

National Institutes of Health

## Fauci Discusses Public Misperceptions About Viruses

BY DANA TALESNIK

Emerging from the height of cold and flu season, it may seem as though there are dozens of new, increasingly stubborn viruses out there. This, in fact, is not the case.

“There is not this whole hoard of unnamed viruses that we do not know about,” said NIAID director Dr. Anthony Fauci, in a recent conversation with the *NIH Record*. “Everything that really is out there, we know about.”

Viruses tend not to become more severe, though certain viruses can vary in their virulence. The influenza strain H3N2 a year ago, for example, was quite virulent and more likely to cause complications



NIAID director Dr. Anthony Fauci

than the predominant flu strain (H1N1) this past winter.

“I guess that is one of the interesting aspects, but one of the confounding aspects of colds, particularly in the winter,” said Fauci. “When people get a sore throat, they get an upper respiratory infection

(URI)— they sneeze, they cough—sometimes they get sinusitis; sometimes they go on to get a complication like pneumonia. Some of the viruses that cause URIs are very mild inherently, with very little chance of there being severity.”

Rhinoviruses, which are responsible for at least one-third of adult colds, are an example. They generally cause a mild URI. Other URIs can be mild or more serious when caused by such viruses as influenza.

“Some URIs are always mild and rarely get serious,” said Fauci. “Some are mild and not infrequently get serious. And some can be very serious.”

If symptoms do not go away, that is the time to seek help. Then it is possible that a secondary, bacterial infection has developed such as sinusitis or pneumonia, which in that case would require antibiotics.

Fauci also discussed two viruses that have made headlines in recent months.

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Campus attraction. Another giant magnet arrives for MRI research. See story, p. 12.

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## MEDICINE ON SCREEN

### NLM Relaunches Vintage Movies with Overview Lecture

BY CARLA GARNETT

From virtual travel and art imagery to family planning and the sexual revolution, you can find films featuring nearly any theme imaginable among the almost 40,000 titles in the National Library of Medicine’s storehouse of audiovisual materials. Recently, NLM relaunches its website dedicated to such resources with



Dr. Oliver Gaycken

SEE **MOVIES**, PAGE 6

## NEEDLESS SUFFERING

### Access to Palliative Care, Pain Relief Out of Reach for World’s Poor

BY ERIC BOCK

The world’s poorest citizens have almost no access to the palliative care and pain relief that provide respite from serious health-related suffering, said Dr. Felicia Knaul at a recent Center for Cancer Research Grand Rounds in Lipsett Amphitheater. Palliative care is one of the most neglected areas in global health today, she said.



Dr. Felicia Knaul

SEE **PAIN RELIEF**, PAGE 8

## 12th Annual NIH Career Symposium, May 10 at Natcher Bldg.

The NIH Office of Intramural Training & Education invites all NIH graduate students and postdoctoral trainees, both basic scientists and clinicians, to participate in the 12th annual NIH Career Symposium on Friday, May 10 at Natcher Conference Center from 8:30 a.m. to 5 p.m. The symposium provides an opportunity for fellows and graduate students to learn about scientific career options and to explore factors that lead to career success. The all-day program will include more than 20 breakout sessions highlighting career opportunities.

Panel sessions cover academic, government, industry and non-profit career paths. More than 80 speakers will provide insights into their careers—what their current job entails, its pluses and minuses and how they got there. For more information and registration visit <https://www.training.nih.gov/>.

## Postbaccalaureate Poster Day, May 2

Postbac Poster Day is scheduled for Thursday, May 2. It will be held at Natcher Conference Center from 10 a.m. to 3:30 p.m. The keynote address will begin at noon, followed by presentation of Postbac Distinguished Mentoring Awards to NIH investigators selected by the postbacs. Poster session I will take place from 10 a.m. to noon and session II is from 1:30 to 3:30 p.m.

Poster Day provides an opportunity for postbacs to share the research they have been conducting at NIH and also develop their scientific communication and networking skills. Posters will be reviewed by teams composed of graduate students, postdocs and staff scientists/clinicians. The authors of the top 20 percent will receive a letter acknowledging their accomplishments. For more information, visit [www.training.nih.gov/postbac\\_poster\\_day](http://www.training.nih.gov/postbac_poster_day).

## NIDCR To Host Craniofacial Research Symposium, May 6

NIDCR will host a symposium, “Looking Back and Facing the Future: From NIDR to NIDCR,” on Monday, May 6, from 8:30 a.m. to 4:30 p.m. in Lipsett Amphitheater, Bldg. 10.

The event will commemorate the founding of the institute in 1948 and the addition of “Craniofacial” to the institute name in 1998, and will showcase research accomplishments in craniofacial biology, from basic science to clinical applications. The symposium will also include presentations on craniofacial development and regeneration, wound healing, salivary gland development and regeneration and bone loss.

Two former directors, Dr. Lawrence Tabak and Dr. Harold Slavkin, will deliver talks at the event.

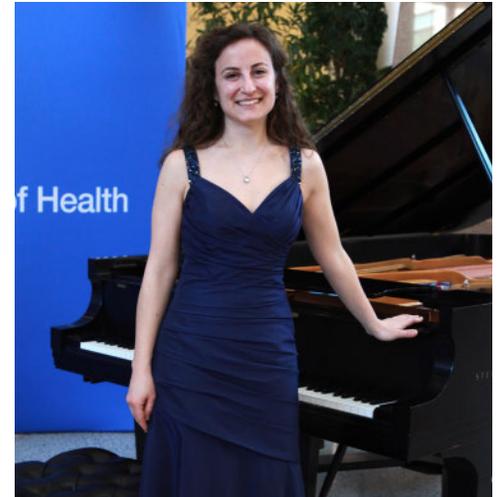
The symposium is free and open to the public; no registration is required. The event will be videocast live and archived. Individuals who need sign language interpreting and/or other reasonable accommodation to participate should contact Mary.



## Pianist Entertains at CRC

Danila Tomassetti, an Italian native and concert pianist who is pursuing her doctorate under a full scholarship at Catholic University, performed on Mar. 28 as part of the Music in the Atrium series at the Clinical Research Center. She played *Ten Pieces from Romeo and Juliet op. 75* by Sergei Prokofiev. To see the calendar of upcoming concerts in the Clinical Center Atrium, go to <https://clinicalcenter.nih.gov/ocmr/music.html>.

PHOTOS: DEBBIE ACCAME



Daum@nih.gov, (301) 594-7559 or the Federal Relay at 1-800-877-8339. Requests should be made at least 5 days before the event.

More information can be found at [www.nidcr.nih.gov/news-events/nidcr-host-craniofacial-research-symposium-may-6-2019](http://www.nidcr.nih.gov/news-events/nidcr-host-craniofacial-research-symposium-may-6-2019).

## Webinar on Prevention Interventions Features Collins

Apr. 23

The Office of Disease Prevention will host a Methods: Mind the Gap webinar with Dr. Linda M. Collins on optimization of prevention interventions using MOST. The event will take place on Tuesday, Apr. 23 at 3 p.m.



Dr. Linda M. Collins

Collins will briefly describe the multi-phase optimization strategy (MOST), an engineering-inspired methodological framework for optimizing and evaluating behavioral, biobehavioral and biomedical interventions.

