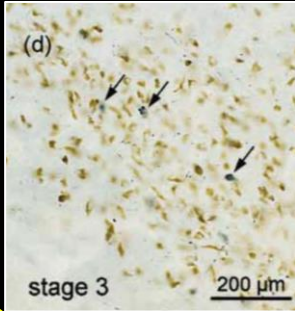
$\beta$ -amyloid



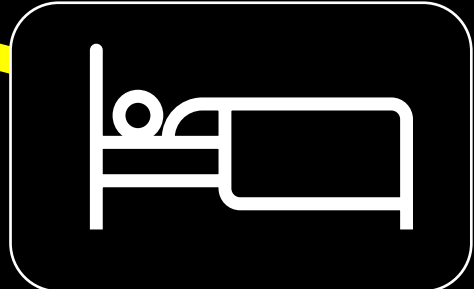
Tau



$\alpha$ -synuclein



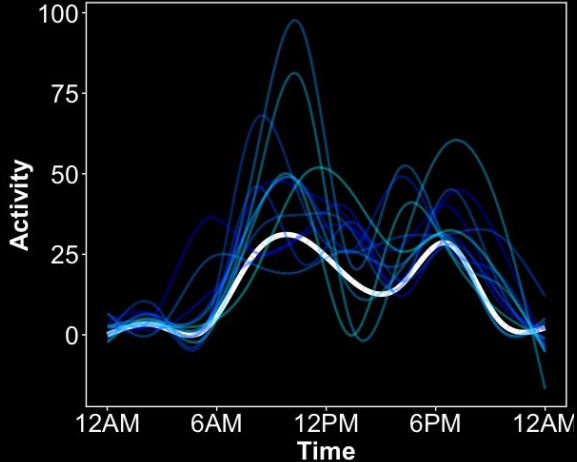
Sleep



Activity



Actigraphy



