Volume 2, Issue 2

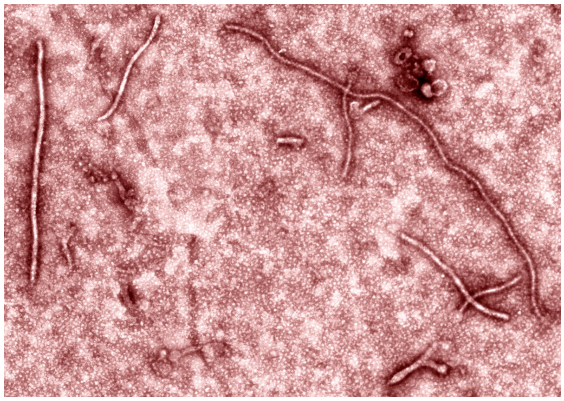
EMORY+CHILDREN'S PEDIATRIC RESEARCH CENTER

August 2015

Center for Childhood Infections and Vaccines

Ebola Vaccine Contract Awarded to Emory's VTEU and CCIV Investigators

A team of CCIV investigators has taken the lead in a new $4.5 million contract from NIH to intensively study two Ebola vaccines in humans. The team is led by Evan Anderson, Paul Spearman, Mehul Suthar, Karnail Singh, and Anita McElroy; all working within the Emory Vaccine and Treatment Evaluation Unit (VTEU) led by Mark Mulligan. A number of Emory leaders in systems biology will also contribute to this project, which will study the proteomics, transcriptomics, lipidomics, and metabolomics of a prime-boost regimen of the MVA multi-filovirus vaccine from Bavarian Nordic and the Ad26 Zaire vaccine from Crucell Holland BV. This exciting study has the potential to identify early innate immune responses that can predict later protective responses against Ebola and Marburg viruses. Along the way the investigators are developing new assays to measure cellular and humoral responses to Ebola vaccination that should be useful in global efforts to understand and combat this deadly infection. The team has benefited from the experience at Emory in caring for the first Ebola-infected individuals to be treated in the United States. Studies performed by Dr. Anita McElroy working with Rafi Ahmed and colleagues of the Emory Vaccine Center this past year showed that cellular immune responses against Ebola were present early after infection, and documented a very high plasmablast response to Ebola infection. The current vaccine trial represents a unique opportunity to compare immune responses observed in vaccine recipients with the responses observed in Ebola-infected individuals treated at Emory.



Ebolavirus is a filovirus, and forms long filamentous strands covered with viral proteins. Shown are Ebola virus-like particles contributed by Xuemin Chen and Karnail Singh, with negative stain EM image by JJ Wang.

-submitted by Paul Spearman, MD

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CCIV Social

September 10 at 5:30 pm in ECC 502

Come join fellow CCIV members to welcome new faculty member Bernardo Mainou, PhD

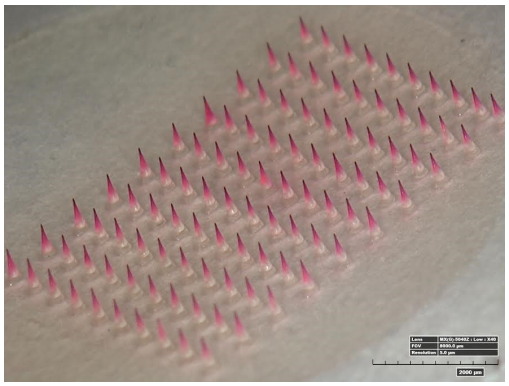
An Interview with CCIV Member Mark Prausnitz, PhD

Mark Prausnitz, PhD
Regent's Professor and
Love Family Professor of
Chemical and
Biomolecular Engineering
Georgia Tech

In June, CCIV Faculty Member Mark Prausnitz, PhD sat down with CCIV Program Coordinator Karen Kennedy to discuss his research. Keep reading to learn what Dr. Prausnitz shared about his work on vaccine delivery and microneedles.

