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National Institutes of Health

NHLBI's Childs on Front Lines of Covid-19 Health Crisis

BY ALEXIS CARTER

In 2014, when the deadly Ebola virus was spreading like wildfire through parts of West Africa, Radm. Richard Childs led a team of physicians, nurses, engineers and safety inspectors to Monrovia, Liberia, to help treat the thousands of patients who had been infected. As chief medical officer for the Public Health Service Commissioned Corps' Ebola Crisis Response, Childs worked steadily for more than 2 months, caring for sick Liberian health care workers, while the global community scurried to contain the virus.

That was then.



Radm. Richard Childs

Six years later, Childs, now assistant U.S. surgeon general and clinical director of the National Heart, Lung and Blood Institute's Division of Intramural Research, is back on the front lines of a new, even deadlier global health emergency—the coronavirus pandemic.

On Feb. 15, Childs led an international mission to evacuate hundreds of Americans from the Diamond Princess cruise ship off the coast of Japan and then care for 50 who had become infected with Covid-19, the

SEE **CHILDS**, PAGE 4



And then there were three: Class of 2020 medical research scholars still residing at NIH

CLOISTERED BY QUARANTINE? Medical Research Scholars Shelter in Place at NIH

BY CARLA GARNETT

When you list all the incredible experiences you might have as an NIH trainee, living like a cloistered nun probably doesn't make your top 10. But if the global pandemic has

SEE **CLOISTERED**, PAGE 6



Downward may go the dog, but upward go spirits. See more quarantine companions, p. 12.

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'TIME IS ELASTIC' OER Adapts to Fresh Challenges of Pandemic

BY RICH MCMANUS



Dr. Jodi Black

They were already big-wave surfers over at the Office of Extramural Research, that group responsible for the orderly, shrewd, fair—and seemingly invisible—distribution of about 80 percent of NIH's annual budget.

They had managed to swallow ARRA

(the American Reinvestment and Recovery Act, which added a massive \$10.4 billion to

SEE **OER**, PAGE 8

New Technologies Speed Up Covid-19 Vaccine Research

BY ERIC BOCK

NIAID researchers are using new technologies to develop a vaccine against Covid-19 as fast as possible, said Dr. Barney Graham, Vaccine Research Center deputy director.

"Since 2009, a number of key technologies have emerged. They have increased our capacity for making new vaccines," he said during an NIH Covid-19 scientific interest group lecture on Apr. 22.

Coronaviruses are a family of spherical



Dr. Barney Graham
PHOTO: LISA HELFERT

SEE **GRAHAM**, PAGE 10

Webinar on Connections Between Traditional, Causal Mediation Methods

The Office of Disease Prevention (ODP) will hold a Methods: Mind the Gap webinar with Dr. David P. MacKinnon on the connections between traditional and causal mediation methods. It takes place on Thursday, June 18 at 2 p.m.

The presentation will describe the connections between traditional mediation analysis and recently developed causal mediation analysis. Mediating variables have a long and important history in



theoretical and applied research because they describe how and why two variables are related.

MacKinnon has been developing, evaluating and applying methods to assess how interventions work for more than 30 years. He is a

Foundation professor of psychology at Arizona State University.

Registration is required at prevention.nih.gov/education-training/methods-mind-gap/connections-between-traditional-and-causal-mediation-methods. The webinar will be recorded and available on the ODP website within about a week.

Special CFC for Covid Opens

Until June 30

The Office of Personnel Management has launched a Combined Federal Campaign (CFC) Special Solicitation to help charities during the global Covid-19 pandemic. Only charities that were approved during the fall 2019 CFC can participate. From now through June 30, the CFC Online Giving Portal (<https://cfcgiving.opm.gov/welcome>) is reopened and accepting new donations that will be considered supplemental to 2019 pledges. Donors can help charities on pandemic frontlines. Contribute a lump sum payment to one or multiple charities via a credit or debit card. To learn more, visit <https://cfcnc.org/cfc-special-solicitation>.

New Covid-19 Web Page for Social Media

NIH has launched a new page for Covid-19 social media resources, with content from across the 27 institutes and centers. Suggested posts on the page deal with a range of topics, from the latest NIH research on Covid-19, to tips on social distancing, staying active and more. Many of the posts also include corresponding images to help illustrate these points.

The site is open to the public and information there can be shared throughout individual communities. Visit www.nih.gov/news-events/covid-19-social-media-resources.



Chef José Andrés is greeted by Zilly at the Children's Inn at NIH during one of his stops to deliver food.

PHOTOS: JEN FORESTER, FERN STONE

Chef Andrés Delivers Meals to Inn

Celebrity chef José Andrés has delivered meals on a number of occasions to the Children's Inn at NIH recently. He wears protective gear to keep himself and the vulnerable children and young people at the inn healthy.

"The kids are enjoying the food deliveries and their parents are, too," said Gaynell Amaya, a research program assistant in 1NW Inpatient at the Clinical Center. "It's nice to see them smiling as they share a family meal together."

"Yesterday [May 4], he dropped food off in person as a family from Peru was going over to the hospital, and they thanked him for the food," said Sonja Luecke, the inn's communications director. "They spoke in Spanish, across a distance, and the chef asked the little girl what her favorite food was. She said chicken and rice, and the chef said he would ask his cook to prepare Peruvian style chicken and rice for her for today since she is about to go inpatient. So he had the chef at his Peruvian-style restaurant prepare today's meal for inn residents: Arroz con pollo al estilo peruano, specifically for the little girl who is going inpatient tomorrow. It's the sweetest gesture!"

Said an NIH'er who is a friend of the chef and helped arrange Andrés' visits to the inn, "It's a nice example of someone from the surrounding community 'wanting to take care of my heroic friends at NIH, and let them know I'm just down the street'—those were his exact words to me."

Andrés is founder of the nonprofit World Central Kitchen (WCK) and a noted area restaurateur. During the Covid-19 crisis, he and his WCK team, plus an army of volunteers, have taken over the kitchens at Nationals Park in Washington's Navy Yard to prepare fresh and nutritious meals for thousands of Washington-area residents daily who are dealing with food insecurity.



Andrés has made multiple NIH visits.

Workshop Addresses Protecting Workers During Covid-19 Outbreak

Strategies to prevent spread of COVID-19 and protect frontline workers were front and center during the 2020 Worker Training Program (WTP) virtual workshop held recently. Federal agency representatives, infectious disease experts and health and safety professionals shared timely information.

The workshop was originally scheduled to take place in Atlanta. WTP Director Joseph “Chip” Hughes said that after



Joseph “Chip” Hughes

consultation with the Emory Woodruff Health Sciences Center, and broadly considering the risks of a face-to-face meeting during the pandemic response, organizers pivoted in just a few days to host a virtual forum instead. WTP has


a long history of training and preparing workers who face potential exposure to hazardous pathogens, such as swine flu and Ebola. WTP’s national network of trainers and experts will prove critical in protecting first responders and other front-line workers during the Covid-19 pandemic.

