

Covid Vaccine Program Staff Thanked for Tremendous Job

BY ERIC BOCK

NIH director Dr. Francis Collins thanked the staff members who made the Covid-19 vaccine program a success, addressing a crowd assembled on May 19 outside the Bldg. 10 B1 cafeteria that housed the immunization clinic since its inception.

“Your efficiency, professionalism, friendliness, sensitivity to everybody’s needs has become famous around here,” Collins said during the event to recognize vaccine clinic staff. “You’ve really done amazing things to set a standard for excellent care. And that’s made us all really proud.”

Since the clinic opened in December, ORS’s Division of Occupational Health and



NIH director Dr. Francis Collins (r) greets staff at an event celebrating the vaccination clinic.

PHOTO: CHIA-CHI CHARLIE CHANG

Safety, members of the Public Health Service and many volunteers from across campus administered more than 30,000 doses to NIH employees. During the majority of the clinic, only 20 doses were wasted.

“You are a reminder why this is such an amazing place and such a noble enterprise,”

SEE **GRATITUDE**, PAGE 4

FRIENDSHIP ARCHAEOLOGY Professor Mines NLM Archives for Medical Biography

BY DANA TALESNIK

Dr. Annmarie Adams is an architectural historian who teaches at McGill University in Montreal. Currently, she’s digging through letters, diary entries, photos and other materials to gain insights into the life of the late Dr. Maude Abbott, a renowned researcher at McGill a century earlier.

Adams came to the National Library



Dr. Annmarie Adams

SEE **ABBOTT**, PAGE 6

MYSTERIOUS ILLNESS DEFINED NIH, USUHS Scientists Discover New Form of ALS

BY SHANNON E. GARNETT

Five years ago, a 15-year-old girl from Santeramo in Colle, Italy, traveled to the United States hoping to learn more about her mysterious illness. More specifically



Claudia Digregorio

PHOTO: MICHAEL SPENCER

she wanted to find a name for her condition, learn about possible treatments and perhaps even find a cure for the rare, yet undiagnosed, neurological disorder she had been suffering from since age 5. Her doctors in Italy had not

SEE **MYSTERY**, PAGE 10

NIDDK DIABETES RESEARCH CITED Century of Insulin Celebrated

BY ALYSSA VOSS

In the summer of 1921 at the University of Toronto, after months of failed experiments, Drs. Frederick Banting and Charles Best made a profound discovery. They found that a pancreatic extract from healthy dogs reduced blood glucose in other animals with diabetes. By the following year, that extract was chemically refined and used in human clinical trials to treat people with type 1 diabetes. Called insulin, the extract would change type 1 diabetes from a fatal condition to one that could be managed.

In the 100 years since, tremendous



Insulin marks its 100th anniversary this year.

SEE **INSULIN**, PAGE 8



Feds Feed Families is online only for second straight year. See Briefs on p. 2 for details.

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'Mind the Gap' Addresses Group-Based Interventions, June 29

The Office of Disease Prevention will host a Methods: Mind the Gap webinar with Dr. David M. Murray on Tuesday, June 29 at 1 p.m. (ET).

The webinar will review current recommendations for design and analysis of group-based intervention trials. In addition, the meeting will review updates to the Research Methods Resources



Dr. David M. Murray

website (research-methodsresources.nih.gov) that currently focuses on parallel group- or cluster-randomized trials and individually randomized group-treatment trials.

Murray will demonstrate the new sample size calculator for individually randomized group-treatment trials that was added to the website in April 2021. He will also preview a new section on

stepped-wedge group- or cluster-randomized trials that will be coming to the website later this year.

Murray has spent his career evaluating interventions designed to improve public health. He has focused on the design and analysis of trials in which groups are randomized to conditions and members of those groups are observed to assess the effect of an intervention.

Murray joined NIH in 2012 as associate director for prevention and director of the ODP. He is responsible for promoting and coordinating prevention research among NIH institutes and centers and other public and private entities.

Registration to attend the webinar is required. Register at prevention.nih.gov/education-training/methods-mind-gap/design-and-analytic-methods-group-based-interventions. The webinar will be recorded and available on the ODP website within about 1 week.

The Methods: Mind the Gap series explores research design, measurement, intervention, data analysis and other methods of interest in prevention science. For more information, visit prevention.nih.gov/MindTheGap.

Blood Bank in Critical Need of Donors

The NIH Blood Bank is in critical need of group O blood donors.

Due to several surgeries and other procedures, inventory of O-positive and O-negative blood is very low. Patients in the Clinical Center need help. Both local and regional inventories of this blood type are dangerously low.

The Blood Bank is accepting donations by appointment only due to the Covid-19 pandemic.



Feds Feed Families, Virtually. In past years, NIH has conducted large-scale "Fill the Trucks" events like the one shown above in 2010 to collect for the annual government-wide summer food drive. These days, efforts are all virtual. See below for ways you can donate now through Aug. 31.

Also, physical distancing and additional cleaning procedures have been implemented.

Call (301) 496-1048 or email NIHBloodBank@cc.nih.gov to schedule an appointment.

Feds Feed Families Virtual Giving Underway

Now through Tuesday, Aug. 31, NIH is participating in the Feds Feed Families virtual summer food drive. Held annually since 2009, this campaign offers federal agencies the opportunity to fight hunger in their communities. NIH donated almost 298,000 pounds of food in the Washington, D.C. metropolitan area and at satellite locations during the 2020 campaign.

Many families are still heavily impacted by the pandemic. Taking care of basic needs, such as paying for housing, utilities and medical care continue to be challenging, especially purchasing food. This year's campaign will again be run entirely online with three ways to contribute and track donations.

HOW TO DONATE

Donate groceries online: Purchase food via your favorite online grocer and have it delivered directly to any food bank or pantry.

Donate money online: Make a monetary donation to a food pantry or food bank.

Combined Federal Campaign (CFC): Make a

monetary donation to a food pantry or food bank through the CFC special solicitation.

WHERE TO DONATE

You can donate to any food bank or food pantry. Visit NIH's campaign website at <https://www.ors.od.nih.gov/FedsFeedFamilies/Pages/default.aspx> for specific information on several local organizations, including the Children's Inn, Safra Family Lodge, Capital Area Food Bank and Manna Food Center.

RECORDING YOUR DONATION

For NIH to receive credit for your contribution, record your donation on this website: <https://survey123.arcgis.com/share/10a5efa3de024beda91d4c61b0bc0a4f>.

