

# The NICHD Connection

## January 2021

### INSIDE THIS ISSUE

First Fully Virtual NICHD DIR and DIPHR Scientific Retreat Exceeds Expectations	1
Letter from the Editor	2
Clinical Corner: Meet Dr. Anne Martini	13
Want to Attend a Grant Writing Workshop? Here's a Sneak Peek	15
January Announcements	16
January Events	19

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## First Fully Virtual NICHD DIR and DIPHR Scientific Retreat Exceeds Expectations

"The Mandarin character for crisis is two characters, danger and opportunity," said Dr. Diana Bianchi, NICHD director, during her opening remarks at the 2020 virtual NICHD Scientific Retreat. "We clearly know the danger associated with COVID-19, but there are opportunities."

Dr. Bianchi was speaking to NICHD trainees directly. She asked you to think about how this experience has affected your life. How has it changed your goals and priorities? Write about it, she insisted. Take advantage of opportunities and make the most of it!

Dr. Bianchi's inspirational words opened a day of engaging presentations by our diverse DIR and DIPHR investigators and trainees. Even through a virtual medium, the day felt like a community coming together to share research endeavors and newfound knowledge.

Thanks to a talented group of NICHD postbacs and postdocs, we recap the entire set of Scientific Retreat talks here. **Our 2020 Mentor of the Year Awardees add to the mix with their mentoring mantras—a few words on what they think about mentorship.**

Presenting the 2020 NICHD Scientific Retreat recap:

### Understanding the Molecular, Cellular, and Structural Basis of Development

#### The Journey from a Tiny Cell to a Whole Organism: Following the RNA Path By Megha Rajendran, PhD

(recap of "Molecular trajectories to determine cellular histories and their effect on development" by Jeff Farrell, PhD, Stadtman Investigator, DIR)

Having recently joined the NICHD, Dr. Jeff Farrell studies gene regulation during development using single-cell RNA sequencing (scRNAseq). During

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危機  
危机

Traditional (top) and Simplified (bottom) Chinese word for "crisis." By Tomchen1989, licensed under [CC0 1.0](#).

## Letter from the Editor

On November 13, NICHD DIR and DIPHR scientists convened, virtually, to share their latest research endeavors at the 2020 Scientific Retreat. I was blown away with the number of fellows who volunteered to write about the event. Thank you, so much, to the many postbacs and postdocs who contributed recaps of the day's presentations. As an editor, I enjoy the diverse perspectives on current research. Join me in revisiting the 2020 Scientific Retreat on [page 1!](#)

One of the retreat presenters, Dr. Annie Martini, talks about why she pursued a reproductive endocrinology career in this month's "[Clinical Corner](#)" column. Her favorite moments at the NICHD are heartwarming.

Looking forward, for fellows who are considering funding mechanisms, Dr. Aisha Burton shares a snapshot of the annual NICHD Office of Education Grant Writing Workshop on [page 15](#). And, finally, don't forget to visit our [January announcements](#) and [events](#), complete with some exciting opportunities this year.

Happy New Year to all!

Your Editor in Chief,  
Shana R. Spindler, PhD

Please send questions and comments to our editor at [shana.spindler@nih.gov](mailto:shana.spindler@nih.gov).



## Virtual NICHD DIR and DIPHR Scientific Retreat

*(continued from page 1)*

development, expression of cell-type specific mRNAs direct cells' future identities ("specification") and then drive them to differentiate into particular cell types (such as skin, brain, heart, and more). Dr. Farrell observes RNA levels in individual cells and then computationally reconstructs the path from distinct cell types back to common progenitors.

Following a time course of early zebrafish development, Dr. Farrell has generated an embryogenesis tree that begins with a single cell and branches into different cell types. The RNA expression levels in each branch show gene expression patterns and dynamics as cells adopt their identities. Knowing the genes expressed during particular developmental events paves the way for reverse genetic screens in his lab to test their function. Moreover, Dr. Farrell showed that cells at boundaries between tissues can express genes characteristic of multiple cell types, implying there can be multiple trajectories to the same cell type and will test how these different trajectories affect cellular behavior.

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### EpiTag Allows for Reporting of Dynamic Epigenetic Changes in Zebrafish

*By Michael Hilzendeger*

*(recap of "Genetic analysis of vertebrate epigenetic regulators" by Aniket Gore, PhD, Weinstein lab, DIR)*

Epigenetics is the study of how gene expression profiles change without altering the underlying DNA sequence. Current research approaches provide a snapshot of the epigenetic landscape but lack real-time visualization of the process in live animals. Dr. Aniket Gore and his colleagues in the Weinstein lab created EpiTag, a transgenic epigenetic reporter zebrafish line, to uncover tissue-specific epigenetic regulators. The construct contains gene-silencing sequences (CpG islands) from *dazl*, a germline-specific gene, upstream of a ubiquitously expressed promoter that drives GFPd2 (destabilized GFP) expression. This allows for dynamic visualization of GFP in response to epigenetic changes.