How did Dr. Prausnitz's career evolve to focus on vaccine delivery?

In high school Dr. Prausnitz did well in chemistry class, and realizing he was science oriented, decided to study chemistry in college. He also liked the application of engineering, so he studied chemical engineering. Later realized that the classical applications of chemical engineering was not his area of interest, rather he liked the chemical engineering of molecules and controlling where molecules go in the body. After college, Dr. Prausnitz took a job at a company that worked on patches for transdermal drug delivery, which was the beginning of his interest that grew his graduate school and his own lab's interest in the development of microneedles for drug and vaccine delivery. Initially he didn't work on vaccine delivery, but a visiting scientist position at the NIH in 2002 in vaccine research ultimately led to a collaboration with Emory researcher Richard Compans, PhD, an expert in influenza vaccines. The flu vaccine turned out to be a good match for microneedle technology, and Dr. Prausnitz's interest in developing microneedle technology for vaccine delivery grew. Since his collaboration with Dr. Compans, Dr. Prausnitz has continued his local collaborations, working with multiple Emory and CDC researchers as well as other collaborators at Georgia Tech. While other key collaborations have developed over time, these Atlanta-based teams have been important in the productivity of Dr. Prausnitz's laboratory.

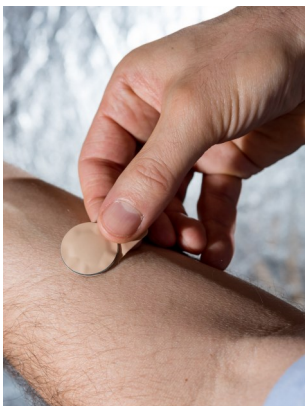


Dr. Prausnitz described the basics of microneedles.

A goal of the microneedles is to deliver medicine or vaccines. For vaccine delivery, the microneedles need to encapsulate the vaccine and keep it stable over time, preferably without special storage needs. The needles must be able to puncture the skin and then dissolve into the skin quickly to safely deliver the vaccine without sharps waste. This is an optimization problem, and manufacturability is a concern throughout development. Being a trained engineer, Dr. Prausnitz knows the importance of considering how the microneedles should be developed for large-scale production.

What are the biggest challenges to new vaccine delivery technology?

Dr. Prausnitz noted that unlike other pharmaceutical developments, there is no "microneedle behemoth." This means there is no large backer of research in development of microneedles for various needs. Big pharmaceutical companies prefer that smaller companies develop this technology for a specific drug or vaccine, then they will acquire the very specific technology. However it is unattractive for these companies to support more general microneedle development because the technology has such diverse applications so the company cannot get the full realization of the technology. Another challenge is that vaccines are delivered to healthy people, including babies and children, so safety standards are very high. Vaccines are also widely administered, meaning they must be cheap. Without the support of a large microneedle backer, these requirements can be burdensome, but not insurmountable, as Dr. Prausnitz has shown.



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CCIV Faculty Highlight: Philip Santangelo

Philip Santangelo, PhD
Associate Professor
Department of Biomedical Engineering
Georgia Tech

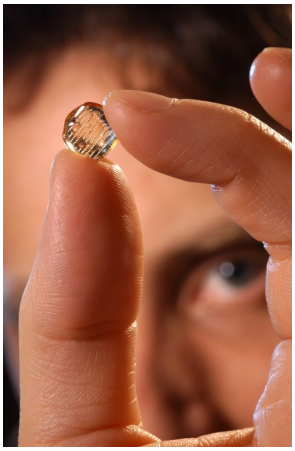
Dr. Philip Santangelo is concerned about the lack of treatment and cures for a number of important infectious agents. Dr. Santangelo is attempting to address this through the development and engineering of new molecular imaging technology for uncovering biological mechanisms. Molecular imaging provides both spatial and temporal information, at the single molecule, cell or organism level, which cannot often be obtained via biochemical assays; these tools have the potential to reveal new mechanisms and drug targets.