Collins is distinguished professor of human development and family studies at Pennsylvania State University. She is also director of the Methodology Center, an interdisciplinary research center devoted to the advancement and dissemination of quantitative methods for applications in drug abuse prevention

and treatment, as well as other areas in the behavioral sciences.

Register at <https://prevention.nih.gov/education-training/methods-mind-gap/optimization-prevention-interventions-using-most-state-science-and-future-directions>.

## Belkaid Wins FNIH's Lurie Prize

The Foundation for the NIH has named NIAID's Dr. Yasmine Belkaid the winner of the \$100,000 Lurie Prize in Biomedical Sciences for outstanding achievement by a promising young scientist in biomedical research. Belkaid, the award's seventh honoree, is being recognized for blazing a trail in understanding the microbiome's significant role in immune regulation. FNIH awards the Lurie Prize annually to recognize pioneering work by scientists early in their careers. Belkaid, who is director of the Microbiome Program and chief of the metaorganism immunity section in the Laboratory of Immune System Biology and an adjunct professor at the University of Pennsylvania, will be presented with the prize at the FNIH Award Ceremony on May 22 in Washington, D.C.



Dr. Yasmine Belkaid

## NIH Exceeds \$2.2 Million Goal in 2018 CFC Program

NIH has done it again. That was the main message of the appreciation and awards ceremony that wrapped up NIH's 2018 Combined Federal Campaign (CFC). The ceremony, which recognized each institute and center based on participation, amount of money raised and overall campaign achievements, was held Mar. 6 at Lister Hill Auditorium, Bldg. 38A.

NIH exceeded its goal for the CFC, raising more than \$2.2 million for charities in the U.S. and abroad. The CFC is the federal government's largest workplace giving campaign. This year, some 8,000 charities participated in the National Capital Area CFC.

"At a time of seemingly endless fractiousness, it was a pure delight to see the NIH community do what it does best—truly caring for others," said campaign co-chair and NCATS director Dr. Christopher Austin. NCATS served as the lead NIH agency for the 2018 campaign. The theme, for the third year in a row, was "Show Some Love."

This year's partial government shutdown presented a unique challenge. "We at NIH only had a very small segment of the employee base furloughed, but the furlough still affected us," said NIH director Dr. Francis Collins. Many NIH employees have spouses and other family members who were furloughed during the shutdown. The uncertainty about whether they would ever



NCATS's Bekah Geiger (r) passes the torch and the CFC banner to NEI's Jessica Ryan.

be paid for the unexpected time off made committing to charitable donations difficult.

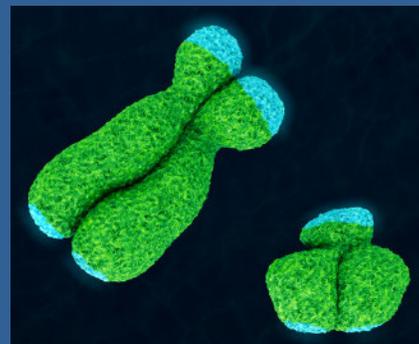
"Even in the face of those challenges, we did it," Collins said. "This speaks to NIH's commitment to this important endeavor." In addition, he noted, colleagues in other parts of the federal government were receiving benefits from some of the same charitable organizations that the CFC supports.

From the kickoff event in October to the

many smaller events held at individual ICs, NIH employees had plentiful opportunities to learn about the charities that are part of the CFC and build enthusiasm for giving.

The NIH's Got Talent event was a particular hit in this year's campaign. NIH staff showed off skills in everything from hula-hooping to harp playing. Collins noted with amusement that the competition's winner was also a co-chair: Austin, who amazed the crowd with his opera skills, singing an aria from *Carmen*.

At the end of the ceremony, the CFC banner and a cardboard torch were passed to NEI, which will be the lead for the 2019 campaign. **R**



ON THE COVER: Humans typically have two sex chromosomes—X (larger pair) and Y. Scientists have evidence that millions of years ago, X and Y were the same size and contained essentially the same genes. Now, virtually the only DNA they still have in common is at the very tips (blue).

IMAGE: MELISSA WILSON, ARIZONA STATE UNIVERSITY

### The NIH Record

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From left: NCATS director Dr. Christopher Austin, Debra Gale, Monica Hanson, NIH director Dr. Francis Collins and Geiger pose with NIH's award from the CFC National Capital Area.

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Turning Discovery Into Health

## Fauci

CONTINUED FROM PAGE 1

In November 2018, a 19-year-old University of Maryland student died after contracting adenovirus, one of dozens of cases of the highly contagious virus reported on the campus around that time.

“Adenoviruses are very common,” said Fauci. “They tend to occur in outbreaks in close quarters. It is a big problem in boot camp in the military and that is why the military vaccinates their recruits against a couple of the adenoviruses.”

Adenovirus is generally not deadly, said Fauci. The student who died had a compromised immune system from an underlying illness.

“She was not a normal host,” he said. “Very, very rarely do you get an otherwise normal, healthy person get so sick that [he or she dies] from an adenovirus.”

Another viral condition making news in recent months is acute flaccid myelitis (AFM), which affects the nervous system and, in serious cases, can cause paralysis.

Proving what triggers AFM has been tough because the virus is difficult to isolate, said Fauci, but circumstantial evidence points to a specific enterovirus as the cause.

“It is one of those hit-and-run viruses,” said Fauci. “You get infected, then you cannot isolate it, but you get a post-infection syndrome—in this case paralysis.”

AFM is rare, contracted by less than one in a million people. An entire family might get infected with the same enterovirus but only one member might get AFM due to environmental, genetic or other predispositions that led to the otherwise rare complication.

“Remember, enteroviruses are all over the place,” said Fauci. “They are very common viruses. Virtually everyone, at one time in their lives, was infected by an enterovirus, including you and me. Only rarely do enteroviruses cause acute flaccid myelitis. The complication is rare, but the virus is not rare.”

Most incidents of AFM in recent years have been reported among children. That is because most adults already contracted an enterovirus when they were younger, explained Fauci, and built immunity from previous exposure.

“You escaped getting flaccid paralysis

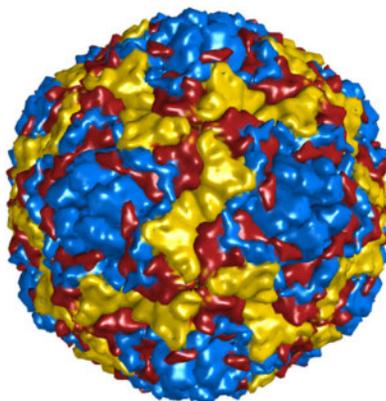


Image of an enterovirus, a common bug

when you were a child and now you are an adult,” he said. “Meanwhile, the children are getting infected for the first time and you do not know if their predisposition—genetically or otherwise—is going to allow them to get AFM.”

Enteroviruses are generally treated symptomatically and there is no cure for AFM.

“If someone gets the rare complication of AFM,” said Fauci, “then very aggressive physical therapy has been shown to be beneficial in preventing the advancement of the physical disability.”

There is also no vaccine for AFM because “you would not know whom to vaccinate,” said Fauci. There are many kinds of enteroviruses, most of which cause mild infections.