GFPd2 expression peaks around 24 hours post-fertilization and decreases as the organism develops. GFPd2 is reactivated in regenerating tissues and responsive to epigenetic modulators like DNMT inhibitors, validating the approach. Forward genetic screening using the EpiTag line revealed mutants with dynamic tissue-specific GFPd2 expression. Candidate genes from some mutants included known histone and DNA modifiers, as well as novel proteins, warranting further study. The EpiTag reporter line is an innovative tool to study epigenetic regulation in a live, intact vertebrate.

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“I believe that an effective mentor is one who listens and asks questions of their fellows, advises by sharing similarities and differences of relevant experiences, helps fellows expand their networks, and, most importantly, empowers fellows to make their own decisions and accept and learn from their consequences.”

—Dr. Leah Lipsky, DIPHR Investigator Mentor of the Year

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## Virtual NICHD DIR and DIPHR Scientific Retreat

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### Identification of Cholinergic Neuronal Subtypes in the Spinal Cord

*By Anna Vlachos*

*(recap of "Single nucleus RNA-sequencing defines unexpected diversity of cholinergic neuron types in the adult mouse small cord" by Mor Alkaslasi, Graduate Student, Le Pichon lab, DIR)*

A recent study from the Le Pichon lab examines neurons of the mouse spinal cord by applying single nucleus RNA-sequencing methods. Graduate student Mor Alkaslasi defines the subtypes of cholinergic neurons within the spinal cord, as well as individual gene markers that can be used to identify specific neurons.

Ms. Alkaslasi's data indicates a possible correlation between the spinal skeletal motor neuron subtypes and the muscle types they innervate. This allows researchers to target and study a specific neuronal subtype while also expanding our understanding of spinal cord circuits and organization. The neuronal markers and transcriptional profiles provide a toolbox for researchers to use when studying the underlying factors of movement disorders, as many motor disabilities show links to spinal cord neurons and circuits.

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### Gut Busters: Pedadda Group Shrinks False Discovery Rates When Analyzing Microbiome Data

*By Nicholas Johnson*

*(recap of "Differential abundance analysis of microbiomes with bias correction" by Shyamal Peddada, PhD, Biostatistics and Bioinformatics Branch, DIPHR)*

In microbiome studies researchers are often interested in identifying taxa that are differentially abundant in two or more experimental groups. Due to various complexities in the data, standard statistical methods of analyses, such as ANOVA, t-tests, and regressions, are not suitable for analyzing these data as they may result in inflated false discovery rates. Thus, a large proportion of taxa are falsely declared to be differentially abundant by these methods.

To deal with these issues, Dr. Shyamal Peddada, Chief of the Biostatistics and Bioinformatics Branch, and his former trainee and collaborators, developed a statistical methodology called Analysis of Composition of Microbiomes (ANCOM), which is widely used by researchers.

Now, the Peddada group has introduced an improvement to ANCOM, called ANCOM-BC which normalizes microbiome data to eliminate the effect of bias introduced by sampling and other artifacts. They demonstrated, using some simulation studies, that both ANCOM and ANCOM-BC control the false discovery rates within the nominal levels while maintaining high power. In contrast to ANCOM, ANCOM-BC creates  $p$ -values for each taxon with corresponding confidence intervals, and it is computationally faster.

*(continued on page 5)*

## Virtual NICHD DIR and DIPHR Scientific Retreat

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### **Placing Cellular Recycling Centers Where They're Needed Most**

*By Jacob Clarin*

*(recap of "The protein SNX19 tethers endolysosomal organelles to the endoplasmic reticulum to restrict their motility" by Amra Saric, PhD, Bonifacino lab, DIR)*

Endolysosomes function like cellular recycling centers: they break down macromolecules into their constituent building blocks for use in future biochemical processes. In her recent talk during the NICHD Scientific Retreat, postdoctoral fellow Dr. Amra Saric of the Section on Intracellular Protein Trafficking focused on the intracellular positioning and transport of these degradative organelles. She explored if tethering proteins responsible for binding endolysosomes to the endoplasmic reticulum (ER) in yeast serve similar functions in their uncharacterized versions in humans.

Dr. Saric's work found that one particular tethering protein, SNX19, is not only embedded in the ER lumen, but also attached to endolysosomes. This begged the question: What is the function of SNX19?

Production of a SNX19 genetic knockout cell line revealed that endolysosomes were more widely distributed away from the nucleus in mutant cell lines. Dr. Saric ultimately suggested that SNX19 may be a key player in the processes that maintain a balance in endolysosomal distribution within the cell, and that this balance is implicated in several diseases, such as schizophrenia.

