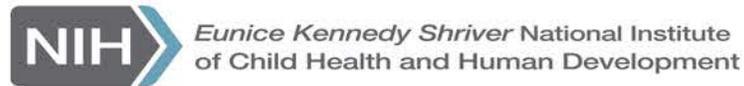


*Eunice Kennedy Shriver*  
National Institute of Child Health & Human Development

Constantine A. Stratakis, MD, D(med)Sci  
Scientific Director

June 7, 2019 NICHD BSC Meeting  
OPEN SESSION





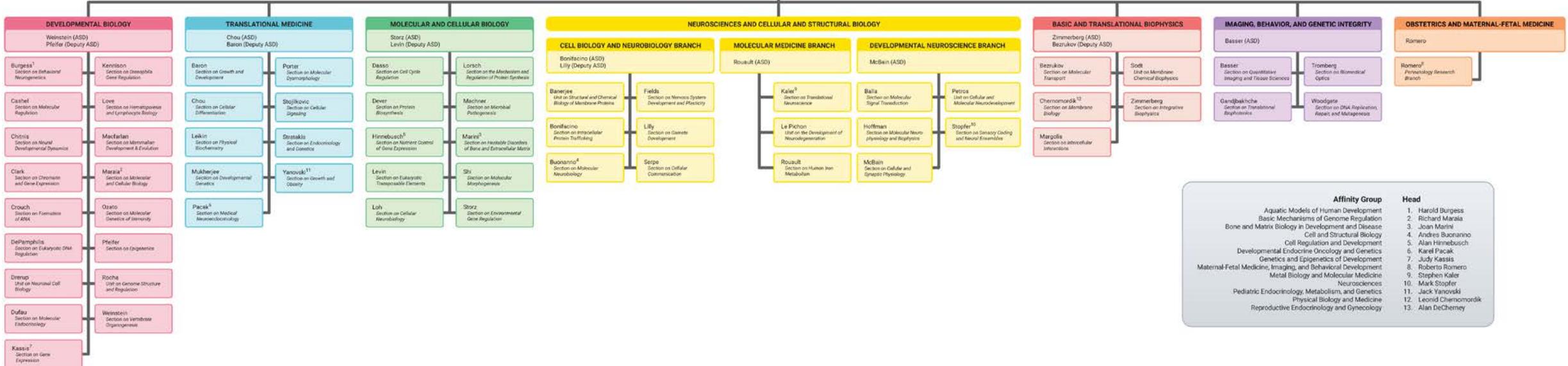
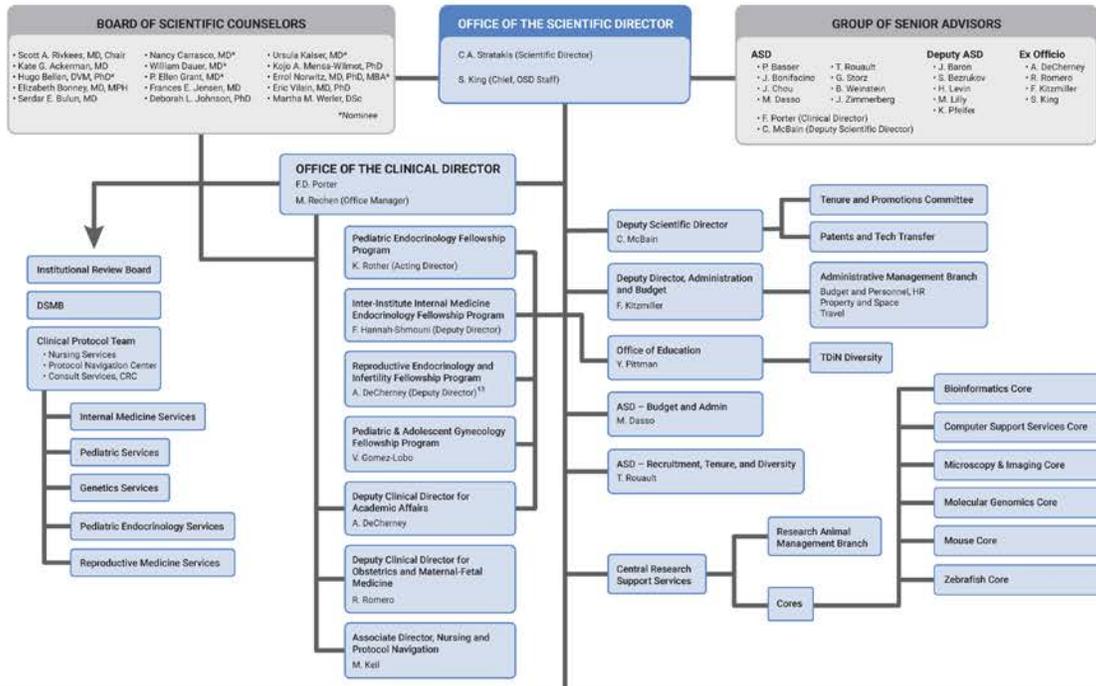
# Who we are: NICHD DIR in numbers