The topic of vaccinations has also hit the news in recent months, as outbreaks of measles have been reported in Washington state, New York and elsewhere.

“First of all, it is important to establish that these measles outbreaks are all associated with lack of vaccinating children,” said Fauci. “So the anti-vax movement is at the root cause of the outbreaks that you have read about.”

Misinformation about vaccines lingers on the internet and gets propagated on social media. Addressing the anti-vaccination community can be complicated though.

“Some people are inveterate anti-vax’ers and no matter what you say or do, they are not going to change their minds,” said Fauci. “But there are some people who are preventing their children from getting vaccinated and can be convinced otherwise. The way you approach them is not to criticize or denigrate them, but to try to get them to appreciate what we call evidence-based

science. And the evidence tells us that the vaccines—particularly for measles—are very safe and highly effective.”

NIAMD continues to underscore the importance of getting vaccinated to protect everyone from disease.

“Herd immunity means that when a certain percentage of the population is protected by vaccination, it boxes the virus in and does not allow the virus to freely circulate in society,” Fauci explained. “For measles, you need somewhere between 92-95 percent of the population to be vaccinated to get full community protection.” Once we fall below this percentage, “then the herd immunity shield is dampened a bit and that is how people in the community start getting infected.”

So stay current on vaccines, avoid or limit close contact with contagious people and frequently wash your hands. The old adage remains: when it comes to viruses, prevention is the best medicine. **R**

### NIGMS, Scholastic Team Up for ‘Pathways’

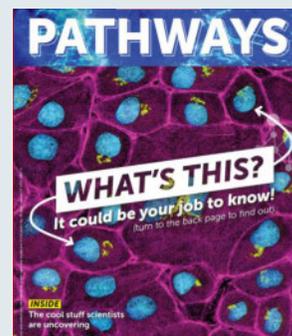
The National Institute of General Medical Sciences recently announced the debut of Pathways, a collaboration between NIGMS and Scholastic, Inc., that provides a collection of free educational resources about basic biomedical science and research careers.

Designed for grades 6 through 12,

Pathways includes a student magazine, teacher lesson plans, activities and videos, all available at [www.scholastic.com/pathways](http://www.scholastic.com/pathways).

The *Pathways* student magazine is also being distributed to subscribers of Scholastic’s *Science World* magazine, reaching nearly 500,000 students in all 50 states. The magazine and accompanying resources feature NIGMS scientists such as “Beetle Guy” Ryan Bracewell, a postdoctoral fellow at the University of California, Berkeley; “Viral Star” Mavis Agbandje-McKenna, a professor at the University of Florida; and “Gene Detective” Melissa Wilson, an assistant professor at Arizona State University.

NIGMS encourages teachers to use #NIGMSPathways on social media to share how they’re using Pathways in their classrooms.



## Hill Lecture on Controlling HIV Pandemic Set for Apr. 30

HIV physician-scientist Dr. Diane Havlir will give the 2019 James C. Hill Memorial Lecture on Tuesday, Apr. 30 at 3 p.m. in Lipsett Amphitheater, Bldg. 10. Her talk,

“Ending AIDS: The Wild West,” will examine strategies used to control the HIV epidemic in San Francisco and rural western Uganda and Kenya, highlighting insights from each approach.

Havlir is chief of HIV, infectious disease and

global medicine at Zuckerberg San Francisco General Hospital and Trauma Center, where she directs the renowned HIV clinic Ward 86. She also is professor and associate chair of clinical research in the department of medicine at the University of California, San Francisco. In addition, she chairs the United Nations AIDS scientific and technical advisory committee, which provides guidance for global action on HIV/AIDS.

In 2014, Havlir co-founded San Francisco: Getting to Zero, a city-wide initiative to eliminate new HIV infections and HIV-related deaths. She also leads a large clinical trial called SEARCH in Uganda and Kenya in which everyone in participating communities was tested for HIV—primarily at multi-disease health fairs—and those who tested positive were offered immediate access to HIV care and treatment. The study found that this approach helped communities surpass UNAIDS targets for HIV diagnosis, treatment and viral suppression and improved overall population health.

In her lecture, Havlir will discuss how the Getting to Zero program has helped cut San Francisco’s HIV incidence in half over 5 years and the need for new strategies to boost population-level viral suppression further. She also will describe the effect in the SEARCH study of integrating HIV testing with screening for other diseases and the lessons this offers for San Francisco and beyond.

The Hill Lecture series is dedicated to the memory of former NIAID deputy director Dr. James C. Hill, who played a critical role in shaping NIAID’s HIV/AIDS research agenda during the early years of the epidemic.



Dr. Diane Havlir

## IT Service Desk Marks Milestone

25 YEARS

When the NIH IT Service Desk recently celebrated its 25th anniversary, veterans of the desk noted the great strides the team had made since its early days in 1994, when team members distributed yellow Rolodex cards containing phone numbers for technical support. No one could have anticipated that, 25 years later, the service desk would operate as a central hub for IT services and support at participating NIH institutes and centers and certain operating divisions of the Department of Health and Human Services.

The NIH IT environment now supports more than 19,000 mobile devices and 50,000 computers in facilities around the country. Last year alone, the service desk team (along with IC help desks) handled more than 279,000 calls.

The team has managed to handle that deluge of tickets by adopting IT best practices and tools that improve the customer experience.

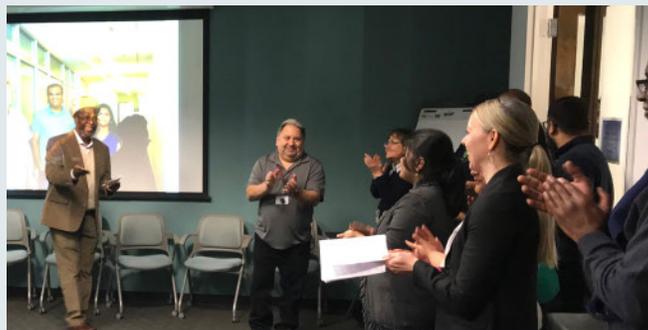
One such tool is remote assistance, which allows technicians to access a user’s machine (with his or her permission) to resolve a technical issue remotely. On average, the tool was used more than 1,000 times per month in 2018.

Another such tool is VoIP (voice over internet protocol), a cloud-based phone service that provides customers the convenience of voice interaction and caller ID. It also offers better geolocation services for emergency personnel and saves money by lowering the cost per call.

These tools are supported by a team of technicians who provide help to the NIH and HHS communities 365 days a year.

“Since its inception 25 years ago, the team has pushed itself each and every day to provide better support to the NIH community,” said Tony Roberts, the IT support service division chief. “And we’re also proud to offer a range of services that make the service desk more accessible, including bilingual and TTY services.”

In the future, says Roberts, “we’re going to continue developing processes that improve the speed and quality with which participating NIH staff engage with the service desk team. Even with a 97.5 percent customer satisfaction rating, it’s always our goal to provide faster and better service.”—**John Hotka**



Tony Roberts (l) and John Buglio at the service desk’s 25th anniversary celebration

## La Spada To Give Sayer Lecture, May 7

Dr. Albert La Spada, professor of neurology, neurobiology and cell biology at Duke University School of Medicine and director of the Duke Center for Neurodegeneration & Neurotherapeutics, will give the 11th Sayer Vision Research Lecture on Tuesday, May 7, at 11 a.m. in Lipsett Amphitheater, Bldg. 10.