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### **Probing the Invisible World of Cells: Evolution of Cryo-EM**

*By Megha Rajendran, PhD*

*(recap of "Towards in situ high-resolution structural biology of membrane proteins" by Doreen Matthies, PhD, Stadtman Investigator, DIR)*

Dr. Doreen Matthies, new principal investigator in the Division of Intramural Research, shared her scientific journey solving membrane protein structures using Cryogenic Electron Microscopy (Cryo-EM). In this visualization technique, a sample is frozen to cryogenic temperatures and exposed to high energy electron beams. There has been a surge in Cryo-EM applications this decade, as advances in instrumentation and image processing enable the visualization of complexes, ranging from virus particles to small protein complexes, with near-atomic resolution. This resolution is similar to nuclear magnetic resonance (NMR) and X-ray crystallography, but without their limitations.

Cryo-EM can be expanded to study bigger structures, like cells and tissues, and allows for the study of proteins in their native environment for single-particle and high-resolution in situ structural biology. Dr. Matthies has used Cryo-EM to study lipid metabolism in neurons and to solve the structures of membrane-bound proteins, such as ion channels and transporters. Now at the NIH, she hopes to utilize Cryo-FIBSEM (Focused Ion Beam Scanning Electron Microscopy), which allows researchers to look into samples thicker than 500 nm.

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## Virtual NICHD DIR and DIPHR Scientific Retreat

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### Setting the Foundation for Healthy Pregnancies and Lifelong Wellness

#### **The Implications of Obesity on Pregnancy and Infertility Treatment**

*By Frances Fernando*

*(recap of "Obese patients are less likely to pursue fertility treatment and take a longer time to do so, after initial infertility consultation" by Annie Martini, DO, DeCherney lab, DIR)*

As the prevalence of obesity in reproductive-age women increases—50% are overweight or obese—clinical fellow Dr. Annie Martini has become concerned about factors related to obesity and pregnancy. In particular, she is interested in the relationship between obesity and the pursuance of reproductive technology.

In a recent study, Dr. Martini found that obese patients are less likely to pursue fertility treatment (and take a longer time to do so) after initial infertility consultation than women with normal BMI. Using a retrospective chart review, Dr. Martini stratified patients presenting with infertility by BMI and obesity classification. This allowed her to study 1) rate of drop out after seeking consultation for assisted reproductive treatment, 2) treatment outcomes, and 3) time to first treatment, if pursued.

For those who underwent fertility treatment with BMIs out of the normal range (either obese or underweight), time to first treatment was significantly longer than women with normal BMI. Drop out rates after initial consultation also increased linearly with BMI. Her findings are relevant to several groups, including physicians, providers of infertility care, and women with non-normal BMIs who wish to become pregnant.

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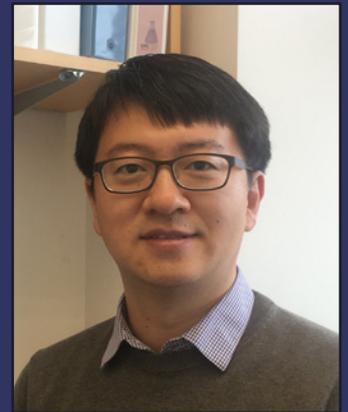
#### **The Vicious Cycle of Diabetes Begetting Diabetes**

*By Frances Fernando*

*(recap of "Determinants and health consequences of gestational diabetes—a life course approach towards diabetes prevention" by Cuilin Zhang, PhD, MD, MPH, Epidemiology Branch, DIPHR)*

"A vicious cycle," is how senior investigator Dr. Cuilin Zhang describes the following gestational diabetes sequence: gestational diabetes, increased risk of obesity and cardio-metabolic disorders in childhood, hyperglycemia in adulthood and pregnancy—the cycle continues. Dr. Zhang looks for risk factors and etiological and prediction markers using data from epidemiological studies at each stage over life course (pre-conception, during, and post-pregnancy).

*(continued on page 7)*



"Mentorship is like making a custom-tailored suit. Plan wisely, your elegant custom design could change someone's life."

—Dr. Hyun Min Jung, DIR Fellow Mentor of the Year



## Virtual NICHD DIR and DIPHR Scientific Retreat

*(continued from page 6)*

According to Dr. Zhang, pre-pregnancy risk factors for gestational diabetes include the absence of beneficial behaviors (for example, Mediterranean diet, and physical activity) and the presence of harmful behaviors (for example, Western diet, sedentary behaviors, and increased refined carbohydrate and animal fat intake). During pregnancy, gestational diabetes biomarkers include abnormal nutrient metabolism (specifically for iron, vitamin D, amino acids and fatty acids), irregular thyroid function, and genetic factors. Following gestational diabetes in utero, offspring may have deleterious metabolic, vascular, and reproductive health effects. Dr. Zhang's research shows that gestational diabetes has compounding and interrelated effects that promote and perpetuate diabetes, and preventing gestational diabetes may hold the hope of interrupting the vicious cycle.

