

May 2016



Center for Childhood Infections and Vaccines

Faculty Profile: Andi Shane, MD



Andi Shane, MD
Emory University

Growing up in apartheid South Africa made me acutely aware of inequality in healthcare. Although I despised going to the healthcare center to receive immunizations as a child, it became ingrained in me that these fleetingly painful experiences were a privilege. My family immigrated to the United States where my interest in epidemiology and infectious diseases was piqued with a neurosciences project that I pursued at the University of Pennsylvania. Additional research related to medication noncompliance in the aged at Columbia University and to assessing outcomes of gastric banding procedures at Louisiana State University School of Medicine cemented my interest in epidemiology. These experiences allowed me to appreciate the accomplishments and set backs of research and the importance of being meticulous and asking questions when results were not as expected. I was inspired by mentors who had spent time at the Centers for Disease Control and Prevention (CDC) and was

fascinated by interventions that had an impact on many.

Plans to complete a one year internship at Albert Einstein College of Medicine were extended to four years with a chief residency as I fell in love with clinical pediatrics. Many nights spent placing intravenous catheters for rehydration of infants with rotavirus infection made me realize the potential impact that an effective vaccine could have on the burden of disease. As an Epidemic Intelligence Service Officer at the CDC, my assignment in the Foodborne and Diarrheal Diseases branch was divided between responses to 9/11 and bacterial diarrheal disease outbreaks. These experiences convinced me that additional training in pediatric infectious disease would be beneficial and I was fortunate to spend three years at UCSF where I learned as much from my co-fellows as I did from my mentors. Celebrating my tenth year as a faculty member in the division of Pediatric Infectious Diseases, I feel fortunate to have my dream job. Every day it seems that I am able to apply some aspect of my past education in the teaching and mentoring of undergraduate students, medical students, and clinical fellows. With colleagues, we developed introductory clinical research courses for medical students (SoCRATES) and clinical fellows (FIRsT) and guidance for both basic science and clinical faculty with career development awards (K-Club). I have collaborated with colleagues in the Atlanta Pediatric Device Consortium to assess the use of a smartphone otoscope in the diagnosis and management of otitis media (ear infections). Participation in NIH multisite clinical trials through our Vaccine and Treatment Evaluations Unit (VTEU) has enabled us to inform public policy by comparing the immunogenicity of combination schedules of rotavirus vaccine formulations in one trial and seasonal influenza vaccine formulations in breastfeeding women and their infants, in

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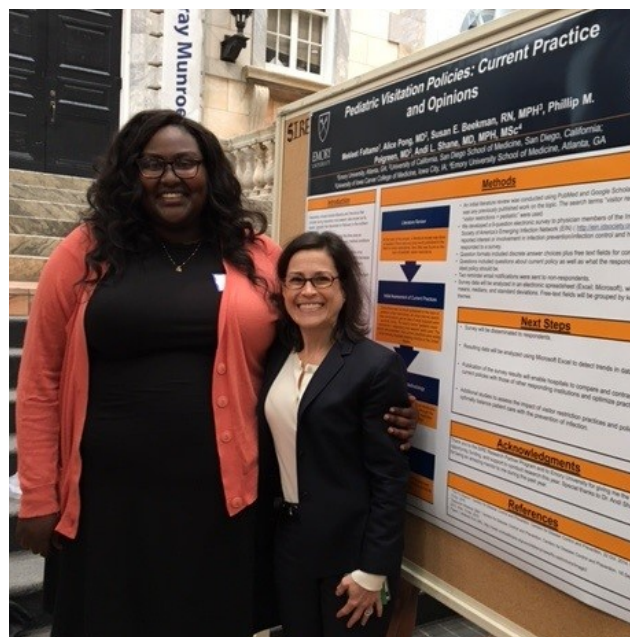
Faculty Profile *continued*

another. Understanding optimal management of congenital CMV infections and assessing the validity of intrapartum diagnostics to detect herpes simplex virus shedding are other multisite studies to which our clinical trials unit has contributed. Applications of probiotics to improve rotavirus vaccine immunogenicity especially in resource disadvantaged settings is a personal research interest. As the medical director of Hospital Epidemiology for Children's Healthcare of Atlanta, I have been afforded opportunities to optimize our infection prevention policies and practices through research and quality improvement initiatives. We have developed a special care unit to care for infants and children with high consequence pathogens and through this effort, collaborate with Emory as their pediatric partner. We are also a pediatric partner to Emory's CDC funded EpiCenter, (PEACH) to which we will contribute data and from which we will have collaborative opportunities to develop evidence based practices.

