



## Center for Childhood Infections & Vaccines

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### Farewell to Evan Anderson

The CCIV would like to thank Dr. Evan Anderson for his many contributions to advance adult and pediatric vaccine research over the past 10.5 years at Emory University School of Medicine.

Dr. Anderson is a Professor of Pediatrics and Medicine, an Attending Physician in Adult and Pediatric Infectious Diseases, Co-Director and Multiple PI for Emory Vaccine Treatment and Evaluation Unit (VTEU), and a Clinical Vaccinologist who has led more than 40 NIH- and industry-sponsored clinical trials during his time at Emory.

Dr. Anderson played a pivotal role in the advancement of COVID-19 vaccines, from phase 1 clinical trials to FDA licensure. With the onset of the COVID-19 pandemic in March 2020, as much of the world shut down, Dr. Anderson led his clinical research team at Emory Children's Center Vaccine Research Center (ECC-VRC) to perform the first phase I study of mRNA-1273 COVID-19 vaccination in adults. This phase I study provided data not only about vaccine dosage, safety, reactogenicity, and immunogenicity, but additionally provided data about durability and breadth of immune responses against emerging SARS-CoV-2 variants.

Dr. Anderson went on to serve as Emory site principal investigator for the phase III Moderna mRNA-1273 (COVE) study, which ultimately led to emergency use authorization, full FDA approval, and CDC recommendation for mRNA-1273. Since then,



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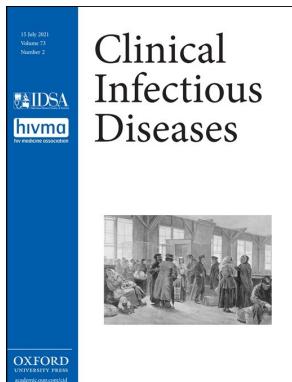
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## Anderson Cont..

more than 600 million doses of mRNA-1273 vaccine have been administered worldwide, and this vaccine has made a substantial impact on saving lives and curtailing the COVID-19 pandemic.

Dr. Anderson was also an early and steadfast advocate for the development of COVID-19 vaccinations in children.

Although the impact of COVID-19 on children was initially underappreciated, it became clear that children can develop severe COVID-19, post-infectious multisystem inflammatory syndrome (MIS-C), complications from long COVID, and occasionally mortality.



### Clinical Infectious Diseases

In an influential article published in September 2020 in *Clinical Infectious Diseases*, Dr. Anderson and colleagues noted that vaccines for children seemed to be “stuck in neutral,” and called for initial pediatric studies for COVID-19 vaccines to begin at the same time as the Phase 3 studies for adults.

Dr. Anderson went on to serve as site principal investigator for both the Pfizer BNTb162b and Moderna mRNA-1273 (KidCOVE) pediatric vaccine phase III clinical trials. In June 2022, he presented data to the Vaccines and Related Biological Products Advisory Committee (VRBPAC) of the FDA advocating for the need for pediatric COVID-19 vaccines, which were subsequently authorized for children down to 6 months of age.

For many families, these vaccines offered hope in a dark time and enabled children to safely re-engage in their world.

In addition to these contributions to the COVID-19 pandemic response, Dr. Anderson has also served as a site PI for the Janssen (ENSEMBLE)

phase III COVID-19 vaccine trial, the DMID 21-0002 and 22-0004 COVID-19 variant vaccine trials, and as a co-investigator for the DMID 21-00012 Mix-and-match study of heterologous COVID-19 booster vaccines.