His presentation is titled “Clinical Features and Molecular Basis of the Cerebellar-Retinal Degenerative Disorder Spinocerebellar Ataxia Type 7: From Mechanism to Therapy.”



Dr. Albert La Spada

Spinocerebellar ataxia type 7 (SCA7) is an inherited neurological disorder characterized by cerebellar and retinal degeneration. People with SCA7 develop atrophy of the cerebellar cortex and the brainstem and they exhibit extensive loss of cerebellar Purkinje cells. Physiological assessments by electroretinogram show cone photoreceptor dysfunction prior to rod photoreceptor abnormalities, leading to complete blindness.

La Spada will discuss progress in identifying the molecular and mechanistic bases of SCA7. His team recently demonstrated that silencing the ataxin-7 gene is an effective treatment for SCA7 retinal degeneration.

The Sayer Vision Research Lecture Series features prominent scientists conducting vision-related research. It is co-hosted by NEI and the Foundation for the National Institutes of Health.

For assistance, including the need for sign language interpretation or other reasonable accommodation to participate in this event, call (301) 451-6763. **R**

## Movies

CONTINUED FROM PAGE 1

a lecture, “Fantastic Voyages Through the Historical Audiovisual Collections at the National Library of Medicine,” by Dr. Oliver Gaycken, a historian of cinema and media with an emphasis on the intersection of science and medicine at the University of Maryland.

“The NLM’s extraordinary collection of AV materials attests to the presence of a largely unknown history of the 20th century where medical media educated and persuaded untold millions of patients and doctors, and documented diseases, innovations and procedures,” said Gaycken, describing the movie trove’s range. “Together these films demonstrate the variety of approaches to communicating medical knowledge and the enduring value of the medical profession’s AV records.”

For sheer art appreciation alone, for example, consider *A Voyage Through the History of Anatomy* with Frank Armitage, the longtime Disney animator and medical illustrator.

“I like to feel that there can be great beauty in medical art, a beauty that really goes hand in hand with science as we explore the infinite inner spaces of the human body,” intones narrator Armitage in the opening sequence of the late 1960s/early 1970s film presentation to the Association of Medical Illustrators. “Here we move deeper through spectacular caverns of the heart and we feel like explorers in this fantastic anatomical world.”

The movie lets viewers catch a ride around the animated, colorful corridors of the organ, guided by the unseen artist’s voice.

“Armitage’s evocative commentary helps to make a general point about medical media’s ability to provide virtual experiences and how the medium of film can multiply the experiences to which individuals can be exposed,” said Gaycken, whose lecture title also revisits another Armitage product, the 1966 Oscar-winning sci-fi thriller *Fantastic Voyage*.

Items in NLM’s AV collection offer historical context as well as commentary on the times, Gaycken points out.

In *Technique of Laparoscopy* (1979), an all-female surgical team taught practitioners how to do a technique.



Gaycken’s look at medical movies in the NLM collection included a group of training films for physicians and psychologists.

PHOTO: MARLEEN VAN DEN NESTE

*Communicating Family Planning: Speak. They Are Listening* (1974) was part of a global communication strategy to address issues such as overpopulation, family planning, nutrition, sanitation, poverty and the environment in developing nations.

“These films are part of the story of how globalization and public health media developed in tandem over the course of the latter half of the 20th century,” Gaycken explained. “They show a dynamic I see throughout this collection: On the one hand [there’s] a heavy-handed Western intervention in the lives of people from different cultural backgrounds, but on the other hand, a global feminist intervention to provide women with control over a central feature of their lives—their reproductive health. Taken together these films illustrate the shrinking world of globalism with the U.S. a hegemonic source for knowledge.”

In answer to a question about some of the movies’ male American narration for an arguably largely female audience in a developing country, Gaycken said, “There is a kind of uneasy quality to some of the films, at least to how some of the dynamics are being stated and that’s one of the dimensions that’s crucial to acknowledge.

“Part of the tendency might be to see them as helplessly stuck in a mode that is

different from the current moment,” he explained. “But I tend to see them as films we are in dialogue with right now, with elements that have become troubling with time [but also with] elements that have remained enduringly helpful.”

The films helped serve the social progress and public health goals of northern Virginia’s Airlie Center, a farm retreat/conference center that “*Life* magazine called ‘an island of thought,’” Gaycken noted. “[Many of these movies] allowed for the inclusion of otherwise excluded perspectives, notably those of women.”

The 1960s-era center established its own documentary filmmaking division. Screenwriter-director Miriam Bucher of the center is credited on several of the films, including *Speak*.

“Her example demonstrates how medical films provided a venue for a woman’s voice to be heard on the critical issue of reproductive health,” said Gaycken. “You can hear it pretty clearly in the conclusion to *Speak*.”

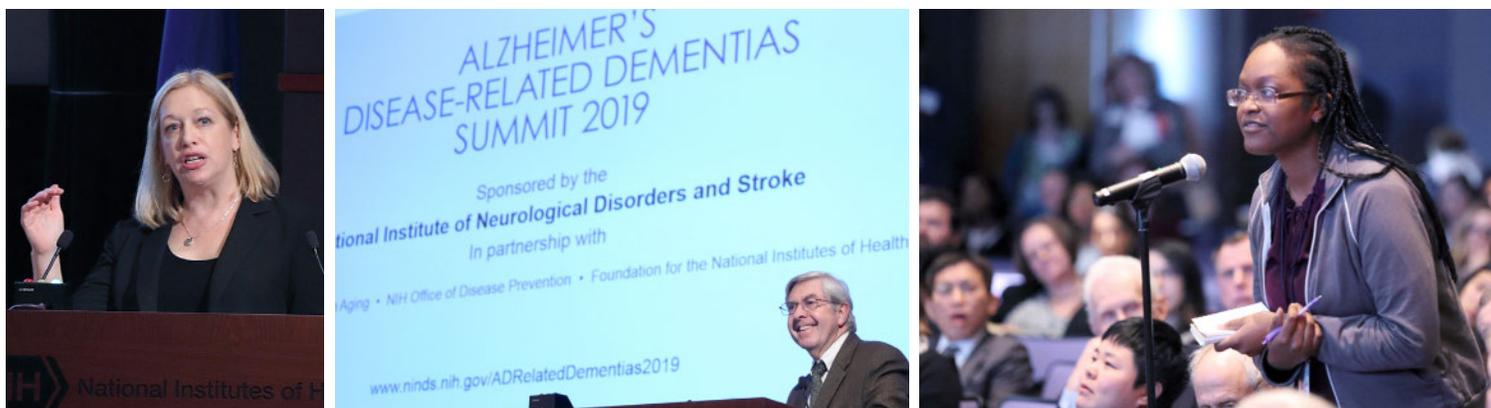
“A young wife need not die worn out by childbirth,” the narrator says in the final clip. “...A child can grow up in a household in which there is room for love...A woman can come to know more of life than childbearing, drudgery, the threat of early death...”