Every year one out of 100-200 children end up in the hospital with severe respiratory syncytial virus (RSV) infections. Currently there is no vaccine for RSV and few treatments. Dr. Santangelo is addressing this through the development of new imaging agents to reveal the mechanisms of the RSV virion assembly, entry, and replication in live cells, with the goal of identifying virus specific mechanisms as new drug targets. The lab has developed single molecule-sensitive probes for imaging ribonucleic acid (RNA) molecules, which allow for the study of RNA regulation, an important part of gene expression, and the replication and assembly of RNA viruses such as RSV. We have also developed, based on these probes, a method for detecting RNA-protein interactions in situ, with single interaction sensitivity, which should aid in revealing interactions associated with RSV mechanisms.

Another area of interest to him is HIV infection. In order to cure HIV, it is critical to understand where the virus is "hiding" during treatment, and how treatments affect the virus at different locations within the body. To confront this issue, the Santangelo lab, in conjunction with the Villinger lab at Emory, has developed positron-emission tomography (PET) probes, which utilize antibodies and radioactive atoms to target SIV in the macaque model and enable whole body scans for the virus. This type of probe should be easily adapted to HIV in humans. The hope is that the tool will contribute to the discovery of new treatments and possibly even a cure for HIV.

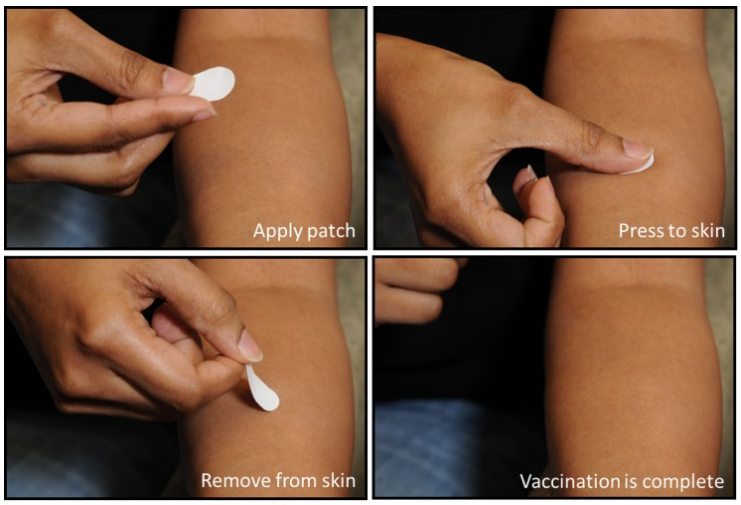
-submitted by Philip Santangelo, PhD

Mark Prausnitz Interview *continued from page 2*



What is the most exciting/new thing on the horizon?

Dr. Prausnitz is very excited that microneedles are opening new avenues to bring necessary medicines/ vaccines to people who need them while lowering logistical barriers. There are two microneedle vaccine clinical trials in the pipeline in which Dr. Prausnitz is involved. First there is a flu vaccine trial starting this year. Next year there will be a trial with a polio vaccine, which will include children in the later phase II studies. Furthermore, Dr. Prausnitz underscored the excitement he has the Atlanta research community—his collaborators at Georgia Tech, Emory and the CDC have provided the critical mix of engineering and biomedical expertise to make these and future project possible.



