MOMENTUM

Moving Forward at Columbia Mailman School of Public Health

Photographs: (left) Timothy Lee; (right) April Renae

NEW EXPOSOMICS CENTER LEADING IN A GROWING FIELD

Gary Miller, PhD, and Randolph Singh, PhD, with colleagues at the new Center.

EXPOSOMICS, WHICH ANALYZES DATA FROM ENVIRONMENTAL EXPOSURES—PHYSICAL, CHEMICAL, BIOLOGICAL, AND PSYCHOSOCIAL—WILL TRANSFORM PUBLIC HEALTH MUCH AS GENOMICS HAS REVOLUTIONIZED MEDICINE. And the new Columbia Mailman Center for Innovative Exposomics promises to be a major player in the space. "Our genes don't provide a complete picture of disease risk. Health is also shaped by what we eat and do, our experiences, and where we live and work," says the new Center's director Gary Miller, PhD, vice dean for research strategy and innovation and professor of Environmental Health Sciences. The exposome is the compilation of these factors.

The Center's team, drawn from across the Columbia University scientific community, is driving discovery and innovation through the development of new methods and workflows to measure complex exposures in blood and other biological samples. Miller and colleagues are leading an arm of a global study using exposomics to examine determinants of cancer in people of African descent. Other investigators are studying cancer, liver disease, Alzheimer's disease, and Parkinson's disease. (Miller was also recently asked to lead the new NEXUS [Network for Exposomics in the U.S.] Coordinating Center at Columbia University, with more than $7 million in National Institutes of Health funding.)

The Center for Innovative Exposomics partners with the Biomarkers Core Laboratory of the Irving Institute for Clinical Translational Research, the Columbia Precision Medicine Initiative, and the Data Science Institute. With links to the European Human Exposome Network, France Exposome, and the Expanse Project, the Center promises to be an international intellectual hub, connecting academia, industry, and government, to share information about this rapidly evolving field. ●

HONORS

Epidemiology trailblazer W. Ian Lipkin, MD, marks 40 years in research and 50 in medicine.

Lipkin's 40th Anniversary

Leading scientists from around the world convened last spring to celebrate the extraordinary career and transformative scientific work of W. Ian Lipkin, MD, the John Snow Professor of Epidemiology and the founding director of the Center for Infection and Immunity (CII). The daylong symposium marked Lipkin's 40th year in research. Panelists, most of whom have collaborated with Lipkin for decades, highlighted Lipkin's significant accomplishments, including the fact that he spearheaded the development of the technology of pathogen discovery used worldwide, which he has used to identify more than 1,500 viruses and advance science on serious outbreaks including West Nile virus, SARS, Zika, MERS, and SARS-CoV-2.

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Recognition for Public Service

Diana Hernández, PhD, associate professor of Sociomedical Sciences, and Parisa Tehranifar, DrPH ’04, associate professor of Epidemiology, were inducted into the Academy of Community and Public Service.

Medical Center Award to Smith

Gilbert Smith, administrative director at CII, received the Columbia University Irving Medical Center Baton Award, recognizing team players who contribute to the medical center’s success.

Llanos at the White House

Adana A.M. Llanos, PhD, MPH, associate professor of Epidemiology, was an invited participant at the 2024 White House Minority Health Forum.

5 Faculty Among Top 1,000

Dean Linda P. Fried, MD, MPH, and four Columbia Mailman School colleagues are among the Best 1,000 Female Scientists in the World, as rated by Research.com. Elaine L. Larson, PhD, RN; Regina M. Santella, PhD; Frederica P. Perera, MPH ’76, DrPH ’82, PhD ’12; and Melanie Wall, PhD, all made the list.

Weissman Wins Award

Myrna Weissman, PhD, the Diane Goldman Kemper Family Professor of Epidemiology and Psychiatry, is the recipient of the Women in Medicine Legacy Foundation’s Alma Dea Morani Award, which recognizes a woman who has furthered the practice of medicine and made significant contributions outside medicine.

Fullilove and Rosner on PBS

Robert Fullilove, EdD, and David Rosner, PhD, MPH, professors of Sociomedical Sciences, were featured in *The Invisible Shield*, a PBS documentary examining public health’s role in improving lives.

TAKING ACTION ON HEALTHY AGING

THANKS IN GREAT PART TO THE FIELD OF PUBLIC HEALTH, LIFE EXPECTANCY HAS ROUGHLY DOUBLED SINCE 1900. By 2050, the number of people aged 80 or older is expected to triple.

