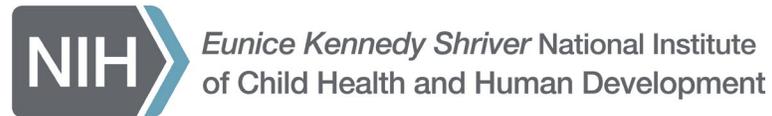


NICHD Advisory Council Open Session Report September 9, 2021

Chris J. McBain, PhD

Acting Scientific Director



Outline:

- Introduction
- NICHD Intramural Program Overview
- Budget & Personnel Updates
- Office of Education Updates
- Competitive Awards



Introduction

Introduction: Chris J. McBain

- Dr. Mary C. Dasso served as Acting Scientific Director from February 7, 2020- June 11, 2021, leading the DIR through the pandemic response
- Appointed Acting Scientific Director on June 12, 2021



Pre-NIH

- 1988 PhD, University of Cambridge, Wolfson College
- 1988 - 1993 Postdoctoral Fellowships at UNC and Duke

NICHD-NIH

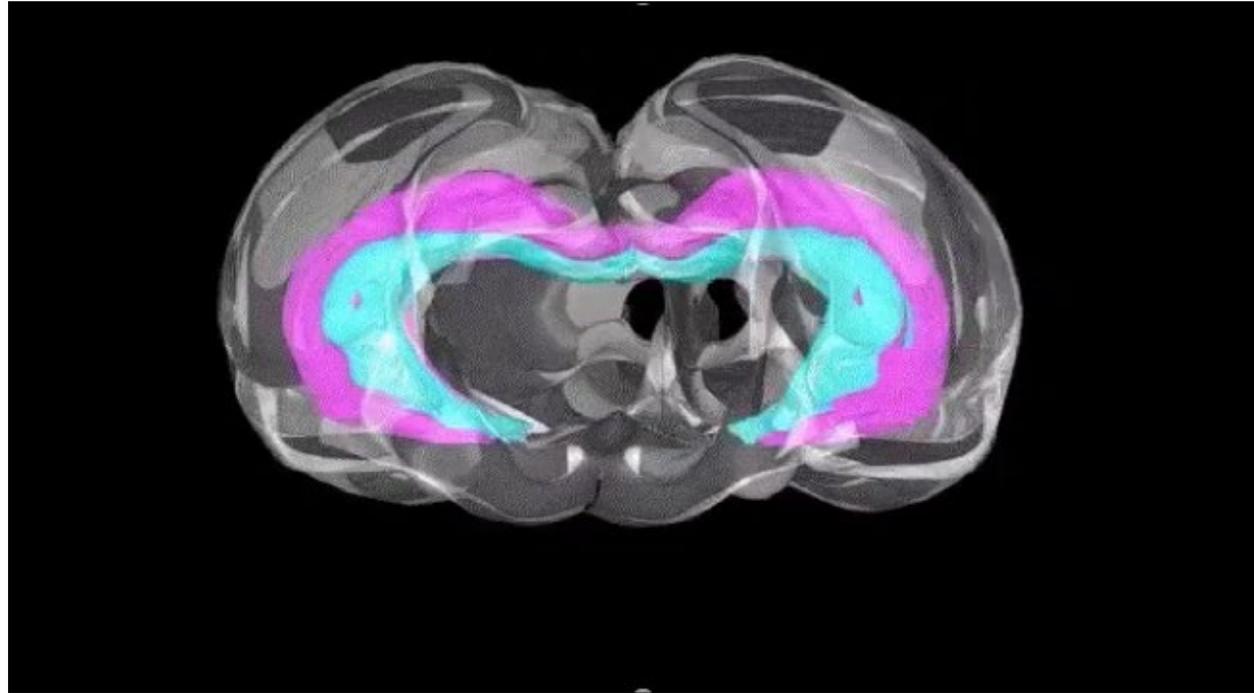
- 1993 **Tenure Track Investigator NICHD-LCMN, Cellular and Synaptic Physiology**
- 2001 **Tenured and Chief of Laboratory of Cellular and Synaptic Neurophysiology**
- 2007 **Chief of Program in Developmental Neurobiology**
- 2015 **Associate Scientific Director for Developmental Neurobiology Branch**

- 2009 **NICHD Deputy Scientific Director**
- 2021 **NICHD Acting Scientific Director**



Research

- Focused on neuronal excitability, synaptic transmission and plasticity and inhibitory interneuron development in physiological and pathophysiological cortical circuits
- Use electrophysiological, molecular, genetic, imaging approaches
- Published ~170 peer reviewed manuscripts (>23,000 citations, h-index 77, Google Scholar)



Leadership and Administration

- 2001 **Chief of Laboratory of Cellular and Synaptic Neurophysiology**
(Lab Chief Structure, 5 Research Labs)
- 2007 **Chief of Program in Developmental Neurobiology**
(Program Structure, 8 Research Labs, Budget of ~\$11m, ~80 Personnel)
- 2015 **Associate Scientific Director for Developmental Neurobiology Branch**
(Flat Structure, 5 Research Labs)
- 2009-2021 **NICHD Deputy Scientific Director**
Chair of NICHD Tenure and Promotions Committee
Chair of Patents and Technology Transfer Committee
Head of the NICHD Microscopy and Imaging Core
Member of NICHD Director's Leadership Committee

Primary role has been to promote and energize NICHD's neuroscience community and to integrate it with the larger NIH neuroscience community.

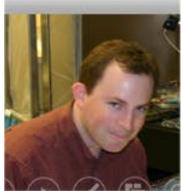
Member of the Porter Neuroscience steering committee

Co-Chair (with K. Swartz) Trans-institute Neurobiology Interest Group

Numerous Search Committees (NICHD, NINDS, NIDCD, NIAAA, NIMH...)

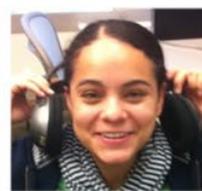
Central Tenure Committee and too many other committees to mention...