Thank you to Dr. Prausnitz for the images, obtained from http://drugdelivery.chbe.gatech.edu/gallery_index.html

Recent Funding Awards to CCIV Members

Investigator	Title	Sponsor
Evan Anderson	An Observational, Non-Interventional Study in the United States to Characterize	UNITED BIOSCIENCE CORPORATION
Evan Anderson	Merck V210-063-0001: A Phase III Double Blind, Randomized, Multicenter	COVANCE
Evan Anderson	Clinical Evaluation of an Improved BinaxNOW Influenza A&B Card	ALERE SCARBOROUGH
Evan Anderson	PXVX-VC-200-004	PAXVAX INC
Evan Anderson	PXVX-VC-200-005	PAXVAX INC
Evan Anderson	V118-05, A Phase III, Stratified, Randomized, Observer Blind, Controlled	ICON CLINICAL RESEARCH
Andres Camacho-Gonzalez	The MACARTI trial with linkage to care and counseling	CDC
Andres Camacho-Gonzalez	AI424452: A Prospective Single Arm, Open-label, International, Multicenter	BMS
Ann Chahroudi	Vitamin D, drug metabolism, and cardiovascular complications in pediatric HIV	CASE WESTERN RESERVE UNIVERSITY
Rana Chakraborty	GS-US-183-0160	GILEAD SCIENCES
Rana Chakraborty	GS-US-216-0128	GILEAD SCIENCES
Rana Chakraborty	GS-US-292-0106	GILEAD SCIENCES
Joseph Hilinski	IRB 48991 Pfizer 1015 Arm A and B, MCV4 Tdap and rLP2086 Vaccine 10 to 13 years	PFIZER
Lisa Kobrynski	170904 - A CLINICAL STUDY OF IMMUNE GLOBULIN SUBCUTANEOUS (HUMAN), 20% SOLU	BAXTER HEALTHCARE CORPORATION
Tracey Lamb	Ephrin Ligands as Novel Targets for an Adjunct Therapy in Cerebral Malaria	NIH
Gregory Melikian	Biophysics of Protein-Mediated Membrane Fusion	NIH
Gregory Melikian	Entry mechanisms used by a model retrovirus	NIH
Martin Moore	R2222-RSV-1332 Regeneron Pharmaceuticals Laboratory Services Agreement	REGENERON PHARMACEUTICALS
Andi Shane	DMID 11-0070 Herpes Simplex Virus-GeneXpert-401	UAB
Andi Shane	DMID 11-0068 CMX 001 Neonatal Herpes HSV-402	UAB
Paul Spearman	Mucosal Protection Against HIV Generated by PIV5 Priming and VLP Boosting	NIH
Paul Spearman	IRB00055834 GSK IV Zanamivir	GLAXOSMITHKLINE
Paul Spearman	Pediatric and Adolescent HIV/AIDS research program at Emory University School of M	WESTAT
Paul Spearman & Evan Anderson	VTEU Ebola Contract	NIH
Mehul Suthar	Identifying host genetic determinants that regulate dendritic cell activation	NIH

Note: If you have an awarded grant that you would like included in the next CCIV newsletter, please contact kmurra5@emory.edu

Recent Publications by CCIV Members

Anderson EJ, Shippee DB, Tate JE, Larkin B, Bregger MD, Katz BZ, Noskin GA, Sederdahl BK, Shane AL, Parashar UD, Yogev R. Clinical characteristics and genotypes of rotavirus in adults. J Infect. 2015 Jun;70(6):683-7. PMID: 25481405.

Andtbacka RH, Kaufman HL, Collichio F, Amatruda T, Senzer N, Chesney J, Delman KA, Spitler LE, Puzanov I, Agarwala SS, Milhem M, Cranmer L, Curti B, Lewis K, Ross M, Guthrie T, Linette GP, Daniels GA, Harrington K, Middleton MR, Miller WH Jr, Zager JS, Ye Y, Yao B, Li A, Doleman S, VanderWalde A, Gansert J, Coffin RS. Talimogene Laherparepvec Improves Durable Response Rate in Patients With Advanced Melanoma. J Clin Oncol. 2015 May 26. pii: PMID: 26014293.

