



# Cystic Fibrosis Center of Excellence

Emory University - Children's Healthcare of Atlanta - Georgia Tech

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Sign up today for the **Daniel B. Caplan CF Family Science Dinner** May 14, 2018 5:30-8 pm HSRB Auditorium [RSVP by May 7](#) [Flyer](#)

Dear friends, patients, families, and colleagues,

We are happy to provide this update for you on behalf of [CF@LANTA](#). This issue focuses primarily on our trainees: the graduate students, postdocs, and clinical fellows that make our research labs such a vibrant experience. Many of you may wonder why our faculty do their research at educational institutions, like Emory and Georgia Tech, instead of in industry labs. For a lot of us, it is the opportunity to work with outstanding young people such as these – helping them accomplish their own career goals, watching them grow, and nurturing the development of their scientific minds. We find opportunities to work with young trainees of a variety of ages: high school students, college undergraduates, graduate and medical students, and post-grads, whether they are holders of a PhD or MD degree or another terminal degree. We hope you will enjoy getting to know some of the many trainees that are engaged in CF research as described in the following pages.

We also are happy to announce the recent support that [CF@LANTA](#) received

from the “Hope & Will Ball,” the main fundraising event for Children’s Healthcare of Atlanta. The black-tie affair was held this year on January 27 at the St. Regis Hotel, and was quite a night. The “Friends” group, a community volunteer organization that supports Children’s through volunteer opportunities, fundraising events and special service projects, designated the CF Program as one of the major beneficiaries of their fundraising efforts for the period leading up to the Ball, and provided \$250,000 support. In addition, the “Fund-an-Item” part of the Ball was centered upon CF, and led to an additional \$223,000. We are deeply grateful for this support from Children’s and the many donors that made this possible! An extra treat at the Ball was the highlight placed upon the family of Will and Ann Shearer, who were ambassadors for the CF Program on that bright night. Please see page 4 of this newsletter for a photo. We remain grateful for the Shearer Family’s advocacy for our CF Program.

~Nael A. McCarty, PhD, [CF@LANTA](#)

## *In Memoriam: Joshua Weatherly*



We write with the sad news of the passing of Joshua Weatherly, a CF patient who was the son of Dr. Mark Weatherly. Mark was the Associate Director of the Emory Pediatric CF Program under Dr. Dan Caplan, from 1994 -1998. On top of being the prime pulmonologist at the former facility on Clifton Road, Mark was instrumental in getting our CF clinical research program established.

Mark moved to Orlando in 1998 and adopted his foster son, Joshua, who was lucky to have a CF doc as his Dad. Joshua worked in the hospitality field for both Disney and Marriott – jobs that fit his personality to a tee.

Joshua received a double-lung transplant in August, 2017, but suffered from rejection and passed away on March 24 at the age of 26. We share in Mark’s grief; he said recently that being a Dad was the best experience of his life.

...*Motivation for our work.*



## Haider Ali, MD: Clinical Trainee & Researcher

I graduated from the University of Edinburgh medical school in 2006 and completed my residency at the University of Edinburgh before pursuing postgraduate clinical training at the University of Liverpool. Subsequently, I entered a pulmonary fellowship in London at St. George's, Charing Cross and the Royal Brompton Hospitals where I completed 6 months of full time clinical training in adult CF medicine. The intense experience in adult CF management provided the most exciting and inspiring clinical experience of my career. I was fascinated by the complexity of care, the influential role of research as a direct contributor to CF therapy, and the strong personalized, humanistic principles that underlie management. I relocated to the United States, where I completed a residency in internal medicine before joining Emory University in July 2016 to complete adult pulmonary and critical care training and gain a broad experience in clinical and research aspects of CF.

### Investigating read-through of premature termination codons in CFTR

Approximately 13% of individuals with cystic fibrosis harbor a premature truncation codon (PTC) in the CF transmembrane conductance regulator (CFTR) gene. PTCs not only interrupt CFTR protein synthesis, but also decrease mRNA expression through nonsense mediated decay (NMD). PTCs confer a severe disease phenotype, and no effective treatments are currently available to overcome the basic molecular defect associated

with these so-called Class I variants. My project in the Sorscher Laboratory therefore aims to identify modifier genes that when silenced enable efficient read-through of CFTR PTCs. Discovery of genes that influence read-through and/or functional expression of CFTR PTCs will advance our understanding of CFTR molecular mechanism and open new avenues for basic and translational research for patients with these forms of the disease.

Using a cell-based ELISA method, we have found that CFTR can be localized to the plasma membrane of Fisher rat thyroid (FRT) cells expressing a PTC following silencing of specific molecular targets. We are currently identifying and optimizing conditions which will partially restore channel activity of CFTR (using short circuit current measurement). In the coming months, I plan to consolidate these data using additional biochemical and functional assays (and replicating these experiments in primary airway epithelia).