- Total personnel of ~900 employees
  - 60 PIs (55 Tenured; 5 Tenure-Track)
  - 57 Staff Scientists
  - 303 trainees (graduate, postbac, postdoctoral and clinical fellows)
- 13 scientifically based affinity groups (from developmental & cell biology to physics, neurosciences, endocrinology & mol. genetics, pre/perinatal care, reproduction & infertility)
- >70 Clinical Protocols
  - ~2/3 at the NIH Clinical Center
- Accredited medical training programs:
  - Pediatric Endocrinology
  - Adult Endocrinology
  - Reproductive Endocrinology and Infertility + Pediatric Gynecology
  - Medical Genetics (with NHGRI)
  - Perinatal Research and Obstetrics (Wayne State Univ/PRB)



# Division of Intramural Research

Updated July 2019



# Affinity Group Membership

## Aquatic Models of Human Development

**Burgess, Harold [Head]**

Chitnis, Ajay

Drerup, Katie

Feldman, Ben (Core)

Weinstein, Brant

## Basic Mechanisms of Genome Regulation

**Maraia, Richard [Head]**

Cashel, Mike

Clark, David

Crouch, Bob

Depamphilis, Melvin

Woodgate, Roger

## Bone & Matrix Biology in Development & Disease

**Marini, Joan [Head]**

Leikin, Sergey

## Cell Regulation & Development

**Hinnebusch, Alan [Head]**

Dasso, Mary

Dever, Tom

Dufau, Maria

Levin, Henry

Lorsch, Jon (NIGMS)

Serpe, Mihaela

Shi, Yun-Bo

## Cell & Structural Biology

**Buonanno, Andres [Head]**

Banerjee, Anirban

Bonifacino, Juan

Lilly, Mary

Machner, Matthias

Storz, Gisela

## Developmental Endocrine Oncology & Genetics

**Pacak, Karel [Head]**

Broadney, Miranda (Training Program)