Arriola CS, Anderson EJ, Baumbach J, Bennett N, Bohm S, Hill M, Lindegren ML, Lung K, Meek J, Mermel E, Miller L, Monroe ML, Morin C, Oni O, Reingold A, Schaffner W, Thomas A, Zansky SM, Finelli L, Chaves SS. Does Influenza Vaccination Modify Influenza Severity? Data on Older Adults Hospitalized With Influenza During the 2012-2013 Season in the United States. J Infect Dis. 2015 Mar 27. pii: jiv200. PMID: 25821227.

Boyoglu-Barnum S, Todd SO, Chirkova T, Barnum TR, Gaston KA, Haynes LM, Tripp RA, Moore ML, Anderson LJ. An anti-G protein monoclonal antibody treats RSV disease more effectively than an anti-F monoclonal antibody in BALB/c mice. Virology. 2015 May 8;483:117-125. PMID: 25965801.

Brownstein PS, Gillespie SE, Leong T, Chahroudi A, Chakraborty R, Camacho-Gonzalez AF. The association of uncontrolled HIV infection and other sexually transmitted infections in metropolitan Atlanta youth. Pediatr Infect Dis J. 2015 May;34(5):e119-24. PMID: 25461474.

Bruden DJ, Singleton R, Hawk CS, Bulkow LR, Bentley S, Anderson LJ, Herrmann L, Chikoyak L, Hennessy TW. Eighteen Years of Respiratory Syncytial Virus Surveillance: Changes in Seasonality and Hospitalization Rates in southwestern Alaska Native Children. Pediatr Infect Dis J. 2015 Jun 10. PMID: 26065863.

Chahroudi A, Silvestri G, Lichterfeld M. T memory stem cells and HIV: a long-term relationship. Curr HIV/AIDS Rep. 2015 Mar;12(1):33-40. PMID: 25578055; PubMed Central PMCID: PMC4370789.

Chatterton-Kirchmeier S, Camacho-Gonzalez AF, McCracken CE, Chakraborty R, Batisky DL. Increased prevalence of elevated blood pressures in HIV-infected children, adolescents and young adults. Pediatr Infect Dis J. 2015 Jun;34(6):610-4. PMID: 25831423.

Chowdhury A, Hayes TL, Bosinger SE, Lawson BO, Vanderford T, Schmitz JE, Paiardini M, Betts M, Chahroudi A, Estes JD, Silvestri G. Differential impact of in vivo CD8+ T-lymphocyte depletion in controller versus progressor SIV-infected macaques. J Virol. 2015 Jun 10. pii: JVI.00869-15. PMID: 26063417.

Deval J, Hong J, Wang G, Taylor J, Smith LK, Fung A, Stevens SK, Liu H, Jin Z, Dyatkina N, Prhavc M, Stoycheva AD, Serebryany V, Liu J, Smith DB, Tam Y, Zhang Q, Moore ML, Fearns R, Chanda SM, Blatt LM, Symons JA, Beigelman L. Molecular Basis for the Selective Inhibition of Respiratory Syncytial Virus RNA Polymerase by 2'-Fluoro-4'-Chloromethyl-Cytidine Triphosphate. PLoS Pathog. 2015 Jun 22;11(6):e1004995. PMID: 26098424; PubMed Central PMCID: PMC4476725.

Giroud C, Marin M, Hammonds J, Spearman P, Melikyan GB. P2X1 receptor antagonists inhibit HIV-1 fusion by blocking virus-coreceptor interactions. J Virol. 2015 Jul 1. pii: JVI.01178-15. PMID: 26136569.

Graham JB, Thomas S, Swarts J, McMillan AA, Ferris MT, Suthar MS, Treuting PM, Ireton R, Gale M Jr, Lund JM. Genetic diversity in the collaborative cross model recapitulates human West Nile virus disease outcomes. MBio. 2015 May 5;6(3):e00493-15. doi: 10.1128/mBio.00493-15. PMID: 25944860; PMCID: PMC4436067.