When not thinking about diarrhea and its prevention, I enjoy spending time with my husband, Mick Ballesteros, a branch chief in the Injury Prevention Center at CDC, and our son Francisco. I enjoy running while pushing a

jogging stroller and have completed 9 half-marathons and 9 Peachtree 10K Road Races without a jogging stroller.

-submitted by Andi Shane



Dr. Shane with a student at a poster session.

New CCIV Faculty Profile: Inci Yildirim, MD



Inci Yildirim, MD
Emory University

Inci Yildirim, MD, MSc completed her pediatric residency at Yale University/New Haven Children's Hospital and infectious diseases fellowship at Boston Children's Hospital/Boston Medical Center Program A in Boston. She has worked as a post-doctoral fellow at Vaccine Evaluation Unit at Public Health England, Manchester, UK with Ray Borrow and at Maxwell Finland Laboratory for

Infectious Diseases, Boston, MA, USA with Stephen Pelton. She trained in epidemiology and is completing her doctoral degree at Boston University School of Public Health.

She joined Emory University School of Medicine and Children's Hospital of Atlanta in September, 2015, and is excited to continue her research pursuits within the Vaccine Trial and Evaluation Unit. She was a recipient of the Massachusetts Infectious Disease Society's Maxwell Finland Award for Excellence in Research, and Edward H. Kass Award for Clinical Excellence During Fellowship in 2015. Dr Yildirim's research focuses on epidemiology of vaccine-preventable diseases particularly pneumococcal infections and cost-effectiveness of screening strategies for tuberculosis. She has published over 40 articles on epidemiology of childhood infectious diseases in various scientific journals, including Pediatrics, Emerging Infectious Diseases, Clinics of North America, Vaccine, and Pediatric Infectious Disease Journal.

Outside of the workplace, Dr Yildirim enjoys spending time with her family, reading, hiking, and drawing.

-submitted by Inci Yildirim

Recent Publication Highlights

EGFR Interacts with the Fusion Protein of Respiratory Syncytial Virus Strain 2-20 and Mediates Infection and Mucin Expression

Currier MG, Lee S, Stobart CC, Hotard AL, Villenave R, Meng J, Pretto CD, Shields MD, Nguyen MT, Todd SO, Chi MH, Hammonds J, Krumm SA, Spearman P Plemper RK6 Sakamoto K, Peebles RS, Power UF, Moore ML. PLoS Pathog. 2016 May 6;12(5). PMID: [27152417](https://pubmed.ncbi.nlm.nih.gov/27152417/)



Michael Currier

Respiratory syncytial virus (RSV) is responsible for severe lower respiratory disease in infants and young children. Currently there are no licensed vaccines for RSV and only an expensive prophylactic therapy. Overabundant airway mucus contributes to airway obstruction in RSV bronchiolitis, and a better understanding of RSV pathogenesis may contribute to needed therapies and vaccines. We reported previously that RSV clinical isolate strain 2-20

induces more airway mucin expression in mice than prototypic RSV strains and that the 2-20 fusion (F) protein

mediates mucin induction. Epidermal growth factor receptor (EGFR) has been shown to play a role in lung mucin expression. We identified a functional interaction between 2-20 F and EGFR, in that 2-20 F expression activated EGFR and, reciprocally, EGFR expression increased 2-20 F fusion activity. RSV F and EGFR co-localized in infected cells. EGFR co-immunoprecipitated with RSV F protein from various RSV strains, and the strength of this in vitro interaction correlated with strain-specific airway pathogenicity in mice. EGFR inhibition abrogated 2-20 F-mediated infection in vitro and mucin expression induction in vivo. These data identify EGFR as a novel strain-specific co-factor of RSV infection, gives a possible explanation for strain-specific disease severity, and suggests EGFR may be a target for ameliorating RSV disease.

-Submitted by the authors, please find the article here: <http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1005622>

Risk Factors for HIV Transmission and Barriers to HIV Disclosure: Metropolitan Atlanta Youth Perspectives.