Stojilkovic, Stanko

Stratakis, Constantine

## Genetics & Epigenetics of Development

**Kassis, Judy [Head]**

Kennison, Jim

Love, Paul

Macfarlan, Todd

Ozato, Keiko

Pfeifer, Karl

Rocha, Pedro

## Physical Biology & Medicine

**Chernomordik, Leonid [Head]**

Bezrukov, Sergey

Sodt, Alex

Zimmerberg, Joshua

## Reproductive Endocrinology & Gynecology

**Decherney, Alan [Head]**

## Maternal-Fetal Medicine, Imaging, & Behavioral Development

**Romero, Roberto [Head]**

Basser, Peter

Gandjbakhche, Amir

Margolis, Leonid

## Metals Biology & Molecular Medicine

**Kaler, Stephen [Head]**

Le Pichon, Claire

Rouault, Tracey

## Neurosciences

**Stopfer, Mark [Head]**

Balla, Tamas

Fields, Doug

Hoffman, Dax

Loh, Y Peng

McBain, Chris

Petros, Tim

## Pediatric Endocrinology, Metabolism, & Genetics

**Yanovski, Jack [Head]**

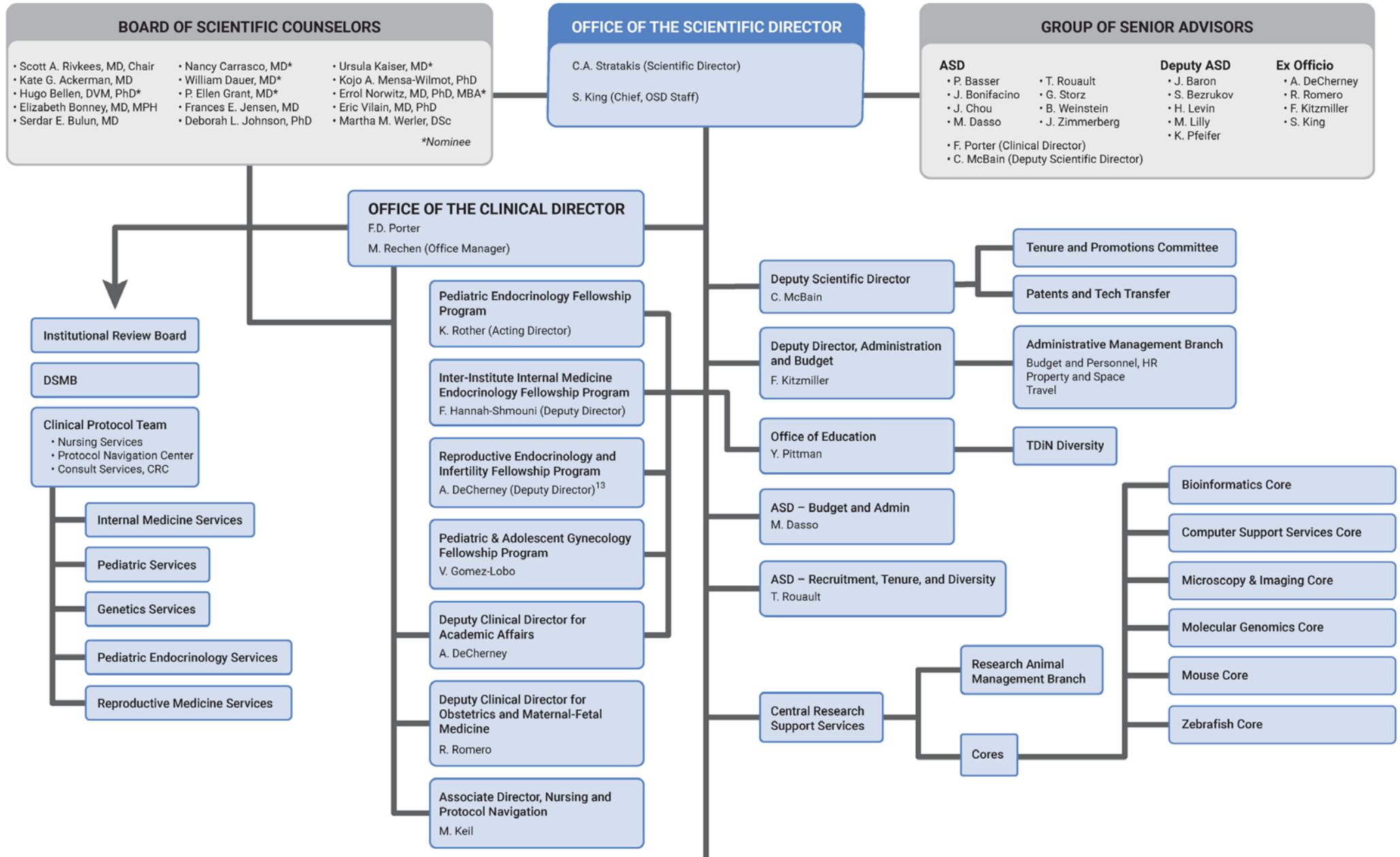
Baron, Jeff

Chou, Janice

Merke, Deborah (CC)

Mukherjee, Anil

Porter, Forbes





# NICHD Board of Scientific Counselors

<b>Scott Rivkees, MD (Chair)</b>	Univ of Florida	Pediatric Endocrinology
<b>Kate Ackerman, MD</b>	Univ of Rochester	Dev Bio/Genetics/Pediatrics
<b>Elizabeth Bonney, MD, MPH</b>	Univ of Vermont	Immunobiology/Mol Bio/OBGyn
<b>Serdar Bulun, MD</b>	Northwestern	Obstetrics/Gynecology
<b>William Dauer, MD</b>	Univ of Michigan	Rare Disease/Genetics/Neuro
<b>Frances Jensen, MD</b>	UPenn	Neuroscience
<b>Deborah Johnson, PhD</b>	Baylor	Molecular & Cell Biology
<b>Kojo Mensa-Wilmot, PhD</b>	Univ of Georgia	Cell Biology
<b>Yoel Sadovsky, MD</b>	Magee-Womens/Pitt	Rep Bio/Obstetrics/Gynecology
<b>Susan Taylor, PhD</b>	UCSD	Struc Bio/Mol Biochem
<b>Eric Vilain, MD, PhD</b>	Children's National	Mol & Human Genetics
<b>Martha Werler, DSc</b>	Boston	Epidemiology



# NICHD Board of Scientific Counselors

## Hugo Bellen, DVM, PhD

**Expertise: Genetics, Neuroscience, Model Organisms**

Investigator, Howard Hughes Medical Institute

Professor, Departments of Molecular and Human Genetics and Neuroscience, Baylor College of Medicine