Concluding his look at medical movies in the NLM collection, Gaycken focused on a group of training films for physicians and psychologists providing counseling for sexual dysfunction.

The movies were made to teach interview and observation techniques, he pointed out, but also “register the aftermath and ongoing repercussions of what has come to be called the ‘sexual revolution’ in the U.S.” In the final clip, both therapists-acting-as-patients are smiling, having agreed that knowing each other’s perspective cleared up the problems they were experiencing.

Regardless of what sparks your movie-watching fancy, Gaycken urges you to check out NLM’s array of AV materials. “Here’s hoping we can all take a lesson on the importance of mutual acknowledgment and apply it to taking a two-way street between archives and their patrons.”

Gaycken’s full lecture is archived online at <https://videocast.nih.gov/summary.asp?Live=28986&bhcp=1>. Visit NLM’s audiovisual collection at <https://medicinescreen.nlm.nih.gov/>. **R**



ADRD summit scientific chair Dr. Julie Schneider (l) presents cross-cutting themes during final session. NINDS director Dr. Walter Koroshetz (c) gives closing remarks. At right, the heavily attended summit offers opportunities for public comment.

## NINDS Hosts Summit on ADRD Research Priorities

BY SHANNON E. GARNETT

Alzheimer's disease-related dementias (ADRD) are debilitating conditions that impair memory, thought processes and functioning. These disorders—which include Lewy body dementia, frontotemporal degeneration, vascular contributions to cognitive impairment and dementia (VCID) and multiple etiology dementias—affect millions of Americans and take a tremendous toll on individuals, families, caregivers and society.

NINDS recently sponsored a 2-day ADRD Summit at Natcher Conference Center to bring together internationally recognized experts, researchers, physicians, non-profit groups, patients and caregivers to discuss scientific advances and research priorities.

The goals of the meeting were to assess progress on research recommendations developed at two earlier summits held in 2013 and 2016, add new recommendations based on recent scientific discoveries, receive input from stakeholders including the public and update priorities and timelines for tackling ADRD under the National Plan to Address Alzheimer's Disease.



At left, session panelists field questions from attendees. At right, Dr. Jonathan Rohrer, a consultant neurologist at UCL Queen Square Institute of Neurology in London, presents on biomarkers in frontotemporal dementia.

PHOTOS: CHIA-CHI CHARLIE CHANG

Dr. Laura Gitlin, dean of the College of Nursing and Health Professions at Drexel University and chair of the Advisory Council on Alzheimer's Research, Care and Services for the National Alzheimer's Project Act (NAPA), gave an overview of the NAPA plan, which aims to overcome Alzheimer's disease and related dementias by 2025.

To help carry out the plan, both NIA and NINDS hold triennial summits to develop a multidisciplinary AD research agenda and priorities. This year's summit was intended to build on progress made since 2016 and to hone those priorities.

"These summits are really important because they provide input from a broad base of participants and really inform the direction of how we are going to change dementia in the United States," Gitlin said. "From the last couple of summits, what's been emerging is that we as a research community have to do research differently. That means involving stakeholders, people living with dementia and caregivers, not only as study participants, but as members of our research team. We've learned from our summits that, by involving our stakeholders, our questions change and our outcome measures change."

The sessions featured overarching topics—those relevant for disorders across the AD/ADRD spectrum—such as multiple etiology dementias,



dementia nomenclature and health disparities as well as disease-specific topics including Lewy body dementias and VCID. One new session, Emerging Scientific Topics in AD/ADRD, covered traumatic brain injury and TDP-43 proteinopathy in common dementias. Each session was followed by open discussion and questions from the audience.

This year's meeting debuted the ADRD

Trainee Travel Scholarship Program, which was designed to increase training and contact among peers regarding the complex realities of the basic and clinical science of AD/ADRD. The 21 recipients included graduate, postdoctoral and medical students, residents and other health professionals from all parts of the country who are pursuing advanced degrees and training in areas relevant to dementia research.

At the summit, the scholars had the opportunity to meet with leading scientists during a welcome reception and attend the meeting. Later, they will participate in a follow-up debriefing teleconference.

"The idea of this program is to find a way to help train the next generation on what real, everyday common dementia is about—the scientific, the clinical and other realities of dementia," said Dr. Roderick Corriveau, a program director in the Neurodegeneration Cluster of the Division of Neuroscience, NINDS.

At the end of the meeting, Dr. Julie Schneider, summit scientific chair, presented highlights and cross-cutting themes. Schneider—who is also associate director at the Rush Alzheimer's Disease Center at Rush University Medical Center—then joined the session chairs as they fielded final comments from the audience regarding ADRD research priorities and the way forward.

Recommendations from this meeting will be presented to the National Advisory Neurological Disorders and Stroke Council in September and then delivered to the NAPA council in November.

"This was a really high-quality summit," said NINDS director Dr. Walter Koroshetz in closing remarks. "I think the one take-home point is that our brains are so vulnerable and they become more and more vulnerable to many different pathologies as we get older. So, this battle to try and understand what's going on and how to make a difference for people is a real challenge. A summit like this allows us to see the gaps so then we can digest this kind of information and try and address the gaps. That's what it's really all about." **R**



Knaul thinks “any country at any level of income” should be able to provide the most basic palliative care services by 2030.

PHOTOS: CHIA-CHI CHARLIE CHANG

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“We saw that, shockingly, palliative care and pain relief was just being ignored, it was cast aside.”

—DR. FELICIA KNAUL



include countries with large populations such as India and Russia. The U.S., Canada and Australia have especially large amounts of these medications compared to patient need.

To prevent an opioid crisis similar to the one in the United States, she suggests countries regulate the supply and marketing of opioids for medical use, especially by avoiding direct marketing to health care providers. Knaul also recommends that health practitioners receive mandatory training for the safe management of opioid prescriptions and that these prescriptions follow evidence-based practice.

An essential package for palliative care services was developed by the commission to address the global burden of serious health-related suffering. It includes low-cost pain relief medicines such as off-patent morphine as well as equipment and health professionals who can administer care at the primary level. Knaul thinks “any country at any level of income” should be able to provide the most basic palliative care services by 2030.

Closing the pain divide—the disparities in access to pain relief, which serve as a marker for tracing inequities in palliative care—is relatively inexpensive compared to many other global health priorities and health needs, she said. Providing morphine to children who experience pain associated with serious health-related problems in low-income countries, for example, would cost only \$1,034,000 per year. That price, however, covers only the medication and doesn’t include the cost of getting the medications to the patients.

Beyond the medicines, it will take political will to close the global divides in access to pain relief and palliative care. In Mexico, for example, Knaul said a group of non-governmental organizations led by the Mexican Health Foundation and Tómatelo a Pecho, AC worked with one of the country’s Supreme Court justices, the minister of health, leading clinicians from a number of hospitals including the Mexican National

Cancer Institute and Human Rights Watch to advocate for palliative care. That advocacy drove explicit policy changes including financial protection of the entitlement to palliative care and a switch from paper to electronic prescribing for opioid medications.

In many parts of the world, palliative care isn’t a priority. Knaul thinks this is because we lack metrics and indicators measuring illness-related suffering.