Select "U.S. Department of Health and Human Services" as your department and "National Institutes of Health" as your agency.

All donations will be tracked by pounds of food. For monetary donations, the site will use a national conversion rate from dollars to pounds.

The Office of Research Services is NIH's sponsoring organization. For more information, visit the ORS website listed above. If you have any questions about the campaign, email FedsFeedFamiliesNIH@nih.gov.

Duke's Shaw Highlights Transformative Opportunities in Digital Health

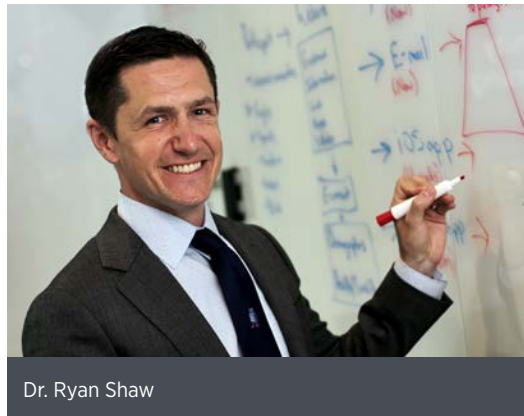
BY JONATHAN W. MARKER

Dr. Ryan Shaw presented the latest edition of the NINR Director's Lecture Series in his discussion, "Digital Health: Towards the Next Era of Health Care Delivery and Chronic Disease Management." His lecture underscored the wide availability of digital technologies that health care providers can use to enhance patient care and manage chronic diseases.

Shaw noted that by integrating a suite of patient-generated health data from phone sensors, connected devices like smartwatches and activity trackers, in-home devices and environmental sensors—in addition to FDA-approved devices like electrocardiograms, wireless stethoscopes and exam kits—health care providers will have a wealth of tools, technologies and software programs available to help bridge the gap between in-person clinic visits.

"Digital health allows health care providers to access their patients in their everyday environments, where health occurs," Shaw said. "This access is especially important to complex and chronic disease management like heart disease, asthma, diabetes, cancer and mental health concerns."

As the patient's home becomes the care site, remote monitoring offers health care providers the ability to manage hospital at-home and virtual care programs. Shaw noted that telehealth grew in



Dr. Ryan Shaw

popularity and use during the Covid-19 pandemic for patient and health care provider safety, offering such conveniences as live video conferencing and remote patient monitoring as substitutes for in-person consultations.

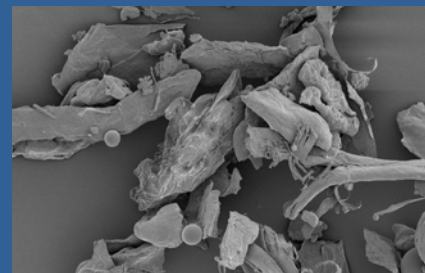
"We were trying to prevent people from coming together because of social-distancing measures, and we observed a spike in delivering telehealth," Shaw said. "I've heard from physicians all over the country that they never delivered telehealth before the pandemic, and health systems saying that they shifted their nursing workforce to deliver telehealth."

These transformative capabilities are not without their drawbacks. Shaw noted that, while more than 85 percent of American adults have access to a smartphone, the digital health experience is not universal. Challenges like equitable access, affordability, security, privacy, technological literacy and data quality necessitate the continued evaluation of digital health capabilities to develop a robust evidence-based practice.

Looking ahead, Shaw and his team recently received an award for their NIH R01 proposal, "Expanding Technology-Enabled, Nurse-Delivered Chronic Disease Care (EXTEND)." EXTEND aims to address existing challenges that prevent the practical application of mobile monitoring-enabled telehealth for clinic-refractory disease. The targeted health condition is persistent, poorly controlled diabetes mellitus and comorbid hypertension, but the team plans to address this clinical problem in a manner that can be generalized to other conditions.

Shaw is an associate professor at the Duke University's School of Nursing and School of Medicine. He is also director of the Health Innovation Lab and faculty lead of the Duke Clinical & Translational Science Institute's Duke Mobile App Gateway digital health initiative. His research focuses on evaluating and integrating data from mobile health and novel sensing technologies into software applications that he uses to engineer models of patient care delivery.

Shaw's lecture is available at www.ninr.nih.gov/newsandinformation/events/shaw-2021. **R**



ON THE COVER: House dust under high magnification

IMAGE: NIAID

Graham Receives 2021 Sabin Gold Medal



Dr. Barney S. Graham

The Sabin Vaccine Institute has awarded its annual Albert B. Sabin Gold Medal to Dr. Barney S. Graham, Vaccine Research Center deputy director.

"It is a great honor to be associated with Dr. Sabin and a privilege to be on the list of all the previous recipients," said Graham. "I am very grateful to all those who have helped me on my journey and to my early mentors for their generosity and inspiration."

The Gold Medal, now in its 28th year, is Sabin's highest scientific honor, given each year to a distinguished member of the global health community who has made extraordinary contributions to vaccinology or a complementary field. Past award recipients include leaders of vaccinology and vaccine advocacy such as Drs. D.A. Henderson, William Foege and Carol Baker.

Graham, an immunologist, virologist and clinical trials physician, is a pioneer in the field of structure-based vaccine design and a thought leader on pandemic preparedness. When the SARS-CoV-2 sequence was first published, his lab identified the relevant stabilizing mutations within hours and sent sequences to a commercial partner for manufacturing within days—these contributions were key to the development of Covid-19 vaccines.

Graham has led the development and testing of new vaccines for many global pathogens, including respiratory syncytial virus (RSV), influenza, human immunodeficiency virus (HIV), Ebola, West Nile, chikungunya, Zika, SARS and MERS.

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Associate Editor:

Carla Garnett • Carla.Garnett@nih.gov

Staff Writers:

Eric Bock • Eric.Bock@nih.gov
Dana Talesnik • Dana.Talesnik@nih.gov

Editorial Intern:

Amber Snyder • Amber.Snyder@nih.gov

Subscribe via email:

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Collins (front, 3rd from l) stands with volunteers and staff from across NIH who came together to administer more than 30,000 doses of Covid-19 vaccine.

PHOTOS: CHIA-CHI CHARLIE CHANG

Gratitude

CONTINUED FROM PAGE 1

Collins concluded. “You keep the community safe, do great science and make all of us proud to be part of NIH.”