Camacho-Gonzalez AF, Wallins A, Toledo L, Murray A, Gaul Z, Sutton MY, Gillespie S, Leong T, Graves C, Chakraborty R. AIDS Patient Care STDS. 2016 Jan;30(1):18-24. PMID: [26588663](https://pubmed.ncbi.nlm.nih.gov/26588663/)



Andres Camacho-Gonzalez, MD

Georgia (GA) ranks among the five states with the highest number of new HIV infections with adolescents and young adults (AYAs) age 13-24 accounting for approximately 23% of all new HIV infections. Recent data from Atlanta Metropolitan Statistical Area (MSA) show that young black men who have sex with men (MSM) have an HIV incidence of approximately 12.1% and that by age 39 years, up to 60% will have acquired HIV. We therefore conducted a mixed methods study in HIV-infected and uninfected

AYAs in order to identify risk factors for HIV acquisition. Focus groups were conducted with 68 participants (mean age 21.5 years, 85% male, 90% black, 68% HIV-infected). Quantitative data showed that HIV risk behaviors included

the perception of condomless sex (Likert scale mean: 8.0) and transactional sex in exchange for food (78%), living expenses (88%) or drugs (84%) as a frequent practice among their peers. Focus group discussions centered around two main themes: (1) high risk behaviors among AYAs and (2) barriers to discussing HIV status before sex. Participants felt the use of social media, need for immediate gratification, and lack of concern about HIV disease were risk factors. Discussing HIV status with sex partners was uncommon mainly due to fear of rejection, lack of confidentiality, unnecessary in temporary relationships, and negatively affected the mood. We concluded that HIV prevention strategies for AYAs should include improving condom use frequency and HIV disclosure skills, responsible utilization of social media, and education addressing HIV prevention including the risks of transactional sex.

-Submitted by the authors, please find the article here: www.ncbi.nlm.nih.gov/pubmed/26588663

Recent Publications by CCIV Members

- Bowen JR, Ferris MT, **Suthar MS**. Systems biology: A tool for charting the antiviral landscape. *Virus Res*. 2016 Jan 12. pii: S0168-1702(16)30019-3. Review. PubMed PMID: 26795869.
- Camacho-Gonzalez AF**, Wallins A, Toledo L, Murray A, Gaul Z, Sutton MY, Gillespie S, Leong T, Graves C, **Chakraborty R**. Risk Factors for HIV Transmission and Barriers to HIV Disclosure: Metropolitan Atlanta Youth Perspectives. *AIDS Patient Care STDS*. 2016 Jan;30(1):18-24. PubMed PMID: 26588663. *highlighted on page 3*
- Chahroudi A, Silvestri G**. HIV and Tfh Cells: Circulating New Ideas to Identify and Protect. *Immunity*. 2016 Jan 19;44(1):16-8. PubMed PMID: 26789919.
- Chamcha V, Kannanganat S, Gangadhara S, Nabi R, Kozlowski PA, Montefiori DC, LaBranche CC, **Wrammert J**, Keele BF, Balachandran H, Sahu S, Lifton M, Santra S, Basu R, Moss B, Robinson HL, Amara RR. Strong, but Age-Dependent, Protection Elicited by a Deoxyribonucleic Acid/Modified Vaccinia Ankara Simian Immunodeficiency Virus Vaccine. *Open Forum Infect Dis*. 2016 Feb 11;3(1):ofw034. eCollection 2016 Jan. PubMed PMID: 27006959.