Workshop speakers discussed transmission of SARS-CoV-2, the virus that causes Covid-19, as well as worker protections, and federal, state and local training efforts. “We are constantly learning more about Covid-19,” said Dr. Richard Hunt of HHS’s Office of the Assistant Secretary for Preparedness. “We must be flexible and willing to adapt our training, because what you trained for last time might not work this time.”

Keynote speaker Dr. Lisa Brosseau, retired professor from the University of Illinois at Chicago, discussed the likelihood of close-range aerosol exposure to SARS-CoV-2, inherent risks for workers and necessary protocols for protection. “Analyze control methods across all levels,” she urged. “We can’t change the toxicity of the organism, so we have to decrease exposure. Workers who face the highest risk need the highest levels of protection.”

A key challenge is the shortage of respirators and other personal protective equipment (PPE) for health care, law enforcement and transportation workers.

Capt. Lisa Delaney, associate director for emergency preparedness and response at the National Institute for Occupational Safety and Health, said her agency is partnering with other agencies to address ways to optimize PPE supplies in the face of shortages. NIOSH is also developing guidance, fact sheets and communication materials for workplaces.

“We know this will be a long-term process,” said Hughes. “Training for front-line workers will continue to be our priority and focus.” In addition to continued coordination with federal partners, he said that WTP is working with private sector partners to launch an online training and learning platform for Covid-19.—Kenda Freeman 



ON THE COVER: At the largest zebrafish facility in the country, Kevin Bishop, NHGRI Zebrafish Core staff member, holds up a tank of zebrafish to observe their behavior and physiology. Using molecular techniques, researchers alter the zebrafish’s genome to mimic what is seen in human patients in the clinic.

IMAGE: ERNESTO DEL AGUILA III, NHGRI

New Covid-19 Training

The Worker Training Program recently received \$10 million from the Coronavirus Preparedness and Response Supplemental Appropriations Act 2020.

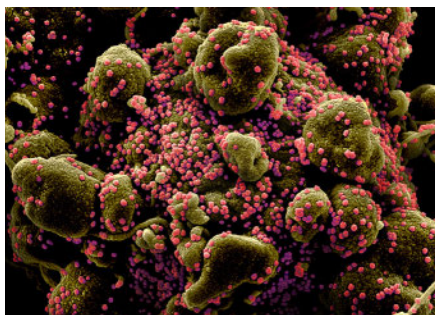
Most of these funds will support grantee organizations that will develop, deliver and evaluate infectious disease preparedness and response training for workers in occupations with high risk of exposure to the virus and other hazardous pathogens.

To date, the funds supported development of the training tool Protecting Yourself from Covid-19 in the Workplace (<https://tools.niehs.nih.gov/wetp/covid19worker/>).

Jonathan Rosen, industrial hygienist and consultant with the NIEHS National Clearinghouse for Worker Safety and Health Training, said the tool includes three modules to increase health and safety awareness for workers who face potential exposure to SARS-CoV-2.

A mobile app is in development in both English and Spanish.

WTP is working with private sector e-learning companies to build a virtual safety training delivery platform on Covid-19. This platform will allow just-in time, web-based training across the country in high-risk industrial sectors.



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National Institutes of Health
Turning Discovery Into Health

Childs

CONTINUED FROM PAGE 1

disease caused by SARS-CoV-2. The cruise vessel had become a hotspot for the virus, with more than 700 passengers testing positive.

What unfolded when they arrived, however, was nothing Childs could have predicted when he set out. It started with a chance encounter with a former colleague and ended with the successful treatment, using the antiviral drug remdesivir, on a few of the most critically ill Americans. Ten weeks later, the National Institute of Allergy and Infectious Diseases announced that remdesivir could be an effective aid in speeding recovery for some Covid-19 patients and potentially help in the survival of the most severely ill.

But when Childs, along with executive officer Cmdr. Julie Erb-Alvarez and 24 other PHS officers, touched down in Japan that February day, none of this was on their radar. He and his team, he said, had their sights set mainly on getting the Americans safely off the ship, then ensuring that those who were critically ill got immediate medical care. Childs said they worked alongside the U.S. Embassy in Japan and the Japanese Ministry of Health to track down the Americans who were admitted to about 25 different hospitals in and around Yokohama and Tokyo. They consulted with the Japanese physicians providing their care and made sure each facility had the medical capabilities required to adequately treat them.

As luck would have it, Childs then ran into a former colleague from NIH, Dr. Robert Walker, now deputy director of clinical studies at the Biomedical Advanced Research and Development Authority in Washington, D.C. Walker was in Japan working to establish an international randomized controlled trial for remdesivir, which had previously been tested in humans with the Ebola virus. The drug had shown to be a possible treatment for other coronaviruses such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). Now, scientists were hopeful it would stop or slow the virus from replicating long enough for the patient's immune system to fight off the virus.

Through his contact with Walker, Childs



Childs reviews x-rays from a coronavirus patient.

said, he got enough remdesivir from the drug's maker, Gilead Sciences, Inc., to treat 20 critically ill American and Japanese patients, using a compassionate-use protocol. He and his team then went to work reviewing the medical records of each patient to identify those with severe pneumonia who would be candidates. The need for a medical translator initially threatened to delay their work, until Childs recruited one of his former NHLBI postdoctoral fellows, Dr. Takehito Igarashi, who lives in Tokyo and works as an endocrine surgeon.

In reviewing the records, Childs said he quickly became disturbed by what he saw. Some patients were so sick they had a "complete whiteout" of their lungs on a chest X-ray, and he knew many were at high risk of dying.

Ultimately, he and the PHS team identified 14 patients with severe pneumonia, including 10 who were on mechanical ventilators and 4 on so-called ECMO machines that function like the heart-lung bypass machines used during open-heart surgery. These critical patients were age 75 on average.

"Experience from China at the time showed only a minority of elderly patients with Covid-19 who were treated with mechanical ventilation or ECMO survived," Childs said. "Nevertheless, Japanese intensivists pushed the envelope with aggressive supportive care in an effort to save every one of these critically ill patients."

In the end, the PHS team was able to get remdesivir treatments to 9 critically ill patients—4 Americans and 5 Japanese.

Remarkably, all of them survived.

Now, Childs is looking even more broadly at the drug as a possible treatment for those with Covid-19.

Since returning home, he co-authored an article in the *New England Journal of Medicine* highlighting preliminary results of the drug's use in 53 patients, ages 23-82, who were hospitalized in the United States, Europe, Canada and Japan. Thirty-four were sick enough to require ventilation support. After receiving remdesivir, 68 percent of patients showed clinical improvement in

their pneumonia symptoms—they needed less oxygen, for example—and 58 percent were weaned off ventilation support. Seven patients, all age 70 and older, died. At least 12 patients had serious problems, including septic shock and trouble with kidneys and other organs. These first preliminary published data suggested that remdesivir, when used under a compassionate-use protocol, may have clinical activity against SARS-CoV-2 and could potentially improve outcomes in patients with severe Covid-19.