Sense of Community Grew

The clinic opened in late December 2020. At first, there was little else besides a few booths and computers, said Dr. Jessica McCormick-Ell, director of the Division of Occupational Health and Safety, ORS. Thanks to efforts by DOHS, ORS’s Division of Emergency Management, the CC pharmacy and department of clinical research informatics and the PHS Commissioned Corps, the clinic swiftly enhanced its ability to administer vaccines.

McCormick-Ell said that with constant communication and improvement, “we were able to add in appointments, had extremely low wait times, if any, even on days when we have over 300 appointments. The clinic was viewed as a best in class clinic by PHS leadership, and required input from staff with many different backgrounds.”

While Covid-19 cases surged across the country, McCormick-Ell added, the clinic worked to ensure the safety of staff and volunteers as well as those who received immunizations.

“A strong sense of community has developed amongst these persons,” she noted. “I have been so lucky to meet and work with people with extraordinary dedication. We held each other up during this really stressful time, supporting each other in many different ways. I am so grateful to this team, their long hours, dedication to excellence and their expertise.”

Getting the clinic up and running was a complex effort that required many people from across NIH to work together, said Capt. Derek Newcomer, DOHS deputy director.

OHS knows how to vaccinate NIH’ers. Every fall, they run the seasonal influenza immunization program. Despite the experience with the flu clinic, Newcomer said, getting Covid-19 vaccines to employees posed unique challenges. Covid-19 vaccines had to have been given as fast as possible to as many people as possible.

In addition, Pfizer and Moderna vaccinations require two shots. For the Pfizer vaccine, the second dose is administered 21 days after the first dose and, for the Moderna vaccine, the second dose is administered 28 days after the first dose.

There were some days when the clinic was giving out a third—the Johnson and Johnson vaccine, which required only one dose. Staff had to keep track of who got what and when or if they needed to return for a second shot.

As more employees began getting vaccinated outside of NIH, staff noted who received vaccines elsewhere to ensure invitations are sent as quickly as possible to eligible staff who have not yet received a shot.

All In

Each morning before the clinic opened, staff would meet to discuss lessons learned, strategy for the next day and reflect on the meaningful work they did.

“Early on, patients shared heartfelt stories about loved ones dying from Covid-19,” said Newcomer. “The vaccine gave them hope they wouldn’t become a statistic.”



Employees from various ORS components, shown above with the NIH director (4th from l), helped make the vaccine clinic a success. At right, Dr. Jessica McCormick-Ell, director of the ORS Division of Occupational Health and Safety, introduces Collins at the recent gratitude tour event.





Collins told clinic staff, “You keep the community safe, do great science and make all of us proud to be part of NIH.”

Judy Chan, a nurse practitioner with OMS, works to ensure the clinic runs smoothly.

“I have worked tirelessly above and beyond my scheduled hours to make sure your Covid vaccine clinic runs effectively and smoothly,” she said.

The night before, Chan reviews the next day’s appointments to make sure there are enough supplies and volunteers to administer the vaccines.

She also estimates how many leftover doses there might be at the end of the day. Then, she notifies people on the vaccine waiting list that there are extra doses and schedules them for a walk-in appointment.

Chan said being part of the vaccine program is “so rewarding.” She enjoys working with everyone towards the same goal as a team. “There’s not one day where I dread coming down here,” she remarked. “We’re all in this together.”

‘A Ticket to Freedom’

To assist with the effort, public health officers were deployed to help staff the clinic. Back in December, Radm. Richard Childs, assistant U.S. surgeon general and clinical director of NHLBI’s Division of Intramural Research, asked Capt. Josef Rivero to lead a team of PHS personnel to work in the Covid-19 vaccine clinic.

PHS members usually deploy to other parts of the country in response to natural disasters and public health emergencies,

said Rivero, NIH vaccines operations chief. Previously, he deployed to Africa to respond to the Ebola epidemic and to Haiti to respond to an earthquake.

Every patient who got a vaccine got a “ticket to freedom,” he pointed out.

Those doses opened the opportunity for

people to visit their families.

Rivero’s never seen an effort at NIH where everyone pitched in to get a job done. “It was an honor to be part of a historic mission and take care of our work family,” he said.


Volunteers were also critical to the clinic’s success, said Newcomer. They greeted and checked in patients, provided IT help,



PHS members helped with NIH’s vaccine effort. Typically, they deploy to natural disasters and public health emergencies away from home.

came in early, stayed late and gave up their weekends so staff on non-traditional schedules could get vaccinated.

“The clinic was staffed and supported by a diverse group of people from across the NIH community,” he said. “Everyone from mid-level staff to senior leadership staffed booths and gave shots.”

The cafeteria clinic closed June 10. Now through August, OMS offers the vaccine once a week on Thursdays in the OMS Clinic (Bldg. 10, Rm. 6C306) for new employees, fellows and other staff. Schedule online (<https://clinweb.cc.nih.gov/cct>), call (301) 480-8990 (interpretive services available) or email OMSCOVIDVaccineProgram@mail.nih.gov. 

Bernard Named Chief Officer for Scientific Workforce Diversity

Dr. Marie Bernard is NIH’s new chief officer for scientific workforce diversity (COSWD). She will lead the effort to promote diversity, inclusiveness and equity throughout the biomedical research enterprise.

“Dr. Bernard is an accomplished physician-scientist and has championed diversity and inclusion efforts over her entire career, including serving a leadership role in NIH’s most recent efforts to end structural racism in biomedical research through the UNITE initiative,” said NIH director Dr. Francis Collins. “Her dedication and passion in creating equity and inclusion throughout the biomedical research enterprise are profound and inspiring. I am delighted that she will now be continuing in this vital leadership role for NIH on a permanent basis.”

She has served as the acting COSWD since October 2020, after the retirement of Dr. Hannah Valentine, who served as NIH’s first-ever COSWD. Bernard has also served as deputy director of the National Institute on Aging since October 2008.

Bernard has played key leadership roles in a broad variety of NIH activities to further diversity, including serving as a co-chair of the UNITE initiative, and leading the development of the NIA Health Disparities Research Framework. She also directed and supervised the NIA Office of Special Populations that leads health disparities research and training for scientists from diverse backgrounds.

She is a founding member of the diversity working group and NIH equity committee, and co-chair of the NIH inclusion governance committee, which oversees inclusion in clinical research by sex/gender, race/ethnicity and age.

