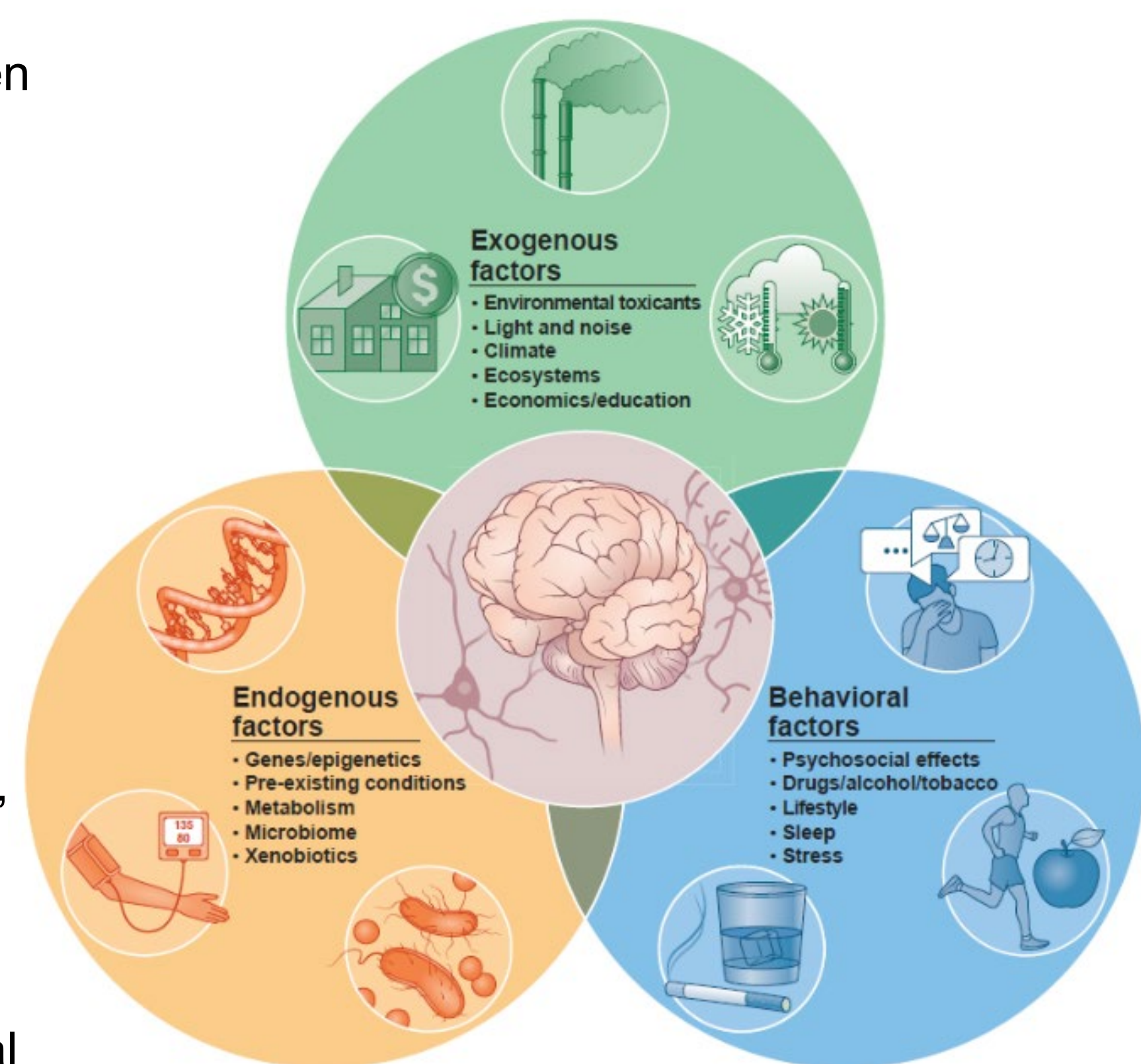


## The Neural Exposome

Most diseases and disorders originate at the intersection between environmental, genetic, and age-related factors. The term “exposome” describes the totality of internal and external exposures across the lifespan affecting human health [1]. At the National Institute of Neurological Disorders and Stroke (NINDS) we refer to the “Neural Exposome” as non-genetic factors or exposures that, over time, impact nervous system health [2]. These exposures include exogenous factors, such as environmental toxicants or biological toxins; endogenous factors, such as the microbiome, and behavioral factors, such as psychosocial effects or diet. Neural exposome research will advance our understanding of the multiple causes of neurological illness and may lead to precise and effective interventions, especially because many of the exposures are modifiable.