## Nancy Carrasco, MD

**Expertise: Molecular Medicine, Pharmacology, & Physiology**

C.N.H. Long Professor of Cellular & Molecular Physiology

Yale School of Medicine



# NICHD Board of Scientific Counselors

## **P. Ellen Grant, MD**

**Expertise: Newborn Medicine, Radiology**

Director, Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children's Hospital

Professor of Radiology and Pediatrics, Harvard Medical School



## **Ursula Kaiser, MD**

**Expertise: Endocrinology, Diabetes & Hypertension**

Chief, Division of Endocrinology, Diabetes, & Hypertension

Co-Director, Brigham Research Institute

Brigham and Women's Hospital

Professor of Medicine, Harvard Medical School



# NICHD Board of Scientific Counselors

## **Errol Norwitz, MD, PhD, MBA**

**Expertise: Obstetrics & Gynecology**

Louis E. Phaneuf Professor of Obstetrics and Gynecology

Chairman, Department of Obstetrics and Gynecology,  
Tufts University School of Medicine

Chief Scientific Officer, Tufts Medical Center

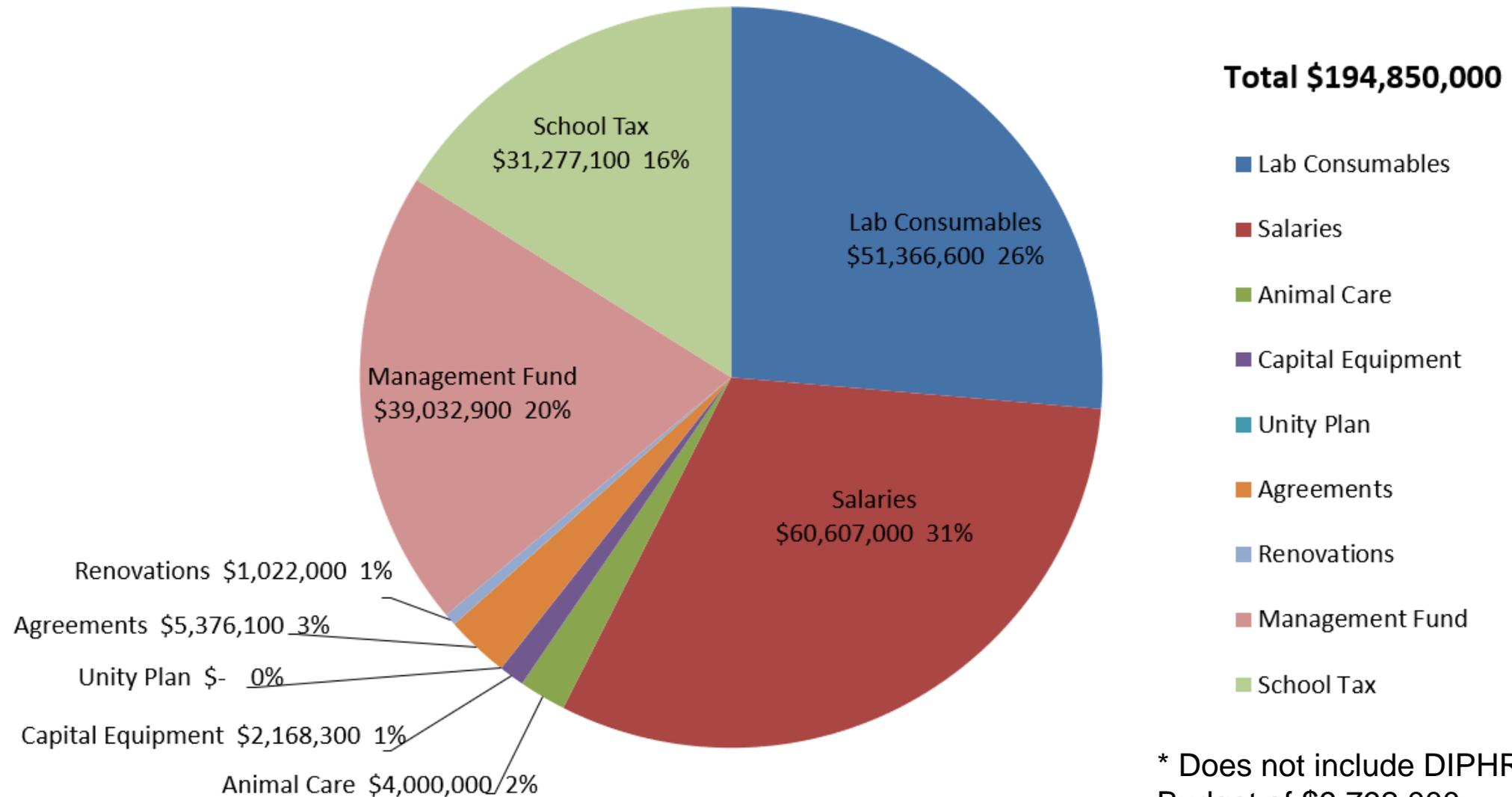




# Budget & Personnel



# NICHD DIR Budget: FY2019 Estimate



\* Does not include DIPHR's Budget of \$9,792,000



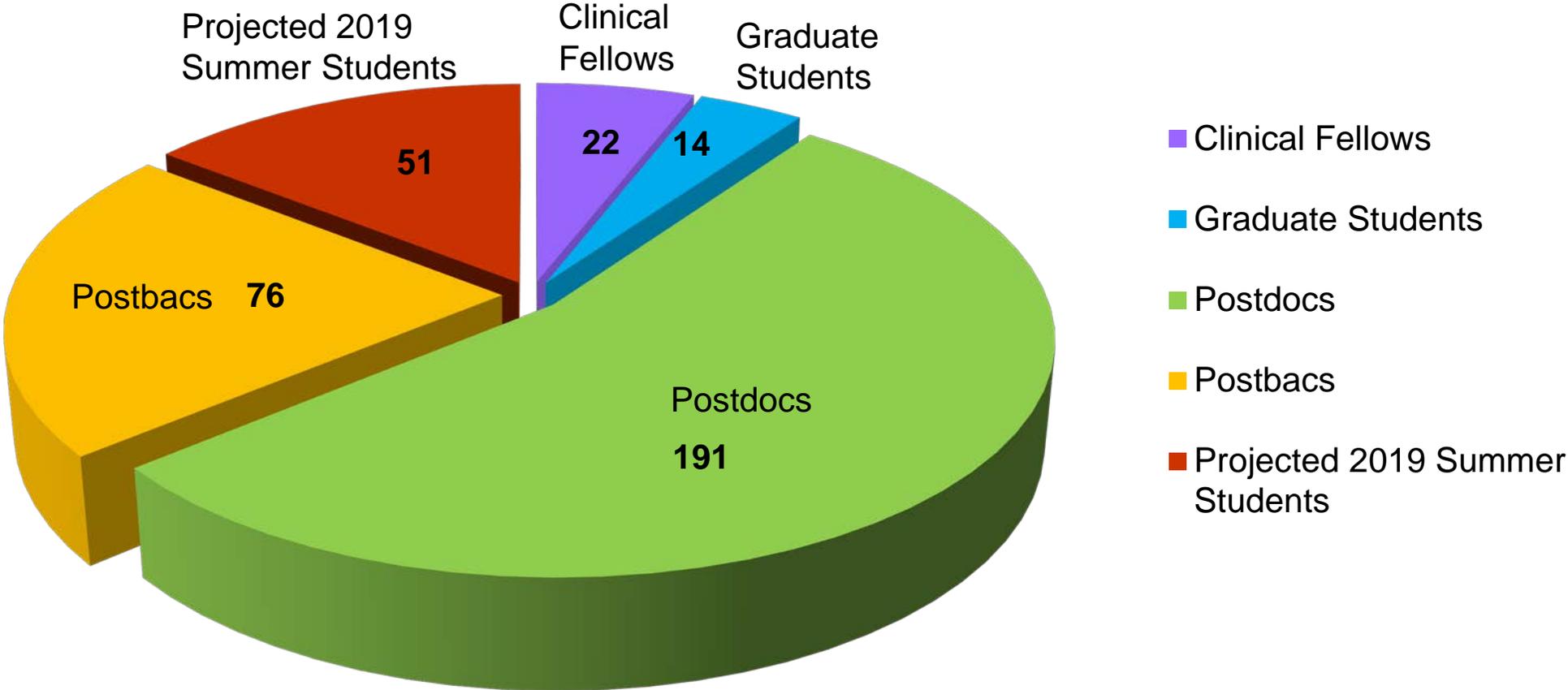
## NICHD DIR Personnel Trends: FY2016-2019

	<b>FY2016</b>	<b>FY2017</b>	<b>FY2018</b>	<b>FY2019</b>
<b>FTEs</b>	308	307	304	296
<b>Non-FTEs</b>	655	607	614	610
<b>TOTAL</b>	963	914	918	906