Bernard also leads the women of color committee of the working group on women in biomedical careers, which established the Women of Color Research Network. Bernard has been recognized for her leadership with multiple awards, including the 2020 NIH Director’s Award for Equity, Diversity and Inclusion.

Bernard completed her undergraduate education at Bryn Mawr College and received her M.D. from the University of Pennsylvania. She trained in internal medicine at Temple University Hospital, where she also served as chief resident.



Dr. Marie Bernard



Friendly colleagues (from l) Dr. Paul Dudley White; Dr. Maude Abbott in Montreal, 1893; and Dr. Emanuel Libman

IMAGES: WHITE COURTESY HARVARD MEDICAL LIBRARY, ABBOTT COURTESY MCCORD MUSEUM, LIBMAN COURTESY CHAPPELLE MEDICAL ARCHIVES/NYU

Adams, “which offers, I think, a stimulating way to see how these well-known medical figures defined zones of familiarity and comfort.”

One event that brought her key players together was a 1932 gala dinner at New York’s elite Waldorf-Astoria. At this 60th birthday party for Libman—a prominent cardiologist and philanthropist—600 guests had piled into the ballroom. Abbott, one of few women in attendance, was a featured speaker and, accord-

ing to published seating arrangements, had a coveted seat among Nobel Prize winners and other notables.

“This role of speaker and [the only woman] sitting at the head table gave Abbott really high visibility,” said Adams. Newspaper coverage of the event described Abbott as “the foremost woman physician in the world.” The gala was but one illustration of “Abbott’s high status as a researcher and physician,” said Adams, that “allowed her

to operate as a kind of peer in this Nobel-level stratum, somewhat like an honorary man.”

Abbott had a strictly formal relationship with Libman, who consistently—and

often anonymously, at his insistence—financed her work.

“I speculate that perhaps Libman’s foreboding character was the reason for their formality,” said Adams. Over the years, Libman and Abbott sometimes dined together, usually at upscale New York restaurants, “which must have been such a treat for Abbott,” said Adams. “It wasn’t the way she lived here.”

And, while she doesn’t mention them in her writings, Abbott was likely fascinated by Libman’s personal collection of organs in jars that he stored in his basement.

“I speculate,” said Adams, “that these ways of being in the world may have

researcher, her *Atlas of Congenital Cardiac Disease* classified heart diseases and laid the foundation for modern heart surgery.

Throughout her career, Abbott devoted copious time to correspondence. Dozens of medical museums consulted her about how to organize and preserve their specimens, and hundreds of doctors wrote to her inquiring about their cardiac patients.

In her talk, Adams focused on a chapter from her forthcoming biography that contrasts Abbott’s relationship with two influential American physicians: Dr. Emanuel Libman and Dr. Paul Dudley White.

“This chapter, I think, broadens the way we study women’s professional networks,” said Adams, “a subject in which researchers often focus on friendships among women, rather than professional relationships.”

Admittedly, Adams at first assumed Abbott was a mentee of Libman and White when, in fact, she was the senior, more experienced doctor. “These two friendships, as it turned out, were two-directional, perhaps symmetrical, in benefits if not in power.”

Adams calls her research approach “friendship archaeology,” in which she digs deeply into specific places and times to paint a more vivid picture. “Friendship archaeology allows me to frame this work in the evolving history of intimacy,” said

• • •
“Friendship archaeology [is] a stimulating way to see how these well-known medical figures defined zones of familiarity and comfort.”
 • • •

—DR. ANNMARIE ADAMS

Abbott

CONTINUED FROM PAGE 1

of Medicine to excavate its collection of related papers and letters. Her timing was auspicious; she visited NLM in October 2019, a few months before the pandemic would hit, restricting travel.

In March, Adams—a professor at McGill’s School of Architecture and chair of the department of social studies of medicine—delivered a virtual NLM History of Medicine lecture on Abbott, one of Canada’s first female physicians. It was a fitting tribute during Women’s History Month.

Abbott had spent much of her 46-year career as curator of McGill’s medical museum. An internationally respected



White, a cycling enthusiast, bikes with his wife, Ina, in a photo taken 36 years after Abbott’s passing.

PHOTO: COURTESY MASS GENERAL HOSPITAL ARCHIVES



Centennial Dinner
GIVEN
BY
Dr. Emanuel Libman
BY HIS FRIENDS, PUPILS AND COLLEAGUES
ON THE OCCASION OF THE PRESENTATION OF
THE LIBRARY ANNIVERSARY VOLUMES

Messu
1913

Fresh Blue Point Oysters
Cocktail Sauce

Cream of New Peas St. Germain
with Buttered Croutons

Hearts of Celery — Ripe and Green Olives

Aligoutte of Kingfish a la Creole
Fried Potatoes

Saute of Milk-fed Chicken Portugaise
Tomatoes and Mushrooms Faislana
Baby String Beans

Small White Leaves of Lettuce
French Dressing

Frozen Bombe Aboukir — Assorted Fancy Cakes

Cafe Filin

The Waldorf Astoria SATURDAY OCTOBER 15, 1932



The Waldorf Astoria - Grand Ballroom

The menu and postcard from Libman's 60th birthday gala are among materials that paint a vivid image of just one event described in Adams's forthcoming biography on Abbott.

MENU: COURTESY OSLER LIBRARY AT MCGILL UNIVERSITY; IMAGE: COURTESY WALDORF-ASTORIA



Adams had auspicious timing when she visited the NLM archives in October 2019, a few months before the pandemic shut down much of NIH's campus.

endeared him to Maude Abbott, who was also unmarried, childless, lived in the house where she grew up, was somewhat eccentric, had experienced discrimination and, of course, loved things in jars.”

Meanwhile, Abbott's relationship with White—a distinguished Boston-based cardiologist—was both professional and personal. In work, they reviewed each other's writings and shared best practices. But Abbott's diaries reveal a rich friendship with White and his wife Ina, filled with European vacations and many get-togethers.

In June 1935, while Abbott and the Whites were vacationing in Milan and their travel companions were off sightseeing, one of Abbott's diary entries read, “Wakened early, chocolate shake by the cathedral, then went over *the Atlas* with Paul.”