Childs commended scientists and doctors everywhere who are researching a range of different treatments and an effective vaccine against Covid-19. "It's not a matter of if we are going to beat the virus, but when," he said.

Another NIH clinical trial has begun to evaluate the safety and efficacy of hydroxychloroquine as a potential treatment for hospitalized adults diagnosed with Covid-19. Randomized trials evaluating numerous other therapeutic approaches, including the use of convalescent plasma collected from patients who have recovered from the virus, are in the works.

For people around the globe, an effective treatment cannot come too soon. As of May 11, the World Health Organization had reported more than 4 million cases of Covid-19 and more than 278,000 deaths



Public Health Service members who served on Team Remdesivir Japan March 2020 included (from l) Childs, Capt. L.J. Belsito, Cdr. Julie Erb-Alvarez, Lcdr. Nicole Carr, Lcdr. Crystal McBride, Lcdr. Bethanie Parrish-Salaam and Lt. Adi Rosario.

CSR's Outlaw Credited with Quick Conversion to Virtuality

KUDOS

"While many investigators have had to shutter their labs due to this public health emergency, the research enterprise will spring back," noted Dr. Kristin Kramer, communications director at the Center for Scientific Review. "Key to seeing that happens without additional delays is that review of the roughly 27,000 applications NIH receives each council round continues. CSR handles the review of about 75 percent of NIH grant applications, amounting to 62,000 per year and about 20,000 per council cycle. Because of the Covid-19 pandemic, we had to very quickly convert our review meetings for the May Advisory Council to virtual formats—64 meetings that were initially planned to take place over a month were converted to virtual meetings. These conversions happened within the span of a week."



Ashlee Outlaw

Kramer credits Ashlee Outlaw, lead program analyst for CSR's events management group, with making this happen.

"Additionally, all of our meetings for the upcoming October Advisory Council will take place as virtual meetings. Many of these are being held as video-assisted meetings. We have relied very heavily on Ashlee to accomplish this. She is an exemplary employee under normal circumstances, but an even greater asset to NIH in these times."

Added Dr. Ross Shonat, director of CSR's Division of Physiological and Pathological Sciences, "Ashlee has taken the lead on moving existing video-based meetings (VAM meetings) from physical CSR meeting rooms to a completely online format with staff operating under telework conditions. Importantly, Ashlee recognized the need to quickly train the support staff on a new video platform [Zoom] and proactively reached out and trained nearly everyone—both support and professional staff—as fast as she could. I don't think there is a single staff member who has not been positively influenced by her actions."

"As we now move towards the next council round," continued Shonat, "where we are now operating under a 100 percent virtual format, Ashlee continues to train [employees] and develop clear operating procedures so that we will be able to handle the largest increase of VAM meetings that CSR has ever encountered. She is thoughtful, personable and proactive, needing almost no guidance from me, and has received rave reviews for her efforts from across the entire CSR community. I have never been more impressed."

National Academy of Sciences Elects New Members



Two NIH scientists are among the new members elected to the National Academy of Sciences announced on Apr. 27. A total of 120 members and 26 international members were elected in recognition of their distinguished and continuing achievements in original research.

Dr. John T. Schiller (l) is deputy chief, Laboratory of Cellular Oncology, NIH distinguished investigator and head, neoplastic disease section, Center for Cancer Research, National Cancer Institute.

Dr. Robert Tycko (r) is senior investigator, Laboratory of Chemical Physics, National Institute of Diabetes and Digestive and Kidney Diseases.

The National Academy of Sciences is a private, nonprofit institution that was established under a congressional charter signed by President Abraham Lincoln in 1863. It recognizes achievement in science by election to membership and provides science, engineering and health policy advice to the federal government and other organizations.



Buses leave quarantined Diamond Princess cruise ship in Japan.

PHOTOS: RICHARD CHILDS, JULIE ERB-ALVAREZ

worldwide. And, more than 1.3 million confirmed cases and upwards of 79,000 deaths had been reported in the U.S., according to the Centers for Disease Control and Prevention.

Childs said he will continue to stay tuned to the public health needs presented by the virus. But the public must do its part to help dramatically slow its spread—something he said is not happening the way many scientists had hoped.

"It is hard not to get discouraged when you see people in public places not embracing preventive measures such as wearing masks and social distancing," Childs said. "Unless everyone buys into these preventive measures, both at home and in the workplace, we're just going to make this epidemic drag out longer, which will lead to continued new cases and preventable deaths."

Since his return from Japan, Childs and his PHS team continue to follow up remotely with the patients from the Diamond Princess, a few of whom still remain in the hospital in Tokyo. Childs is currently working at Commissioned Corps Headquarters Command Center, where he is the commander for safety for hundreds of officers deployed to numerous federal medical stations (FMS) and alternate care sites across the U.S. The Javits Center FMS in New York City, where doctors cared for more than 1,000 Covid-19 patients, was among those Childs helped set up.

In the meantime, Childs continues in his role at NHLBI, where he oversees the clinical research activities of the intramural research division, which conducts first-in-human research in cardiology, vascular medicine, pulmonary medicine, hematology, population sciences, diagnostic imaging and now, Covid-19. **R**

Cloistered

CONTINUED FROM PAGE 1

taught us anything, it's how to adjust to the unexpected. That's what three students in the NIH Medical Research Scholars Program (MRSP) have been learning since mid-March when NIH shifted into extreme telework mode—like the rest of the country—to prevent spread of Covid-19.

Annah Baykal, Esha Chebolu, Layne Raborn and 47 other young people arrived at NIH last July as part of MRSP, a 12-month residential research-immersion program for medical, dental and veterinary students.

"They interrupt their medical school education to come to NIH to work in research labs that align with their career interests, to learn rigorous laboratory as well as clinical trial and epidemiology methods, to get career mentorship and leadership skills, to fine-tune their writing and presentation skills and otherwise see how top-tier research is done," explained MRSP academic director Dr. Susan Leitman.

While training, the scholars live in Bldg. 60, the Mary Woodard Lasker Center for Health and Science Education, also known as "the Cloister." The structure was built in 1923 to house an order of secluded nuns, the Sisters of the Visitation of Washington. They lived on the third floor of the building, in 10 small, bare bedrooms that were also called "cells."

The nuns departed the Cloister in 1981 and NIH acquired the property, which was refurbished and expanded in 1985 through a partnership with the Howard Hughes Medical Institute. These days, the former cells, whose occupants share a kitchen and several bathrooms, are called "dorms" and every year they accommodate a corps of the MRSP. Other students live in apartments built in 1985.

The program was nearing its completion in March—with 5 men and 5 women residing dorm-style—when the lockdown occurred.