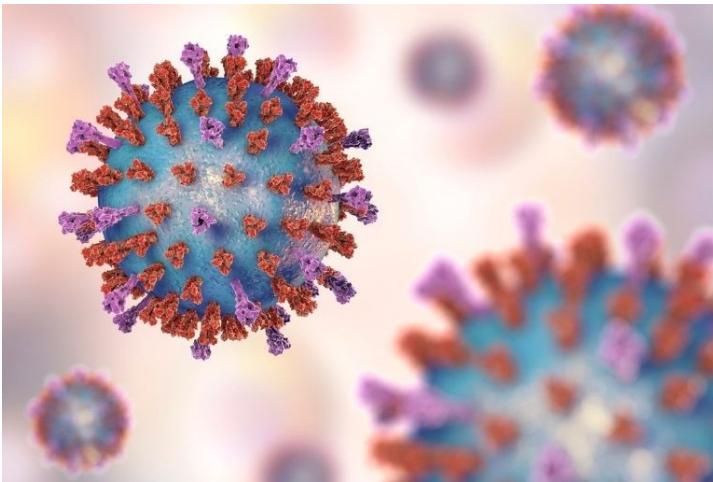
He has served as the Georgia lead investigator for the Emerging Infections Program (EIP) influenza, RSV, and COVID-19 surveillance network, which has generated pivotal data about COVID-19 epidemiology, risk factors for disease severity, and real-world vaccine effectiveness against SARS-CoV-2 variants. He has led the ECC Vaccine Research Center laboratory, and has been the PI of a pediatric specimen collection protocol which has provided clinical samples from children with COVID-19 and MIS-C to multiple internal and external collaborative studies. He has published more than 220 peer-reviewed manuscripts, with more than 100 since the onset of the COVID-19 pandemic.

Remarkably, his research contributions have extended far beyond COVID-19. He has advanced the field of RSV vaccinology on multiple fronts, and served as the Emory site principal investigator for phase III studies of two RSV prevention products which are expected to receive licensure in 2023. He has worked on vaccine and therapeutic studies from A to Z over the years, including anthrax, avian influenza vaccines (e.g., H3N2v, H7N9, H5N8), chikungunya, Ebola, hepatitis E, influenza, MVA (IMVAMUNE), norovirus, osteomyelitis, the ‘omics of response to vaccination, rotavirus, *Staphylococcus aureus*, tularemia, and Zika.

He has been a trusted, highly regarded, visionary, and prolific expert in the field of clinical vaccinology. He is appreciated by his staff, study participants, patients, and colleagues alike.

The CCIV would like to thank Dr. Anderson for all he has done throughout his career to advance vaccinology and to prevent disease and human suffering. He has been an inspiration, and we wish him all the best in his future endeavors. §

# Advances in RSV Vaccines



Respiratory syncytial virus (RSV) is the most common cause of bronchiolitis and pneumonia in children under 1 in the US. According to the [CDC](#), each year in the US, an estimated 58,000-80,000 children under 5 are hospitalized due to RSV. Due to high transmissibility and severity in infants, many CCIV researchers devote time to developing an RSV vaccine.

To develop a safe and effective RSV vaccine, however, researchers must first learn more about how RSV effects the infant immune system.

Larry Anderson and his team are just one of the labs studying this topic. In a recent study, published in [\*Frontiers in Immunology\*](#), Anderson and his lab looked at the potential immunological effects an RSV infection has on subsequent RSV infections. The study used blood samples taken from healthy children, 2-3 years of age. The samples were studied to see if RSV memory T cell responses among children first infected with RSV during their first year of life compared to those infected after their first year. The study found that Children who had an RSV infection before the age of 1 had lower memory T cell responses at ages 2-3 to *in vitro* RSV stimulation than those with a later infection.

Through this study, Anderson's team became the first to show the potential that primary RSV infection during infancy compared to primary infection after the first year of life induces a

dampened long-term RSV immune memory response, regardless of the severity of the infection. In other words, primary RSV infection in infancy may be less effective at inducing protection against infections.

Understanding the impact of infant RSV infections on pediatric immunity furthers our understanding of vaccine development as well as provides clues to the development of reactive airway diseases like asthma.

CCIV researchers also worked to develop more effective and safer RSV vaccines this year.

Cristina Rostad's team published findings about advances in RSV Vaccines this October in [\*The Journal of Infectious Diseases\*](#). The study focused on generating candidates for a RSV live-attenuated vaccine (LAV). The team investigated two LAV's in a mouse model. Ultimately, both LAVs were undetectable in mouse lungs and elicited similar antibody concentrations. When challenged with RSV, the vaccinated mice showed no detectable RSV in the lungs when compared with unvaccinated mice.

Rostad's team concluded that by removing the G-protein mucin domain from the RSV recombinant lines, they produced highly effective LAV candidates that did not cause enhanced pulmonary histopathology, an important safety factor for future RSV vaccines. §



# Neutralizing Antibody for COVID-19 Variants



Dr. Murali Krishna Kaja co-led a team of Emory scientists in Atlanta and India in the discovery of a unique antibody that neutralizes most key COVID-19 variants.