~submitted by Haider Ali, MD



## Osric Forrest Receives 2018 Eleanor Main Graduate Mentoring Award

In 2014-15, the Laney Graduate School at Emory University established two new awards to recognize graduate faculty and graduate students who set the standard for mentorship excellence at Emory: the Eleanor Main Graduate Mentor Awards. This year's awardee is Osric Forrest, from the Tirouvanziam Lab.

The Eleanor Main Mentor Awards are a highly visible way for the Laney Graduate School to recognize graduate faculty and graduate students that set the standard for mentorship here at Emory. It is fitting, then, that they are named in honor of the late Dr. Eleanor C. Main. Learn more about Dr. Main and the award [here](#).

Join us in congratulating Osric, who is also defending his dissertation this month! And many thanks to him for his mentoring new researchers in CF.



## RDP Scholar Predoctoral Fellow: Camilla Margaroli

Camilla was originally born in Italy, but at a very young age she moved to Switzerland with her family, where later she pursued a Bachelor degree in Biochemistry at the University of Fribourg and a Master degree in Medical Biology – Immunology and Oncology at the University of Lausanne. During her master's work, she studied the role of pro-apoptotic proteins on the innate immune response during lethal infections. After graduation, she was accepted to the Emory University PhD program in Immunology and Molecular Pathogenesis (IMP), where she joined the Tirouvanziam group.

Currently she is involved in several projects that aim at understanding how neutrophil migrating into the airways contribute to the beginning of chronic lung disease in CF infants (in collaboration with the AREST-CF group in Australia and the Erasmus Medical Center in the Netherlands), finding new avenues for therapy and early intervention, and investigating whether this neutrophilic pathogenic

phenotype is confined to CF lung disease or is present in other chronic illnesses.

When not in the lab, Camilla enjoys cooking and trying new recipes, but also reading thrillers and crime novels. She also loves playing tennis and watching sports, especially basketball and American football.

~submitted by Camilla Margaroli



## RDP Scholar Predoctoral Fellow: Ashley Cross

Ashley Cross is from Murphy, North Carolina and received her Bachelors of Science from Young Harris College (YHC) in 2013. While at YHC she became very interested in microbiology while participating in independent research studying drug resistance in the dental plaque bacterium *Fusobacterium nucleatum*. After graduating from YHC Ashley accepted an internship at Oak Ridge National Laboratories. Here she genetically altered the central metabolism of soil-derived anaerobes to optimize ethanol production so as to investigate the uses of bacteria for alternative energy and biofuel research. Following this internship Ashley joined the



Microbiology and Molecular Genetics program at Emory University, ultimately joining the laboratory of Dr. Joanna Goldberg.

The Goldberg lab focuses on understanding how the bacterium *Pseudomonas aeruginosa* causes life-threatening infections in people with

cystic fibrosis (CF). In CF, *P. aeruginosa* is capable of establishing chronic lung infections by transitioning from a nonmucoid to a mucoid phenotype, characterized by the

### *Pseudomonas aeruginosa*



**nonmucoid      mucoid**

overproduction of the exopolysaccharide alginate. The goal of Ashley's thesis work is to characterize, at the genetic level, additional phenotypes that accompany this transition and therefore contribute to disease progression. Recently, Ashley received an impact score of 15 on the National Institute of Health (NIH) F3I Predoctoral Fellowship she submitted titled "Regulation of O antigen in Mucoid *Pseudomonas aeruginosa*". With a current payline set at a score of 17, this proposal has a high likelihood of being funded this grant cycle.

When not in the lab, Ashley enjoys playing on intramural Atlanta sports teams, exploring new restaurants, and watching superhero movies.

~submitted by Ashley Cross

## RDP Scholar Postdoctoral Fellow: Sheyda Azimi, PhD



Sheyda received her B.Sc. degree in Molecular Cell Biology/Microbiology from University of Tehran, Iran in 2004. She worked as an IVF cell biologist for four years where she became very interested in bacterial interactions with eukaryotic cells and the way they hijack host machinery for their benefit.

Sheyda moved to the UK in 2009 where she received her M.Sc. and Ph.D. degrees in Molecular Medical Microbiology from the University of Nottingham (2009, 2015). During that time; she studied interactions between *Neisseria meningitidis* and its human host. She joined Steve Diggle's group as Postdoctoral Research Fellow in 2015 to study the phenotypic diversity of biofilm evolved communities of *Pseudomonas aeruginosa* and changes in bacterial population dynamics during the chronic

infections of CF lungs. Before moving to Atlanta, she joined Ian Hall's group in the Respiratory Medicine department at the University of Nottingham where she undertook further training in respiratory medicine and GWAS. She worked on the impact of genomic diversity in GSTCD and M3 receptor genes on inflammation and immune responses in airways as part of 100000 Genome project.