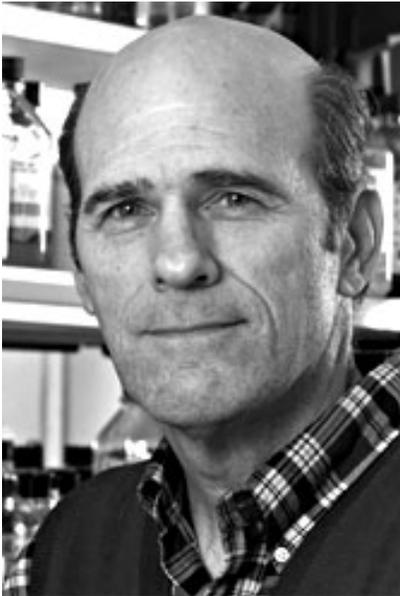
# NICHD Intramural Trainee Numbers

As of April 2019, 354 total





# Retirements & Departures



## **Bruce Howard, MD**

Senior Investigator, Developmental  
Biology Group

Retired June 30, 2019



# Retirements & Departures

## **Bruce Simons-Morton, EdD, MPH**

Retired July 31, 2019

Senior Investigator, Social & Health Behavior Branch

1997-2015 Chief of the Social and Behavioral Sciences  
Branch (previously the Prevention Research Branch)

2015-2017 NICHD Associate Director for Prevention





# Pediatric Endocrinology Training Program

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**Miranda Broadney, MD, MPH**

Stepped down as Interim Director July 2019

Now: Assistant Professor of Pediatric  
Endocrinology, University of Maryland

**Kristina Rother, MD, MHSc**

Chief, Section on Pediatric Diabetes &  
Metabolism, NIDDK

Started July 2019 as:

Interim Director, Pediatric Endocrinology  
Inter-Institute Training Program



# Pediatric Endocrinology Training Program



**Christina Tatsi, MD, PhD**

Staff Clinician, NICHD

Recruited September 2019 as:

Associate Director,  
Pediatric Endocrinology  
Inter-Institute Training  
Program

# New Recruitment

## **Veronica Gomez-Lobo, MD**

Started July 1, 2019 as:

- Senior Clinician & Director, Pediatric & Adolescent Gynecology Program, NICHD





# New Recruitment

## **Fady Hannah-Shmouni, MD**

- Started June 24, 2019 as:
  - Staff Clinician & Co-Chief, Internal Medicine, NICHD
  - Associate Program Director, Inter-Institute Endocrinology Training Program
- Graduated from the NIH Inter-Institute Endocrinology Training Program in 2017

# New Recruitment

## **Marissa Lightbourne, MD**

- Started July 1, 2019 as:
  - Staff Clinician & Co-Chief, Internal Medicine, NICHD
- Graduated from the Pediatric Endocrinology Training Program in June 2019





# Pediatric Endocrinology Training Program Graduation

June 14, 2019

Graduates: Marissa Lightbourne, MD, MPH  
Hilal Sekizkardes, MD  
Ahmed Torky, MD

Guest Speaker: Dr. Michael Levine, MD, CHOP



## Reproductive Endocrinology & Infertility Training Program Graduation

June 1, 2019

Pictured (L to R): Micah Hill (REI Fellowship Director), Justin Pilgrim (Tripler ARMY Hospital), Nicole Doyle (Shady Grove Fertility), Toral Parikh (private practice: Houston TX), Constantine Stratakis (Scientific Director, NICHD), Alan DeCherney (REI Program Director, NICHD)



# DIR Honors

## **Mary Dasso, PhD**

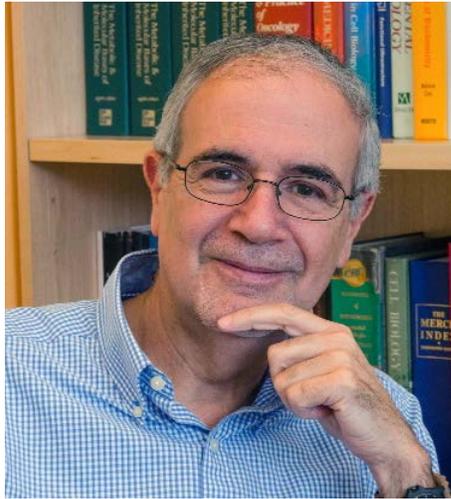
- 2018 NICHD Mentor Award
- Elected to AAAS



