



California Initiative to Advance Precision Medicine

In 2021, CIAPM announced seven awardees from the request for proposals, "Addressing Health Impacts of Adverse Childhood Experiences (ACEs) through a Collaborative Precision Medicine Approach."

CIAPM's ACEs Research Program

What are ACEs? ACEs refer to 10 types of abuse, neglect, and household dysfunction that, when encountered in early life, can negatively impact lifelong physical and mental health due to activation of the toxic stress response. According to data from the UCLA Center for Health Policy Research in 2022, 72% of adults in California have experienced at least one ACE and 20% have experienced at least 4 ACEs.

Types of Adverse Childhood Experiences

Abuse



sexual



physical



emotional

Neglect



emotional



physical



mental
illness



partner
violence

Household Challenges



parental
separation



incarceration



substance
misuse or
dependence

Program Goals and Collaborations: Through collaborations between academic and community partners, 7 funded projects aim to identify biological and behavioral markers of the health impacts of ACEs to enable earlier detection and tailored interventions that improve the health of children, youth, and their families.

The ACEs Research Program funded 7 demonstration projects (turn the page to read about projects 3-7).

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University of California, Irvine, Lead Investigator: Tallie Z. Baram, MD, PhD. 2021-2025, \$2.9

Million. Using Precision Medicine to Tackle Impacts of Adverse and Unpredictable Experiences on Children's Neurodevelopment

- **How:** The UC Irvine team aims to identify how a novel actionable ACE, unpredictability, influences the developing brain at an individual level and discover biomarkers that distinguish those impacted by ACEs from those who exhibit resilience.
- **Impact:** This approach could inform the delivery of evidence-based interventions to those in greatest need, ameliorating accumulating health disparities.

Stanford University, Lead Investigator: Sayantani Sindher, MD. 2022-2026, \$3 Million

Systems-based, Multidisciplinary Assessment of Adversity and Toxic Stress for Individualized Care

- **How:** The Stanford team aims to develop a biomarker assessment to identify toxic stress, guide precision medicine treatment recommendations, and ultimately assess treatment efficacy.
- **Impact:** This toxic stress assessment profile could help providers more easily identify patients affected by toxic stress and recommend personalized intervention treatment strategies.

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<https://ciapm.chhs.ca.gov/>



CIAPM@chhs.ca.gov

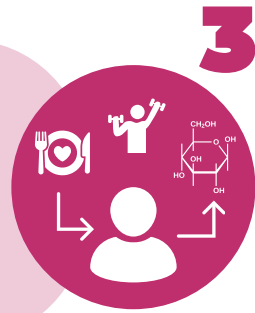


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Children's Hospital Los Angeles, Lead Investigator: Pat Levitt, PhD. 2021-2025, \$2.5 Million Scalable Measurement and Clinical Deployment of Mitochondrial Biomarkers of Toxic Stress

- **How:** The CHLA team aims to improve early detection of ACEs through screening and laboratory measures that identify disruptions in metabolic health and toxic stress.
- **Impact:** Through early identification and interventions, the team seeks to improve health and quality-of-life outcomes for infants and families



Loma Linda University, Lead Investigator: Ariane Marie-Mitchell, MD, PhD, MPH. 2021-2026, \$2.9 Million. A Multi-Component Intervention to Strengthen Families and Build Youth Resilience

- **How:** Using Health, Education, and Learning partnerships, the Loma Linda team aims to optimize the delivery of information and resources to families based upon different levels of need.
- **Impact:** This intervention could be a scalable approach for pediatric preventive care and lead to decreased toxic stress, reduced disparities, and increased positive health outcomes.

University of California, Los Angeles, Lead Investigator: George Slavich, PhD. 2021-2026, \$3 Million. Identifying Social, Molecular, & Immunological Processes for Mitigating Toxic Stress & Enhancing Personalized Resilience

- **How:** The UCLA team aims to develop educational programs on stress and resilience and study how ACEs influence biological functioning and perceived stress, using multi-omics approaches.
- **Impact:** The team's scalable precision intervention could identify social, molecular, and immunological processes that can be targeted to reduce stress-related disease risk.



University of California, San Diego, Lead Investigator: Gary Firestein, MD. 2021-2025, \$3 Million. Advancing a Precision Population Health Approach to ACEs to Reduce Health Disparities

- **How:** The UCSD team aims to develop a community-based intervention to mitigate ACEs, build resiliency to toxic stress, and reduce childhood obesity within Latino communities.
- **Impact:** The intervention is informed by and co-designed with community engagement teams, serving as a model for a community-based approach to improve ACE-related health outcomes.

University of California, San Francisco, Lead Investigator: Neeta Thakur, MD, MPH. 2021-2025, \$3 Million. The Collaborative Approach to Examining Adversity and Building Resilience Program

- **How:** The UCSF team aims to study biomarkers associated with ACEs and test the effectiveness of interventions that reduce caregiver stress and improve the child-caregiver relationship.
- **Impact:** This approach could demonstrate the effectiveness of mitigating the health impacts of ACEs, measured by biomarkers and health outcomes, through reduction in caregiver stress.