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### **Vegetarian Diets Pose No Major Harm Nor Benefits to Gestational Outcomes**

*By Michael Hilzendeger*

*(recap of "Association of maternal vegetarian diets during pregnancy and maternal and neonatal outcomes" by Samrawit Yisahak, PhD, Office of the Director, DIPHR)*

Vegetarian diets are becoming increasingly popular in the United States. In 2012, 4% of men and 7% of women in the US identified as vegetarian. Given the high proportion of women vegetarians, Dr. Samrawit Yisahak and coauthors investigated the association of vegetarian diets and gestational outcomes using data from NICHD Fetal Growth Studies – Singletons.

Controlling for covariates including age, socioeconomic status, physical activity, energy intake, and diet quality, Dr. Yisahak et al. found no increase in the risk of preterm birth in neonates of vegetarians (defined as eating meat, poultry, or fish less than once a month). However, neonates of vegetarians were constitutionally smaller; they had lower birthweight but were otherwise healthy. Contrary to what is seen in the general population, a vegetarian diet was not inversely associated with gestational diabetes and hypertensive disorders of pregnancy. Moreover, a vegetarian diet was not associated with a higher risk of gestational anemia. In summary, the data suggest that vegetarian diets pose no great harm to pregnant women or their neonates, but no health benefits either.

*(continued on page 8)*

## Virtual NICHD DIR and DIPHR Scientific Retreat

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### **Placental Gene Expression Profiles in Mothers with Abnormal Blood Lipid Levels**

*By Kristen Polinski, PhD*

*(recap of "Placental gene co-expression network reveals inflammation response enrichment in maternal dyslipidemia" by Marion Ouidir, PhD, Epidemiology Branch, DIPHR)*

Maternal dyslipidemia during pregnancy may alter placental gene expression, impacting the risk of cardiometabolic disease in offspring. Using data from the NICHD Fetal Growth Study, postdoctoral fellow Dr. Marion Ouidir set out to identify networks of placental co-expressed genes that might interact with each other to have potentially biologically meaningful functions.

Using a weighted gene co-expression network analysis, Dr. Ouidir constructed 24 modules or clusters of highly correlated genes expressed in the placenta. This analysis identified a module composed of 39 genes that were positively correlated with both total cholesterol and low-density lipoprotein (LDL) in mothers with dyslipidemia. Further validation analyses reaffirmed six genes—LTF, MPO, PGLYRP1, ALX4, MAGEC2, and LUZP4—that collectively are lipid and cardiovascular-related. Dr. Ouidir's research highlights possible placental gene expression signatures in maternal dyslipidemia that might compose meaningful pathways underlying cardiometabolic traits later in life.

### **Developmental Influences on Health and Well-Being Across Childhood**

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#### **Early Childhood Screen Time: Developmental Delays and Peer Play**

*By Kristen Polinski, PhD*

*(recap of "Trajectories of screen time and displacement of peer play by screen time in early childhood" by Diane Putnick, PhD, Epidemiology Branch, DIPHR)*

A recent study conducted in the birth cohort Upstate KIDS, including individuals from 57 counties in New York State from 2008 to 2010, found an increasing trend in early screen time among one- to three-year-olds. These children exceeded screen time recommendations set by the American Academy of Pediatrics, and the early screen time trend was associated with increased screen time at seven and eight years of age.

Building off these findings, Dr. Diane Putnick, staff scientist in DIPHR's Epidemiology Branch, examined the consequences of increased screen time on child development, as measured by the Ages and Stages Questionnaire (ASQ) and displacement of peer play activities. Children with more screen time were more likely to fail the ASQ at three years of age, whereas children with more peer play time were less likely to fail the ASQ. Screen time's effects on developmental delay were mediated by decreased peer play time, suggesting that peer play could potentially offset the negative effects of screen time.

*(continued on page 9)*

## Virtual NICHD DIR and DIPHR Scientific Retreat

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### **Prevent Overeating in Youths with Depression and Anxiety**

*By Nickolas Chu*

*(recap of "Inhibitory control and negative affect in relation to food intake among youth" by Meghan Byrne, MA, Yanovski lab, DIR)*

Previous studies have associated pediatric obesity with two potential mechanisms: negative affect and poor inhibitory control. Negative affect can drive disinhibited eating as maladaptive coping with negative emotions. Inhibitory control involves the deliberate suppression of automatic thoughts and behaviors. In a recent study, Meghan Byrne investigated a potential relationship between the two mechanisms.