- Cho A, **Wrammert J**. Implications of broadly neutralizing antibodies in the development of a universal influenza vaccine. *Curr Opin Virol*. 2016 Mar 28;17:110-115. Review. PubMed PMID: 27031684.
- Currier MG, Lee S, Stobart CC, Hotard AL, Villenave R, Meng J, Pretto CD, Shields MD, Nguyen MT, Todd SO, Chi MH, **Hammonds J**, Krumm SA, **Spearman P**, **Plemper RK**, Sakamoto K, Peebles RS Jr, Power UF, **Moore ML**. EGFR Interacts with the Fusion Protein of Respiratory Syncytial Virus Strain 2-20 and Mediates Infection and Mucin Expression. *PLoS Pathog*. 2016 May 6;12(5):e1005622. eCollection 2016 May. PubMed PMID: 27152417. *highlighted on page 3*
- Ding Y, Thompson JD, **Kobrynski L**, Ojodu J, Zarbalian G, Grosse SD. Cost-Effectiveness/Cost-Benefit Analysis of Newborn Screening for Severe Combined Immune Deficiency in Washington State. *J Pediatr*. 2016 May;172:127-35. PubMed PMID: 26876279.
- Finocchiaro-Kessler S, Champassak S, Hoyt MJ, Short W, **Chakraborty R**, Weber S, Levison J, Phillips J, Storm D, Anderson J. Pre-Exposure Prophylaxis (PrEP) for Safer Conception Among Serodifferent Couples: Findings from Healthcare Providers Serving Patients with HIV in Seven US Cities. *AIDS Patient Care STDS*. 2016 Jan 29. PubMed PMID: 26824425.
- Hicar MD, Chen X, Kalams SA, Sojar H, Landucci G, Forthal DN, **Spearman P**, Crowe JE Jr. Low frequency of broadly neutralizing HIV antibodies during chronic infection even in quaternary epitope targeting antibodies containing large numbers of somatic mutations. *Mol Immunol*. 2016 Feb;70:94-103. PubMed PMID: 26748387.
- Hudson LE, Stewart TP, Fasken MB, Corbett AH, **Lamb TJ**. Transformation of Probiotic Yeast and Their Recovery from Gastrointestinal Immune Tissues Following Oral Gavage in Mice. *J Vis Exp*. 2016 Feb 8;(108). PubMed PMID: 26890281.
- Hudson LE, McDermott CD, Stewart TP, Hudson WH, Rios D, Fasken MB, Corbett AH, **Lamb TJ**. Characterization of the Probiotic Yeast *Saccharomyces boulardii* in the Healthy Mucosal Immune System. *PLoS One*. 2016 Apr 11;11(4):e0153351. PubMed PMID: 27064405.
- Libster R, McNeal M, Walter EB, **Shane AL**, Winokur P, Cress G, Berry AA, Kotloff KL, Sarpong K, Turley CB, Harrison CJ, Pahud BA, Marbin J, Dunn J, El-Khorazaty J, Barrett J, Edwards KM; VTEU Rotavirus Vaccine Study Work Group. Safety and Immunogenicity of Sequential Rotavirus Vaccine Schedules. *Pediatrics*. 2016 Feb;137(2):1-10. PubMed PMID: 26823540.
- Markosyan RM, Miao C, Zheng YM, **Melikyan GB**, Liu SL, Cohen FS. Induction of Cell-Cell Fusion by Ebola Virus Glycoprotein: Low pH Is Not a Trigger. *PLoS Pathog*. 2016 Jan 5;12(1):e1005373. doiPubMed PMID: 26730950.
- Mehrotra P, **Shane AL**, Milstone AM. Upholding Family-Centered Care in the Face of High-Consequence Pathogens- Thinking Inside the Room-Reply. *JAMA Pediatr*. 2016 Mar 1;170(3):299. PubMed PMID: 26810275.
- Millman AJ, Finelli L, Bramley AM, Peacock G, Williams DJ, Arnold SR, Grijalva CG, **Anderson EJ**, McCullers JA, Ampofo K, Pavia AT, Edwards KM, Jain S. Community-Acquired Pneumonia Hospitalization among Children with Neurologic Disorders. *J Pediatr*. 2016 Mar 17. pii: S0022-3476(16)00271-7. PubMed PMID: 27017483.