There don't seem to be any photos of Abbott together with White or Libman. Their friendships though are well-documented in letters, memoirs, diaries, poetry, house plans, magazine articles, family interviews and at least one mural—prominent Mexican artist Diego Rivera featured Abbott and White in

his *History of Cardiology* mural, painted in 1944, four years after Abbott's death.

Adams depicts Abbott as a woman who often played a leading role in the spaces and places she shared with her esteemed male colleagues.

“Most biographers of Abbott couldn't see intimacy beyond sex and marriage,” said Adams. “Her diaries attest, however, to how she was constantly surrounded every day by so-called clinical people who she considered her friends, whom she loved and who loved her.” **R**

‘Path to Excellence’ Launches New Cohort

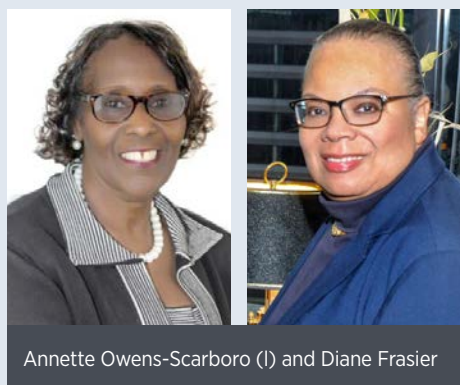
NIH recently selected 21 historically Black colleges and universities (HBCUs) and 42 businesses for the 2021 cohort of its Path to Excellence and Innovation Initiative, also known as PEI 2.0.

“HBCUs’ ongoing contribution to public health in America is undeniable,” said Diane Frasier, head of contracting activity and director of NIH’s Office of Logistics and Acquisition Management. “Consequently, increasing contracting opportunities with HBCUs is a key component of the NIH Small Business Program Office’s strategic plan.

PEI was created in 2016 specifically to cultivate NIH’s relationships with HBCUs. A 5-year pilot program ended in 2020. The new phase, PEI 2.0, is an 18-month program.

“The mission of the PEI Initiative is to empower HBCUs with the knowledge, resources and skills they need to effectively and consistently compete for and win contracts from NIH,” said Annette Owens-Scarboro, program manager and HBCU coordinator in the NIH Small Business Program Office. “With the launch of PEI 2.0, we will be offering more extensive acquisition training and technical assistance, as well as fostering partnerships between HBCUs and businesses.”

The selected schools are Bowie State University, Central State University, Cheyney University, Clark Atlanta University, Delaware State University, Elizabeth City State University, Fayetteville State University, Fisk University,



Annette Owens-Scarboro (l) and Diane Frasier

Florida Agricultural and Mechanical University, Howard University, Jackson State University, Morehouse College, Morehouse School of Medicine, Morgan State University, Norfolk State University, North Carolina Agricultural & Technical State University, Savannah State University, Texas Southern University, Tuskegee University,

University of Virgin Islands and Xavier University of Louisiana.

The academic institutions were chosen based on capability and capacity to compete for, secure and manage federal contracts, as well as potential to partner with a business with similar capabilities. Businesses were selected by experience and ability to assist HBCUs in navigating the federal procurement system.

NIH will receive program support from its 8a contractor, Supreme Solutions, Inc. Read more about PEI at <https://oamp.od.nih.gov/content/nih-path-excellence-innovation-initiative>.



At left, participants in the Diabetes Prevention Program hike together. PHOTO: DPOS RESEARCH GROUP At right, NIH began studies of the Gila River Indian Community of Arizona in the 1960s. PHOTO: NIDDK

Insulin

CONTINUED FROM PAGE 1

progress has been made in diabetes research and care. By 1936, the glucose tolerance test was developed and two types of diabetes emerged: insulin-sensitive and insulin-insensitive—now known as type 1 and type 2 diabetes, respectively.

From its very beginning in 1950, NIDDK conducted and supported laboratory, clinical and population research to understand diabetes, metabolic, endocrine and related diseases.

“NIDDK has leveraged the discovery of insulin to play a critical role over the last 70 years in advancing diabetes research,” said NIDDK director Dr. Griffin Rodgers, in a video reflecting on insulin’s 100th anniversary.

The reflections were part of a recent virtual symposium commemorating insulin’s discovery.

During symposium opening remarks, NIH director Dr. Francis Collins said, “I look forward to witnessing the next steps that researchers presenting and attending this meeting are going to take along the path first cleared by Banting, Best and their collaborators a century ago. Let’s make the next century of diabetes one where we figure out how to prevent and cure this disease so that it goes into the history books.”



Dr. Frederick Banting with one of his research dogs

PHOTO: WELLCOME COLLECTION

New Approach to Type 1 Diabetes

NIDDK-supported research made an important impact on advancing understanding about type 1 diabetes. The Diabetes Control and Complications Trial (DCCT) started in 1983 to see if people with type 1 diabetes who kept their blood glucose levels as close to normal as could safely be achieved could delay development of diabetes-related

complications such as eye, kidney and nerve disease, compared with people who used the conventional treatment at the time of the study.

The trial became a landmark success. DCCT ended after 10 years in 1993—a year earlier than planned—when the study showed that participants could significantly lower their chances of developing diabetes-related complications by keeping their blood glucose levels close to normal. Its long-term follow-up study, called the Epidemiology of Diabetes Interventions and Complications

(EDIC), has followed DCCT participants since the trial ended and showed that continuing the tight management of blood glucose levels helps people with type 1 diabetes live a normal-length life.

“The DCCT/EDIC findings were paradigm changing and were quickly

adopted worldwide and incorporated into the standards of care for people living with diabetes,” said Dr. William Cefalu, director of NIDDK’s Division of Diabetes, Endocrinology and Metabolic Diseases (DEM). “This NIDDK-supported research favorably changed the way we review the management of diabetes forever.”

Much of NIDDK’s type 1 diabetes research funding comes from the Special Statutory Funding Program for Type 1 Diabetes Research, or Special Diabetes Program (SDP). This appropriation approved by Congress has provided more than \$3 billion over 24 years to support innovative trials and research networks for the prevention, treatment and cure of type 1 diabetes.

SDP has supported the development of cutting-edge technologies that have made daily management of diabetes easier, such as the continuous glucose monitor (CGM). In the last few years, artificial pancreas technology has eased the management burden. The devices automatically monitor and regulate blood glucose using a CGM and insulin pump programmed with dosing algorithms tailored to the user. Through decades of NIDDK-supported clinical testing and trials, multiple artificial pancreas devices have been approved by the FDA.