Mentoring

- Primary motivation is mentoring young students, postdocs and PIs
- Fellows have won over 15 FARE awards and secured outside funding (PRAT, Wellcome Trust, Human Frontiers, NINDS Intramural, etc)
- **NIH- Graduate Partnership Programs**
 - Founding member of the NIH-Oxford-Cambridge GPP
 - Founding member of the NIH-Wellcome Trust GPP
 - Current Co-director (with K. Roche) of NIH-Brown Neuroscience GPP
 - Have had 10 Graduate Students in Lab (Valparaiso-Chile, CU-Hong Kong, Karolinska, Wellcome Trust, Brown University)
- Mentor tenure track investigators (NICHD, NINDS, NIMH, NIAAA)





NICHD Intramural Program Overview

NICHD Intramural Program

- The NICHD Intramural Research Program (IRP) includes two Divisions:
 - Division of Intramural Research (Basic, Clinical, and Translational)
 - Division of Intramural Population Health Research (Epidemiological)



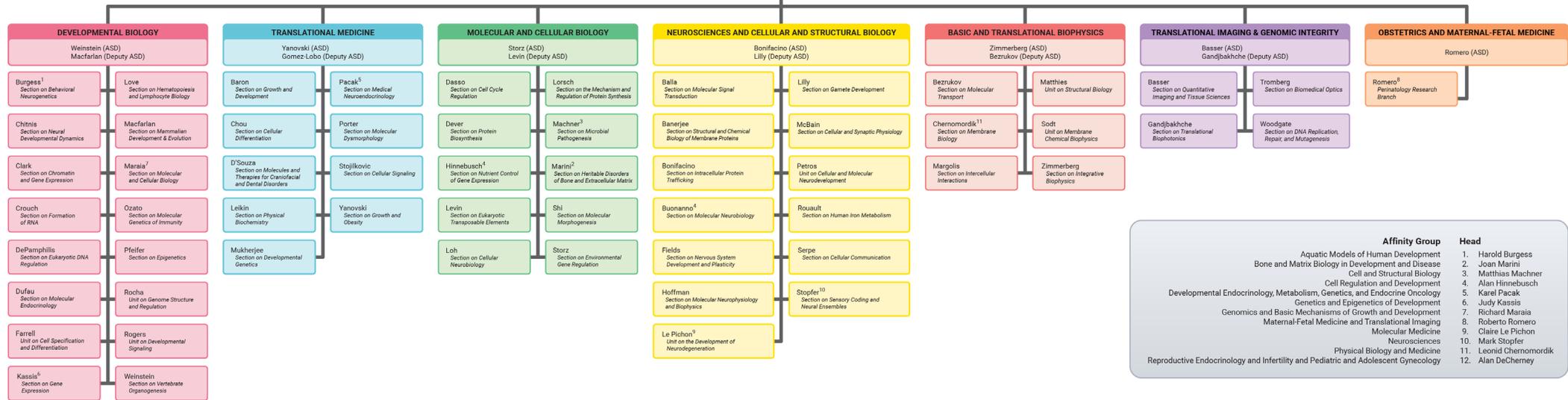
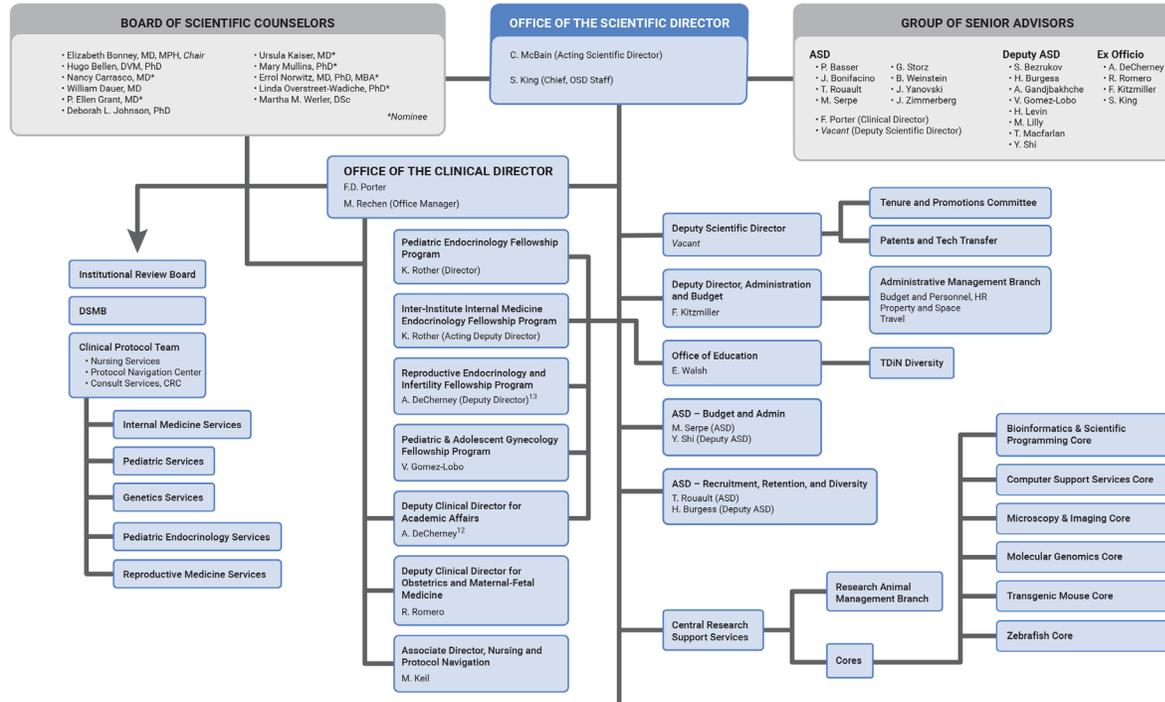
Who we are: NICHD DIR in numbers

- Total personnel of ~830 employees
 - 60 PIs (53 Tenured; 7 Tenure-Track)
 - 59 Staff Scientists
 - 297 trainees (graduate, postbac, postdoctoral and clinical fellows)
- 12 scientifically based affinity groups (from developmental & cell biology to physics, neurosciences, endocrinology & mol. genetics, pre/perinatal care, reproduction & infertility)
- 61 Clinical Protocols
 - ~2/3 at the NIH Clinical Center
- Accredited medical training programs:
 - Pediatric Endocrinology
 - Adult Endocrinology
 - Pediatric and Adolescent Gynecology
 - Reproductive Endocrinology and Infertility
 - Medical Genetics (with NHGRI)
 - Perinatal Research and Obstetrics (Wayne State Univ/PRB)



Division of Intramural Research

Updated July 2021



Affinity Group

Aquatic Models of Human Development
Bone and Matrix Biology in Development and Disease
Cell and Structural Biology
Cell Regulation and Development
Developmental Endocrinology, Metabolism, Genetics, and Endocrine Oncology
Genetics and Epigenetics of Development
Genomics and Basic Mechanisms of Growth and Development
Maternal-Fetal Medicine and Translational Imaging
Molecular Medicine
Neurosciences
Physical Biology and Medicine
Reproductive Endocrinology and Infertility and Pediatric and Adolescent Gynecology