Her current focus is on understanding the immunomodulatory effects of diverse *Pseudomonas aeruginosa* populations in CF lungs as a Postdoctoral fellow in Steve Diggle's lab.

During her Ph.D. studies Sheyda volunteered with Ignite! a non-profit organization that helps promote teaching in STEM fields. She also used to volunteer to help and accompany adults with learning disabilities and mental health problems to live independently. In her spare time, she enjoys drinking wine and eating cheese!

~submitted by Sheyda Azimi PhD

## Hope & Will Ball



The Shearer family was the honorary patient family at the Hope and Will Ball benefitting Children's Healthcare of Atlanta on January 27. Ann and Will Shearer are parents to 3 children, Brown, Helen, and Hayes. Both Helen and Hayes are patients in our Clinical CF program. The Shearers have been outspoken advocates for CF@LANTA's efforts in research, education and patient care.

## CF-AIR Trainees

We have so many trainees learning and researching in our center. Here is a sampling of projects they are working on:

- Haider Ali, MD (Eric Sorscher, MD Lab), Emory University, Investigating read-through of premature truncation codons in CFTR
- Sophie Darch PhD (Marvin Whiteley, PhD Lab), Georgia Tech, Biogeographic determinants of *P. aeruginosa* aggregate tolerance in CF
- Kirsten Cottrill (Nael McCarty, PhD Lab), Emory University, Determining the Signaling Mechanism of SMase-mediated Inhibition of CFTR
- Osric Forrest (Rabin Tirouvanziam, PhD Lab), Emory University, Pathological Conditioning of Neutrophils in Airway Inflammation
- David Hufnagel, PhD (David Weiss, PhD Lab), Emory University, Prevalence and Mechanism of *Pseudomonas aeruginosa* Colistin Heteroresistance
- Camilla Margaroli (Rabindra Tirouvanziam, PhD Lab), Emory University, Neutrophil plasticity in cystic fibrosis airway disease
- Dina A Moustafa, PhD (Joanna B. Goldberg, PhD Lab), Emory University, Assessing novel gene specific therapeutic approaches and exploring new targets to combat *Pseudomonas aeruginosa* and *Burkholderia cepacia* complex (BCC) in mouse models of cystic fibrosis (CF) and chronic granulomatous disease (CGD)
- Kathryn Oliver, PhD (Eric Sorscher, MD Lab), Emory University, Ribosomal Targeting as a Novel Therapeutic Strategy in CFTR Modulation
- Carleen Mae P. Sabusap (Eric Sorscher, MD Lab), University of Alabama at Birmingham/Emory University, Characterization of P67L CFTR as a Model of "Precision" Therapeutics for Rare CFTR Alleles
- Kerry Strickland (Inga Schmidt-Krey, PhD & Nael McCarty, PhD Labs), Georgia Tech/Emory University, Structure-Function studies of CFTR in a lipidic environment



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## Recent CF-AIR Publications

Recent publications by CF-AIR members can be viewed online here:

<http://www.pedsresearch.org/uploads/blog/doc/2018-04CF-AIRNewsletterPubs.pdf>

## Events for Researchers

Each month there are several opportunities for CF-AIR researchers to get together to discuss their work.

### [Full CF-AIR Calendar of Events](#)

- [CF-AIR Faculty and Trainees Research](#) (CF-TR):  
On the first Tuesday of the month, faculty chalk talks on either the overall work in their lab, or on a grant proposal planned for submission soon. On the third Tuesday of the month trainee chalk talks discussing planned manuscripts or fellowship proposals. Meet at noon in various rooms in ECC and HSRB, check the calendar.
- [CF-AIR Workshop](#):  
A weekly Wednesday meeting for research-in-progress and journal club presentations. Typically meet at 4:00 pm in ECC 302, periodically at GT
- [CF Scholars Meetings](#):  
A monthly program for CF Scholars, Friday afternoons, see website schedule.

Sign up for the [CF-AIR Weekly Digest](#) to hear about all events of interest to researchers, just email [kmurra5@emory.edu](mailto:kmurra5@emory.edu)

#### Clinics:

Children's Healthcare of Atlanta  
CF Care Center:  
Children's at North Druid Hills  
1605 Chantilly Drive NE  
Atlanta, GA 30324  
404-785-2000

Children's at Scottish Rite  
Cystic Fibrosis Affiliate Program  
5455 Meridian Mark Road, Suite 200  
Atlanta GA 30342  
404-785-2898

Emory Adult CF Clinic: 404-778-7929

#### Website:

[www.pedsresearch.org/research/centers/cf-air](http://www.pedsresearch.org/research/centers/cf-air)

If you are interested in supporting our research and outreach programs please visit: [www.pedsresearch.org/research/centers/cf-air/donors-visitors/](http://www.pedsresearch.org/research/centers/cf-air/donors-visitors/)

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