"After Covid-19, most of the dorm residents moved out, leaving me, Annah and Layne on the floor," said Chebolu. "The dramatic end to all the social events was

definitely the most noticeable [change]. Switching to telework has been different for everyone, based on their project. Some people are no longer able to do lab science at the bench and this has shifted their work balance greatly. However, my data analysis and paper-writing remain computer-based, and instead of walking to Bldg. 10 every day to complete my work, I take a few steps to the second-floor library."

Chebolu, originally from Watertown, N.Y., attends the Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo and trains with Dr. David Goldman, chief of NIAAA's Laboratory of Neurogenetics, whose group is characterizing inter-individual variation in responses to alcohol use and associated genetic/clinical implications.

"The dorm rooms are unique because we sleep in the same rooms where nuns previously slept," noted Raborn, who grew up in Baton Rouge and will soon enter her fourth year of medical school at Louisiana State University Health Sciences Center New Orleans. "Within each of our dorm rooms, there is a historical quote from the time when the nuns resided here. Staying here during this time, when we are limiting our exposure to the

outside world, has given us an interesting perspective into the lives of the nuns who previously lived here."

Training in NIDCR's skeletal disorders and mineral homeostasis section led by Dr. Michael Collins, Raborn plans a career in plastic surgery. She conducted both clinical and translational projects focusing on fibrous dysplasia/McCune-Albright syndrome and tumor-induced osteomalacia, a disorder of excess fibroblast growth factor-23-mediated osteomalacia resulting in profound bone fragility.

After working at NIH, she "aspires to develop my field further through research and innovation. The surgeon-scientist as well as the physician-scientist career path has experienced a shortage in

recent years. Although I have always wanted to continue research throughout my medical career, I hope that other future physicians will also consider the importance of research and incorporate research into their careers in light of Covid. I hope to bring attention to the importance of research and research funding during my future career."

All three scholars admit that lessons learned during this unprecedented era go well beyond science and medical research.

"After Covid, I've tried to maintain somewhat of a [regular] rhythm," said Baykal, who hails from the University of Oklahoma College of Medicine, Oklahoma City. "I know this time has been super-challenging on so many fronts—with transitions and uncertainty—but I'm definitely trying to see quarantine as a time for growth and development in one way or another... Everyone is in the same boat, though, and I think that helps. Having the other MRSP students to empathize and go through the lonely or frustrating times with has only made this year even more unique and life-transforming."

Baykal works in NIDDK's Diabetes, Endocrinology and Obesity Branch where Dr. Rebecca Brown is acting chief of the section on translational diabetes and metabolic syndromes.

"We study rare diseases of severe insulin resistance such as lipodystrophy and insulin receptor mutation syndromes in order to understand more about the biology of insulin signaling," Baykal explained. "We then translate this knowledge to treat more common metabolic disorders such as obesity, metabolic syndrome and diabetes."

Over the past year, the dorm mates bonded in many different



Annah Baykal



Layne Raborn



Esha Chebolu



Scholars Chebolu (l), Raborn (c) and Baykal are sheltered in place on campus at the Mary Woodard Lasker Center, the former cloister.

ways and even traveled together, visiting Shenandoah National Park, New York City and New Orleans.

“The 10 of us got pretty close while living together and would often have ‘family dinners’ where we’d get together over homemade [meals] to catch up on the week,” Chebolu said. “We also had an MRSP volleyball team and enjoyed playing sand volleyball at the Lincoln Memorial courts in D.C. as well as in our own cloister backyard with other NIH faculty—and sometimes [NIH director Dr.] Francis Collins!”

Loss of that social life and sense of fellowship was difficult.

“I’ve been coping by trying to keep a routine with help and motivation from my floormates—just to keep a sense of normalcy,” Chebolu said. “I’ve been enjoying morning workouts with Annah, a normal 9-to-5 workday... and the three of us usually get together for dinner around the same time.

It’s been really great to have them both here with me and I think we’ve all been supporting each other through these chaotic times.”

The scholars also faced professional and academic concessions.

“I was really looking forward to attending the ENDO 2020 conference with my lab in San Francisco at the end of March,” Baykal lamented, “and I was supposed to give an oral presentation on the project I’d been working on. But of course the meeting was canceled, which I was definitely bummed about.”

“Our MRSP curriculum, which the entire cohort partakes in, has shifted to virtual lectures,” Chebolu noted. “I was actually one of the first students to deliver my Journal

Club presentation to my classmates via WebEx and we had to practice an entirely new way of presenting and entertaining questions. But it worked out really nicely and we continue to have lectures from distinguished faculty and student presentations in a virtual meeting format.”

Despite the unforeseen changes, scholars said their experience here exceeded expectations.

“My family is very excited that I am working—and living—at NIH during this time,” said Raborn. “I can see [the Vaccine Research Center] out of the Cloister windows—it is such an inspiring view!”

“I expected everyone at the NIH to be brilliant and I have not been disappointed,” said Baykal. “What took me by surprise was how everyone is so passionate and willing to teach and discuss ideas. The overall atmosphere promotes inquisitiveness and appreciation of everyone’s role in undertaking

research. The nurses, postbacs, even cleaning staff all are treated with such respect. I could go on and on about how wonderful it is to work at the NIH.”

Chebolu, who wants to be an emergency medicine physician, concluded, “Covid-19 has definitely highlighted the sacrifices that come with the job. But, if anything, I am more excited to eventually be helping on the frontlines, if something like this were to happen again. Whether through research or clinical medicine, we all came into this field wanting to help people. And finally, all that time you spent studying in the library during medical school has a clear purpose in tumultuous times like these.”

Raborn agreed, “I am thankful that at the NIH, we are still able to conduct research and work during this time. As we know, health-related research has global importance and I am thankful that we are still able to contribute in this way... Readjusting research plans and schedules has been challenging but completely feasible. The sobering thing is seeing that even with ambition and resources, achieving results takes time. As we wait eagerly for more Covid-related research, I rest assured that all of the efforts towards stopping Covid will soon pay off!” **B**



Images from when the Mary Woodard Lasker Center—the oldest building on campus—actually functioned as a cloister. Sister Mary Rita (shown on the porch outside the assembly room, circa New Year’s 1953), who donated the photos, later left the order, earned a Ph.D. and became a social worker. Now known as Dr. Rita Parle, she is in her mid-90s.

PHOTOS: OFFICE OF NIH HISTORY

NIH's budget, to be spent in 2009-2010), reorganized themselves under new leadership imported from NHLBI, begun to tackle the challenges posed by organized offshore rule-breaking and kept up with balancing the demands of OMB, HHS and Congress, not to mention the nation's research community,



Dr. Michael Lauer

which depends on OER for support.

Then along came a big RNA virus called SARS-CoV-2 and a global pandemic of the disease it causes, Covid-19.

"This is different than anything, including ARRA," said Dr. Jodi Black,

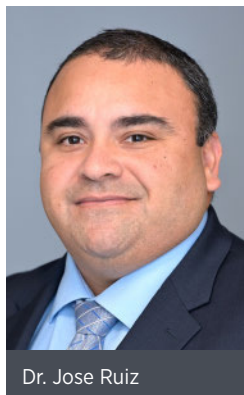
OER deputy director for the past 4 years.