Society now faces the challenge of optimizing our longer lives by extending our “healthspan”—years of life lived free of disease and disability. Dean Linda P. Fried, MD, MPH, has long been a leading researcher and advocate for healthy aging; now she is leading CHAI, the Columbia University Irving Medical Center Healthy Aging Initiative, a medical center-wide steering committee defining a new vision for aging research at Columbia. This spring, its Healthspan Extension Summit brought together 300 researchers and guests from across the medical center and beyond to present findings in basic science, clinical medicine, and public health.

Allison E. Aiello, PhD ’03, of the Robert N. Butler Columbia Aging Center led a discussion examining the need to translate basic science insights from animal models to humans. The Columbia Aging Center’s Alan Cohen, PhD, said animal models are important but cautioned that mice with short lifespans are substantially different from humans. CUIMC clinicians presented findings on disrupted sleep, which disproportionally affects older people. Representatives from neurology, nursing, pulmonology, and cardiology also shared findings. Columbia Mailman’s Thalia Porteny, PhD, spoke to the effect that social determinants of health have on aging, while Katherine Keyes, PhD ’06, MPH ’10, pointed to spikes in suicide and binge drinking among older adults.

Daniel Belsky, PhD—a co-lead on the symposium planning committee with Gregory Alexander, PhD, RN, of Nursing, and Caitlin Hawke, associate director of programming at the Columbia Aging Center—added that scientists need to both “translate up from the basic sciences, but also translate back down,” to make sure mechanisms identified in the lab are present in communities of people.

Katrina Armstrong, CEO of CUIMC, concluded the plenary by announcing that CHAI would immediately launch $240,000 in pilot funds to foster new collaborations. “I feel a sense of optimism coming from the people in this room, but also an incredible sense of urgency,” she said. “We need to get this work done.” ●

Illustrations: (left) Brian Stauffer; (right) iStock

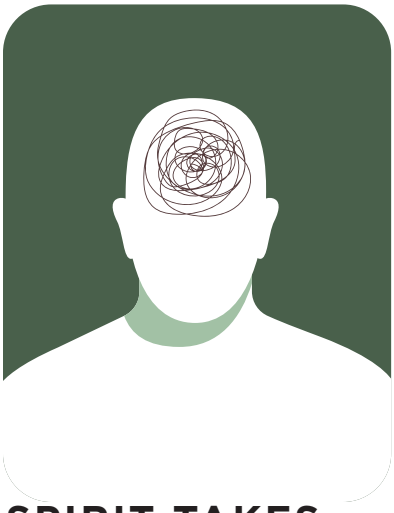
SALUTING STEM PROGRAMS *Insight Into Diversity*, a higher education magazine, awarded Columbia Mailman School two of its 2024 Inspiring Programs in STEM Awards for programs encouraging and supporting the recruitment and retention of women and underrepresented students into STEM fields.

EXAMINING PAY INEQUITY IN PUBLIC HEALTH

HEATHER KRASNA, PhD, EdM, ASSOCIATE DEAN OF CAREER SERVICES, TOOK A CLOSE LOOK AT SALARY DIFFERENCES BETWEEN PUBLIC- AND PRIVATE-SECTOR JOBS AND PUBLISHED RESULTS IN THE *AMERICAN JOURNAL OF PUBLIC HEALTH*. Thirty of 44 occupations paid at least 5 percent less in government than the private sector, with 10 occupations paying 20 percent to 46.9 percent less. To develop a sustainable public health workforce, health departments must consider adjusting salary or using creative incentives such as student loan repayment for hard-to-fill roles.

SAMPLE MEDIAN ANNUAL PUBLIC HEALTH SALARIES

OCCUPATION	PRIVATE SECTOR	LOCAL GOVERNMENT *(Excluding schools/ hospitals)*	STATE GOVERNMENT *(Excluding schools/ hospitals)*
Chief Executive	$209,810	$111,380	$129,540
Computer and Information Systems Manager	$166,070	$126,930	$117,690
Epidemiologist	$92,700	$70,910	$69,510
Environmental Scientist/Specialist	$76,870	$76,300	$70,080
Compliance Officer	$69,990	$64,000	$59,700
Emergency Management Director	$100,210	$75,160	$66,750