“We saw that, shockingly, palliative care and pain relief was just being ignored, it was cast aside,” she noted. “Most health ministers don’t even realize that the issue is there.”

The commission is beginning to develop a comprehensive metric to quantify suffering, building on the concept of serious health-related suffering “to measure how much patients value the alleviation of suffering independent of whether or not it makes them live longer.”

If they are successful, Knaul believes that ending serious illness-related suffering could become a priority for countries around the world. Such a metric would provide an opportunity to track the performance of countries that provide palliative care and pain relief.

“We’re actually just starting to scratch the surface of understanding about suffering-intensity-adjusted life years and how patients and families value the alleviation of pain and other symptoms,” Knaul said. **R**

## Pain Relief

CONTINUED FROM PAGE 1

“The poorest 50 percent of people that inhabit our world have access to 1 percent of distributed opioid morphine equivalent. The wealthiest 10 percent have access to 90 percent,” explained Knaul, a professor in the University of Miami’s department of public health sciences at the Leonard M. Miller School of Medicine and director of the University of Miami Institute for Advanced Study of the Americas.

From 2014–2017, she served as chair of the *Lancet* Commission on Global Access to Palliative Care and Pain Relief. The commission found that, in 2015, more than 61 million people worldwide experienced serious health-related suffering, including 5.3 million children. These individuals experienced physical and psychological symptoms, including pain, for at least 6 billion days of suffering and up to 21 billion days of suffering.

Cancer is one of the biggest causes of suffering—16 million cancer patients worldwide in 2015 experienced serious health-related suffering. In addition, in low-income countries, other causes, such as infectious diseases, HIV and malnutrition, also account for massive suffering, yet are preventable. A large part of the burden of suffering among the poor “happens because of a lack of access to appropriate and necessary health care.”

European countries are considered the “gold standard” or benchmark for access to pain relief medications—a core component of palliative care, Knaul said. By contrast, opioid medications are largely unavailable in low- and middle-income countries, which cover much of Asia, Africa and Latin America and the Caribbean, and notably

## VOLUNTEERS

### Vaccine Study Needs Volunteers

NIAID researchers seek healthy volunteers, 18 to 70 years old, to participate in an influenza (flu) vaccine study. Scientists are testing an investigational vaccine to determine if it is safe and if there are any side effects. There is no risk of infection since the investigational vaccine product does not contain any virus. Compensation is provided. For more information, call 1-866-833-5433 or email [vaccines@nih.gov](mailto:vaccines@nih.gov).

### Healthy Volunteers Wanted

Partner with NIAID researchers to investigate how antibiotics affect the trillions of good microbes that live on or in our bodies, also known as our microbiome. If you are 21–39 years old and healthy, contact the CC Office of Patient Recruitment, 1-800-411-1222, or [prpl@cc.nih.gov](mailto:prpl@cc.nih.gov). Refer to study 16-1-0078. Read more online at <https://go.usa.gov/xng4m>.

## First-in-Human Trial of a Universal Influenza Vaccine Candidate Begins

The first clinical trial of an innovative universal influenza vaccine candidate is examining the vaccine's safety and tolerability as well as its ability to induce an immune response in healthy volunteers. Scientists at NIAID developed the experimental vaccine.

Known as H1ssF\_3928, the vaccine is designed to teach the body to make protective immune responses against diverse influenza subtypes by focusing the immune system on a portion of the virus that varies relatively little from strain to strain. The vaccine candidate was developed as part of a broader research agenda to create a so-called "universal" influenza vaccine that can provide long-lasting protection for all age groups from multiple influenza subtypes, including those that might cause a pandemic.

"Seasonal influenza is a perpetual public health challenge, and we continually face the possibility of an influenza pandemic resulting from the emergence and spread of novel influenza viruses," said NIAID director Dr. Anthony Fauci. "This phase 1 clinical trial is a step forward in our efforts to develop a durable and broadly protective universal influenza vaccine."



A healthy volunteer receives an experimental universal influenza vaccine known as H1ssF\_3928 as part of a phase 1 clinical trial at the Clinical Center.

PHOTO: NIAID

The trial, conducted at the Clinical Center, is being led by Dr. Grace Chen of NIAID's Vaccine Research Center Clinical Trials Program. The trial will gradually enroll at least 53 healthy adults ages 18 to 70 years.

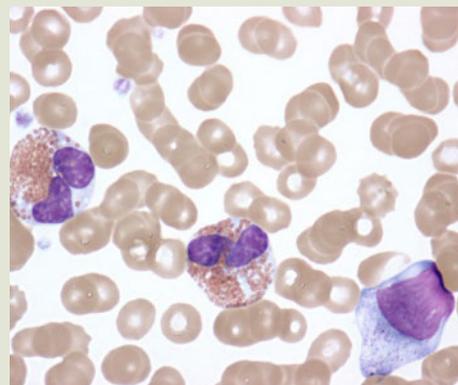
The first 5 participants will be ages 18 to 40 and will receive a single 20-microgram (mcg) intramuscular injection of the experimental vaccine. The remaining 48 participants will receive two 60-mcg vaccinations spaced 16 weeks apart. They will be stratified by age into 4 groups of 12 people each: 18 to 40 years, 41 to 49 years, 50 to 59 years and 60 to 70 years. Investigators hope to understand how participants' immune responses to the experimental vaccine may vary based on age and the likelihood of their previous exposure to different influenza variants.

## FDA-Approved Drug Effectively Treats Rare Chronic Immune Disorder

A drug approved to treat a severe form of asthma dramatically improved the health of people with rare chronic immune disorders called hypereosinophilic syndromes (HES) in whom other treatments were ineffective or intolerable. This finding comes from a small clinical trial led by scientists at NIAID and conducted through a partnership with the global biopharmaceutical company AstraZeneca. The results were published online Apr. 3 in the *New England Journal of Medicine*.

"People living with a rare disease often have few, if any, effective treatment options," said NIAID director Dr. Anthony Fauci. "This promising treatment advance for people with hypereosinophilic syndromes is just one example of how NIH research responds to the unique medical needs of individuals with rare diseases."

HES is caused by higher-than-normal numbers of white blood cells called eosinophils in the blood, tissues or both. While most people have 0 to 500 eosinophils per microliter ( $\mu\text{L}$ ) of blood, people with HES typically have more than 1,500 eosinophils/ $\mu\text{L}$ . The symptoms of HES vary widely from one patient to the next and can affect the heart, lungs, skin, gastrointestinal tract, central nervous system and other organ systems.



Activated eosinophils in the peripheral blood of a patient with idiopathic hypereosinophilic syndrome

PHOTO: NIAID

Nearly all existing therapies for HES involve drugs that are not specifically approved for treating the syndromes, have significant side effects and sometimes become less effective over time. This study was only the second randomized, placebo-controlled trial—the gold standard of medical research—to test the effectiveness of a drug specifically for treating HES. The trial was led by Dr. Amy Klion, chief of the human eosinophil section in NIAID's Laboratory of Parasitic Diseases.

## Harnessing T-Cell 'Stemness' Could Enhance Cancer Immunotherapy

A new study led by scientists at NCI sheds light on one way tumors may continue to grow despite the presence of cancer-killing immune cells. The findings, published Mar. 29 in *Science*, suggest a way to enhance the effectiveness of immunotherapies for cancer treatment.