## ONETOX Efforts to Promote Interdisciplinary Research

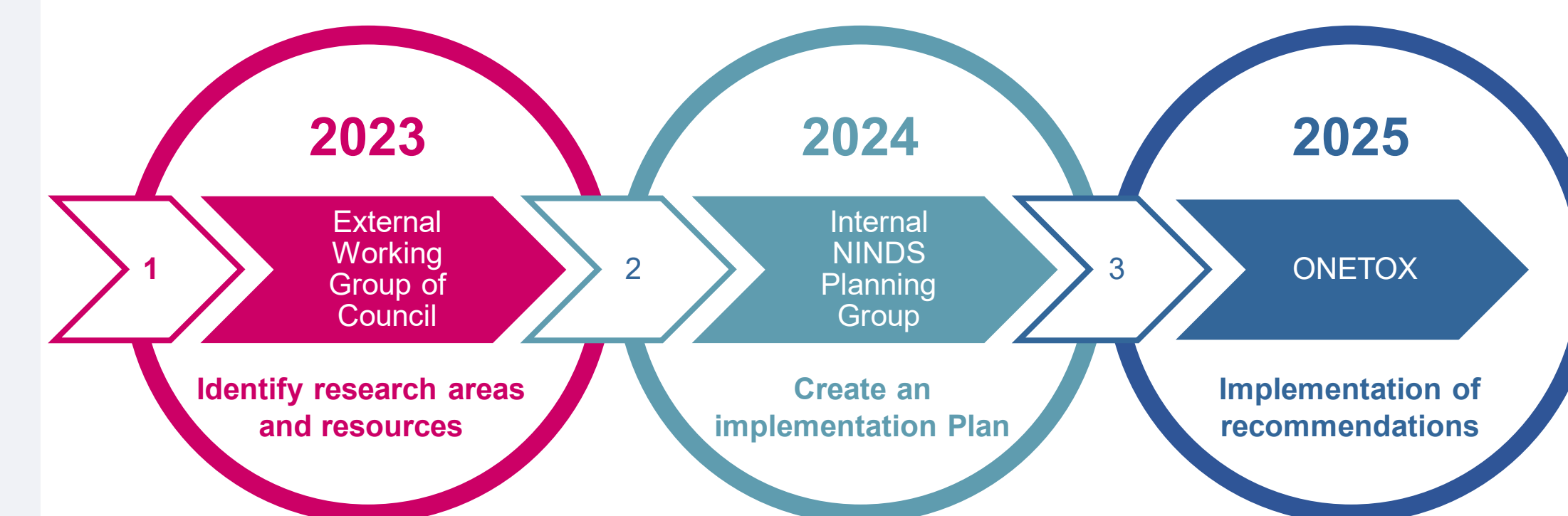
**2022 Society for Neuroscience**  
*Satellite Event*  
“The Neural Exposome and Why it's Important to You!”  
San Diego, CA, November 2022

**2024 Virtual NINDS Workshops**  
“Team Science to Advance Neural Exposome Research”  
“The Right Tools and Resources for Neural Exposome Research”

**2023 Society of Toxicology**  
*Symposium*  
“Expanding Our Knowledge of Neurological Disease Etiologies: Current Research on the Neural Exposome”  
Nashville, TN, March 2023

**2024 Society for Neuroscience**  
*Symposium*  
“What Does the Microbiome Tell Us About Prevention and Treatment of AD/ADRD?”  
Chicago, IL, October 2024

