INTRODUCTION

SAN DIEGO NATHAN SHOCK CENTER

Aging: it’s not just about time.

INTRODUCTION TO SAN DIEGO NATHAN SHOCK CENTER OF EXCELLENCE IN THE BASIC BIOLOGY OF AGING

- The Division of Aging Biology of the National Institute on Aging funds 8 Nathan Shock Centers of Excellence in the Basic Biology of Aging across the U.S.
- The Centers provide leadership in the pursuit of basic research into the biology of aging
- Each Center has an overall theme and specialized research resource cores that provide services for-fee to the community, along with a research development core
Overall premise of the San Diego Nathan Shock Center (SDNSC):
promote the analysis and understanding of the heterogeneity of aging

Long-term goal is to inform personalized healthspan interventions

AIM 1. Create novel integrated scientific resources to develop human cell models of aging and enable basic studies of molecular, cellular, and tissue heterogeneity.

AIM 2. Increase basic biology of aging research through development, training, and mentoring activities of a Research Development Core.

AIM 3. Extend the reach of the SD-NSC by providing leadership and outreach activities to advocate for basic biology of aging research in general, and studies into the heterogeneity of aging specifically.
INTRODUCTION TO SAN DIEGO NATHAN SHOCK CENTER

Core Leads:
Rusty Gage, Salk
Anthony Molina, UCSD

Core Lead:
Tatyana Sharpee, Salk

Center Director: Gerald Shadel, Salk

HETEROGENEITY OF AGING CORE

Martin Hetzer
Peter Adams
Jolene Diedrich
Nasun Hah
Uri Manor

Core Leads:
Martin Hetzer, Salk
Peter Adams, SBP

Core Lead:
Malene Hansen, SBP
INTEGRATIVE MODELS OF AGING CORE

Data infrastructure
Mathematical modeling
Online tools

Tanya Sharpee
Max Shokhirev

HUMAN CELL MODELS OF AGING CORE

Novel human lifespan cohort
Organoid systems
Subject-specific fibroblasts and iPSCs
Induced cell models

Anthony Molina
Lina Scandalis
Ken Diffenderfer
SAN DIEGO NATHAN SHOCK CENTER – RESEARCH CORE OVERVIEW

HUMAN CELL MODELS OF AGING
- Novel human lifespan cohort
- Organoid systems
- Subject-specific fibroblasts and iPSCs
- Induced cell models

Deliverables: Hardware and software infrastructure, integrative analysis/modeling

INTEGRATIVE MODELS OF AGING
- Data infrastructure
- Online tools
- Mathematical modeling

Deliverables: Omics approaches, imaging technology, support with data acquisition

HETEROGENEITY OF AGING
- Single-cell RNA/ATAC-seq
- Proteomics/metabolomics
- Imaging
- Technology implementation

Deliverables: Hardware and software infrastructure, integrative analysis/modeling

RESEARCH DEVELOPMENT CORE

Objective: Bring new investigators into biology of the aging field

- Pilot grants: 6 x $15K for especially junior investigators (to be spent in research cores)
CONGRATS TO THE 2021 SAN DIEGO NATHAN SHOCK CENTER PILOT GRANT Awardees!!

Ana Chucair-Elliott  A novel mouse model for chromatin accessibility and transcriptomic studies of retina Müller glia in age-related macular degeneration / Oklahoma Medical Research Foundation

Maria Mihaylova  Characterizing Age-Dependent Changes in the Mammalian Colon / The Ohio State University

Adam Konopka  The Metabolic-Epigenomic Network of Metformin and Exercise / University of Wisconsin

CONGRATS TO THE 2021 SAN DIEGO NATHAN SHOCK CENTER PILOT GRANT Awardees!!

Vanessa Delcroix  A single-cell atlas of the aging lacrimal gland to understand the mechanisms underlying age-associated dry eye disease / The Scripps Research Institute

Lara Labarta-Bajo  Astrocyte Plasticity in the Aging Brain / Salk Institute

Maria Clara Guida  Investigating the epigenetic drift of aging hearts using Drosophila / Sanford Burnham Prebys MDI
**Objective:** Bring new investigators into biology of the aging field

- **Pilot grants:** 6 x $15K for especially junior investigators (to be spent in research cores)
- **Intro/Training workshop:** 1-day following LJAM symposium, conceptual and practical training in core techniques; moreover, grantees can visit and receive training
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- **Mentoring program:** Personalized mentor/mentee pairing, e.g., at NSC annual meeting; recipients of awards will be paired with mentor

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**UPDATES**

**NEW LEADER FOR THE RESEARCH DEVELOPMENT CORE**

**ALESSANDRA SACCO, PhD.**
Sanford Burnham Prebys Medical Discovery Institute

Associate Professor
Associate Dean of Curriculum, Graduate School of Biomedical Sciences

**SAN DIEGO NATHAN SHOCK CENTER**
KEYNOTE SESSION

DARREN J. BAKER, PhD
MAYO CLINIC

Establishment of Causality for Senescence to Aging