Digital biomarkers for early detection and disease specificity

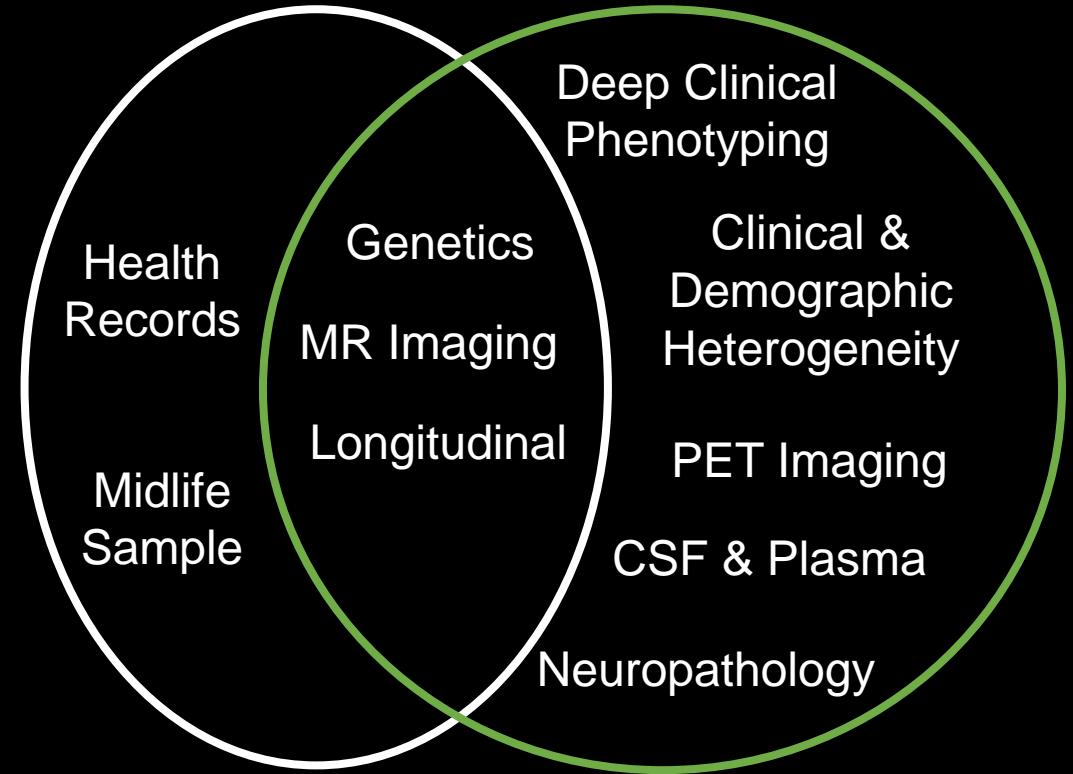
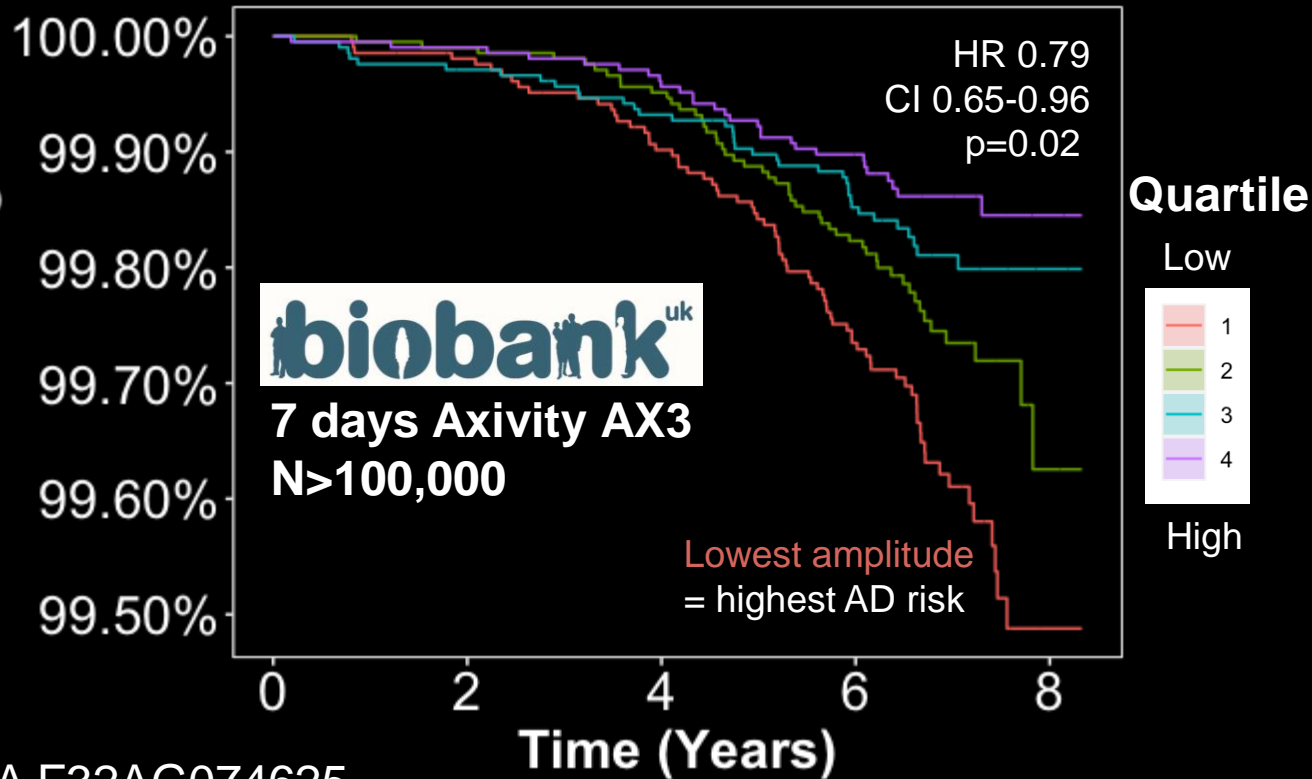
# Passive 24hr activity monitoring is low burden and scalable