Head

- Harold Burgess
- Joan Marini
- Matthias Machner
- Alan Hinnebusch
- Karel Pacak
- Judy Kassia
- Richard Malaria
- Roberto Romero
- Claire Le Pichon
- Mark Stopfer
- Leonid Chernomordik
- Alan DeCherney

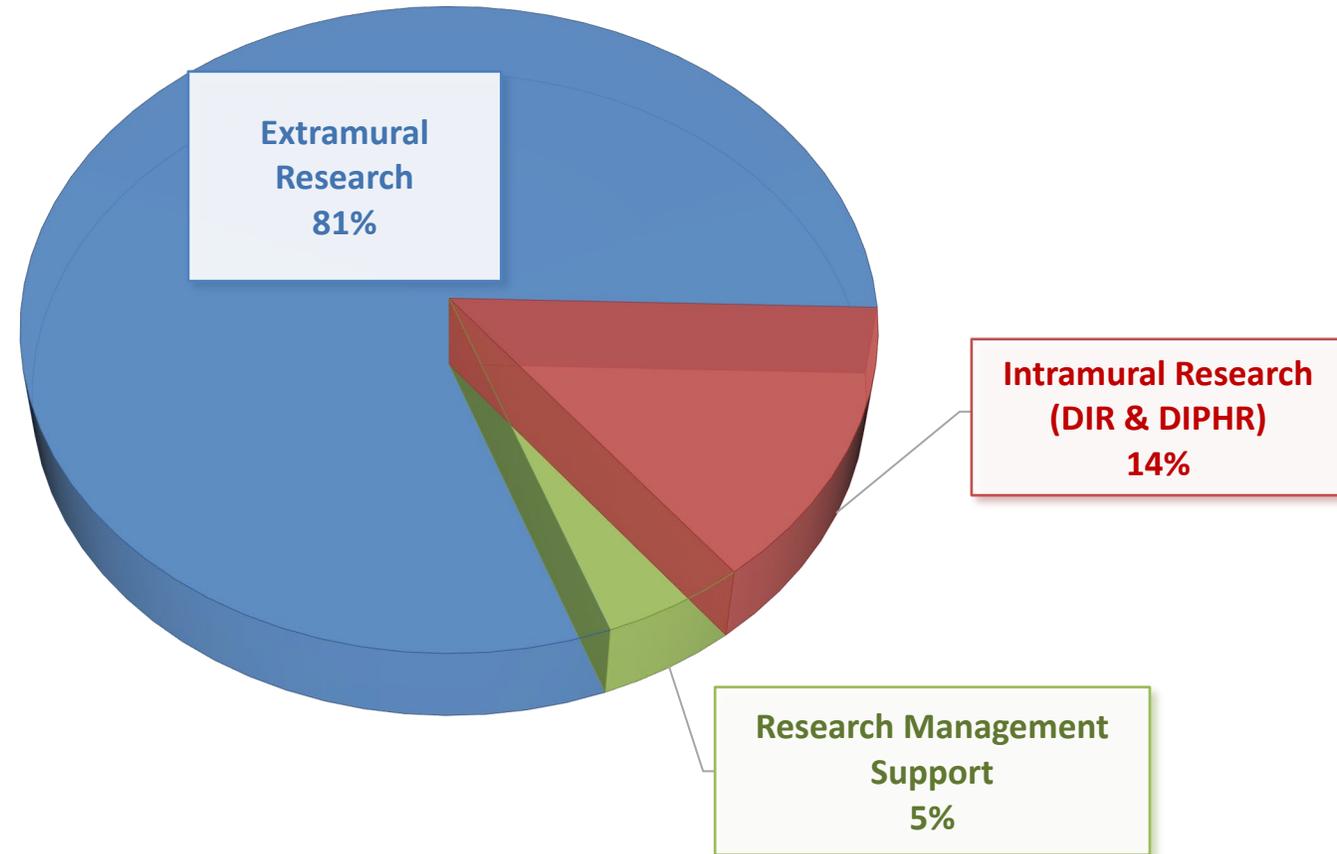


NICHD Division of Intramural Research

- Two-Tiered Structure
 - Investigators self-assembled into 12 scientific **Affinity Groups**, fostering communication around a scientific area or theme.
 - Administratively organized into functional groups loosely based around buildings. **Associate Scientific Directors** (ASD) oversee the scientific management and shared resources of their building but do not oversee individual lab budgets.
- Both Affinity Groups and Associate Scientific Directors play a role in mentoring Tenure-Track Investigators
- The Scientific Director works directly with each PI on their budget and resource needs
- Additional ASDs manage administrative portfolios such as Budget and Administration as well as Recruitment, Retention, and Diversity