Hotard AL, Laikhter E, Brooks K, Hartert TV, Moore ML. Functional Analysis of the 60-Nucleotide Duplication in the Respiratory Syncytial Virus Buenos Aires Strain Attachment Glycoprotein. J Virol. 2015 Aug 15;89(16):8258-66. PMID: 26018171.

Hussen SA, Andes K, Gilliard D, Chakraborty R, Del Rio C, Malebranche DJ. Transition to adulthood and antiretroviral adherence among HIV-positive young Black men who have sex with men. Am J Public Health. 2015 Apr;105(4):725-31. PMID: 24922167; PMCID: PMC4358185.

Jonnalagadda S, LaCourse SM, Otieno P, Lohman-Payne B, Maleche-Obimbo E, Cranmer LM, John-Stewart GC. Incidence and correlates of tuberculosis IGRA conversion among HIV-infected postpartum women. Int J Tuberc Lung Dis. 2015 Jul;19(7):792-8. PMID: 26056103.

Kaur K, Zheng NY, Smith K, Huang M, Li L, Pauli NT, Dunand CJ, Lee JH, Morrissey M, Wu Y, Joachims ML, Munroe ME, Lau D, Qu X, Krammer F, Wrammert J, Palese P, Ahmed R, James JA, Wilson PC. High Affinity Antibodies against Influenza Characterize the Plasmablast Response in SLE Patients After Vaccination. PLoS One. 2015 May 7;10(5):e0125618. PMID: 25951191; PMCID: PMC4423960.

Kondo N, Marin M, Kim JH, Desai TM, Melikyan GB. Distinct requirements for HIV-cell fusion and HIV-mediated cell-cell fusion. J Biol Chem. 2015 Mar 6;290(10):6558-73. PMID: 25589785; PMCID: PMC4358289.

Kraft CS, Hewlett AL, Koepsell S, Winkler AM, Kratochvil CJ, Larson L, Varkey JB, Mehta AK, Lyon GM 3rd, Friedman-Moraco RJ, Marconi VC, Hill CE, Sullivan JN, Johnson DW, Lisco SJ, Mulligan MJ, Uyeki TM, McElroy AK, Sealy T, Campbell S, Spiropoulou C, Ströher U, Crozier I, Sacra R, Connor MJ Jr, Sueblinvong V, Franch HA, Smith PW, Ribner BS; Nebraska Biocontainment Unit and the Emory Serious Communicable Diseases Unit. The Use of TKM-100802 and Convalescent Plasma in 2 Patients With Ebola Virus Disease in the United States. Clin Infect Dis. 2015 Apr 22. pii: civ334. PMID: 25904375.

Larkin EK, Gebretsadik T, Moore ML, Anderson LJ, Dupont WD, Chappell JD, Minton PA, Peebles RS Jr, Moore PE, Valet RS, Arnold DH, Rosas-Salazar C, Das SR, Polack FP, Hartert TV; INSPIRE Study. Objectives, design and enrollment results from the Infant Susceptibility to Pulmonary Infections and Asthma Following RSV Exposure Study (INSPIRE). BMC Pulm Med. 2015 Apr 30;15(1):45. PMID: 26021723; PMCID: PMC4506623.

Lee YN, Hwang HS, Kim MC, Lee YT, Lee JS, Moore ML, Kang SM. Recombinant influenza virus expressing a fusion protein neutralizing epitope of respiratory syncytial virus (RSV) confers protection without vaccine-enhanced RSV disease. Antiviral Res. 2015 Mar;115:1-8. PMID: 25513755; PMCID: PMC4323669.

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Recent Publications continued

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Ma DY, Suthar MS. Mechanisms of innate immune evasion in re-emerging RNA viruses. Curr Opin Virol. 2015 Jun;12:26-37. PMID: 25765605; PMCID: PMC4470747.

Marin M, Melikyan GB. Can HIV-1 entry sites be deduced by comparing bulk endocytosis to functional readouts for viral fusion? J Virol. 2015 Mar;89(5):2985. PMID: 25657214; PMCID: PMC4325720.