Axivity AX3  
\$190



UK Biobank

NACC





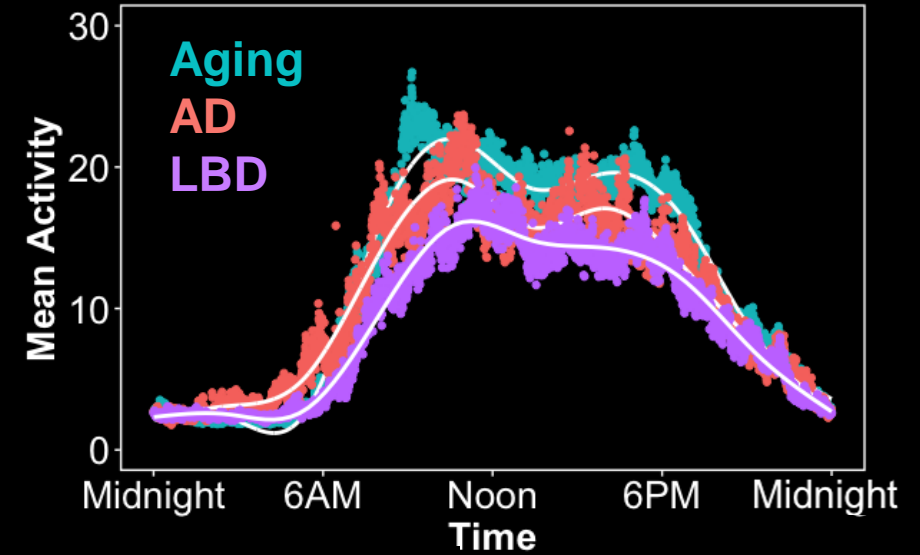
# Our success at Stanford ADRC demonstrates feasibility



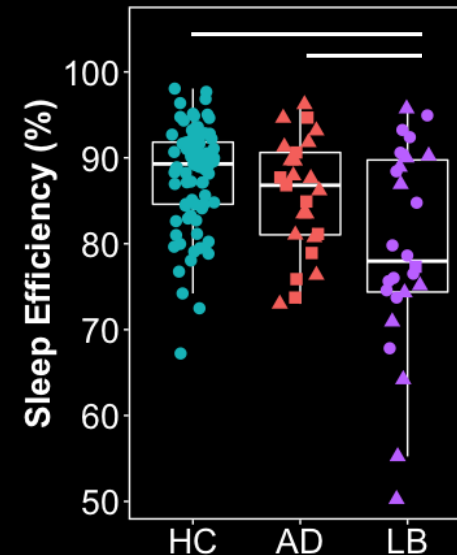
Since Fall 2021, n=191 individuals

	Healthy Aging	Alzheimer's disease	Lewy body disease	Other ADRD
Total N	105	37	40	9
(%)	(55)	(19)	(21)	(5)