## NINDS Neural Exposome Strategic Planning



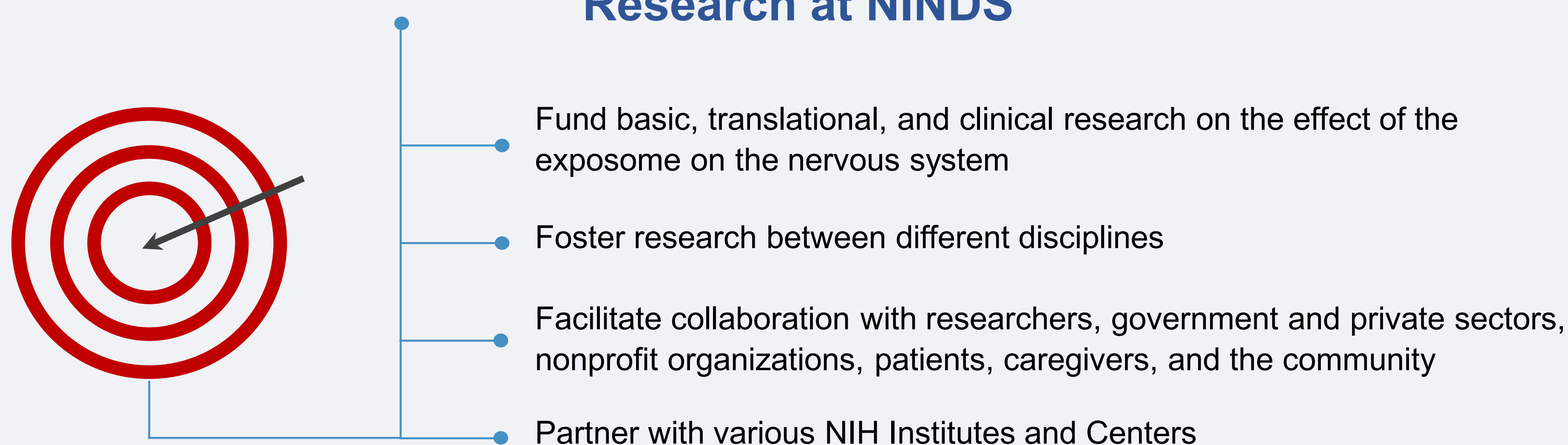
In 2023, NINDS initiated strategic planning to guide and coordinate neural exposome research. An external Working Group of Council will define NINDS's role, prioritize research areas, identify best practices for collaboration, and find research tools. An internal NINDS group will create an implementation plan.

By 2025, ONETOX will establish its vision, purpose, and goals to support neural exposome research at NINDS.

