

UCSF lab sends filters to hurricane-ravaged Puerto Rico

By Grant Burningham / Mon Nov 27, 2017

wearing a t-shirt bearing the lab motto: “Think big!!! @UCSF.”



Credit: Centro Neumologia Pediatrica, Puerto Rico

Clinic staff member at Centro Neumologia Pediatrica, Puerto Rico's largest pediatric pulmonary clinic, expressed thanks for the delivery of 484 water filters. Each filter can clean up to 295 gallons of water per day.

Esteban Burchard, MD, MPH⁷, has always believed that the people studied through science should benefit from the insights they make possible.

As a researcher, Burchard has worked extensively in Puerto Rico, exploring the unique gene pool ⁸ that contributes to the U.S. territory's high asthma rates. But to Burchard, a faculty member in the Department of Bioengineering and Therapeutic Sciences ⁹, a joint department of the UCSF Schools of Pharmacy and Medicine, the island is more than a trove of valuable data. The wellbeing of the people behind the data defines his work as well.

Burchard lectures on genetics every year in Puerto Rico and works with clinics that provide pulmonary care to the island. Not surprisingly, his lab is helping residents of the island get fresh water in the aftermath of Hurricane Maria, which struck in September.

“We don’t want to be safari scientists, where we parachute into a population,” says Burchard, while

Dire news from the island

That attitude wasn’t lost on Andy Zeiger, a junior researcher in the Burchard Lab ¹⁰ who recently finished his undergraduate degree at the University of Washington and hopes to go to medical school next year.

“One thing that Esteban demands of us is to find ways to serve,” Zeiger says, pointing out the Martin Luther King Jr. photos that hang above the benches and beakers in the lab.

Zeiger followed the storm’s progression in the news and on status.pr ¹¹, a government-run website with statistics on the storm. He continued to provide the lab with daily updates on the dire news coming from the island, even as the story dropped off the front pages of U.S. newspapers.

Two months later, Puerto Rico is still in serious trouble. With nearly \$100 billion in damages, it’s estimated that 250,000 homes were damaged or destroyed, all on an island with an economy of \$95 billion a year.

Electricity is flowing again on most of the island—and to hospitals—but smaller towns are still without power, which means they’re forced to rely on natural sources for water. One big concern for residents is leptospirosis ¹², a bacteria found in rivers, lakes, and untreated water. The disease can cause kidney failure and even death in otherwise healthy individuals.

“There’s still over 600,000 people without clean water,” Zeiger says. “It’s insane—and these are Americans.”

Lab colleagues pitch in to help

Zeiger realized Burchard’s lab was in a unique position to help. Burchard has built a network of health

care providers and scientists in Puerto Rico. He often works with a pediatric pulmonary clinic run by José Rodríguez-Santana, MD, which is the largest in the Caribbean and serves many of the small, isolated communities that have been cut off by the storm.

“One thing that Esteban demands of us is to find ways to serve.”

—Andrew Zeiger
Junior Researcher, Burchard Lab

Quite naturally, Zeiger put his science training to work. He identified the problem, developed a solution, and set out to implement it. First he called Sawyer ¹³, a water filter company that agreed to provide its water filters for just \$12.57 instead of the regular price of \$58. Then he created a GoFundMe ¹⁴ page to accept donations from inside and outside UCSF. Sandra Salazar¹⁵, a Burchard Lab colleague, pitched in on the project, even as her own family was suffering from the devastation of Hurricane Harvey, which hit Houston in early September.

In just two weeks, the project raised \$8,000, enough money for 484 filters. The filters began arriving at the clinic in Puerto Rico this week. From there, they'll be sent to families in need. Each filter can clean 295 gallons of water daily.

As more problems loom, Puerto Rico still needs help

Even with water, Puerto Rico still needs help. “The island has a high rate of asthma anyway, and with all the standing water and the mold, that could lead to more respiratory infections and more asthma,” Zeiger says. “A group of doctors from Harvard recently said that rates of hypertension are up ¹⁶ (in Puerto Rico). There will be worse diabetes outcomes because of the lack of refrigeration, and dialysis centers are cutting hours. A lot of people are leaving the island.”

Julie Dutil, PhD ¹⁷, an associate professor at the Ponce School of Medicine in Puerto Rico, was on

the island with her one-year-old child during the storm. Like many Puerto Ricans, she lost power, and went weeks without much communication with the outside world.



Dutil is spending a few weeks at UCSF so she can continue to work while her home university cleans up. The Ponce School of Medicine decided against relocating its medical students to continue their studies in the disruption, instead choosing to have those students stay to help distribute aid and provide medical care. Dutil says one of her biggest concerns is the mental health issues that are bound to surface after such a traumatic event.

“And now the concerns are about mosquito bites,” Dutil adds. “We normally have these diseases, but now that there is so much debris, they could be much worse. Anything you have that can hold stagnant water is a place where mosquitoes can grow, and that means chikungunya, dengue, and even Zika.”

Zeiger's interest in Puerto Rico may have started with research, but Burchard says Zeiger may end up taking a trip to the island in the coming months, both to further the lab's science and to help with relief efforts.

“We give back. The water filter stuff is just one additional thing that we're doing to help out,” Burchard says. “And it was all Andy's idea.”

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