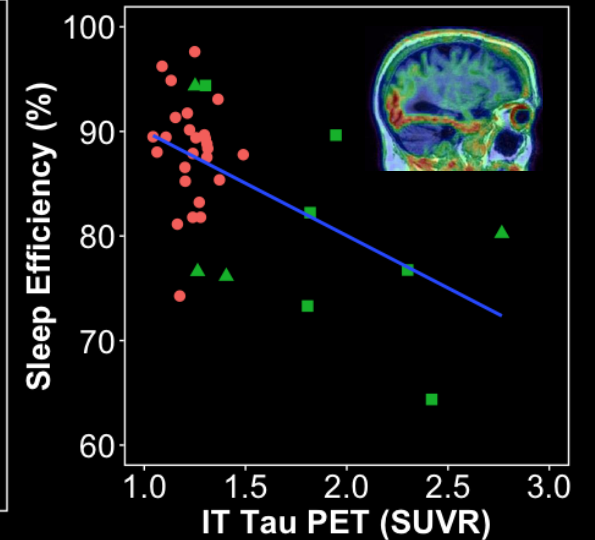
Mean 24h Activity



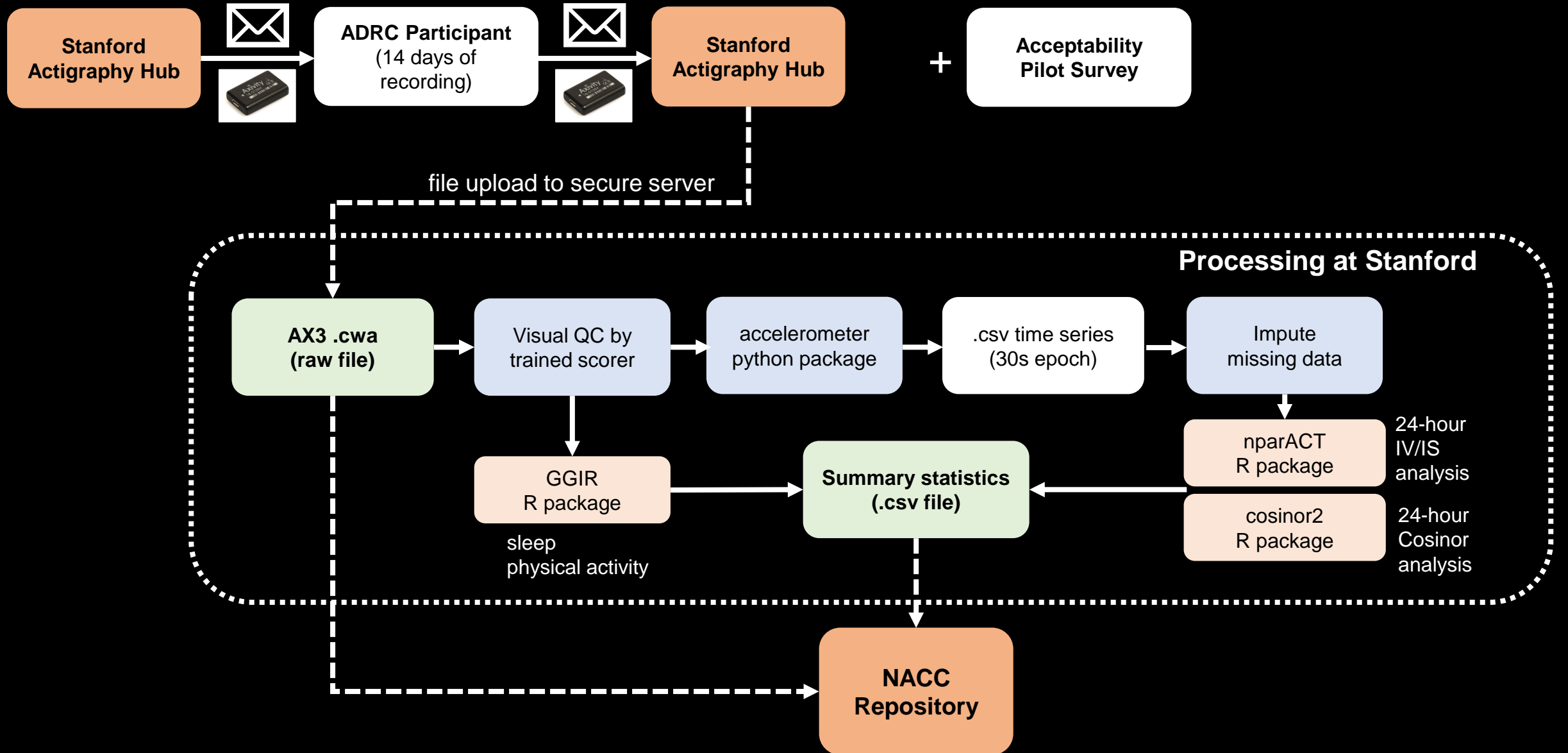
Sleep Efficiency



Tau PET x Sleep



# Develop infrastructure for standardized multi-site actigraphy data



# Real world sleep and physical activity data will be a valuable resource towards digital biomarkers for ADRD



**Stanford  
Actigraphy Platform**