For more information, follow QR code

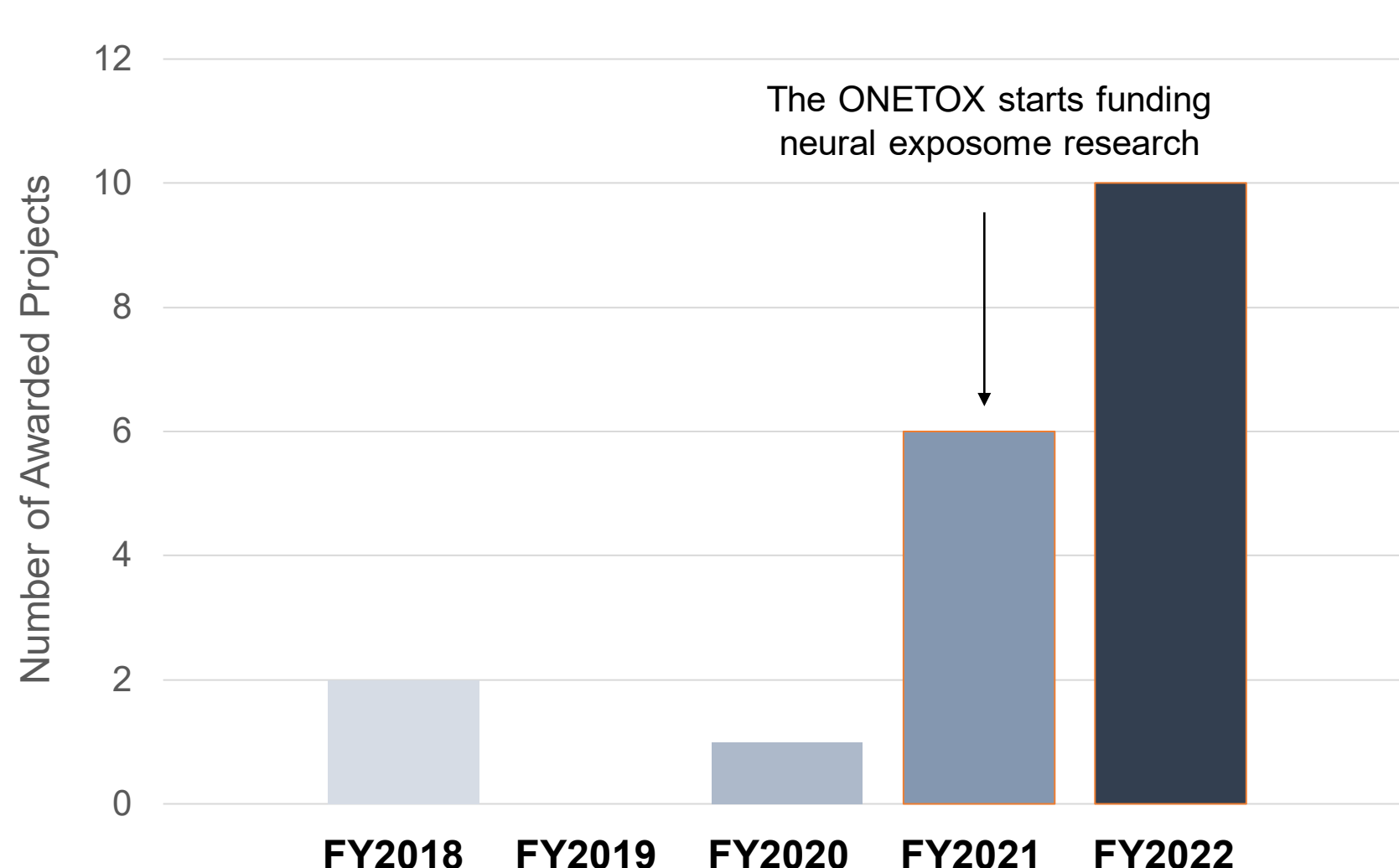


## Goals of the Office of Neural Exposome and Toxicology (ONETOX) Research at NINDS

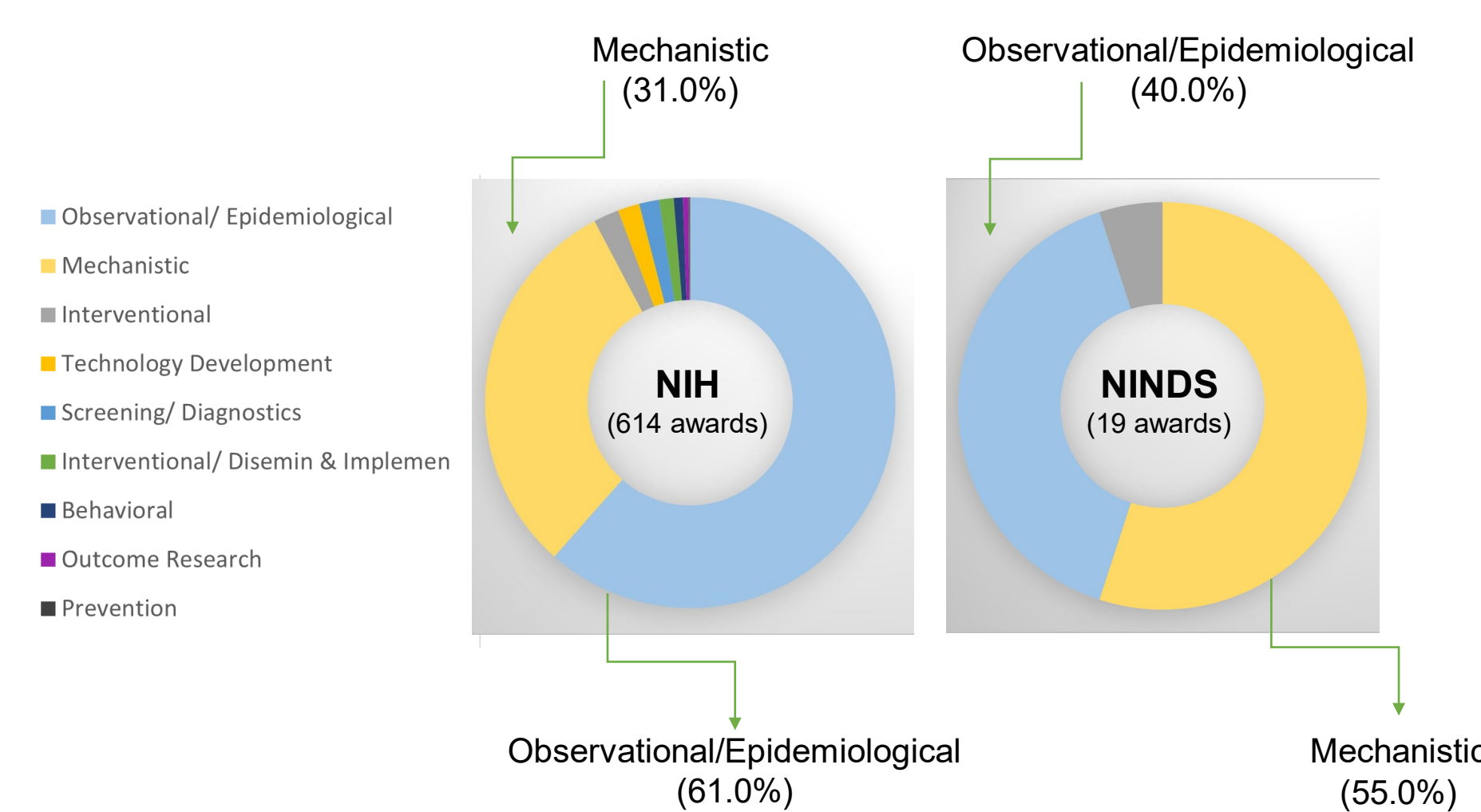


## The ONETOX Boosts Mechanistic Neural Exposome Research

A. NUMBER OF NEURAL EXPOSOME PROJECTS FUNDED BY NINDS (2018-2022)



B. THE ONETOX PRIORITIZES FUNDING MECHANISTIC NEURAL EXPOSOME RESEARCH (2018-2022)



Selected awards covering research, cooperative agreements, and training funding mechanisms investigating the neural exposome during 2018-2022. **A.** Rapid growth of neural exposome NIH awards coincides with the establishment of the ONETOX. **B.** Donut charts indicating NINDS (right panel) supports more mechanistic neural exposome projects (light yellow) compared to the NIH (all Centers and Institutes, left panel), which support more observational and epidemiological neural exposome studies (light blue).

## ONETOX Funding Opportunities

	Clinical Relevance of the Linkage between Environmental Toxicant Exposures and Alzheimer's Disease and Related Dementias	PAR-22-048
	Climate Change and Health	NOT-ES-22-006
	Impact of the Microbiome Gut-Brain Axis on Alzheimer's Disease and Alzheimer's Disease Related Dementias	PAR-22-211
	Role of Environmental Stress in the Health Inequities of Alzheimer's Disease-Related Dementias	RFA-NS-24-024
	Research on Biopsychosocial Factors of Social Connectedness and Isolation on Health, Wellbeing, Illness, and Recovery	PAR-21-349

The ONETOX has funded neural exposome research addressing exogenous, endogenous, and behavioral factors affecting the nervous system

## References

- Wild, C.P. 2005 Cancer Epidemiol Biomarkers Prev. 14(8):1847-1850
- Tamiz, AP, et al 2022. Neuron. 110(8):1286-1289.

## Contact Us and Find Upcoming Funding Opportunities

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