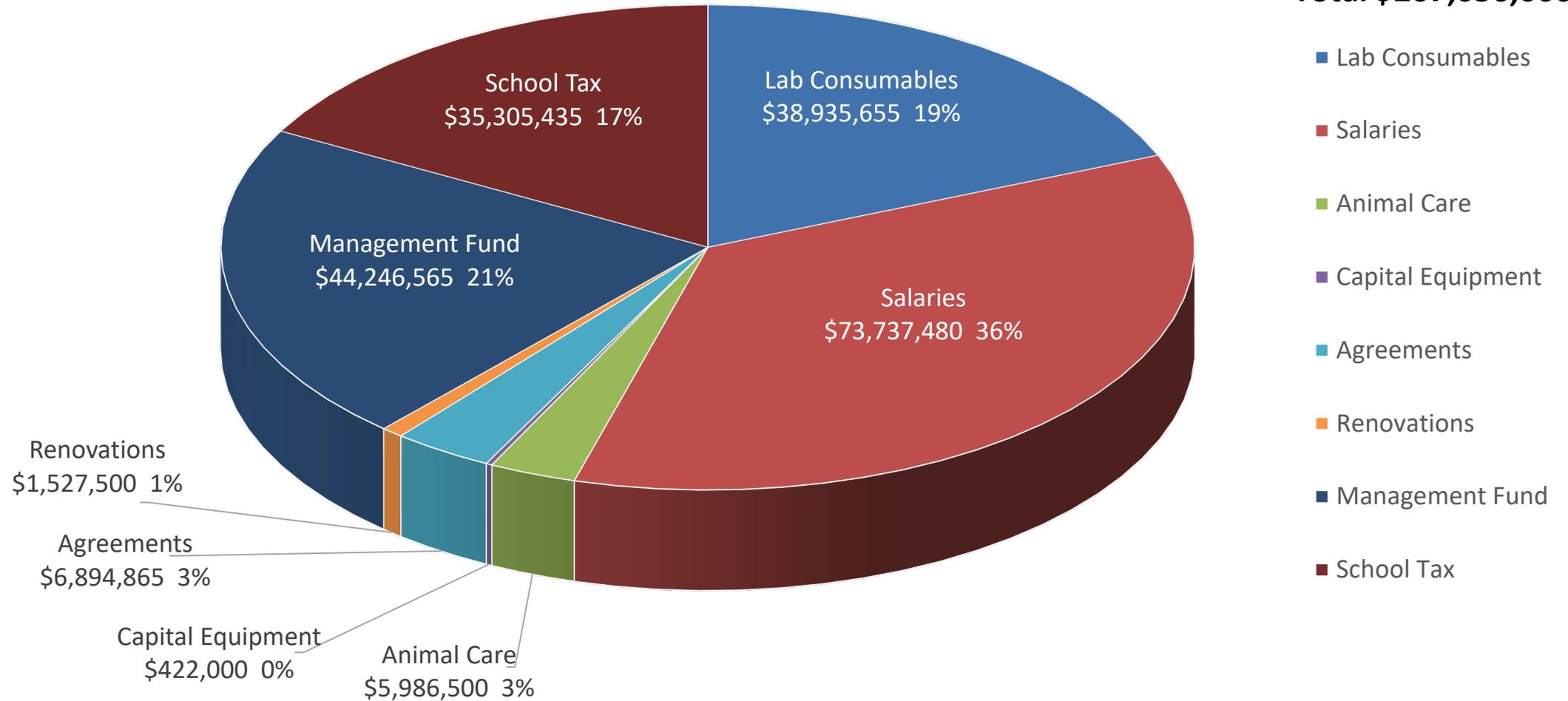


NICHD Intramural Program FY2020 Allocations



NICHD DIR Budget FY21 Estimate

Total \$207,056,000



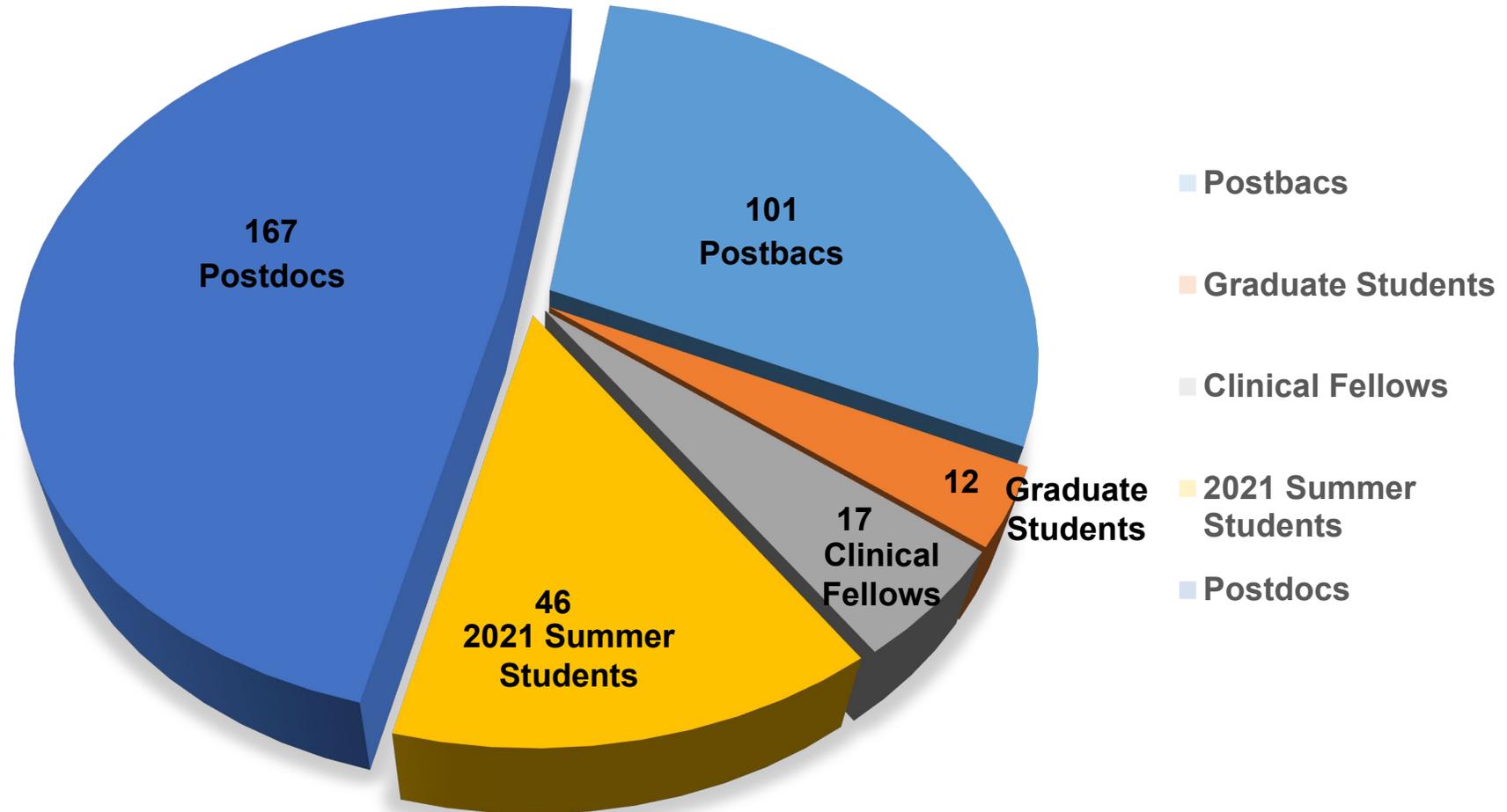
NICHD DIR Personnel Trends: FY2017-2021

	FY2018	FY2019	FY2020	FY2021
FTEs	304	296	284	279
Non-FTEs	614	610	597	554
TOTAL	918	906	881	833

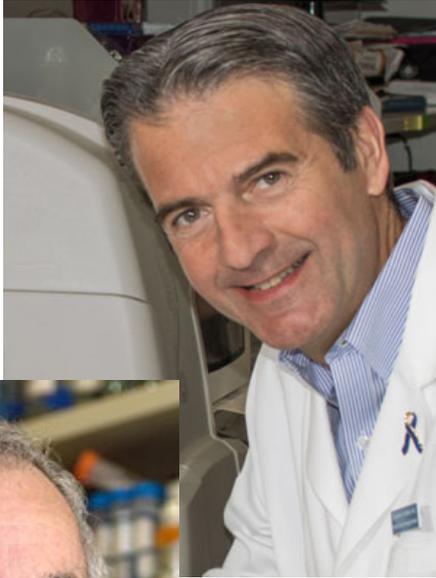


NICHD Intramural Trainee Numbers

As of April 2021, 297 current total



Departures



Dr. Constantine Stratakis

Head, Section on Endocrinology and Genetics

- Retired February 28, 2021
- Dr. Stratakis is now Head, Human Genetics & Precision Medicine, Gene Regulation & Epigenetics Department, Institute for Molecular Biology & Biotechnology (IMBB), Foundation for Research & Technology Hellas (FORTH), Heraklion, Crete, Greece
- His laboratory will phase out over the next year.

Dr. Charles "Mike" Cashel

Head, Section on Molecular Regulation

- Retired July 2, 2021, after 58 years of federal service
- As a PhD student, Dr. Cashel discovered (p)ppGpp (guanosine penta and guanosine tetra-phosphate) a small molecule that regulates a substantial fraction of the proteins in *E. coli* during multiple stress conditions. He spent his career studying ppGpp and related molecules, uncovering pathways regulated by these molecules, probing molecular interactions between ppGpp and RNA polymerase, studying ppGpp synthesis and turnover, and delineating the genetics of the players in ppGpp regulation.





Staff Changes: New Deputy Clinical Director

Laverne Mensah, MD, FACOG, FACS, FASCO

- Started December 10, 2020 as NICHD's first Deputy Clinical Director
- Board certified in Obstetrics and Gynecology
- Considered one of the innovators in gynecologic robotic minimally invasive surgery
- Dr. Mensah brings expertise in program development, implementation, and evaluation as well as unique operational and regulatory clinical research experience.



DIR Faculty Recruitments

- DIR established two priorities for the 2020-2021 search:
 - Developmental Biology
 - Physician Scientist
- Running targeted ads through Science, Nature, and targeted journals and societies
- Application review begins in December

**Health and Human Services
National Institutes of Health**
Eunice Kennedy Shriver National Institute of Child Health and Human Development

TENURE TRACK TRANSLATIONAL INVESTIGATOR POSITION

The Intramural Research Program of the *Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)* is looking to recruit a tenure-track scientist to develop an independent combined translational and clinical research program.

We are searching for candidates who perform innovative and rigorous research in the fields of developmental or cell biology. Successful candidates will apply innovative approaches to address any fundamental question that furthers understanding of the molecular, cellular, and structural basis of development.



**Tenure-Track Position in Developmental Biology
in the *Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)***

The *Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)*, National Institutes of Health (NIH) is recruiting a tenure-track investigator to join the faculty of the Intramural Research Program with a potential start date of Fall 2021.