Breaking Through on Type 2 Diabetes

NIDDK’s role in type 2 diabetes research had an earlier start. By the 1960s, the institute began the first long-term population study among American Indians to understand causes and risk factors for type 2 diabetes and its complications. One of the first collaborations of its kind, the study



NIH researchers study an insulin assay in the 1950s.

PHOTO: NIH OFFICE OF HISTORY

Three years into the 4-year study, the trial stopped early because of the significant benefits seen among participants in both of the study's treatment groups.

The study found that people who are at high risk for type 2 diabetes can prevent or delay the disease by losing a modest amount of weight, about seven percent of their

“Through RADIANT and other studies like it, we hope to gain insight into the more common differences present within the broad spectrum of type 2 diabetes and develop diagnostic criteria for new forms of diabetes,” said Dr. Christine Lee, DEM program director and RADIANT project scientist. “Precision medicine will play a key

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“NIDDK and the diabetes research community as a whole have made great progress. But our work is not done...”

-NIDDK DIRECTOR DR. GRIFFIN RODGERS

was conducted in partnership with the Gila River Indian Community, the Indian Health Service and other academic partners.

NIDDK's Dr. William Knowler, chief of the NIDDK diabetes epidemiology and clinical research section in Phoenix, was a principal investigator with the study, which uncovered the alarmingly disproportionate burden of diabetes and its complications among American Indians.

“One of our important early observations was that type 2 diabetes occurs in American Indian children,” Knowler said. “It was previously assumed that almost all diabetes in children was type 1 diabetes, which has a different pathogenesis from type 2 diabetes that was previously thought to occur only in adults. Type 2 diabetes is now recognized as a major form of diabetes in U.S. children, especially those from certain racial and minority groups.”

The study also revealed risk factors for type 2 diabetes, some of which—obesity, for instance—had the potential to be modified to reduce risk or delay onset in those at high risk.

The NIDDK-funded Diabetes Prevention Program (DPP) was launched in the 1990s to examine whether an intensive lifestyle intervention for weight loss or the medicine metformin would delay or prevent type 2 diabetes among people at high risk for the disease.

starting weight, through lifestyle changes—regular physical activity and a diet low in fat and calories.

Participants in the lifestyle program reduced their incidence of diabetes by 58 percent during the 3-year study. The generic drug metformin also prevented the disease by about 31 percent.

“This was a very exciting time for all of us involved in the study,” said Knowler,

who also served as a DPP principal investigator.

“The large magnitude of the lifestyle effect was much greater than we had hoped for. And because the intervention effects were uniform among the participants from different racial and ethnic groups, and geographic areas, the results changed the way people approach type 2 diabetes prevention worldwide.”

Blazing a Future of Innovation, Better Health

As NIDDK continues to support innovative research, a new area of exploration focuses on the ways in which diabetes varies among people, even among those diagnosed with the same diabetes type. In fact, some forms of diabetes don't fit any of the known types or causes.

A new NIDDK-funded study called RADIANT (the Rare and Atypical Diabetes Network) seeks people with these unknown or uncommon forms to help understand the broad spectrum of diabetes.

role in the future of personalized diabetes care. Because we know that one size doesn't fit all, having precise information on prognosis and therapies for a given person will help them form diabetes care plans to meet their individual goals and preferences.”

Many of the last 100 years of advances would not have been possible without the altruism of study participants. Elena Ennis, a study participant with type 1 diabetes who tested artificial pancreas technology, spoke about her experience volunteering in a trial.

“Before I had participated in my first clinical trial, I was very newly diagnosed and everything was so new to me,” she said. “I was worried about what my future would look like. Participating in these trials really has given me a sense of hope as far as the future of living with diabetes. I feel like I have a large support group behind me cheering me on, because researchers are really working so hard to make things better for those of us with diabetes.”

As the century since Banting and Best's discovery comes to a close, the future of diabetes research—and better prevention, management and, one day, a cure—looks bright.

“NIDDK and the diabetes research community as a whole have made great progress,” Rodgers said. “But our work is not done, and NIDDK will continue working toward finding prevention methods, better treatments and, one day, a cure for all types of diabetes.”

To watch the videotaped reflections, visit <https://www.youtube.com/watch?v=x-I2e76BQZgA>. The virtual symposium will be archived soon as well. **B**



Elena Ennis participated in NIDDK-sponsored clinical trials testing artificial pancreas technology.



The NIH team led by senior scientist Dr. Carsten Bönnemann (r) and lead author of the study Dr. Payam Mohassel, a research fellow, examine Digregorio in 2015.

PHOTO: MICHAEL SPENCER

Mystery

CONTINUED FROM PAGE 1

been able to provide her with a diagnosis or effective treatment. Her story was shared in a 2015 *NIH Record* article.

Fast forward 5 years later—thanks to her team of NIH researchers with the help of scientists from the Uniformed Services University Health System (USUHS)—20-year-old Claudia Digregorio now has a name for her ailment.

In a recent study published in *Nature Medicine*, the scientists describe their pursuit of Digregorio's mysterious illness and their discovery of a new, unique form of amyotrophic lateral sclerosis (ALS).

ALS is a rapidly progressive, often fatal disease that affects the nerve cells in the brain and spinal cord that control voluntary muscle movement. Symptoms most commonly develop between ages 55 and 75.

The NIH team led by Dr. Carsten Bönnemann, chief of the neuromuscular and neurogenetic disorders of childhood section in NINDS's Intramural Neurogenetics Branch, worked with scientists in labs led by Dr. Teresa Dunn, USUHS professor and chair, and Dr. Thorsten Hornemann of the University of Zurich in Switzerland. Together their research further revealed that this new form of ALS is linked to a gene called SPTLC1—part of the body's fat production system.

"We found that this new genetic form of the disease can affect children in particular," said Bönnemann.

For 5 years, NIH researchers studied Digregorio's clinical symptoms, data gathered from her neurological examinations and her DNA—along with data from 10 other people who had similar symptoms. Many patients required a wheelchair to get

around and a tracheostomy (a tube inserted in the neck to allow air to the lungs) to help them breathe. They all had hallmarks of ALS such as severely weakened or paralyzed muscles and muscle atrophy.

In addition to Digregorio, study participants included a patient Bönnemann's team identified in one of their travel clinics. The team visits other medical centers around the world and uses advanced genetic techniques to solve some of the most mysterious pediatric cases of neurological disorders.