Marin M, Du Y, Giroud C, Kim JH, Qui M, Fu H, Melikyan GB. High-Throughput HIV-Cell Fusion Assay for Discovery of Virus Entry Inhibitors. Assay Drug Dev Technol. 2015 Apr;13(3):155-66. PMID: 25871547; PMCID: PMC4410757.

Matar CG, Anthony NR, O'Flaherty BM, Jacobs NT, Priyamvada L, Engwerda CR, Speck SH, Lamb TJ. Gammaherpesvirus Co-infection with Malaria Suppresses Anti-parasitic Humoral Immunity. PLoS Pathog. 2015 May 21;11(5):e1004858. PMID: 25996913; PMCID: PMC4440701.

Matar CG, Jacobs NT, Speck SH, Lamb TJ, Moormann AM. Does EBV alter the pathogenesis of malaria? Parasite Immunol. 2015 Jun 29 PMID: 26121587.

McElroy AK, Akondy RS, Davis CW, Ellebedy AH, Mehta AK, Kraft CS, Lyon GM, Ribner BS, Varkey J, Sidney J, Sette A, Campbell S, Ströher U, Damon I, Nichol ST, Spiropoulou CF, Ahmed R. Human Ebola virus infection results in substantial immune activation. Proc Natl Acad Sci U S A. 2015 Apr 14;112(15):4719-24. PMID: 25775592; PMCID: PMC4403189.

Mimche PN, Brady LM, Bray CF, Lee CM, Thapa M, King TP, Quicke K, McDermott CD, Mimche SM, Grakoui A, Morgan ET, Lamb TJ. The receptor tyrosine kinase EphB2 promotes hepatic fibrosis in mice. Hepatology. 2015 Mar 17. PMID: 25784101.

Mir KD, Mavigner M, Wang C, Paiardini M, Sodora DL, Chahroudi AM, Bosinger SM, Silvestri G. Reduced SIV replication in macrophages of sooty mangabeys is associated with increased expression of host restriction factors. J Virol. 2015 Jul 22. pii: JVI.00710-15. PMID: 26202248.

Ptaschinski C, Mukherjee S, Moore ML, Albert M, Helin K, Kunkel SL, Lukacs NW. RSV-Induced H3K4 Demethylase KDM5B Leads to Regulation of Dendritic Cell-Derived Innate Cytokines and Exacerbates Pathogenesis In Vivo. PLoS Pathog. 2015 Jun 17;11(6):e1004978. PMID: 26083387; PMCID: PMC4470918.

Qi M, Chu H, Chen X, Choi J, Wen X, Hammonds J, Ding L, Hunter E, Spearman P. A tyrosine-based motif in the HIV-1 envelope glycoprotein tail mediates cell-type- and Rab11-FIP1C-dependent incorporation into virions. Proc Natl Acad Sci U S A. 2015 Jun 16;112 (24):7575-80. PMID: 26034275; PMCID: PMC4475960.

Rappaport KM, McCracken CC, Beniflah J, Little WK, Fletcher DA, Lam WA, Shane AL. Assessment of a Smartphone Otoscope Device for the Diagnosis and Management of Otitis Media. Clin Pediatr (Phila). 2015 Jul 7. pii: 000992281559390 PMID: 26156976.

Rogers BB, Shankar P, Jerris RC, Kotzbauer D, Anderson EJ, Watson JR, O'Brien LA, Uwindatwa F, McNamara K, Bost JE. Impact of a rapid respiratory panel test on patient outcomes. Arch Pathol Lab Med. 2015 May;139(5):636-41. PMID: 25152311.

Sakurai Y, Fitch-Tewfik JL, Qiu Y, Ahn B, Myers DR, Tran R, Fay ME, Ding L, Spearman PW, Michelson AD, Flaumenhaft R, Lam WA. Platelet geometry sensing spatially regulates α-granule secretion to enable matrix self-deposition. Blood. 2015 May 11. pii: blood-2014-11-607614. PMID:
25964667.