We are searching for candidates who perform innovative and rigorous research in the fields of developmental or cell biology. Successful candidates will apply innovative approaches to address any fundamental question that furthers understanding of the molecular, cellular, and structural basis of development.

The Intramural Research Program uses a variety of model systems to study fundamental cell biology, basic mechanisms of development, diseases that result from developmental processes, and the translation of basic findings into clinical treatments (see <http://www.nichd.nih.gov/about/org/dir/Pages/index.aspx>). The successful applicant would join our collaborative and interactive faculty of 53 tenured investigators and 7 junior tenure-track investigators on the NIH main campus in Bethesda, MD and have access to NICHD's stellar core facilities, including bioinformatics, biological imaging, molecular genomics, mouse, and zebrafish facilities. Additionally, the NICHD Intramural Research Program offers many unique opportunities for investigators:



NIH Earl Stadtman Investigator Program

- Annual search open to all doctoral-level, biomedical and behavioral researchers interested in NIH Intramural tenure-track positions
- Searching for researchers studying important problems in innovative ways
- Show us your best ideas and we will see if we can find a place for you
- Accepting applications each August and September
- For details see <http://irp.nih.gov>



Recruitments: Tenure-Track Investigators



Katherine Rogers, PhD
Investigator, Unit on Developmental Signaling

Started July 6, 2021

My goal is to understand how signaling pathways coordinate embryogenesis. Specifically, how do signaling molecules travel to target cells, how are they interpreted once they arrive, and how do a handful of key signaling pathways work together to pattern complex bodies? My lab will use molecular optogenetic approaches together with the microscopy-friendly zebrafish embryo to directly test key hypotheses and develop new patterning models.



Sarah Sheppard, MD, PhD
Investigator

Starting: fall 2021

My research centers on the genetics and potential tailored therapeutics for individuals with congenital lymphatic malformation syndromes (CLMs). CLMs are devastating, debilitating, life threatening diseases with serious lack of molecular etiologies and severely limited treatment options. The goals of my research are to improve molecular diagnostic yield and discover treatments for individuals with CLMs with the premise that the underlying molecular etiology of the CLMs will allow for a precision medicine approach to identify targeted therapy.



The NIH Distinguished Scholars Program (DSP)

- The DSP aims to build a more inclusive community within the NIH IRP by reducing the barriers to the recruitment and success of principal investigators from groups underrepresented in biomedical research.
- The program intends to recruit a cohort of up to 15 investigators from diverse backgrounds each year and to provide the investigators with mentoring and other professional development activities that foster research and career success.
- Selection for the program is competitive and is prestigious recognition of outstanding accomplishments both in scientific research and in promoting diversity and inclusion.