"This is so negatively affecting our entire ecosystem, our whole enterprise. OER is trying to figure out how to lighten the blow. It's very challenging. We're working 12-hour days, squeezing in the covid job with our regular jobs.

"There's never a dull moment around here, that's for sure," said Black, whose day job includes co-chairing an Office of Science and Technology Policy group on reducing the burden of grant administration throughout government, including NASA, DoD, NSF and other agencies. "We may not have any sexy new discoveries to report, but we provide all the underpinning for it."

Both Black, a pathologist who spent more than a decade at CDC and had her own lab ("I grew up in the federal government"), and her boss, NIH deputy director for extramural research Dr. Mike Lauer, hail from NHLBI division leadership. Black comes from the Division of Extramural Activities and Lauer led the Division of Cardiovascular Science. "We think a lot alike when it comes to developing supportive infrastructure for the internal and external community," said Black.

Lauer had been a practicing cardiologist and epidemiologist at the Cleveland Clinic before



Dr. Jose Ruiz

coming to NIH. Together they share a vision of an OER more user-friendly and supportive—which is the approach they are taking



Michelle Bulls

with the current crisis.

"OER is like the master implementer of all this functionality," said Black, ticking off the office's myriad responsibilities. "If it broke, it would be a big problem."

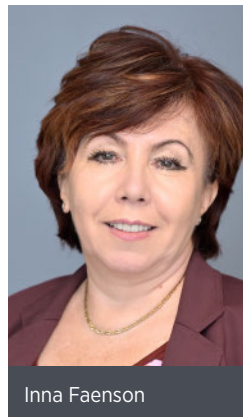
She credits a cast

of skilled lieutenants with keeping the office balanced on its surfboard:

• Michelle Bulls, who directs the Office of Policy for Extramural Research Administration, "is helping us understand OMB and HHS regulations on grants, so NIH can provide the flexibilities needed to help ensure the extramural research can weather

these extenuating circumstances," said Black.

• Inna Faenson ("A genius!" says Black) oversees eRA, or Electronic Research Administration, a system that has supported the research administration needs of NIH staff and the grantee



Inna Faenson

community for more than 20 years. eRA has had to evolve rapidly to accommodate new requirements for tracking covid-related awards. Making quick adjustments to capture rapidly evolving needs is par for the course for OER systems.

Faenson also had to pull off the feat of migrating all eRA systems to cloud computing in the midst of a national emergency, an effort that had been 2 years in the making.

• Dr. Jose Ruiz, director of the NIH Guide, has been posting funding opportunities for Covid-19. "He has responded very quickly," Black noted, issuing about 40 notices of special

interest. To get funding for covid research to the community as quickly as possible, NIH is offering competitive supplements to existing awardees "so they can use their expertise to expand their scope to work on the pandemic," said Black, "and administrative supplements, for researchers whose skills match an area of current need."

• Megan Columbus, OER communications director, whom Lauer has labeled the office's "movie director," has been helping ensure that the research community feels supported during this time. She noted,

"OER has put out policies that let researchers continue to get paid on NIH grants even though their labs are closed, that allow clinicians to redirect their time from doing grant-supported research to doing Covid-19 patient care and that allows them to donate personal protective equipment from NIH grants for public health care purposes. We have facilitated getting emergency funding announcements on the street, and more."



Dr. Pam Kearney

• Dr. Pam Kearney, director of the OER human subjects and clinical trials oversight division, and Dr. Patricia Brown, director of NIH's Office of Laboratory Animal Welfare, both rapidly devel-

oped guidance for disruptions of studies involving people and animals to maximize the safety and well-being of human and animal participants. Brown and her team also put on multiple webinars and promoted the extensive materials they maintain on contingency planning for animal care and use programs.

• Sally Amero, NIH's review policy officer, quickly developed guidance for peer reviewers and staff about the handling of applications during this national emergency.



Megan Columbus

Also keeping the enterprise going as if there weren't a pandemic happening are Dr. Sheryl Brining, director of the Office of Research Information Systems, who manages NIH RePORTER, the NIH Data Book and



Dr. Patricia Brown

RCDC—Research, Condition and Disease Categorization—which shows where NIH is spending its money; Dr. Kay Lund, director of OER's Division of Biomedical Research Workforce, “is making sure that the next generation of researchers—a high priority for [NIH director Dr. Francis Collins]—is getting early-stage support, across all of the institutes and centers” says Black.

Other key players include Dr. Patricia

Valdez, OER's research integrity officer; Dr. Paula Goodwin, the program administration officer; and another ex-NHLBI'er, Dr. Matt McMahon, who runs Small Business Education and Entrepreneurial Development.



Sally Amero

“These are just a few of the many, many people in OER who have been making all this happen; there are so many more in OER who are deserving of credit,” Columbus said.

“Everyone is working double-time,” said Black. “We're in this twilight zone—it's surreal. We have non-stop meetings, weekend work. This is a rare and unfortunate research environment. We face the potential loss of the next generation of researchers, but we're doing everything that we can to save them.

“We do have staff that have gotten ill,” she noted. “There is a lot of anxiety, and a lot of need, all happening simultaneously.

“Time is elastic,” she concluded. “You have to have that attitude to work in OER.” **B**

ORWH Hosts 50th Advisory Committee Meeting, Virtually

GROUP MARKS MILESTONE

The Office of Research on Women's Health hosted a virtual meeting of the NIH advisory committee on research on women's health on Apr. 21. ORWH director Dr. Janine Clayton provided opening comments that acknowledged the global changes that have occurred as a result of the Covid-19 pandemic. She reviewed early Covid-19 data relevant to ORWH's mission, including some initial sex-specific findings. For example, more men are dying of Covid-19 than women, and of the 210 nations and territories reporting on Covid-19 cases and deaths, only 19 are disaggregating the data by sex.

Clayton also described NIH's efforts to mitigate the problem of maternal morbidity and mortality, particularly from the life course perspective.

Dr. Marcia McNutt, president of the National Academy of Sciences, delivered the keynote address, detailing challenges to and possible solutions for women in the sciences. Her speech focused on the findings and recommendations from

Promising Practices for Addressing the Underrepresentation of Women in Science, Engineering and Medicine: Opening Doors—a consensus study report by the National Academies of Sciences, Engineering and Medicine—and other consensus studies on women in science. She described women achieving parity in medical schools and other science graduate programs, women's attrition from science careers, sexual harassment and career mentorship.

Following the keynote address, Dr. Carrie Wolinetz, acting chief of staff to the NIH director and associate director for science policy at NIH, gave a presentation on “NIH Efforts on Changing the Culture of Science to Maximize Talent and End Harassment.”

More information on the 50th meeting of the committee is available on the ORWH website. A video-cast of the meeting is available at <https://videocast.nih.gov/summary.asp?live=35545&bhpc=1>.