## **Meg Keil, PhD**

- Selected for Fellowship in the American Academy of Nursing





# DIR Honors

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## **Juan Bonifacino, PhD**

- Elected American Society for Cell Biology (ASCB) Fellow

## **Forbes Porter, MD, PhD**

- Elected to the Association for American Physicians (AAP)



# DIR Honors

## **Jack Yanovski, MD, PhD**

- Received the Obesity Society's 2019 Thomas A. Wadden Award for Distinguished Mentorship

# Recently Tenured DIR & DIPHR

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## **Todd Macfarlan, PhD**

Senior Investigator and Head,  
Section on Mammalian Development & Evolution, DIR  
Awarded Tenure: October 15, 2018

## **Edwina Yeung, PhD**

Senior Investigator, Epidemiology Branch, DIPHR  
Awarded Tenure: December 14, 2018





# **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>



# NICHD DIR Competitive Awards

## NICHD DIR Director's Awards, FY18

- Two years of funding
  - FY14-15, \$3M
  - FY16-17, \$2M, 8 of 25 applications funded
  - FY18-19, \$3.2M, 12 of 26 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 DIR Director's Awards, FY18-19

PI	Collaborators	Project Title
Banerjee, Anirban	Inglese, James (NCATS); Shi, Lei (NIDA)	A multipronged approach to develop small molecule probes for investigating the physiology and pharmacology of protein palmitoylation
Burgess, Harold Pfeifer, Karl		Characterization of random mono-allelic gene expression in zebrafish
Chernomordik, Leonid Margolis, Leonid		Mechanisms of Zika virus entry into human cervical and placental tissues ex vivo
Clark, David	Burgess, Harold	Autism-Spectrum Disorder-linked Chromatin Remodelers in Brain Development
Crouch, Robert Ozato, Keiko	Mukoyama, Yosuke (NHLBI)	Clearing endogenous nucleic acids in microglia: essential requirement for neuronal development and brain health
Dasso, Mary Serpe, Mihaela	Oliver, Brian (NIDDK)	IRBIT-dependent pathways for control of cell differentiation and tissue homeostasis
Feldman, Benjamin Coon, Steve	Kaler, Stephen; Porter, Forbes; Marini, Joan	Modeling of Disease-Related Missense Mutations in Zebrafish
Levin, Henry Macfarlan, Todd	Nath, Avi (NINDS)	The role of retrotransposons and zinc finger proteins in neural development and neurological diseases
Maraia, Rich	Iben, James	Functional modeling of TRIT1 deficiency alleles toward precision medicine
Marini, Joan	Robey, Pamela (NIDCR); Collins, Michael (NIDCR); Bhattacharyya, Timothy (NIAMS)	Role of MAP2K1 somatic mutations in melorheostosis
Storz, Gisela	Banerjee, Anirban; Luisi, Ben (University of Cambridge)	Modulating drug efflux pumps with small proteins
Yanovski, Jack	Zimmerberg, Joshua; Demidowich, Andrew; Margolis, Leonid	Novel Approaches to quantify and ameliorate the impact of adipose inflammation on insulin resistance



# NIH Competitive Awards - Office of AIDS Research (OAR)

## Strategic Funding

- Aim: to redirect NIH HIV/AIDS research funds to the highest priority, most meritorious, research
- Funding through OAR/NICHD Office of the Director and can be multi-year requests

## Innovation Funding

- Aim: to support innovative, unanticipated or unfunded applications
- Funding through the NICHD Office of the Director, single year only

## Both Strategic & Innovation Fund requests must align with OAR priorities:

- Reducing Incidence of HIV/AIDS
- Next generation of HIV therapies
- Research toward a cure
- HIV-associated comorbidities, coinfections, and complications
- Basic research
- Health disparities
- Training



## OAR Strategic Funding, FY19

PI	Project Title	FY19 Funding
Leonid Chernomordik	TMEM16 scramblase dependence of HIV-1 cell entry	\$120,000 (NICHD)
Leonid Margolis	HIV-1 –Cytokine Complexes and their Immunosuppressive Activity	\$95,000 (NICHD)
Josh Zimmerberg	Membrane Remodeling in Viral Infection, Muscular Dystrophy, Parasite Invasion, and Traumatic Brain Injury	\$950,000 (OAR)



# OAR Innovation Funding, FY19

PI	Project Title	FY19 Funding
Anirban Banerjee	A multipronged approach to investigating the structure and function of SERINC3 and SERINC5	\$179,000 (NICHD)
Henry Levin	The role of mRNA splicing in HIV-1 integration	\$100,000 (NICHD)
Leonid Margolis	Lactobacillus-generated extracellular vesicles (EVs) in HIV-1 transmission to cervico-vaginal tissue ex vivo	\$95,000 (NICHD)



# NICHD DIR Competitive Awards

## Human Placenta Project (HPP) Awards

- Funding through the NICHD Director
- Up to \$150K for 3-5 awards
- To support studies with potential to advance the goals of NICHD's Human Placenta Project. The HPP seeks to improve current methods, and develop new technologies, for real-time monitoring of human placental development and function across pregnancy and to apply these technologies to understand and monitor, in real time, human placental development and function in normal and abnormal pregnancies.