Simões EA, Ambrose CS, Wu X, Anderson EJ. Intensive care unit admission rates for respiratory syncytial virus infection as a function of age in preterm infants born at 32-35-week gestation and not receiving immunoprophylaxis. Pediatr Infect Dis J. 2015 Mar;34(3):331. PMID: 25742086.

Spengler JR, McElroy AK, Harmon JR, Ströher U, Nichol ST, Spiropoulou CF. Relationship Between Ebola Virus Real-Time Quantitative Polymerase Chain Reaction-Based Threshold Cycle Value and Virus Isolation From Human Plasma. J Infect Dis. 2015 May 3. pii: jiv187. PMID: 25941333.

Thapa M, Chinnadurai R, Velazquez VM, Tedesco D, Elrod E, Han JH, Sharma P, Ibegbu C, Gewirtz A, Anania F, Pulendran B, Suthar MS, Grakoui A. Liver fibrosis occurs through dysregulation of MyD88-dependent innate B-cell activity. Hepatology. 2015 Jun;61(6):2067-79 PMID: 25711908; PMCID: PMC4441566.

Velazquez VM, Uebelhoer LS, Thapa M, Ibegbu CC, Courtney C, Bosinger SE, Magliocca JF, Adams AB, Kirk AD, Knechtle SJ, Kalman D, Suthar MS, Grakoui A. Systems biological analyses reveal the hepatitis C virus (HCV)-specific regulation of hematopoietic development. Hepatology. 2015 Mar;61(3):843-56. PMID: 25331524; PMCID: PMC4340762.

Walpita P, Johns LM, Tandon R, Moore ML. Mammalian Cell-Derived Respiratory Syncytial Virus-Like Particles Protect the Lower as well as the Upper Respiratory Tract. PLoS One. 2015 Jul 14;10(7):e0130755. PMID: 26172453; PMCID: PMC4501727.

Westblade LF, Rostad CA, Hilinski JA, Stanley T, Jerris RC, Wilkey K, Pincus DH. Candida quercitrusa Candidemia in a 6-Year-Old Child. J Clin Microbiol. 2015 Aug;53(8):2785-7. PMID: 26063864.

Yi H, Strauss JD, Ke Z, Alonas E, Dillard RS, Hampton CM, Lamb KM, Hammonds JE, Santangelo PJ, Spearman PW, Wright ER. Native Immunogold Labeling of Cell Surface Proteins and Viral Glycoproteins for Cryo-Electron Microscopy and Cryo-Electron Tomography Applications. J Histochem Cytochem. 2015 Jun 11. pii: 0022155415593323. PMID: 26069287.

Note: 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/centers/detail/immunology-vaccines

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Emory+Children's Pediatric Research Center
An Atlanta-based research alliance
Children's Healthcare of Atlanta · Emory University · Georgia Institute of Technology · Morehouse School of Medicine

Upcoming Events

Pediatric ID Seminar Series

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

September 3: Elizabeth Wright
September 10: Zunlong Ke (Wright Lab) and Jason Hammonds (Spearman Lab)
September 17: Nate Jacobs (Lamb Lab) and Mingli Qi (Spearman Lab)
September 24: Karnail Singh (Spearman Lab) and Siddhartha Bhaumik (Kaja Lab)
October 1: Jens Wrammert
October 8: Sujin Lee (Moore Lab) and Chetan Sood (Melikian Lab)
October 15: Thayer King (Lamb Lab) and Tanay Desay (Melikian Lab)
October 22: JJ Wang (Spearman Lab) and Patrice Mimche (Lamb Lab)

Wednesday, November 18, **Raymond Pickles** from UNC will be visiting, visit www.pedsresearch.org for more details in November