For this study, the team posted genetic information they collected in a gene "matchmaker" program and found other patients—who were identified and evaluated by collaborators. The data was shared and the study population increased to 11.

"These patients had many of the upper and lower motor neuron problems that are indicative of ALS," said NIH clinical research fellow Dr. Payam Mohassel, lead author of the study. "What made these cases unique was the early age of onset and the slower progression of symptoms. This made us wonder what was behind this distinct form of ALS."

Upon learning the diagnosis, according to Bönnemann, the patients and their families felt a sense of relief and gratitude that they

finally had an answer to the mystery.

"But then naturally there's always the question: What can we do now that we know what causes this?" he said. "And that is the real challenge, which we are trying to address next."

Preliminary results from the study suggest that genetically silencing SPTLC1 gene activity may be an effective strategy for combating this form of ALS. The team plans to conduct additional basic studies to further define the mechanisms.

"Finding viable and rational therapeutic approaches is obviously the next important step," Bönnemann noted. "This work really underscores that everything we do starts with the patients and eventually leads back to the patients, and sometimes even only one patient can get it started (such as was the case here). Claudia was our index patient. It was her mysterious symptoms that triggered the team's search for answers and subsequently led to this study. It also shows that findings in an ultra-rare genetic disorder can lead to a broader understanding about many things—in this case ALS as a disease group and about the critical role of tight regulation of these important lipids (fats) in neurons."

To read about Digregorio's initial NIH visit, go to <https://nihrecord.nih.gov/sites/recordNIH/files/pdf/2015/NIH-Record-2015-10-23.pdf>. **B**

NICHD's Pacak Receives Endocrinology Award

Dr. Karel Pacak recently received the Outstanding Clinical Investigator Award from the U.S. Endocrine Society and was elected to the Czech Medical Academy in recognition of his research achievements at NIH. For more than 20 years, Pacak has developed and led an internationally recognized program on neuroendocrine tumors called pheochromocytomas (PHEOs) and paragangliomas (PGLs).

Pacak's award from the U.S. Endocrine Society stems from his significant contributions to understanding both the development of PHEO/PGLs as well as novel treatments for patients. He is among the most cited researchers in the field of PHEO/PGLs worldwide, with more than 2,000 citations each year.

In NICHD's intramural program, Pacak serves as chief of the section on medical endocrinology and head of the developmental endocrinology, metabolism, genetics and endocrine oncology affinity group. He has published more than 620 articles, many of which focus on the clinical presentation, genetics, biochemistry and imaging of PHEO/PGLs. His team, in collaboration with colleagues, discovered several mutations that contribute to these tumors, including mutations in HIF2A, PHD1, IRP1 and SUGL2 genes.

In 2012, Pacak's team, together with NCI co-investigators, also identified a PGL-associated syndrome unique to women.

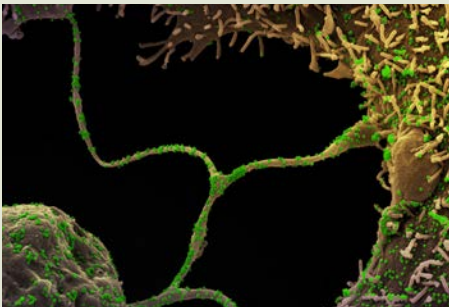
Pacak and colleagues were the first to introduce and implement a diagnostic technique for PHEO/PGLs using plasma metanephrines and methoxytyramine, which are now the clinical standard. The researchers have also made numerous contributions to imaging and therapies for these tumors. Most recently, their work on PHEO/PGLs led to a new diagnostic imaging algorithm and updated clinical guidelines in 2019.



Dr. Karel Pacak

New Nanoparticle-Based Coronavirus Vaccine Shows Potential

A team of researchers funded in part by NIAID and NCI created a vaccine that protects against a range of coronaviruses, including SARS-CoV-2. Monkeys immunized with this vaccine produced antibodies that neutralized several SARS-CoV-2 variants, as well as SARS-CoV-1 and two related bat coronaviruses. The findings appeared in *Nature*.



Colorized scanning electron micrograph of cells infected with SARS-CoV-2 virus particles (green). The tentacle-like protrusions from the cells are filopodia, which extend from infected cells, attach to neighboring cells and promote infection as a transport system for virus particles.

IMAGE: NIAID INTEGRATED RESEARCH FACILITY FORT DETRICK, MD

Coronaviruses have caused three major epidemics in the past 20 years—SARS, MERS and the current Covid-19 pandemic. These viruses began as animal coronaviruses that jumped to human hosts. A vaccine that protects against multiple types of coronaviruses could prevent future outbreaks as well as help contain the current pandemic.

“This work represents a platform that could prevent, rapidly temper or extinguish a pandemic,” said lead author Dr. Barton Haynes of Duke University School of Medicine.

To create the new vaccine, the researchers attached a part of the viral spike protein, called the receptor binding domain (RBD), to protein nanoparticles. Previous research has shown that antibodies to the RBD can neutralize many coronaviruses and that putting many copies of the RBD on nanoparticles enhances the immune response. Each nanoparticle had 24 RBD copies attached to it. The team also added a compound to the vaccine called an adjuvant designed to further boost the immune response.

When tested in monkeys, the vaccine performed favorably. Compared to mRNA vaccines, such as the authorized Pfizer and Moderna vaccines, this nanoparticle vaccine induced equal or higher neutralizing antibody levels to SARS-CoV-2, SARS-CoV and bat coronaviruses. When vaccinated monkeys were exposed to SARS-CoV-2,

they had no virus in their lower respiratory tracts 2 days later. Only one monkey had detectable virus in nasal swabs, but this was gone after another 2 days.

Interestingly, the mRNA vaccines also elicited antibodies against SARS-CoV and bat coronaviruses, albeit at lower levels than the new nanoparticle vaccine. This suggests that vaccines already in use may provide some protection against coronaviruses other than SARS-CoV-2.—**Brian Doctrow**, *NIH Research Matters*

Hopeful News for Women Who Take Antiseizure Medication During Pregnancy

New findings suggest there is no difference in cognitive outcomes at age 2 among children of healthy women and children of women with epilepsy who took antiseizure medication during pregnancy. The findings are part of the large, long-term research project, Maternal Outcomes and Neurodevelopmental Effects of Antiepileptic Drugs, funded by NINDS. The latest results were published in *JAMA Neurology*.