The study, recently [published](#) in *Science Advances* describes a potential breakthrough in ongoing efforts to improve treatment and tackle the COVID-19 pandemic. Researchers from the Emory Vaccine Center, the International Centre for Genetic Engineering and Biotechnology and the National Institute of Malaria Research in India discovered a highly potent monoclonal antibody derived from COVID-19 recovered individuals from India.

Termed as clone 002-S21F2, this antibody was tested against several SARS-CoV-2 variants including Alpha, Beta, Gamma, Delta and the recently emerging and highly infectious Omicron sub-lineages like BA.1, BA.2, BA.2.12, BA.4 and BA.5. Results from laboratory testing showed that the antibody potently neutralizes most of the key SARS-CoV-2 variants of concern. Unlike other antibodies that target areas of the virus that are more likely to mutate, this particular antibody targets a highly conserved area on the outer surface of the receptor binding domain of the virus. With its unique characteristics and neutralizing abilities, this antibody has excellent potential as a therapeutic against a broad range of infections and can help inform vaccine development. §

## Ongoing Clinical Trials with Dr. Andi Shane



Emory Children's Center (ECC) will participate in two studies sponsored by the NIH-funded Rare [Diseases Clinical Research Network \(RDCRN\)](#), [Congenital Perinatal Infections Consortium \(CPIC\)](#). The first is a phase I study to assess the pharmacokinetics of valacyclovir in neonates born to women receiving valacyclovir preventative therapy. The second is a long term follow-up of children who received valganciclovir as infants for a congenital CMV infection.

Dr. Andi Shane is the site PI for both rare disease phase I studies, as well as several other nationally funded programs to support care for patients with rare or highly infectious diseases. Additionally, ECC and Children's Healthcare of Atlanta will continue working with Emory's Regional Emerging Special Pathogen Treatment Center (RESPTCs) on a HHS-ASPR funded program supports to care for people with highly

infectious diseases, such as Ebola or COVID-19. Part of this work including serving as regional hubs for the [National Special Pathogen System](#).

Also funded by the HHS-ASPR, is Emory and Children's Pediatric Disaster Centers of Excellence. Our location is one of 7 sites, nationally. The purpose of the center is to build upon existing foundations for pediatric clinical care and emergency response by enhancing coordination mechanisms and incorporating relevant capabilities at the local, state and regional levels.

This cooperative agreement will enable the rapid sharing of assets and expertise throughout southeastern states and ensure that a well-trained cohort of highly specialized pediatric clinicians are available for onsite care and remote consultation. Shane joins Claudia Morris from the Division of Emergency Medicine, as site co-Investigators, while David Greenky, also from Emergency Medicine is serving as the site PI. §

# Research Retreat



research of early-stage investigators.

Chandy C. John, MD, MS, from Indiana University visited Emory as the keynote speaker for CCI's Research Retreat. His talk, "Cognitive Impairment After Severe Malaria: What Causes It and Can we Prevent it" reviewed several years of pivotal contributions to the understanding of malaria pathogenesis. In particular, Dr. John discussed his studies of the long-term neurological complications of Malaria with a focus on elucidating mechanisms that may point to novel treatments and/or preventative measures.

Dr. John is the Ryan White Endowed Chair in Pediatric Infectious Diseases and director of the Ryan White Center for Pediatric Infectious Disease and Global Health. His research program focuses on malaria pathogenesis, immunology and epidemiology, and infections in children with sickle cell disease. He conducts research and training programs in Uganda and Kenya.

In addition to serving as Keynote Speaker for the Retreat, Dr. John also led several breakout sessions later in the day on early-stage investigator needs and global health research. Other breakout sessions included biobanks and specimen repositories, research using databases and the electronic health record, epidemiology and public health outcomes research and basic science technologies. These sessions provided

practical tips and served to further connections between CCI investigators. A highlight was the presentation of the advances in access to research data with Children's EPIC led by Drs. Andi Shane, Wayne Liang, and Jonathan Beus.