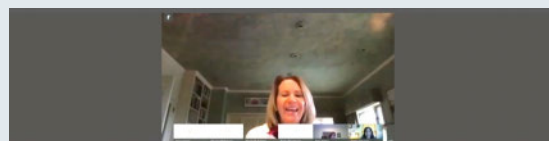
ORWH's Quarterly Publication Explores Women's Health

As part of the Office of Research on Women's Health's trans-NIH role to help ensure that research conducted and supported by NIH appropriately addresses issues regarding women's health, ORWH publishes *Women's Health in Focus at NIH*. This quarterly publication highlights recent NIH research involving the health of women as well as research, policy and funding related to the influences of sex and gender on human health and disease. In addition, the publication covers topics concerning the advancement of women in STEM careers. *In Focus* also profiles the people and programs that are making a difference in these areas in “spotlight” articles and other features.

In Focus is celebrating

ORWH's 30th anniversary year with a series of cover stories focusing on the history of the office, ORWH's careers mission, the NIH sex as a biological variable policy (scheduled for this summer) and the NIH inclusion policies (scheduled for this fall).

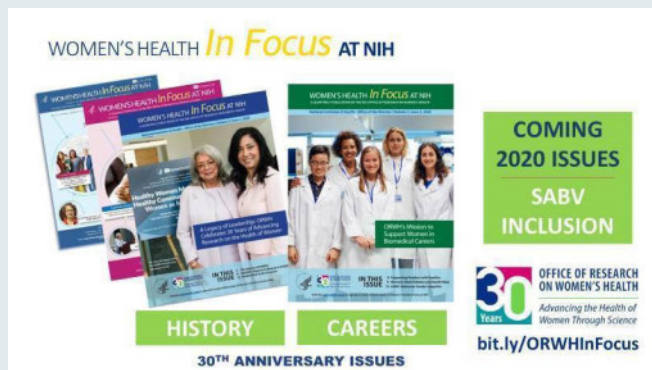
The editors of *In Focus* invite feedback, ideas and submissions. Email them at ORWHComms@od.nih.gov and sign up for a free subscription at https://public.govdelivery.com/accounts/USNIH/subscriber/new?topic_id=USNIH_110.



National Academies of SCIENCES ENGINEERING MEDICINE

Dr. Marcia McNutt

President of the National Academy of Sciences



Graham

CONTINUED FROM PAGE 1

viruses that have crown-like protein spikes on their surfaces. The spikes bind to the surface of cells, allowing the virus to enter. Four types of coronavirus routinely circulate in human populations. They cause up to 30 percent of common colds.

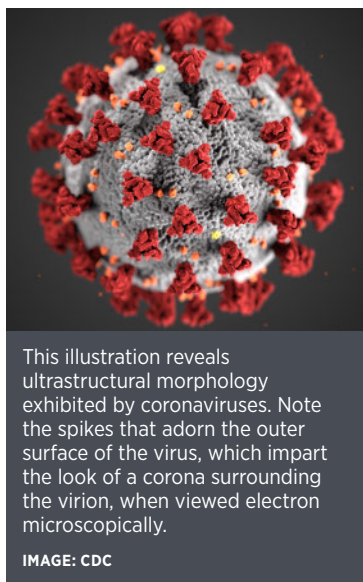
Over the past 2 decades, 3 new types of coronavirus emerged from animal reservoirs: SARS-CoV, MERS-CoV and SARS-CoV-2, the virus that causes Covid-19. SARS-CoV first appeared in fall of 2002. Back then, Graham said, “It took until March 2003 to diagnose it as a virus and another month to get it sequenced.” It had a fatality rate of 10 percent. By the summer, the virus disappeared and “people stopped thinking about it.”

Ten years later, MERS-CoV appeared in the Middle East. It had a fatality rate of almost 40 percent, but it didn’t spread, except for one outbreak in South Korea. “Again, the disease didn’t spread that far and there was not much of a motivation to make commercial vaccine products,” he noted.

It seemed obvious that more coronaviruses would emerge, Graham said. Advances in cryo-electron microscopy allowed researchers to see viral proteins in much greater detail. Now, they could solve the atomic-level structure of coronavirus spike proteins. The advance gave them the ability to define vaccine targets. From there, they can stabilize the spike protein and use it to induce antibodies that could neutralize the virus.

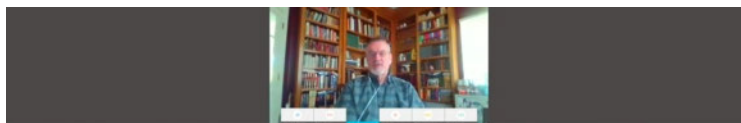
“Three or 4 years ago, we thought we knew a generalizable approach for how to make coronavirus vaccine antigen. If anything ever happened again, we wanted to be able to deliver it quickly,” he said.

So, NIAID began to collaborate with the biotechnology company Moderna, Inc., that had developed an “mRNA technology platform” that allowed scientists to quickly manufacture a potential vaccine. The platform is based on the idea that



This illustration reveals ultrastructural morphology exhibited by coronaviruses. Note the spikes that adorn the outer surface of the virus, which impart the look of a corona surrounding the virion, when viewed electron microscopically.

IMAGE: CDC



CoV Spike is Primary Target for Neutralization



Graham’s talk was the second in a new series sponsored each Wednesday afternoon by the Covid-19 scientific interest group.

mRNA can be made, purified and prepared as a product regardless of the protein being expressed. With the mRNA expressing the spike protein, scientists would be able to inject mRNA into a cell where the

“We are going to have antibody data—at least on the first few subjects—by the middle of May,” he said [hopeful preliminary data was later confirmed].

The vaccine candidate being tested

◆ ◆ ◆
“We really need about 10 good vaccine programs.”

—DR. BARNEY GRAHAM

protein would be made and spur antibody production.

Just weeks after SARS-CoV-2 was isolated and genetically sequenced, NIAID scientists, in partnership with Moderna, began a phase 1 clinical trial evaluating a potential vaccine based on a stabilized spike protein using mutations identified in their prior studies on other coronaviruses. The vaccine directs the body’s cells to express a virus protein, with the goal of causing a strong immune response.

“This was the first time I have seen manufacturing outpace the clinical and regulatory processes,” Graham said.

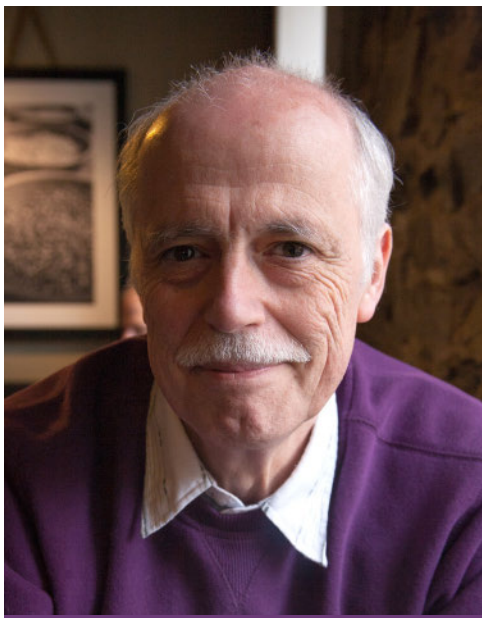
They were able to move

by NIAID and Moderna is just one of 115 vaccines being developed in different parts of the world. Graham believes “we really need about 10 good vaccine programs.” Having so many candidates will make it difficult to identify the best ones.