Assistant Clinical Investigator (ACI) Program

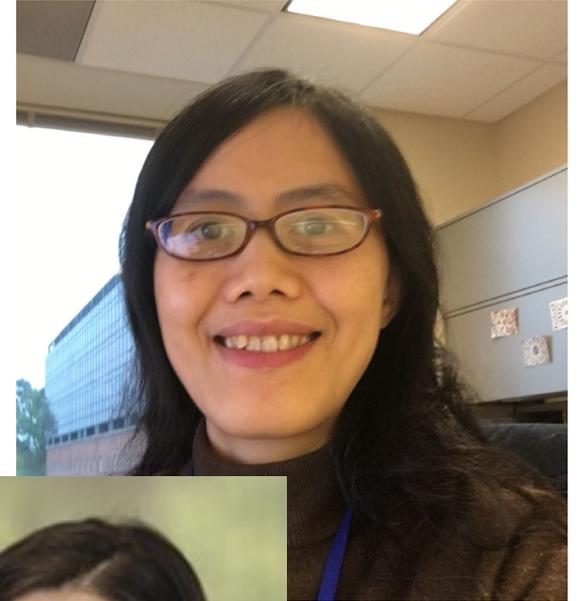
- Goal: Recruit Assistant Clinical Investigators (ACI) engaged in both clinical and basic science that have the potential to become competitive for tenure-track position in NICHD or elsewhere within three years.
 - FY21: Two positions
 - FY22: Two positions
- Areas of Interest, Subdiscipline agnostic
 - Pediatrics
 - Reproductive/Women's Health
- Program Improvements:
 - Broaden the field: Subdiscipline agnostic
 - Competitive salary
 - Better resourcing
 - Structured mentorship, with both basic and clinical primary mentors



Recruitments: Assistant Clinical Investigators

An Dang Do, MD

Dr. Dang Do will investigate the regulation of cellular integrated stress response as a mechanism for variable phenotypic expressions and a potential therapeutic approach for relevant human diseases.



Christina Tatsi, MD

Dr. Tatsi aims to optimize the care and management of patients with sellar/suprasellar tumors with the focus on prevention/early treatment of complications and novel therapeutic approaches for resistant tumors.



NICHD DIR Honors & Awards

Joan Marini, MD, PhD

Elected to the Association of American Physicians

Peter Basser, PhD

Awarded the 2021 Eduard Rhein Stiftung Technology Award from the Eduard Rhein Foundation of Germany along with Dr. Denis Le Bihan *“for the development of MRI diffusion tensor imaging, which is used for surgery and radiation planning, for research into neurological diseases associated with white matter changes, and for reconstruction of neural pathways in the brain.”*

Karel Pacak, MD, DSc, PhD

Awarded the Endocrine Society’s Outstanding Clinical Investigator Award

Elected as a member of the Czech Medical Academy



DIPHR Director Update



- Dr. Germaine M. Buck Louis, PhD stepped down in September 2017 to serve as Dean of the College of Health and Human Services, George Mason University
- Dr. Constantine Stratakis served as Acting Director, DIPHR from October 2017-February 2020
- Dr. Una Grewal appointed Interim Director in February 2020, following Dr. Stratakis stepping down as Scientific Director.
- Recruitment of the new Director was pending the outcome of NICHD's Strategic Planning and is now underway.



DIPHR Recruitments: Tenure-Track Investigators

Bobby Cheon, PhD
Investigator, Social and Behavioral Science Branch

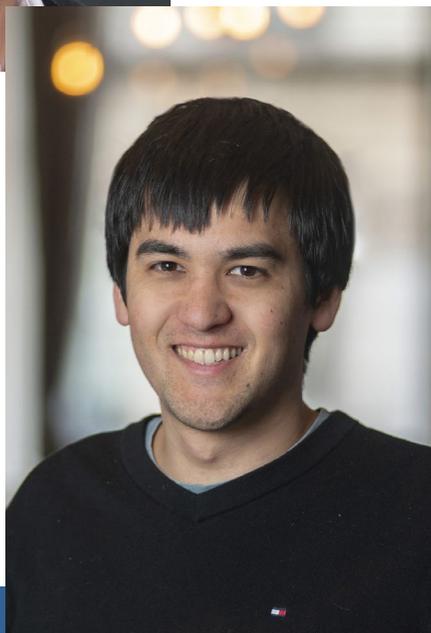
Started August 1, 2021

Dr. Cheon is an experimental social psychologist who investigates psychosocial influences on human appetite, food preferences, and eating behavior. His research interests include the influence of socioeconomic insecurity on appetite, how cultural variations in psychological processes contribute to cultural diversity in food-related cognitions, and psychological mechanisms that contribute to disparities (e.g., intergroup bias and discrimination).

