

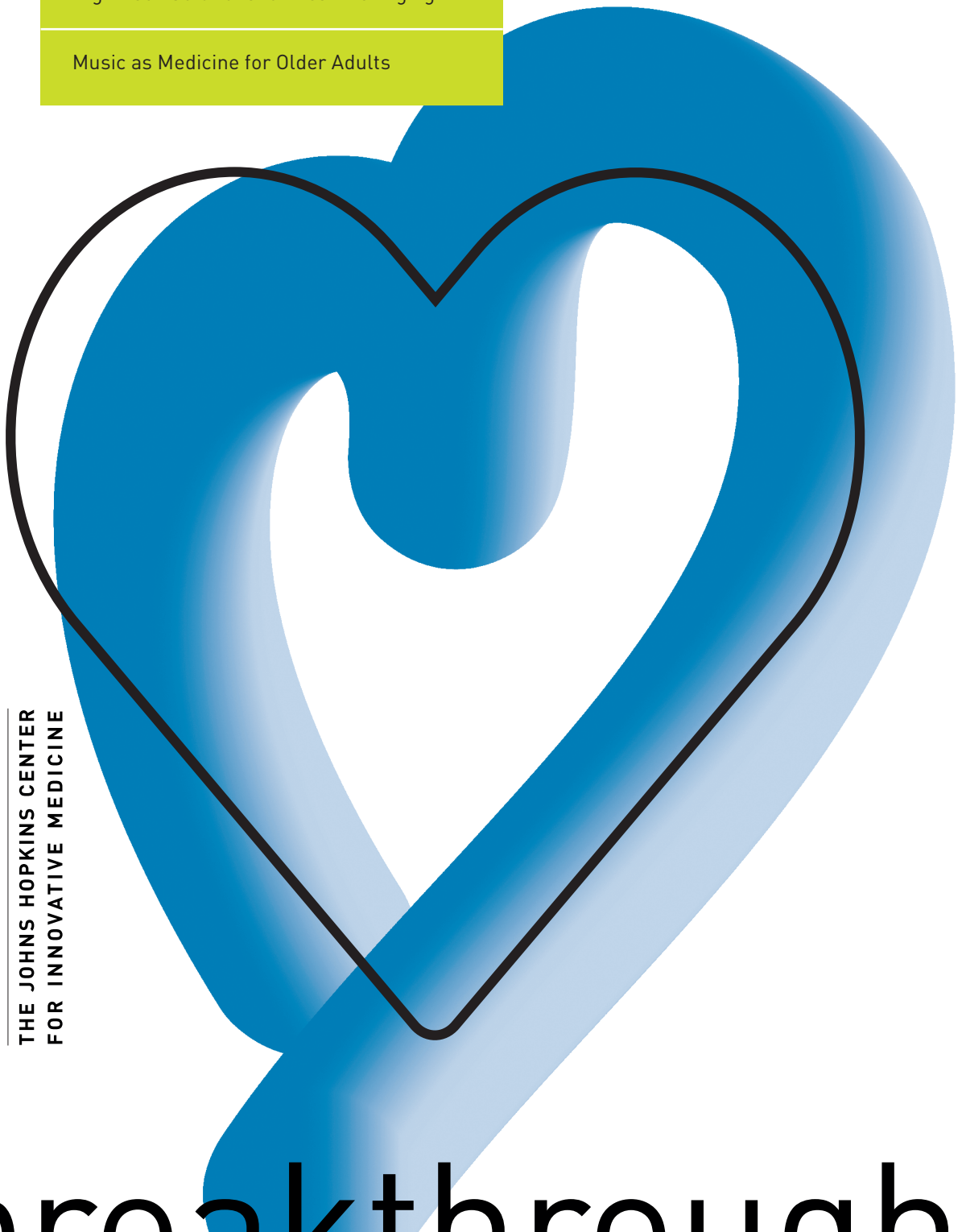
Creating a Model for Humanizing Medicine

The 'Personomics Projects'

High-Tech Solutions for Healthier Aging

Music as Medicine for Older Adults

Medicine is a public trust
THE JOHNS HOPKINS CENTER
FOR INNOVATIVE MEDICINE





David B. Hellmann,
M.D., M.A.C.P.
*Aliko Perroti Professor
of Medicine*

ON A MISSION

Like many of us within our community and around the world, I watched with fascination recently as NASA’s Double Asteroid Redirection Test (DART) successfully completed its amazing mission of colliding with a small asteroid and knocking the space rock off its course. Johns Hopkins pride was in evidence for the big event, since it was the university’s Applied Physics Laboratory that led the mission on behalf of NASA.