Another key component of the Retreat was the Lightening Round presentations from faculty, focused on collaborative opportunities. Selected investigators were asked to discuss what they are most excited about in their current research, collaborations sought, and shareable resources. This year's speakers were Drs. Brian Zanoni, Larry Anderson, Evan Anderson, Lisa Cranmer, Preeti Jaggi, Andres Camacho-Gonzalez, and Cassie Grimsley-Ackerley. Exemplifying the broad scope of CCI, the research presented spanned from basic science of RSV transmission, network trials of novel vaccines, research driven by clinical observations from inpatients in Atlanta, to global health studies of HIV and tuberculosis.

CCIV hopes to include similar style lightening presentations into the Spring CCIV Seminar schedule. Suggestions for future seminar and retreat topics as well as external speakers can be sent to Ann Chahroudi and Megan Vallowe. We thank everyone who participated and made the first CCIV Research Retreat a success! §



# Awards & Accomplishments



**Larry Anderson** received the Chanock Award at this year's ISIRV Conference in Belfast, Ireland. The Chanock Award is given annually to a researcher who has advanced the field of respiratory virus pathophysiology. The award is named after Dr. Robert M. Chanock, an American pediatrician and vaccinologist who discovered RSV and spent more than 50 years at NIAID.



**Maud Mavigner** was re-elected to the Reservoirs Remission and Cure Transformative Science Group (Cure TSG). The group is part of the AIDS Clinical Trials Group Network, and their goal is to cure HIV through complete elimination of the HIV reservoir or by controlling the virus in the absence of ART.



**Ann Chahroudi** was named 1 of 4 luminaries to honor Women in ID by the Pediatric Infectious Diseases Society at the 2022 ID Week Conference.

**Christina Rostad** was selected for 1 of only 2 Pediatric Infectious Diseases Society Young Investigator Awards at the 2022 ID Week Conference.



**Pratik Patel** received the 2022 Stanley and Susan Plotkin Fellowship Award from the Pediatric Infectious Diseases Society to support his research in infectious diseases and oncology.



At this year's Department of Pediatrics Awards night, **Brian Zanoni** won the Department of Pediatrics Junior Faculty Researcher of the Year Award, and **Megan Vallowe** won the Department of Pediatrics Rising to the Occasion Award.



## Upcoming Events

### CCIV Research Grand Rounds

CCIV Research Grand Rounds will be on Wednesday 4/12 at 8am. More information on our speaker and format will come in early 2023.

### CCIV Weekly Seminars

CCIV Monday Seminars will resume this fall, starting **January 23rd**. Weekly seminars are held every Monday from 1-2 PM. This Spring will feature external or faculty speakers at least once a month, in addition to trainees and alumni!

# Research Highlights



Brian Zanoni received his first R01 titled: "Interactive Transition Support for Adolescent Living with HIV Comparing Virtual and In-Person Delivery Through a Stepped-Wedge Cluster Randomized Clinical Trail in South Africa."



Andres Camacho-Gonzalez, in collaboration with Emergency Medicine physicians, Lauren Middlebrooks, MD, and Mark Griffiths, MD, was named a recipient of the Gilead FOCUS award to develop a replicable model project at Children's that will allow for universal HIV screening of adolescents in pediatric emergency departments.

Emory's Center for AIDS Research received a five-year \$11.25 million renewal from the NIH to further its work aimed at ending HIV epidemic.



Ann Chahroudi serves as one of 3 PIs for the Emory CFAR, and as the co-director for basic science.

Satoshi Kamidani's CDC vaccine safety study was published in article *Pediatrics* this November. The study showed that 13-valent pneumococcal vaccines and rotavirus vaccines were *not* associated with an increased risk of Kawasaki Disease in children under 2 years of age.



## Resources

### CCIV and Children's Publication Citation

Remember to cite CCIV and Children's Healthcare of Atlanta in your publications. This is vital to ensure recognition of our work by both Emory and Children's. This requirement applies to all center members, whether lab-based or non-lab based. Children's has been a significant supporter of the research operations that make all of our work possible and should be acknowledged.

The proper affiliation citation is: Center for Childhood Infections and Vaccines (CCIV) of Children's Healthcare of Atlanta and Emory University Department of Pediatrics, Atlanta, GA USA.

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