Ms. Byrne and her colleagues hypothesized that poor inhibitory control mediated the relationship between negative affect and disinhibited eating. To test this, the investigators recruited participants (8- to 17-years-old). A negative affect score was based on self-reported feelings of depression and anxiety. The participants also completed behavioral tasks to measure inhibitory control. Finally, participants were given a laboratory buffet meal and instructed to eat as much as they wanted. The research team measured total calorie intake. The study found that inhibitory control mediated the relationship between negative affect score and total calories consumed. These findings suggest that improving inhibitory control in combination with approaches to reduce negative affect may prevent overeating in youths with depression and anxiety.

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### **Evaluating Parenting Classifications in Late Childhood Type 1 Diabetes Management**

*By Ashley Pratt*

*(recap of "Relations of diabetes parenting constellations with child disease management and well-being" by Chelsie Temmen, PhD, Social and Behavioral Sciences Branch, DIPHR)*

Postdoctoral fellow Dr. Chelsie Temmen investigates how different parenting classifications influence the well-being and disease management outcomes of children with type 1 diabetes and their intensive care regimens during late childhood. Using data from a 24-month clinical study, Dr. Temmen describes three parenting classifications based on reported levels of parental involvement and parent-child conflict in type 1 diabetes management: harmonious, discordant, and indifferent. She evaluated the well-being, adherence to regimen, glycemic control, and other outcome factors for children across these groups.

*(continued on page 10)*

## Virtual NICHD DIR and DIPHR Scientific Retreat

*(continued from page 9)*

“Harmonious” families, those who exhibited high involvement in disease management and support with minimal parent-child conflict, performed the best on outcome measures. “Discordant” families, those who reported high involvement and high parent-child conflict, consistently performed poorly on these measures. And finally, the “indifferent” group, those who scored low in involvement and conflict, fell between the other groups for outcome performance. Behavioral intervention improved glycemic control measures equally across groups. These findings indicate that high parental involvement in type 1 diabetes management is likely beneficial to the child, but only in the absence of significant parent-child conflict.

### Screening and Developmental Health During a Pandemic

#### **Developing a Biosensor Device for Early Detection of Respiratory Infections**

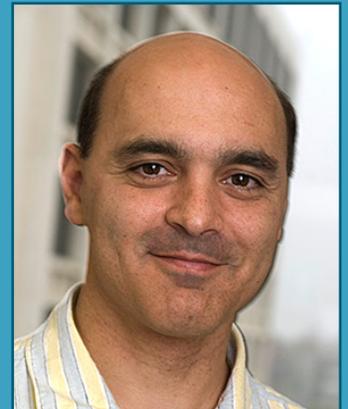
*By Ashley Pratt*

*(recap of “Development of a point-of-care multimodal biosensor for screening and monitoring patients with respiratory infectious diseases such as COVID-19” by Kosar Khaksari, PhD, Gandjbakhche lab, DIR)*

In efforts to identify and treat COVID-19 infections, it is evident that early detection of related symptoms is important for improving survival rates. Two biophotonics labs led by Drs. Bruce Tromberg and Amir Gandjbakhche within the NIH and Dr. Babak Shadgan from the University of British Columbia (UBC) are currently collaborating to develop a biosensor device for the screening and monitoring symptoms associated with respiratory infections, including COVID-19.

Postdoctoral fellow Dr. Kosar Khaksari described how some devices already exist to monitor symptoms—such as temperature—for clinical screening, but these devices have low sensitivity and specificity. Dr. Khaksari and her collaborators are developing an inexpensive, non-invasive device for point-of-care at-home detection and monitoring of infectious respiratory symptoms, such as tissue oxygenation, heart rate, and temperature in healthy patients. Collaborators at UBC have collected preliminary data on device efficacy, and a clinical protocol has been submitted within the NIH. Future goals seek to use a successfully developed device for the collection of respiratory data in patients with COVID-19 and other respiratory infections.

*(continued on page 11)*



“I think it’s always a good idea to try to put yourself in your mentees’ shoes, and to remember to remind yourself occasionally that it’s not all about you!”

—Dr. Brant Weinstein, DIR Investigator Mentor of the Year

## Virtual NICHD DIR and DIPHR Scientific Retreat

*(continued from page 10)*

### **Is Pooled Testing for Covid-19 a Good Idea?**

*By Nicholas Johnson*

*(recap of "Group testing for COVID-19: Pros and Cons" by Aiyi Liu, PhD, Biostatistics and Bioinformatics Branch, DIPHR)*

Group, or "pooled," testing requires combining multiple samples into a single test to avoid the expense and labor of conducting many individual tests. This method first appeared during World War II to test for syphilis in prospective troops. But is pooled testing useful? According to Dr. Aiyi Liu, if the positivity rate is low, the cost and time efficiency improvements over individual testing can be substantial.

For example, researchers using lower-accuracy tests can achieve greater precision in surveillance studies by pooling tests. Subjects may also benefit from increased anonymity. Disadvantages of this method include the sample dilution effect of pooling, which necessitates a greater sample volume and might result in more false negatives. In diagnostic settings, the additional time required to identify positive samples within pools may reduce patients' opportunity to act accordingly, though improved throughput may counteract this disadvantage.