Dying cancer cells release the chemical potassium, which can reach high levels in some tumors. The research team reported that elevated potassium causes T cells to maintain a stem-cell-like quality, or "stemness," that is closely tied to their ability to eliminate cancer during immunotherapy. The findings suggest that increasing T cells' exposure to potassium—or mimicking the effects of high potassium—could make cancer immunotherapies more effective.

"This study helps us better understand why cancer immunotherapy works the way it does," said Dr. Nicholas Restifo, who led the research team. "It could also point the way toward generating better and more long-lasting responses to these treatments."

Immunotherapy has led to remarkable results for some patients' cancers, eradicating difficult-to-treat tumors and, in some cases, causing complete remission of disease. But many patients' tumors do not respond to immunotherapy treatments and researchers are working to determine why this is.

In addition, some immunotherapy treatments, such as CAR T cells and immune checkpoint inhibitors, are limited by the lifespan of T cells. Cancer-fighting T cells inside the tumor can get "exhausted" and die. Therefore, researchers are exploring ways to help T cells used for immunotherapy not only last longer but also replicate and grow.

## Role Named NINDS Scientific Director

Dr. Lorna Role was recently named scientific director at NINDS. She officially joined the institute in February. She will oversee NINDS's Intramural Research Program, which consists of 1,015 employees working in 48 labs on the NIH campus.

Before coming to NINDS, she was a SUNY distinguished professor and chair of the department of neurobiology and behavior at the State University of New York at Stony Brook (SBU).

Role received a B.A. in applied mathematics and earned a Ph.D. in physiology from Harvard University.

After completing her postdoctoral training with Dr. Gerald Fischbach, who served as NINDS director from 1998-2001, she became an assistant professor in the department of anatomy and cell biology in the Center for Neurobiology and Behavior at Columbia University College of Physicians and Surgeons in 1985. She was promoted to associate professor with tenure in 1992 and full professor in 1996.

In 2008, Role became professor and chair of the department of neurobiology and



Dr. Lorna Role

behavior at SBU and, in 2016, she was named a SUNY distinguished professor.

The focus of Role's research has been on the brain's cholinergic system over the lifespan. Cholinergic signaling is essential for attention, cognitive processing and memory and is compromised in neurological disorders including Alzheimer's and Parkinson's disease. She has been the principal investigator on numerous NIH-funded grants, supported continuously since 1982, and the recipient of an NINDS Javits award. She has published more than 100 scientific articles. Throughout her career at both Columbia University and SBU, Role has mentored more than 50 postdoctoral fellows, graduate and medical students and nearly 20 undergraduate students.

Role has also earned numerous awards and honors, including being named a fellow of the American Association for the Advancement of Science in 2011 and a fellow in the American College of Neuropsychopharmacology in 2009. She received three separate awards from the McKnight Foundation at different stages of her career and was twice named a distinguished investigator by the National Alliance for Research on Schizophrenia and Depression, now the Brain and Behavior Research Foundation.

In 2010, she received the NIH Director's Pioneer Award, which is granted to extremely creative researchers proposing innovative strategies for solving big problems in medical research.

Role replaces Dr. Alan Koretsky, who had served as NINDS scientific director since 2006.

## Corsaro Retires from CSR

BY PAULA T. WHITACRE

Dr. Cheryl Corsaro, a scientific review officer who retired in February, found her passion for puzzle-solving beneficial as she managed



Dr. Cheryl Corsaro

genetics-related study sections during her 34 years with the Center for Scientific Review, formerly the Division of Research Grants.

"Finding the right person with the right expertise to complement the rest of the study section was like finding the piece

with just the right shape to solve a jigsaw puzzle," she said.

The results were study sections known for their expertise and camaraderie.

"Cheryl was a wonderful colleague, the work she did was so comprehensive, so well-done," said Dr. Richard Panniers, former chief of the genes, genomes and genetics integrated review group.

Dr. Elena Smirnova, current GGG chief, lauded her "tremendous track record in the genetics community." She said members valued the poems Corsaro wrote about them when they rotated off the study section.

Corsaro grew up in Cleveland, the middle of three sisters. She loved math's problem-solving aspects and originally planned to major in math at St. Mary's College, Notre Dame, Ind. But a biology professor introduced her to genetics and sparked her lifelong interest in the field. She graduated as a biology major and moved to Johns Hopkins for a Ph.D. in human genetics.

Corsaro's dissertation focused on the use of mammalian cell genetics to isolate mutants in cell culture and the impact of cell communication through gap junctions on the isolation of such mutants. She had postdoctoral fellowships at several places, including the University of Toronto and Caltech.

After a number of years at the bench, Corsaro took a career exploration workshop to help focus her next step. One assignment required her to interview someone with

## Biassou Honored by Amherst College

Dr. Nadia Biassou, a staff clinician in the Clinical Center radiology and imaging sciences department, has been named a Wade Fellow at Amherst College for the 2019-2021 academic years. The appointment will bring her to campus during the academic year, with the goal of sharing her extensive experiences with students to help them learn how identity informs career exploration and to collaborate on programming that teaches them skills for navigating a complex professional world before and after graduation. Biassou is the lead physician for the Clinical Image Processing Service. Previously she served as acting chief/lead interpreting physician of the mammography division from 2007 to 2009, and general body imaging radiologist from 2006 to 2009. She has lectured at continuing medical education conferences throughout the Caribbean and Central America, where she has taught community physicians cutting-edge radiologic interpretation in various clinical settings. Her interdisciplinary training places her at the intersection of applied linguistics and cognitive science, imaging and medicine.



similar training but doing something different professionally. “I interviewed my grad school roommate, who was a program officer at NIH,” she said. From her, Corsaro learned about and was accepted into NIH’s Grants Associate Program, a program for people switching from research to administration.

After rotating through 12 assignments in a year, Corsaro found herself most drawn to peer review positions.

“I liked how review was explicit, with clearly defined tasks,” she said, “and I loved interactions with some of the smartest scientists in the country.” She joined the DRG/CSR staff.

Among other assignments as an SRO, she managed the genome study section and another on the ethical, legal and social implications of human genetics. More recently, she ran the genetics of health and disease study section.

In March, the remaining original extramural staff of the NIH genome center/institute held a luncheon to honor Corsaro. They recognized her as the SRO who introduced CSR reviewers to non-hypothesis driven research, so critical to the Human Genome Project. Her study section also suggested that the genome center/institute consider the R21 program to help PIs who had great ideas about genomic technologies, but no funds to generate preliminary data.

Corsaro also served on the trans-NIH bioethics committee and NIH ethics advisory committee. Among many awards, she is proudest of a CSR Director’s Award for her ethics-related contributions to NIH.

On the lighter side, Corsaro initially spearheaded and then participated in the Rockledgers, a popular group that created and sang parodies for CSR social events for more than 20 years. Fittingly, several Rockledgers composed two parodies for her retirement party.

Corsaro plans to stay in Maryland. She will hone her puzzle skills by playing bridge and tackling the jigsaw and crossword puzzle gifts she received from family in anticipation of her retirement.