This study reports findings from 382 children (292 children born to women with epilepsy and 90 born to healthy women) who were



IMAGE: PAUL BRADBURY/OJO IMAGES/GETTY

assessed for language development at age 2. The researchers also compared developmental scores with third trimester blood levels of antiseizure medication in these children.

Results suggest that children born to healthy women and those born to women with epilepsy do not show significant differences in language development scores at age 2, and language development was not linked to third trimester blood levels of epilepsy medications. Most women with epilepsy in the study were taking lamotrigine and/or levetiracetam.

However, the study did find that those children born to mothers with the highest levels of antiseizure medication in the blood during the third trimester did have somewhat lower scores on tests in the motor and general adaptive domains, which refer to skills related to self-care, such as feeding.

The children in this study will continue to be followed and will participate in additional cognitive

tests through age 6. Results so far indicate that controlling epilepsy with these medications during pregnancy may be safe for babies.

Coalition Sheds Light on Inflammatory Eye Disease

An international coalition of eye researchers used machine learning to classify 25 of the most common types of uveitis, a collection of more than 30 diseases characterized by inflammation inside the eye. Together, these diseases are the fifth leading cause of blindness in the U.S.

The standardization of uveitis nomenclature (SUN) working group, funded by NEI, published its classification criteria in the *American Journal of Ophthalmology*.

In uveitis, inflammation can be seen in the anterior chamber (anterior uveitis), vitreous (intermediate uveitis), choroid, or retina (posterior uveitis), or all of these (panuveitis).

Disease course, complications of uveitis, and the effect on vision vary dependent on the specific disease. Some uveitis appears abruptly and resolves. But many cases are recurrent or chronic, requiring long-term therapy. Symptoms may include floaters, vision loss, pain and light sensitivity. Uveitis can strike at any age and dramatically affect quality of life.

Until recently, classification of uveitis was based on the primary location of inflammation. However, types of uveitis affecting the same anatomic location can have different causes, courses, prognoses and treatment needs. Previous work by SUN demonstrated that even uveitis experts can disagree on diagnosis, making comparisons difficult when conducting clinical research.

SUN, a team of nearly 100 international uveitis experts from more than 20 countries and 60 clinical centers, worked together throughout the project that involved informatics, consensus techniques and technology to help identify important characteristics that distinguished each disease.

The team entered 5,766 cases into a database, averaging 100-250 of each uveitis type. Only cases with a more than 75 percent agreement among experts were included in the final database. The resulting cases (4,046) were put through machine learning to create training and validation sets.

“These classification criteria are a major step forward for epidemiological studies, translational studies, pathogenesis research, outcomes research and clinical trials, said Dr. Douglas Jabs, SUN project leader and professor of epidemiology and ophthalmology, Johns Hopkins Bloomberg School of Public Health. “They hopefully will yield better disease-specific approaches to diagnosis and treatment.”



DR2 resources can aid study of health effects in people exposed to heavy smoke from wildfires, like those in California.

PHOTO: BRITTANYNY/SHUTTERSTOCK

NIEHS NOW HOSTING Disaster Research Program Launches New Website

BY CAROL KELLY

For more than 20 years, the National Institute of Environmental Health Sciences has played a lead role in our nation's health research following oil spills, hurricanes and other environmental calamities. Now, NIEHS is providing a new home for the Disaster Research Response (DR2) program and its vast collection of website-based resources for scientists to conduct vital and timely public health research in the aftermath of disasters.

More than 500 curated research tools and resources are now organized into an easy-to-use online portal, available on the NIEHS website free of charge.

The resource portal updates and enhances the



"In addition to providing resources, the DR2 program seeks to train a cadre of researchers who are ready to act when disasters happen," says NIEHS's Dr. Aubrey Miller.

PHOTO: STEVE MCCAWE

original collection hosted by the National Library of Medicine, which has been a fundamental partner to the program.

"Going forward, NIEHS has sole oversight of the program, but it's still a collaborative effort within NIH," said Dr. Aubrey Miller, NIEHS senior medical advisor and DR2 program director for NIH. "We work across governments, and even internationally, to help ensure that all of us in public health research are ready to act to collect vital scientific information when an emergency or disaster happens."

Every disaster and public health emergency, no matter the type or cause, uniquely affects the environment and people. Research is essential to understanding the human health effects of events such as floods, earthquakes, wildfires, chemical or oil spills and even large-scale acts of terrorism.

"Program goals are to provide information people need about exposures right after an event, and to inform preparedness actions and policies that will help make communities more resilient to future events," said Miller.

Research following a disaster often faces tight windows of opportunity for collecting essential information.

"A ready-to-go set of data collection tools can save time for disaster researchers," Miller pointed out. "It's useful to see how a question was successfully asked before or how a biological sample was collected."

At the same time, research activities must not interfere with life-saving efforts. Institutional review boards (IRB), which are concerned with the ethical conduct of research and participant protection, help ensure studies achieve this balance.

DR2 strives not only to prepare researchers, but also to prime IRBs in their assessment of research plans and procedures. They are given guidance, templates and training for the efficient and effective review of protocols for these studies.

Miller said researchers can help people in disaster-affected communities understand answers to questions such as:

- Is my area or home safe?
- What are risks to my family and pets of being exposed to hazardous substances in our homes, yards, schools and parks?
- How will recovery and clean-up efforts help us?
- What health effects might we experience?
- Are there concerns for longer-term physical and mental health consequences?

Information from disaster research can answer short-term questions. And, over a longer term, it can provide knowledge that helps people recover from an incident and prepare for or avoid future disasters and public health emergencies.

For example, in summer months when wildfires are more prevalent, researchers can access DR2 materials to find ways to collect information about types of chemicals in smoke. They can also build on prior studies by using the same research



Related to Covid-19, about 125 curated research resources are available within the DR2 collection.

PHOTO: ZSTOCK/SHUTTERSTOCK

methods to assess certain health conditions and determine how people exposed to wildfire smoke are affected over time.

With an outstanding search engine for the multidisciplinary collection, the right resource is easy to find.

Using DR2 resources also can improve data interoperability and harmonization across studies.

"The collection continues to grow as users submit new resources," Miller added. "We're always looking for good tools to share with the disaster research community in the U.S. and globally."

Find the new site at <https://tools.niehs.nih.gov/dr2/>. 