The take home message: Dr. Liu emphasized that group testing is most useful when the infection rate is low.

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### **Risk of Maternal to Fetal Transmission of COVID-19 is Low, But Not Zero.**

*By Anna Vlachos*

*(recap of "SARS-CoV-2 in Pregnancy: The Risk of Vertical Transmission and mRNA Expression of Viral Receptor and Protease in the Human Placenta" by Roberto Romero, MD, DMedSci, Perinatology Research Branch, DIR)*

Unfolding evidence in COVID-19 studies show that pregnancy increases risk of death and suffering from the SARS-CoV-2 virus, particularly for pregnant women of color. But how does the virus affect the fetus?

Recent findings from the NICHD Perinatology Research Branch indicate that the percentage of vertical transmission of SARS-CoV-2 from mother to fetus is 3.25%, which is relatively low, but still possible. Using single-nucleus RNA-sequencing techniques, Dr. Roberto Romero, Chief of the Perinatology Research Branch, and his group found a lack of mRNA expression for common

*(continued on page 12)*

## Virtual NICHD DIR and DIPHR Scientific Retreat

*(continued from page 11)*

COVID-19 cell entry mediators in placental cells. The rare cases of fetal infection may be explained by the expression of non-canonical COVID-19 mediators in the placenta.

These findings build on our understanding of COVID-19 and examine how some of our most vulnerable populations are affected. Though the risk of a mother transmitting COVID-19 to the fetus is low, it is not impossible. The virus still has a means of infecting cells in the placenta.

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### Leveraging Trans-NIH Initiatives to Study COVID-19

*By Nickolas Chu*

*(recap of "NICHD and the Research Response to COVID-19" by Rohan Hazra, MD, DER)*

For the final presentation of the 2020 Scientific Retreat, Dr. Rohan Hazra, NICHD's Acting Associate Director for Extramural Research, talked about NICHD's role in studying COVID-19 in women and children. In 2018, the NIH Pediatric Research Consortium was established as a trans-institute initiative to harmonize pediatric studies. As the lead institute of this initiative, NICHD was optimally placed to become one of seven NIH groups to coordinate a response to COVID-19. Co-leading with NIDA, NICHD has worked to formulate a research agenda targeting pregnant and lactating women and children.

When healthy children began exhibiting multisystem inflammatory syndrome (MIS-C) weeks after infection, Dr. Collins reached out to the directors of NICHD and NHLBI and asked them to head a trans-NIH group to study these new symptoms. By building research protocols with pre-existing investigator communities, NICHD has been able to collect data quickly on children with MIS-C—with the goal of understanding the long-term consequences of MIS-C and COVID-19 infection.

**CORRECTION:** An earlier version of this article identified Dr. Rohan Hazra as Chief of the Maternal and Pediatric Infectious Disease Branch. Dr. Hazra is no longer in this position.

## Clinical Corner: Meet Dr. Anne Martini

Anne “Annie” Martini, DO, joined the NIH in 2018 as a clinical fellow in the [Reproductive Endocrinology and Infertility Training Program](#).

She received her DO degree from the Chicago College of Osteopathic Medicine (CCOM) in Downers Grove, IL and subsequently completed her residency at Rush University Medical Center in Chicago, IL.

Dr. Martini studies *in vitro* fertilization outcomes in patients who created embryos with oocytes that had been previously cryopreserved for fertility preservation. As part of a fellowship thesis in the Macfarlan lab, she investigates the role of ZCWPW1, a protein involved in homologous chromosome recombination, in female mice. In particular, she explores if this protein’s interactions with DNA during meiosis can be used to map ‘hot spots’ of chromosome recombination in female embryos.

We asked Dr. Martini a few questions about her interests to get to know the person behind the degree. Introducing Dr. Martini:

### ***What influenced you to go into reproductive endocrinology and fertility?***

I have always been fascinated by the physiology of reproduction. In medical school, this interest drew me towards a residency in OB/GYN. In residency, I found my REI rotations to be the perfect blend of meaningful patient interactions with my basic scientific interests. Fellowship has continued to confirm that I made the best career choice—being able to use my knowledge to help individuals and couples begin a family is the ultimate reward.

*(continued on page 14)*

*Clinical  
Corner*



*Anne Martini, DO*

## Clinical Corner: Meet Dr. Anne Martini

*(continued from page 13)*

### ***What led you to the NIH—why did you choose to do your fellowship here?***

I did a month-long rotation during residency in the REI clinic at NIH. Having the opportunity to see and converse with patients with the rarest of endocrine and genetic disorders was an incredible experience and I knew that I would thrive in that type of setting for fellowship.