He said that a prototype-pathogen approach, similar to what was done for MERS-CoV to inform how to respond to any other coronavirus, could be used for the other 24 virus families that are known to infect humans. Within those families there are about 100 known viruses that are recognized as potential threats.

“New technologies are transforming vaccinology. By combining the precision of atomic-level antigen design with the speed of platform manufacturing, a new paradigm for preparing for and responding to emerging viruses is possible,” Graham concluded.

To watch the entire lecture, visit <https://videocast.nih.gov/summary.asp?live=36377&bhcp=1>.



Dr. Felipe Sierra

Sierra, NIA Division of Aging Biology Director, Retires

BY CHIP ROSE

Dr. Felipe Sierra, director of NIA's Division of Aging Biology (DAB) and an international advocate for growing the field of geroscience, retired from federal service on Apr. 30 after leading the division for 14 years.

A native of Chile, he came to the U.S. after studying biochemistry at the Universidad de Chile. He received his Ph.D. in biochemistry and molecular biology at the University of Florida and then did postdoctoral work at the University of Geneva, Switzerland. While working for Nestlé in Switzerland, he became interested in the biology of aging. This pursuit led him back to academia and the U.S., first as an assistant professor at the Medical College of Pennsylvania, and later as an associate professor at the Lankenau Institute for Medical Research near Philadelphia.

In 2002, Sierra joined DAB as a program officer, becoming director in 2006. He soon founded the trans-NIH geroscience interest group (GSIG), which pushes for better understanding of the ways in which the basic biology of aging is a major risk factor for age-related diseases such as cardiovascular disease, cancer, diabetes and Alzheimer's. In 2013 and 2014, he received NIH Director's Awards for this effort.

As DAB director, he attracted a new

generation of young investigators to research in the biology of aging. Through the GSIG, he convened several successful Geroscience Summits, edited the first book on geroscience and wrote numerous influential articles to advance the evolving field. A talented artist, Sierra painted the cover art for the inaugural issue of the journal *GeroScience*. In addition to geroscience, he worked to spearhead understanding of concepts of healthspan as well as molecular and cellular resilience.

★ ★ ★

“Felipe truly helped change the conversation on aging and geroscience at the NIH and internationally.”

-NIA DIRECTOR DR. RICHARD HODES

★ ★ ★

“I feel so grateful and blessed for the opportunity I was given to lead DAB during a period of such exciting growth for the field of geroscience,” said Sierra. “I am proud to have seen our work mature as the scientific community better recognized its influence on the health of our older adults. I look forward to continue working to help the field evolve.”

“Felipe truly helped change the conversation on aging and geroscience at the NIH and internationally,” said NIA director Dr. Richard Hodes. “He leaves a legacy of curiosity and collaboration in the field that will continue to influence future generations of scientists.”

“Felipe made geroscience an internationally recognized research field,” said Dr. Ron Kohanski, DAB deputy director. “He also enhanced the infrastructure for research in basic biology in a way that will help sustain the field long after his departure from NIA. Personally, I value our 15 years together with Felipe as my friend and mentor.”

Future plans for Sierra include working with Dr. Bruno Vellas on the INSPIRE geroscience project in Toulouse, France, and as a senior advisor on an NIH Common Fund activity. In addition, he will remain active in other international initiatives to further promote aging biology and geroscience. He also hopes to find time to further pursue his love of painting and playing the guitar.

R&W's Stalwart Cole Mourned

Margaritha Barbara Cole, 84, who provided memorable retail warmth at the R&W Gift Shop when it was a large operation on the B1 level of Bldg. 31, died Apr. 19 in Maryland. She had retired in 2006 after a 27-year career at NIH.

Cole, universally known as Barbara, came to NIH in fall 1979 on a part-time basis, to accommodate her three kids' school schedules.

Many of her customers became friends.

“The NIH Recreation and Welfare Association and the NIH were a brighter place because of Barbara Cole,” said R&W

President Randy Schools, on the occasion of Cole's retirement. “She brought forth a smile for all, welcoming comments and a sincere desire to help employees with their personal and professional needs. She treated employees with respect, and they in turn treated her like family. Always



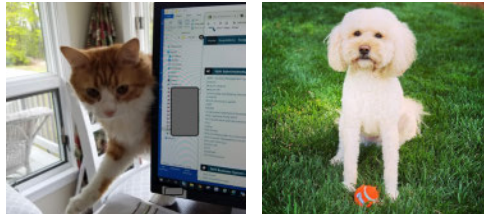
Barbara Cole

available to listen, she will be remembered most for her distinguishing trait of kindness.”

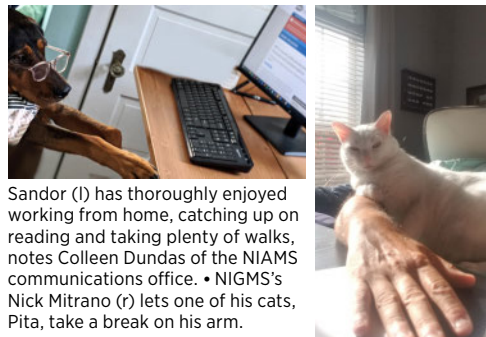
Cole was born in Casablanca, Morocco, the daughter of Swiss parents who came to Africa as colonists from Europe. Her first language was Schweizerdeutsch, a Swiss-German dialect, and she also spoke Arabic, in order to get along with the natives. She learned French in school, as France had taken over Morocco.

Perhaps her penchant for attentive personal service was inherited: “Both of my grandparents were in business, and they always stressed the importance of high ethical standards,” she said.

Cole lived in Africa until age 22. During a brief visit to the United States, she met Jack Cole, whom she later married. At the time of her retirement, they had 12 grandchildren, 8 of whom “live within 3 miles of us,” she noted, delightedly. **R**

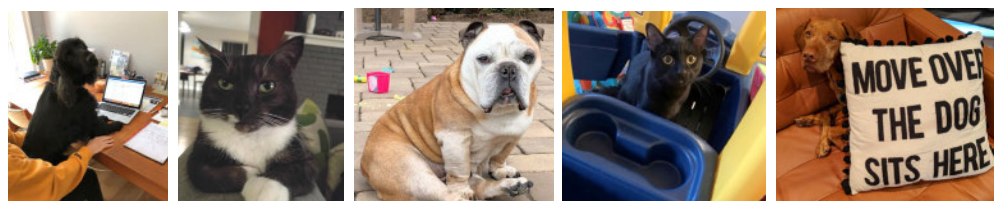


From I: “My not so helpful coworker,” says Angie Tew of NIEHS. • “Beans the Goldenoodle here, with a reminder to take frequent breaks for some fresh air, and oh, I don’t know—maybe a game of fetch?” Beans belongs to Jill Hughes, an NIEHS administrative officer.