It was quite a feat. Simply put, the DART mission showed that our best scientists now have a successful strategy to literally save the world from a catastrophic, humanity-ending asteroid collision should a large body find itself in the future with its sights on Earth.

It struck me that DART — a modest spacecraft that traveled 7 million miles over 10 months to nudge an asteroid just slightly off its course — is an apt metaphor for Johns Hopkins Medicine in general and the Center for Innovative Medicine in particular. When the Johns Hopkins University School of Medicine opened in 1893, this moderate-sized school in the moderate-sized city of Baltimore was up against an “asteroid” of medical ignorance of the day: lethal practices like bloodletting, blistering and high doses of mineral poisons. Yet Johns Hopkins managed to make a world-saving impact by nudging the world of health care into an entirely new orbit: one informed by evidence-based practice.

In a similar vein, CIM’s *Miller Coulson Academy of Clinical Excellence* got its start in 2008 in a single department, the Department of Medicine, on one campus, Bayview Medical Center. In the years since then, the MCACE has vastly expanded to impact departments across the Johns Hopkins Medicine enterprise. Most notably, it has pushed the entire faculty promotions process into a new orbit with a new path to promotion — a true game changer that, for the first time in the institution’s history, rewards Johns Hopkins Medicine faculty members for their excellence in clinical care.

Now, we at CIM are creating another “DART” mission to take on a dangerous crisis in health care today: a high-tech, low-touch approach to medical care that has left patients feeling dehumanized and clinicians burned out. I’m confident that with careful aim and a whole lot of creativity, CIM’s new *Institute for Humanizing Medicine* (which you can read more about on p. 2) will be just what our world needs to knock the asteroid of poor health care into a brand-new, healing orbit. And I invite you to join us on our mission.

David B. Hellmann, M.D.

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Creating a Model for Humanizing Medicine

Support, ideas and enthusiasm abound for a new CIM initiative that goes to the very core of providing effective health care: getting to know patients as people.

The ‘Personomics Projects’

Intent on developing methods for more personalized patient care, medical trainees across Johns Hopkins have embarked on a series of promising initiatives.

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High-Tech Solutions for Healthier Aging

From wearable devices to robots, innovative projects aimed at improving health for older adults are now underway, thanks to the Johns Hopkins Human Aging Project.

Music as Medicine for Older Adults

Neurologist Alexander Pantelyat is gathering evidence to show that music — making it, listening to it, moving to it — can mitigate aging-related neurodegeneration.

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WE BELIEVE

Medicine belongs to the public. Our mission is to create a different kind of academic medicine, to tear down ivory towers, share knowledge and dedicate ourselves toward one goal—making life better for patients.