### OD Alumnus Coppola Retires

Paul Coppola (r) is retiring on May 31 after 29 years of federal service. He spent 17 years at NIH in the Office of the Director’s Office of Management Assessment, conducting management analysis studies and supporting the NIH Management Control Program. In 2007, he joined the Office of the Secretary’s Division of Acquisition and later moved on to the Office of Recipient Integrity Coordination, the department’s Suspension and Debarment Program. Coppola will start his retirement working as an adjunct professor at Washington Adventist University, teaching chemistry and biochemistry to pre-nursing students. In the photo above, Coppola is shown with HHS Secretary Alex Azar, one of four secretaries under whom he served.

PHOTO: CHRISTOPHER SMITH

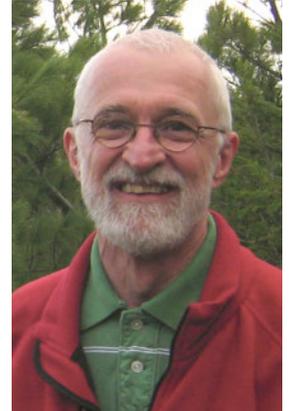
### NIH Alumnus Rinzel Honored

Former NIH senior investigator Dr. John Rinzel was awarded the Israel Brain Technologies

Mathematical Neuroscience Award recently for his “pioneering role in the application of mathematical systems to neural systems” (<https://braintech.kenes.com/ibt-awards/>).

Rinzel helped establish the field of mathematical and computational

neuroscience during his career as a research mathematician and member of the Public Health Service in NIDDK from 1975 to 1997. He was chief of NIDDK’s Mathematical Research Branch (now called the Laboratory of Biological Modeling) from 1981 until he left to become a professor in the Center for Neural Science and the Courant Institute of Mathematical Sciences at New York University in 1997.



Dr. John Rinzel

### NHLBI’s Fakunding Mourned

Dr. John Fakunding, 73, former director of the Heart Research Program in the Division of Heart and Vascular Diseases at NHLBI, died Feb. 21 in Beaufort, S.C.

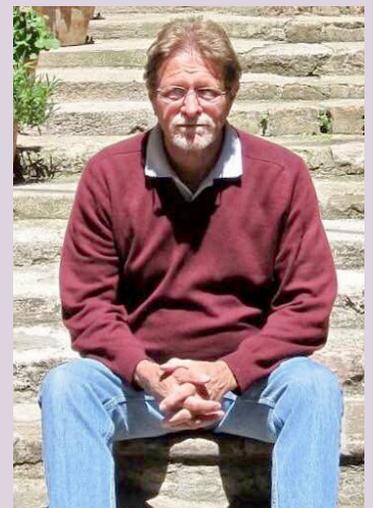
A native of California, he received a Ph.D. in biochemistry and biophysics from the University of California, Davis. He went on to conduct postdoctoral training in endocrine research at Baylor College of Medicine in Houston. His first NIH position was in the intramural program lab of Dr. Kevin Catt at NICHHD.

After leaving NICHHD, Fakunding went to the Extramural Review Branch of NHLBI, where he was responsible for reviewing training and career development grant applications.

After joining the Division of Heart and Vascular Diseases as a program officer, he eventually was appointed chief of the DHVD Training and Career Development Branch. In that position, he was charged with identifying training and career development needs, providing new opportunities to enhance the cardiovascular biomedical workforce and support new biomedical training programs for underrepresented minority scientists. He developed such programs as the Clinical Scientist Development Award, Short-Term Training for Minority Students and the Research Scientist Award for Minority Faculty.

Fakunding retired in 2005, at age 60. In retirement he taught physiology and chemistry at the University of South Carolina, Beaufort and at the Technical College of the Lowcountry, Beaufort.

He is survived by his wife Patti and his two beloved dogs.



Dr. John Fakunding



The magnet was loaded on a truck in Baltimore, after arriving on a cargo ship from Italy. A crane lifted it into the side of the NMR Center. The operation took nearly the entire day.

PHOTOS: DINH NGUYEN

## Another Huge MRI Magnet Delivered to NIH

On Mar. 16, an 11.7-Tesla magnet for advanced MRI studies—the largest of its kind in the world—was delivered to the advanced magnetic resonance imaging section in Bldg. 10. Unlike last fall's delivery of a 19-ton magnet through the facility's roof, this one entered through a side bay door at NIH's NMR Center. The behemoth now resides in Rm. 1D703.

It took 16 tractor-trailers to deliver both the 51-dry-ton magnet and the swinging-arm crane used to seat it. The world's strongest brain scanner, it has the potential to study the brain at the circuit, or microscopic, level. Scientists anticipate that it will enable them to see brain disease hallmarks that only microscopes can currently detect. Excited



The magnet was first staged on parking lot 41 as the crane for loading it was being assembled and positioned.

about the recent delivery, researchers say the 11.7T machine, which succeeds a 7T predecessor, could be like the leap made from using the Hubble Space Telescope to using the Webb Space Telescope to study the universe.

The new machine, jointly funded by NINDS and NIMH, will require a tremendous amount of helium to cool the coil that creates the magnetic field. Some 120 tons of steel were needed to shield the new magnet.

"This is a large jump [in field strength]," said NIMH principal investigator Dr. Peter Bandettini, who noted that MRI magnets used in most clinical studies have been 1.5T or 3T machines, with NIH's two 7T machines "at the upper end of research scanner use."

When the 11.7T machine becomes ready for use with human patients, scientists will have to develop protocols to help people slowly adjust to the strong magnetic fields, or else they may experience vertigo; that was a lesson from the 7T machines.

"With higher field strength we get three things," Bandettini said. "First, increased signal or sensitivity. Second, increased tissue and function contrast. And third, unanticipated types of contrast that were previously not seen in lower field strengths.



The magnet is carefully nestled into the side of the building using a trolley. The magnet arrives "warm," meaning that it has not yet been cooled with cryogenics to enable the superconducting wire to function properly. Cooling the magnet and then energizing it by slowly adding current until it reaches 11.7T will take several months.



Because the crane was placed above an underground utilities tunnel located just 10 feet below the crane, engineers recommended shoring up the tunnel.

"It's this third element where we don't know what to expect," he explained. "However we have a good idea for the most part. With these gains, we can either go to higher resolution or image faster as we won't need as much averaging. It's almost analogous to creating a telescope with a larger lens that gathers light more efficiently.

"It might turn out that at 7T, we were just below some sensitivity threshold, stopping us from seeing a wide range of functional organization and biomarkers for disorders. This is one of the exciting parts—looking into the unknown.

"We'd love to do whole-brain layer-specific functional MRI," added Bandettini, "to start to draw a connection between systems-level neuroscience and circuit-level neuroscience."

The new magnet's higher field strength, he said, will be much more sensitive to subtle deposits of iron and other metals that are related to some brain disorders.

NINDS is the lead institute on the new magnet, including principal investigators Dr. Alan Koretsky and Dr. Jeff Duyn.

The machine itself was originally made by Agilent but then remanufactured by a company in Milan, Italy, called ASG. The console for the magnet—the computer system that drives everything—is made by Siemens.

A video of the delivery can be viewed at <https://youtu.be/R6c2JiFRN-w>. 