# NICHD HPP Awards, FY19

PI	Project Title	FY19 Funding
Amir Gandjbakhche	Real Time Oximetry of Anterior Placenta Using Self-Calibrating Near Infrared Spectroscopy	\$80,000
Todd Macfarlan	Molecular Genetics Approaches in TSCs to Model Placental Development	\$55,000
Edwina Yeung	Protocol Development for Isolation of Placental Exosomal miRNA from Blood and Urine Samples	\$94,056



# NICHD DIR Competitive Awards

## Zika Virus Research Awards

- Funding through the NICHD Director
- Up to \$150K for 3-5 awards
- To support studies with potential to advance our understanding of Zika virus-related morbidity. Studies are needed to investigate how Zika virus infection affects reproduction, pregnancy, and the developing fetus. Notable is the link of the virus to the increase in cases of microcephaly among newborn babies. Basic and clinical research are needed to address a range of pressing questions.



# NICHD Zika Awards, FY19

PI	Project Title	FY19 Funding
Leonid Chernomordik	The Role and Mechanism of Phospholipid Signaling in Zika Virus Entry into the Cell	\$50,000
Constantine Stratakis	Genetics of Human Susceptibility to Infections and/or Complications of Zika Virus: Variants of the Cyclic AMP-dependent Protein Kinase (PKA) Pathway	\$20,000
Josh Zimmerberg	Three-Dimensional Ultrastructure Study of the Pathology of Congenital Zika Syndrome in Neonatal Chorioamnion and Placenta Using Ultra-Fast Freezing, Freeze-Substitution, Serial Sections, and Focused Ion Beam Scanning Electron Microscopy	\$80,000



## K-99 Awards

- Marina Venero Galanternik, Ph.D. (Weinstein Lab)  
for *“Studying the development and function of meningeal cell populations in the zebrafish brain”*
- Amber Stratman, Ph.D. (Weinstein Lab)  
for *“Analysis of mural cell ontogeny and gene function during vascular development ”*
- Sarah Cohen, Ph.D. (Lippincott-Schwartz Lab)  
for *“Fatty acid trafficking in astrocytes: role of mitochondrial morphology and lipid droplet dynamics”*



# **Diversity & Training Initiatives**



# DIR Diversity Initiatives

*committed to train, support, and sustain a diverse cohort of individuals traditionally underrepresented in science*



## NICHD Developing Talent Scholars Program

(Postbacs/Grad Students): **Three new recruits for 2019**

Alumni group of 14: our three new alumni are starting professional school in the fall with full scholarships; L. Crawford (PhD program at Penn State University), A. Simmons (Cornell Medical School), and O. Bankole (Rush College, Biotechnology Master's)

**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)

**Fellows Recruitment Incentive Award** (Postdocs):  
**Recruited Velencia Witherspoon (Basser Lab, starting July 2019)**

Alejandra Garcia (Stopfer Lab, started in Nov. 2017)  
FRIA alumni: AAAS Science Policy Fellow (Tamara James)





# Three-minute Talks (TmT): Science Communication Training and Awards Program

- Professional training in speech development and presentation delivery
- One-on-one coaching and feedback in a supportive environment
- For finalists: A professionally produced video of your talk for NICHD promotional efforts and your own use, plus travel/training awards
- **Final competition with other participating institutes: NIDCR, NIAMS, NEI, & NHGRI on June 27, 2019**



## Last Year's NICHD Finalists:

Karen Plevock Haase (Dasso)

Larissa Erben (Buonanno)

Lindsey Friend (Serpe)

**Jakob Gutzmann (Hoffman)**

**NIH 3<sup>rd</sup> place winner**



# My year as President Society of Pediatric Research (SPR) 2018-2019

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**Thank you**

*How we shuffle our genes in  
the germ-line and why it might  
matter for human fertility*

**Todd S. Macfarlan, Ph.D.**

**Senior Investigator and Head,  
Section on Mammalian Development & Evolution  
Division of Intramural Research, NICHD**