SPIRIT TAKES ON THE MENTAL HEALTH CRISIS

A NEW INITIATIVE AT COLUMBIA MAILMAN SCHOOL WILL INVEST IN PUBLIC HEALTH SOLUTIONS FOR THE SURGING MENTAL HEALTH CRISIS—for example, examining how changes to the physical and social environment affect mental health. Called SPIRIT (Social Psychiatry: Innovation in Research, Implementation, and Training) and led by Katherine Keyes, PhD '06, MPH '10, the effort will explore the root causes of the rise of mental health problems, including social determinants of health. Fifty participating faculty come from across Columbia University Irving Medical Center and explore factors giving rise to mental illness, such as the emotional stress of climate change, social media and other new technologies, as well as what is driving poor outcomes in populations like Black and LGBTQ+ communities.

Other efforts will examine how brain development, stress response, and loneliness each play a role. Researchers will also examine possible solutions. These include school- and community-based prevention programs, economic and social policy, crisis support, and stigma reduction. SPIRIT also offers pilot funding and mentoring to scholars to further expand the research and keep the scholarship and collaboration going long term.

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A NEW CHAIR FOR 'POPFAM'

The Heilbrunn Department of Population and Family Health welcomes a new department head this fall. Thoai D. Ngo, PhD, MHS, is an internationally recognized scientist working at the intersections of global public health, population dynamics, gender equality, and sustainable development. He comes to the School from the Population Council, where as vice president for social and behavioral science research he led a global team of interdisciplinary scientists with expertise in climate science, demography, epidemiology, economics, public health, and sociology. Before that, Ngo was the vice president and senior director of research at Innovation for Poverty Action, directing a team of 500 research staff in conducting over 250 impact evaluations of programs and policies to address global poverty in 18 countries.

Ngo is also the founding director of the Girl Innovation, Research and Learning (GIRL) Center, a globally recognized hub for research on adolescents. He received a PhD in epidemiology and population health from the London School of Hygiene and Tropical Medicine and his Master of Health Science in global epidemiology and disease control from Johns Hopkins Bloomberg School of Public Health.

Researchers inside the U.S. Army Corps of Engineers permafrost tunnel, which is held at around 25° F, prepare to take samples.

WHAT DO PERMAFROST AND WASTEWATER HAVE IN COMMON?

AS THE CLIMATE WARMS, SWATHS OF PERMAFROST ARE THAWING. ARCTIC PERMAFROST STRETCHES ACROSS Alaska, Scandinavia, Russia, Iceland, and Canada and is a reservoir of microbes, including bacteria, viruses, and fungi. With little known about these potentially infectious agents, the School's Center for Infection and Immunity (CII) was invited to visit Fort Wainwright, Alaska, and the U.S. Army Corps of Engineers' Permafrost Tunnel Research Facility. J. Kenneth Wickiser, PhD, the administrative director of the Global Alliance for Preventing Pandemics (GAPP) at CII, was one of a handful of civilians present as advisors in February when Army Corps of Engineers members extracted samples for research to detect pathogens in permafrost. "Melting of permafrost will trigger the release of pathogens not seen for thousands and thousands of years," says Wickiser, an associate professor of Population and Family Health. "Most of our work out of CII and GAPP is in temperate or tropical climates. But we will be working in other climates, and these are the places likeliest to be subject to climate change. A significant number of people are living on top of or exposed to permafrost."

The Army Corps of Engineers will send ice core and permafrost samples to CII to assess for viral and bacterial pathogens, and CII will direct further sampling from areas where there is currently no melting but where permafrost is expected to melt in the future. "The goal is to get ahead of this," says Wickiser, and tests invented at CII, VirCapSeq-VERT and BacCapSeq, will enable CII to do so. "The tools we have here are great in that they assess all pathogens simultaneously. So you don't have to know exactly what you are looking for to find it."

The same innovative tests are also helping CII interrogate wastewater at the U.S. Air Force Academy. Like permafrost, wastewater can contain a massive biological load, and looking for harmful pathogens can be like seeking a needle in a haystack. But CII's tests enable the noninvasive detection of pathogens circulating in a community of hundreds of students housed in close quarters. "COVID-19, measles, mpox, adenovirus … our technology finds everything all at once," says Wickiser. With new uses for CII's tests arising frequently, there is seemingly no end to the potential for these breakthrough technologies.

Photographs: (left) Amy Nguyen; (middle) J. Kenneth Wickiser, PhD; (right) iStock