James Morton, PhD
Investigator, Biostatistics and Bioinformatics Branch

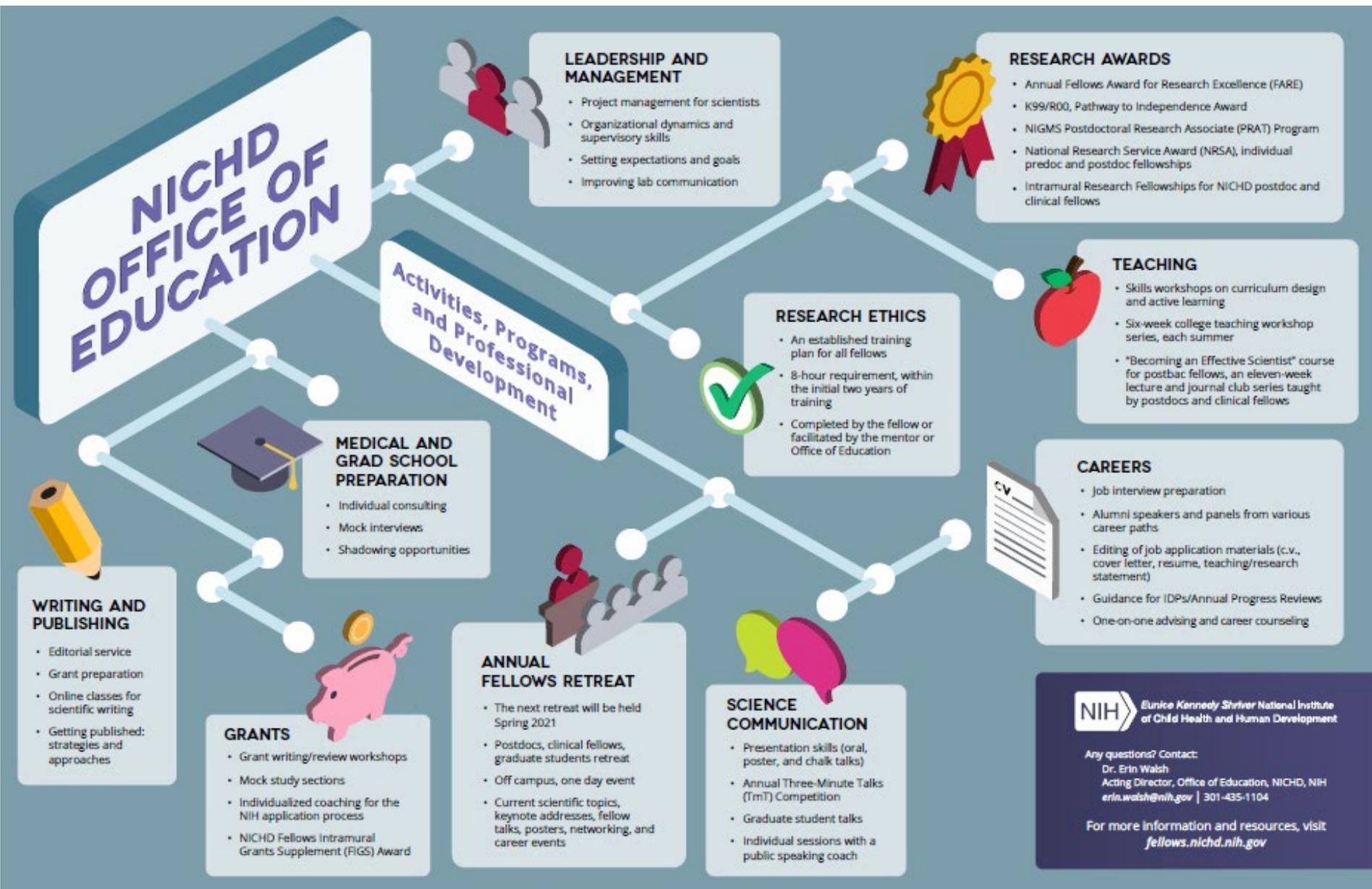
Proposed Start Date: January 30, 2022

Dr. Morton is interested in machine learning and applied statistical modeling with applications to microbial ecology and evolution with special interests in microbial metabolism and functional genomics.





Education Updates



Office of Education: Key Activities

Public Speaking & Teaching: job talks, individual coaching, elevator speeches, syllabus & curriculum development with Univ. of Maryland (college teaching workshop summer series); graduate student talks (GST) during the PI monthly meetings

Grantsmanship & Publishing: annual grants workshop (full day); guidance with NIH submissions (several K99 and K22, help with NRSAs), mock study section workshop, three-week grant writing course

Careers: job interview preparation, networking, editing of job application materials, individualized guidance of IDPs/Annual Progress Reviews, exploration sessions for various career paths, preparing for industry success

COVID-19 / Virtual Programming: Virtual platforms for one-on-one advising and career counseling, and all professional development programming and grants submissions.

- **Two-day grant writing workshop (November 2020)**
- **SciPhd Business of Science Bootcamp Webinar Series (March 2021)**
- **Postbac Seminar Series: Career Exploration, Professional Development, & Graduate/Medical School Application Prep (Ongoing Since January 2021)**
- **2021 Three-minute-Talk Program: Science Communication Competition (February – June 2021)**



NICHD Intramural Diversity Initiatives

Supports the DIR commitment to recruit, train, support and sustain a diverse group of talented young scientists including those from groups traditionally underrepresented in science

➤ **NICHD Developing Talent Scholars Program**

(Postbacs/Grad Students):

- **Two new scholars for 2021**
 - **Postbac Tiara Tillis (Storz Lab)**
 - **Postbac Andrea Munoz (Porter Lab)**
- Alumni group of 18 - many of them are currently in professional school, MD and PhD programs

➤ **Fellows Recruitment Incentive Award** (Postdocs):

- **Mohamed Mohamed (Macfarlan Lab) for 2021**
- Aisha Burton (Storz Lab) for 2020
- Velencia Witherspoon (Basser Lab, started in 2019)
- Alejandra Garcia (Stopfer Lab, started in Nov. 2017)

➤ **Summer Trainees:**

- Centrally-funded slots for students from groups traditionally underrepresented in science or from disadvantaged backgrounds
- 10 filled for 2019 (20% of our summer population)
- Program canceled in 2020 but will resume this summer virtually



Howard University College of Arts and Sciences Collaboration

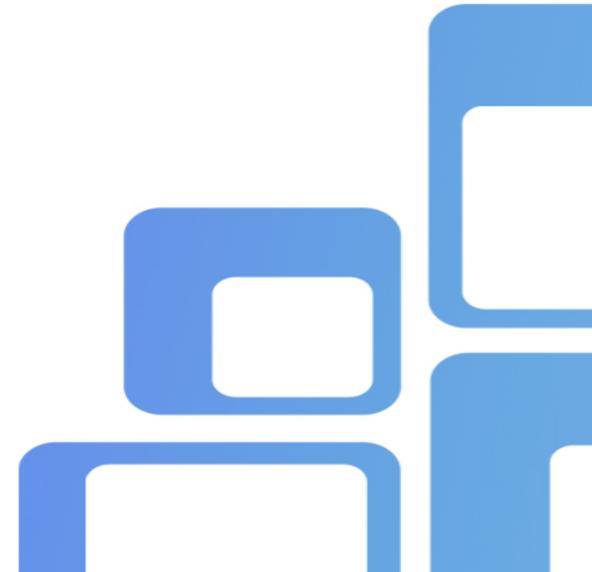


Biology Secondary Honors Program (began Spring 2021 Semester)

- Two-year program that matches students with NICHD PIs beginning in their sophomore year through their senior year.
- Students and their mentors work on developing and executing a research project
- We have 4 current mentor pairings:
 - Morgan Ford with Dr. Ajay Chitnis
 - Ayanfeoluwa Kolawole with Dr. Henry Levin
 - Alexa Moore with Dr. Jack Yanovski
 - Katelyn Robertson with Dr. Harold Burgess
- New cycle of pairings scheduled for Spring 2022 semester

Career Planning and Professional Development Seminar Series: Exploring the MD, PhD, and MD-PhD Paths (Spring Semester Course)

- For undergraduates in the department of biology with an interest in research/medicine to give them exposure to medical and research careers and provide guidance on how to proceed with medical/graduate school admissions processes
- Lead by Dr. Fowler in the NICHD Office of Education and Dr. Yvette Pittman, the director of the Office of Education at NINDS
- First session took place this spring from March 4th- April 22nd with 12 students
- Next session will begin in the Spring of 2022 with up to 25 students





Competitive Awards

Opportunities for Collaborations at the NIH Clinical Center (U-01)



- Goal: to support collaborative research projects aligned with NIH efforts to enhance the translation of basic biological discoveries into clinical applications that improve health
- Up to \$500K/year x 4 years, renewable
- Teams must have one extramural and one intramural co-PI
- Some of the work must be done at the CC