### ***What is your most memorable experience so far while at the NIH?***

I would absolutely say my most memorable experience is when I found out that the first three patients whom I performed an embryo transfer for all became pregnant. Our fellowship program places great emphasis on fellows getting hands-on experience, including embryo transfers. I felt so grateful in that moment for my training and to be able to help families in this special way. Another wonderful experience was traveling to Paris with my NIH fellowship colleagues to present our research at the Society for Reproductive Investigation conference in 2019!

### ***Do you participate in any volunteer activities or hobbies?***

For the last one and a half years I have been one of the co-chairs for the Clinical Fellows Committee. It has been a great experience that has allowed me to network with fellows outside of my program and institute. I also appreciate having the opportunity to interact with NIH and Clinical Center leadership.

I am very dedicated to fitness and spending time outdoors. Hiking is a favorite pastime for me and my husband. Being a native Chicagoan, we fell in love with the DMV area for its ample hiking spots and warmer/more tolerable weather!

Don't forget to check out our recap of Dr. Martini's 2020 Scientific Retreat Virtual talk, *"Obese patients are less likely to pursue fertility treatment and take a longer time to do so, after initial infertility consultation,"* on [page 6!](#)

## Want to Attend a Grant Writing Workshop? Here's a Sneak Peek

*By Aisha Burton, PhD*

I attended the annual NICHD Office of Education Grant Writing Workshop, led by Dr. Cedric Williams, on November 19 and 20, 2020. Dr. Williams is a professor of psychology at the University of Virginia who has over 20 years of experience with grants via National Science Foundation, NIH, and Department of Defense study sections.

The first day we studied the innerworkings of preparing a grant. We learned how study sessions operate and how to identify information that is necessary for a successful grant application. Three words stood out to me as take-away points:

- » **Significance** – Show how the proposed activity advances knowledge and understanding within the field or across different fields.
- » **Innovation** – Show how the proposal addresses the mission of the granting agency. Explain how you are implementing something new!
- » **Approach** – Verify that your specific aims are not dependent on each other. They can be linked only if you have demonstrated that the method works. You should ask questions about the same problem from different angles. Preliminary data is needed. Ensure that you address potential problems and alternative strategies!

On the second day, participants participated in a mock study section for half of the day. During the mock study sections, we read the aims pages of three other workshop participants. After reading, we discussed each other's grants for clarity and content. Later in the day, we received comments on our specific aims page from Dr. Williams (some of the comments made during the study sessions were the same as Dr. Williams' comments). I would recommend this session to trainees who are preparing grant applications!

## January Announcements

### SEEKING IMAGE SUBMISSIONS FOR THE 16<sup>TH</sup> ANNUAL FELLOWS MEETING

*We are beginning our search for the feature image of the 16<sup>th</sup> Annual NICHD Fellows Meeting.*

The winning image, chosen by the Fellows Advisory Committee, will be showcased on the fellows' retreat website, on posters, and used as the front cover of the event program. Also, to highlight everyone's imagery, all submissions we receive will be used to produce a collage posted on the 2021 retreat website. You can always take a look at the image submissions from previous years at [retreat.nichd.nih.gov](http://retreat.nichd.nih.gov).

In addition to image resolution and quality, selection criteria include the relevance to our institute's mission and artistic view of the image. **All submissions (at the highest possible resolution) should be sent to Nicki Swan ([jonasnic@mail.nih.gov](mailto:jonasnic@mail.nih.gov)) by January 31, 2021**, with a brief caption for the image.

### NICHD ANNUAL POSTBAC COURSE: PROFESSIONAL DEVELOPMENT AND CAREER EXPLORATION

*Our Annual Postbac Course launches on Wednesday, January 13!*

Currently there are over 100 postbacs conducting clinical and basic science research in our intramural laboratories. During your one or two years of training here at the NICHD, we want you to have an enriched research experience, while at the same time growing more prepared and excited about your chosen career path.

**The year's course will be entirely virtual and will be held on Wednesdays, from 1 to 2 p.m.** The intent is to create a comfortable environment within a small group of peers to help postbacs improve their analytical skills as scientists, while expanding their knowledge of biomedical research and its relevance to human health. This course also focuses on professional development: learning how to present your science, exploring different career trajectories, meeting physicians and scientists from various clinical or research settings, and preparing for the medical or graduate school application cycle (including interviews!).

You'll hear from a senior NICHD postdoc; a panel of physicians will share their personal and professional experiences in practicing as a pediatrician; and there will be a "Meet the Scientist" series where scientist in clinical, basic science, and industry laboratories will share their career journeys.