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Recent Publications *continued*

- Oboho IK, Reed C, Gargiullo P, Leon M, Aragon D, Meek J, **Anderson EJ**, Ryan P, Lynfield R, Morin C, Bargsten M, Zansky SM, Fowler B, Thomas A, Lindegren ML, Schaffner W, Risk I, Finelli L, Chaves SS. Benefit of Early Initiation of Influenza Antiviral Treatment to Pregnant Women Hospitalized With Laboratory-Confirmed Influenza. *J Infect Dis*. 2016 Feb 3. pii: jiw033. PubMed PMID: 26908745.
- Oum YH, Desai TM, Marin M, **Melikyan GB**. Click labeling of unnatural sugars metabolically incorporated into viral envelope glycoproteins enables visualization of single particle fusion. *J Virol Methods*. 2016 Jul;233:62-71. PubMed PMID: 27033181.
- Priyamvada L, Cho A, Onlamoon N, Zheng NY, Huang M, Kovalenkov Y, Chokeyhaibulkit K, Angkasekwina N, Pattanapanyasat K, Ahmed R, Wilson PC, **Wrammert J**. B cell responses during secondary dengue infection are dominated by highly cross-reactive, memory-derived plasmablasts. *J Virol*. 2016 Mar 30. pii: JVI.03203-15. PubMed PMID: 27030262.
- Quinn CP, Sabourin CL, Schiffer JM, Niemuth NA, Semenova VA, Li H, Rudge TL, Brys AM, Mittler RS, Ibegbu CC, **Wrammert J**, Ahmed R, Parker SD, Babcock J, Keitel W, Poland GA, **Keyserling HL**, El Sahly H, Jacobson RM, Marano N, Plikaytis BD, Wright JG. Humoral and Cell-Mediated Immune Responses to Alternate Booster Schedules of Anthrax Vaccine Adsorbed in Humans. *Clin Vaccine Immunol*. 2016 Apr 4;23(4):326-38. PubMed PMID: 26865594.
- Sanders ME, **Shane AL**, Merenstein DJ. Advancing probiotic research in humans in the United States: Challenges and strategies. *Gut Microbes*. 2016 Mar 3;7(2):97-100. PubMed PMID: 26963522.
- Self WH, Grijalva CG, Williams DJ, Woodworth A, Balk RA, Fakhra S, Zhu Y, Courtney DM, Chappell J, **Anderson EJ**, Qi C, Waterer GW, Trabue C, Bramley AM, Jain S, Edwards KM, Wunderink RG. Procalcitonin as an Early Marker of the Need for Invasive Respiratory or Vasopressor Support in Adults with Community-Acquired Pneumonia. *Chest*. 2016 Apr 20. pii: S0012-3692(16)48560-0. PubMed PMID: 27107491.
- Sood C, Marin M, Mason CS, **Melikyan GB**. Visualization of Content Release from Cell Surface-Attached Single HIV-1 Particles Carrying an Extra-Viral Fluorescent pH-Sensor. *PLoS One*. 2016 Feb 10;11(2):e0148944. PubMed PMID: 26863211.
- Stier MT, Bloodworth MH, Toki S, Newcomb DC, Goleniewska K, Boyd KL, Quitalig M, Hotard AL, **Moore ML**, Hartert TV, Zhou B, McKenzie AN, Peebles RS Jr. Respiratory syncytial virus infection activates IL-13-producing group 2 innate lymphoid cells through thymic stromal lymphopoietin. *J Allergy Clin Immunol*. 2016 Apr 9. pii: S0091-6749(16)30080-X. PubMed PMID: 27156176.
- Uyeki TM, Erickson BR, Brown S, **McElroy AK**, Cannon D, Gibbons A, Sealy T, Kainulainen MH, Schuh AJ, Kraft CS, Mehta AK, Lyon GM 3rd, Varkey JB, Ribner BS, Ellison RT 3rd, Carmody E, Nau GJ, Spiropoulou C, Nichol ST, Ströher U. Ebola Virus Persistence in Semen of Male Survivors. *Clin Infect Dis*. 2016 Apr 3. pii: ciw202. PubMed PMID: 27045122.
- Wang F, Alain T, Szretter KJ, Stephenson K, Pol JG, Atherton MJ, Hoang HD, Fonseca BD, Zakaria C, Chen L, Rangwala Z, Hesch A, Chan ES, Tuinman C, **Suthar MS**, Jiang Z, Ashkar AA, Thomas G, Kozma SC, Gale M Jr, Fitzgerald KA, Diamond MS, Mossman K, Sonenberg N, Wan Y, Lichty BD. S6K-STING interaction regulates cytosolic DNA-mediated activation of the transcription factor IRF3. *Nat Immunol*. 2016 May;17(5):514-22. PubMed PMID: 27043414.
- Wortham JM, Hansen NI, Schrag SJ, Hale E, Van Meurs K, Sánchez PJ, Cantey JB, Faix R, Poindexter B, Goldberg R, Bizzarro M, Frantz I, Das A, Benitz WE, **Shane AL**, Higgins R, Stoll BJ; Eunice Kennedy Shriver NICHD Neonatal Research Network. Chorioamnionitis and Culture-Confirmed, Early-Onset Neonatal Infections. *Pediatrics*. 2016 Jan;137(1). doi: 10.1542/peds.2015-2323. PubMed PMID: 26719293.
- Yi J**, Humphries R, Doerr L, Jerris RC, Westblade LF. *Bergeyella zoohelcum* Associated with Abscess and Cellulitis After a Dog Bite. *Pediatr Infect Dis J*. 2016 Feb;35(2):214-6. PubMed PMID: 26535880.

Note: Bolded names are CCIV center members. If you have a publication that you would like included in the next CCIV newsletter, please contact kmurra5@emory.edu

Keep in Touch

Visit our website: www.pedsresearch.org/research/centers/cciv

The CCIV website was recently redesigned, check out the new features on it and www.pedsresearch.org!

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Upcoming Events

Pediatric ID Seminar Series

Meets each Thursday at 1 pm in the Emory-Children's Center Room 202

June 2: Tania Chirkova and Junghwa Choi

June 9: Thayer King and Charline Giround

June 16: Murali Kaja

June 23: Samadan Jadhao and Sarah Takushi

June 30: Devi Rajan and Robert Kauffman

Pediatric Grand Rounds

CCIV is sponsoring a Grand Rounds Speaker in August and October,

Wednesday mornings at 7:30 am in Egleston Classroom 5

August 24: William Steinbach, MD (Duke University)

October 19: John V. Williams, MD (University of Pittsburgh)

CCIV Symposium

CCIV is sponsoring a symposium on October 19. Look for more details in the coming months on www.pedsresearch.org.