<https://clinicalcenter.nih.gov/translational-research-resources/U01/index.html>

NIH Competitive Awards Office of AIDS Research (OAR) Innovation Fund

- Aim to redirect NIH HIV/AIDS research funds to the highest priority, most meritorious, research that use innovative approaches to address significant and high priority scientific opportunities in NIH HIV/AIDS research.
- One year of funding through OAR/NICHD Office of the Director

PI	Project Title	FY21 Funding	Supported by
Anirban Banerjee	Functional and Mechanistic dissection of palmitoylation of human SERINC3 and SERINC5	\$158,825	NICHD
Henry Levin	To determine the chromatin specificity of HIV-1 integration	\$110,000	OAR
Tracey Rouault	Fe-S clusters: Potential undiscovered cofactors that modulate viral pathogenesis in HIV	\$86,200	NICHD
Doreen Matthies Alexander Sodt Joshua Zimmerberg	Basic Virology of HIV Entry and Exit from Immune Cells	\$902,221	NICHD



NIH Center on Compulsive Behaviors (CCB) Fellowship

- The CCB's mission is to understand the neurobiology of complex behaviors that result in these compulsive and repetitive actions, and to develop and test new therapeutics aimed at alleviating or reversing these behaviors. Research focuses span a wide range of topics related to compulsive behaviors, that include synaptic mechanisms driving compulsive drug taking, neural circuitry that mediates relapse, and behavioral paradigms that promote compulsive overeating.
- This Fellowship provides awards for postdoctoral fellows interested in studying topics aligned with the CCB's mission and with a strong desire for interactions and collaborations with the labs in the IRP.
- NICHD had 4 Awardees in 2021:
 - Adam Caccavano (McBain lab)
 - Wen-Chieh Hsieh (Serpe lab)
 - Thien Nguyen (Gandjbakhche lab)
 - Geoffrey Vargish (McBain lab)



NICHD Scientific Director's Awards

- Now in its fourth cycle. Provides two years of funding:
 - FY14-15, \$3M
 - FY16-17, \$2M, 8 of 25 applications funded
 - FY18-19, \$3.2M, 12 of 26 applications funded
 - FY20-21, \$2.5M, 11 of 19 applications funded
- Established pursuant to a recommendation in the July 2013 Blue Ribbon Panel Report to create competitive research opportunities with a collaborative focus among investigators, and to support new research ideas.
- Uses a modified application based on an R-21, and an expedited administrative review process with the support of NICHD's Division of Extramural Research and a panel of NIH extramural reviewers.



NICHD Scientific Director's Awards FY20-21

PI(s)	Collaborators	Project Title
Tamas Balla	Tracey Rouault, Richard Youle (NINDS)	The role of mitochondrial lipids in the functional organization of mitochondria dynamics and energetics
Leonid Chernomordik Leonid Margolis		Cell fusion in placenta formation in healthy and complicated pregnancies
Ajay Chitnis Katie Drerup	Greg Palardy	Mechanistic analyses of the neural deficits in KAND pathology
David Clark	Rich Maraia, Steve Coon	Investigating mechanisms of transcription through chromatin by RNA polymerases I, II and III using long-read sequencing
Mary Dasso	Mihaela Serpe, Yixian Zheng (Carnegie Inst)	Dissecting the Genetic Program of Tissue Aging
Claire Le Pichon	Katie Drerup, Juan Bonifacino, Vincent Schram	Organelle dynamics during axon regeneration after injury in human sensory neurons analyzed using advanced microscopy techniques
Paul Love	Karl Pfeifer, Yasmin Belkaid (NIAID), Gregoire Altan-Bonnet (NCI)	An unexpected inhibitory role for T cell antigen receptor (TCR) signaling motifs (ITAMs) in TCR signaling
Chris McBain Constantine Stratakis	Tim Petros	PKA RII α mediated regulation of medial habenula neuron function
Tim Petros Pedro Rocha	Ryan Dale, Soohyun Lee (NIMH)	Exploring how the epigenetic landscape regulates GABAergic interneuron neurogenesis
Forbes Porter	Claire Le Pichon, Juan Bonifacino, Michael Ward, Ryan Dale, Steve Coon	Modeling of neuronal ceroid lipofuscinosis 3 disease in i3neurons to investigate neuronal pathology and CLN3 function
Bruce Tromberg	Amir Gandjbakhche, Ashura Buckley	Development of a Wearable Point of Care Monitoring Device for Pediatric Obstructive Sleep Apnea

NICHD Young Investigator Awards

NEW! Launched in FY21 as an NICHD OD, OSD & OE Initiative

- **Internal funding opportunity aimed at promoting the research careers of early-stage intramural researchers in the basic, clinical, and translational sciences.**
- Modeled after Tufts University School of Medicine's Zucker Grant Program (Blanchard et al., 2019)
 - Between 2000 and 2016, \$377,050 was awarded to 142 recipients (early-stage, female investigators)
 - Funds were primarily used for development of pilot, preliminary research projects
 - 2016 Survey: awards promoted extramural funding success (60% success rate), mentorship, and boosted confidence and morale at a critical time in their careers

JOURNAL OF WOMEN'S HEALTH
Volume 28, Number 12, 2019
© Mary Ann Liebert, Inc.
DOI: 10.1089/jwh.2018.7642

The Impact of an Institutional Grant Program on the Economic, Social, and Cultural Capital of Women Researchers

Rebecca D. Blanchard, PhD,¹ Reva Kleppel, MSW, MPH,¹ and Diana W. Bianchi, MD²



NICHD Young Investigator Awards

NEW! Launched in FY21 as an NICHD OD, OSD & OE Initiative

- **Internal funding opportunity aimed at promoting the research careers of early-stage intramural researchers in the basic, clinical, and translational sciences.**
- NICHD tenure-track investigators, postdoctoral fellows, research fellows, and clinical fellows are eligible
- Individual awards of up to \$25,000 for outstanding, original research proposals, to support one-year research projects.
- Up to \$10,000 awarded individually to applications for proposed scientific meeting participation, and/or training that supports scientific and/or professional development.
- 50 applications received for FY21

Research Area	Applications Received	Total Funds Awarded	Number of Awardees
Clinical	11	\$91,096	5
Basic Science	36	\$281,522	14
Epidemiology	3	\$17,356	3





QUESTIONS?

***Fertility Preservation in
Children at Risk for
Gonadal Dysfunction***

Veronica Gomez-Lobo, M.D.

Senior Clinician and Director, Pediatric
and Adolescent Gynecology Training
Program