*(continued on page 17)*

## January Announcements

*(continued from page 16)*

### NICHD ANNUAL POSTBAC COURSE, CONTINUED

**Schedule of Topics** *(All sessions take place from 1 to 2 p.m. unless otherwise indicated)*

January 13	Career Planning Step One: Knowing the End of Your Rainbow
January 27	The Medical School Search and Application Process
February 10	Meet the Scientist: Basic Science Research
February 17 <i>(Begins at 12 Noon)</i>	Meet the Physician (Panel)
March 10	The Medical School Personal Statement
To Be Announced	Meet the Scientist: Industry Career Panel
To Be Announced	Postbac Poster Day: Organizing and Presenting Your Work
To Be Announced	Meet the Scientist: Clinical Research
To Be Announced	Journal Club Session: Cloning a Gene—How to, and Practical Applications
To Be Announced	The Graduate School Search and Application Process
To Be Announced	Knowing Your Why? The Key to the Medical School Interview
To Be Announced	The Graduate School Personal Statement

Stay-tuned for the final schedule, which will be announced by email soon. Enrollment in this course will be limited to 25 students to allow maximum participation and interaction with the instructors. We ask that all participants attend at least seven sessions. At the end of the course, we will offer a certificate in recognition of your participation.

If you are interested in joining the class, please email Monica Cooper ([cooperm@mail.nih.gov](mailto:cooperm@mail.nih.gov)) to register, and let her know which sessions you plan to attend.

*(continued on page 18)*

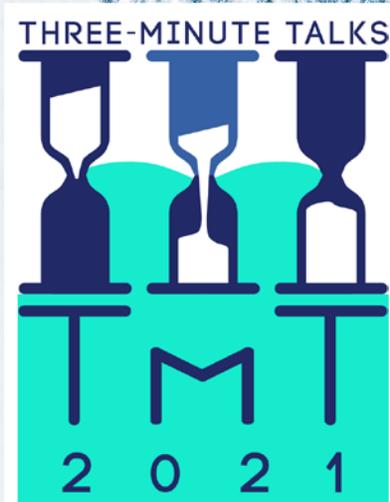
# January Announcements

(continued from page 17)

## THREE-MINUTE TALKS (TmT) COMPETITION 2021

### Now Seeking Postdoc & Clinical Fellows, Graduate Students & Postbacs

- » Learn how to explain your research effectively to a broad scientific audience, in three minutes or less, with one-on-one professional training from public speaking coach Scott Morgan.
- » Get the chance to win up to \$1,000 for use towards approved training or scientific conference participation.
- » Visit the [NICHD TmT Program website](#) for more details: up to 10 DIR or DIPHR fellows (postbac, predoctoral, postdoctoral, visiting and clinical) are invited to compete for these science communication honors.
- » Please note that this year's TmT Program will be virtual.



## 2021 TmT Program Timeline and Details

<b>Monday, February 8</b>	<b>Deadline to Enter</b> <ul style="list-style-type: none"> <li>» To enter, complete the <a href="#">2021 Submission Form</a></li> <li>» The submission form, competition rules and judging criteria are available at the <a href="#">NICHD TmT Webpage</a></li> </ul>
<b>Thursday, February 11 1-2 PM</b>	<b>"Speaking About Science" Workshop</b> <ul style="list-style-type: none"> <li>» Tips on scientific storytelling with only one slide</li> <li>» Speaking in plain language while addressing the human health relevance for your research</li> <li>» Creating effective visual aids</li> </ul>
<b>March &amp; April, Dates TBD</b>	<b>Individual Coaching/Practice Sessions</b> <ul style="list-style-type: none"> <li>» Meet one-on-one with public speaking coach Scott Morgan</li> <li>» Practice your talk and obtain feedback on oral presentation skills and speech development</li> </ul>
<b>June, Date TBD</b>	<b>NICHD TmT Competition</b> <ul style="list-style-type: none"> <li>» Finalist(s) will be chosen to advance to the next round</li> <li>» Finalist(s) will each be awarded \$500 for approved training/travel</li> </ul>
<b>June, Date TBD</b>	<b>NIH TmT Competition</b> (With NICHD, NCATS, NHGRI, NIDCR, NIDCD, NIAMS, NEI, & NINR fellows)

*1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place winners will be chosen to receive an additional \$500 training/travel award*



## January Events

WEDNESDAY, JANUARY 13, 1–2PM

**Annual Postbac Course: “Career Planning Step One: Knowing the End of Your Rainbow”**

*Triesta Fowler, MD*

If you are interested in joining the class, please email Monica Cooper at [cooperm@mail.nih.gov](mailto:cooperm@mail.nih.gov).

WEDNESDAY, JANUARY 27, 1–2PM

**Annual Postbac Course: “The Medical School Search and Application Process”**

*Triesta Fowler, MD*

If you are interested in joining the class, please email Monica Cooper at [cooperm@mail.nih.gov](mailto:cooperm@mail.nih.gov).

### ONGOING EVENTS AROUND CAMPUS

**NIH-Wide Office of Intramural Training and Education (OITE) Events**

For more information and registration, please visit [Upcoming OITE Events](#).

**NIH Library Training and Events**

For more information and registration, please visit the [NIH Library Calendar](#).