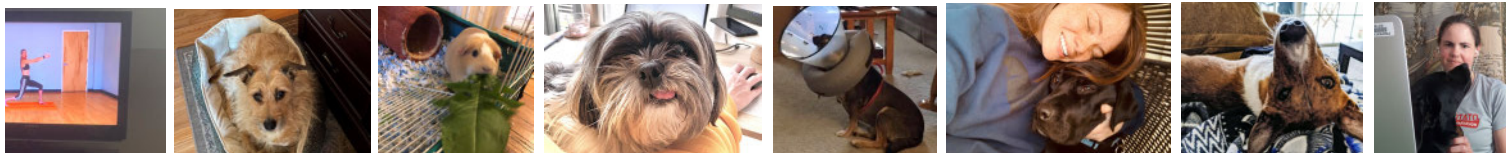


Sandor (l) has thoroughly enjoyed working from home, catching up on reading and taking plenty of walks, notes Colleen Dundas of the NIAMS communications office. • NIGMS’s Nick Mitrano (r) lets one of his cats, Pita, take a break on his arm.

From I: 12-year-old Stella tests the limits of inactivity and her own disordered sleep throughout the day, while her parents are working. She belongs to Katie Morris, health science policy analyst, Office of Behavioral and Social Sciences Research. • Telework patrol always has their eyes on me, says the Office of Human Resources’ Joani Ward, of dogs Mai and Mikko. • The Clinical Center’s Benita Bazemore has co-worker Winston as an accomplice. • NIAMS’s Sara Rosario Wilson has home office support staff from Duncan Bear McDoodle.



From I: Dr. Nancy Garrick, communication director at NIAMS, gets paw-sitive advice from her dog Darwin Murphy. • It’s not surprising NCATS staff showcased their feline friends. Here’s Angus, who beckoned owner Eric Wallgren: “Close the door and have a seat; we need to discuss your performance review.” • Kate Winseck, public health advisor, ODP, says of family bulldog, Churchill, “Lazy dog that embodies the stay-at-home mentality.” • “Bagheera is ready to ‘roll’ with posting Covid-19 information to www.nih.gov,” says Jess Hiller of OD’s Online Information Branch, which updates the main NIH web page. • “Any questions?” asks Elsie, who belongs to Dr. Oliver Bogler, director, Center for Cancer Training, NCI.



Clockwise (from I): “This is my dog Zach, who watches to make sure I am doing my exercise,” said Sandra McBride of NIEHS. • “All I have to say is ‘Let’s go to work’ and Auggie gets so excited. He runs into my office and sits there right next to my desk. He’s an excellent teleworker,” says Donna Dassen, a Clinical Center administrative officer. • “I do realize this dandelion leaf is bigger than me, but...,” says Lemon, a guinea pig belonging to Christopher Wanjek of the Office of Intramural Research. • “Hairy Caray was hoping to circle back on the treat proposal made at this morning’s walk meeting,” said Meredith Swan, special assistant in the Office of Finance & Management, All of Us Research Program. • “One of my coworkers asked if this was a dog or a phonograph,” said Nora Weston, Access & Reference Services librarian at NIEHS. • “Excuse me, this is not social distancing!” says Ranger, who belongs to Evelyn Castro-Rubio, operations coordinator in the Immediate Office of the Director. • Yes, NCATS staff enjoy dogs. For example, Dorian Cheff now works side-by-side with Derek, who feels like his whole world is turned upside down. • “Chile has been giving me constant support of my telework situation,” said Donna Stefanick of NIEHS. “She checks on me throughout the day.” • Kat Schwartz, communications specialist at ODP, explains, “Little Jerry Seinfeld practices physical distancing from squirrels and local cats. He also serves as neighborhood watch, alerting us to anyone not taking the appropriate public health measures. #Solidarity #InItTogether • “Move the little mouse thing again, please,” says English bull terrier Phineas to his owner, Debbie Gutierrez, nurse manager at the Clinical Center’s 5SE and SCSU.

Hold Those Allergies! We’ve Got More Tele-Pets

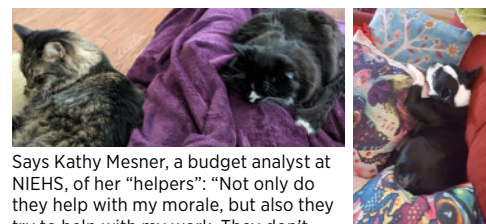
Sneezing yet? Yes, we have another selection of the unsung heroes of our telework lives, who have kept us company through thick, thin and plans for eventual return to our physical workplaces. These pets, by obeying their natures, have behaved heroically. It is not, however, possible to nominate one for an NIH Director’s Award.



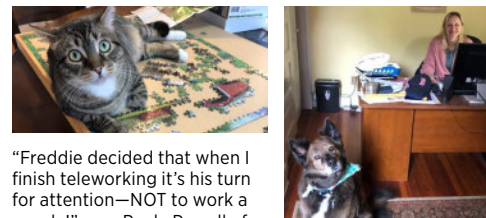
“Here are my dogs, cozy and happy with me in my den all day long,” said Dr. Linda Kupfer, senior scientific advisor for FIC’s Center for Global Health Studies. “They only move when I take them out for their 2-3 daily walks. They have never been calmer or happier.” • Beth Mahler of NIEHS offers Cricket’s sentiments.



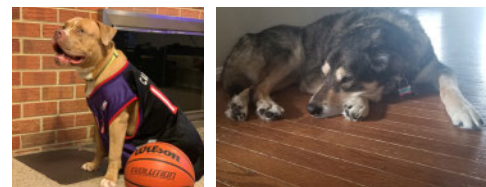
Taco and Nacho (l) are still figuring each other out, says Jake Basson of NIGMS. • “I can hear Mia saying, ‘Not another reply-all!’” said Frank Mickey of the Clinical Center.



Says Kathy Mesner, a budget analyst at NIEHS, of her “helpers”: “Not only do they help with my morale, but also they try to help with my work. They don’t leave much room for my laptop though!” • “Sending a photo of our pets at home during telework...mostly of them sleeping,” says Pam Leach of NINDS.



“Freddie decided that when I finish teleworking it’s his turn for attention—NOT to work a puzzle!” says Paula Powell of NIGMS. • Christine Mashek (r), a clinical manager/nurse on 5SE, is attended by Skibo, her Australian retriever.



“Simba [l] has been my therapist during this period of social isolation,” said Mandy Mansaray of the Clinical Center. • Norma Minkoff, contract analyst at ODP, says, “Teeni [r] is showing you all how it’s done.”