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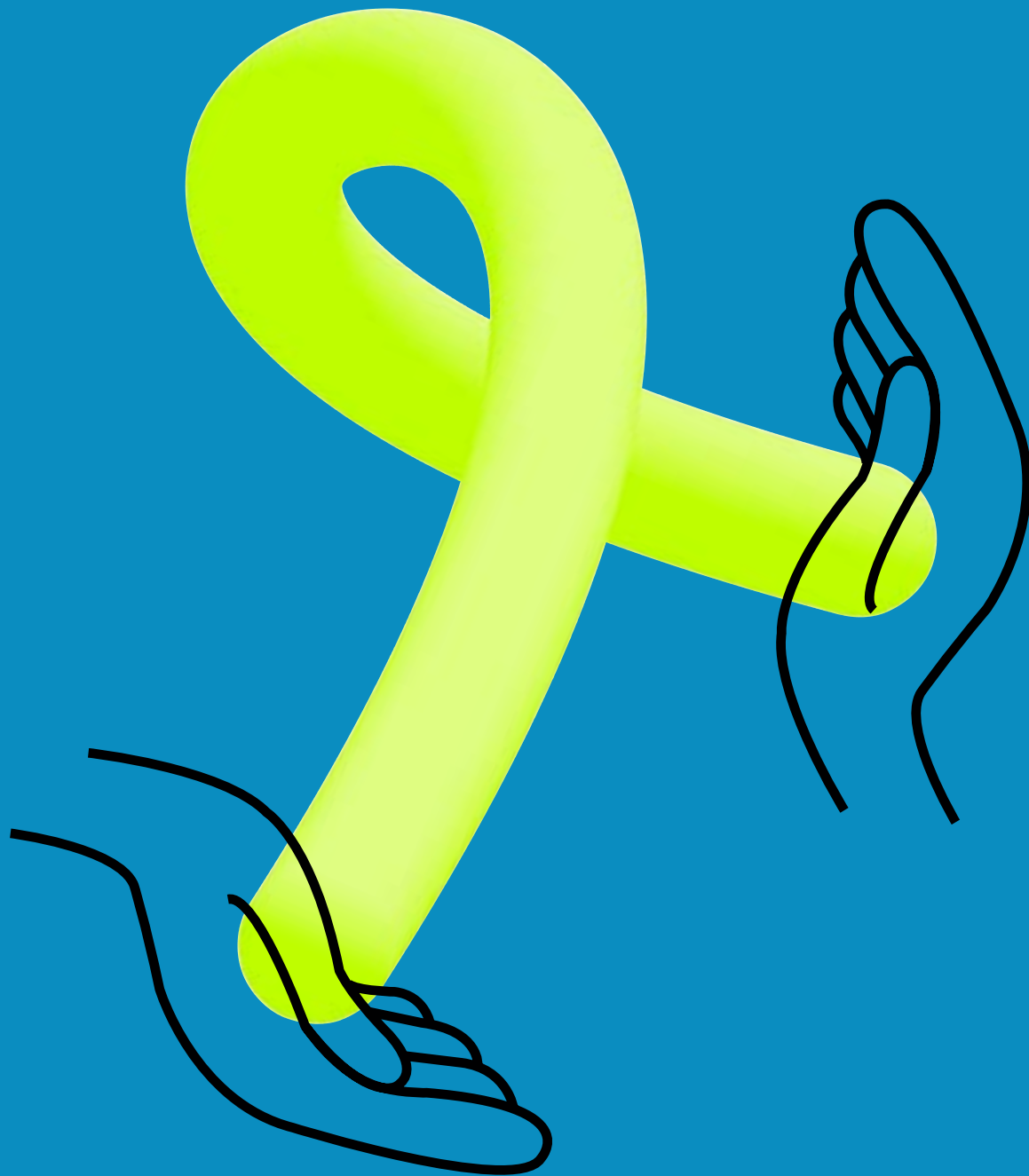
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Creating a Model for Humanizing Medicine



On a crisp morning in early September, more than 50 of Johns Hopkins Medicine's most visionary thinkers and doers gathered at Folly Farm — the beautiful Baltimore County home of **Stephanie Cooper Greenberg**, who is chair of CIM's International Advisory Board — for CIM's annual retreat. The group's mission: to advance the initiative to create CIM's new *Institute for Humanizing Medicine*.

The rationale for creating the Institute for Humanizing Medicine at Johns Hopkins is four-fold, notes CIM Director **David Hellmann**:

- Health care in the United States is in crisis, with patients feeling dehumanized in the face of technological advances, costs spiraling out of control and clinicians experiencing burnout in record numbers.
- Knowing patients as people is both the soul of healing for patients and the basis of rejuvenation for the professionals who care for them.
- Johns Hopkins Medicine is well-positioned to meld science with humanism.
- The Institute for Humanizing Medicine will draw on the best of the entire health system and university.

In the months since the concept for the institute was introduced at last year's retreat, it has been greeted with great enthusiasm by trustees, faculty members and donors. "In fact," says Hellmann, "nothing CIM has done has attracted so many donors so quickly." Over the last six months, he says, "CIM has received nearly \$3 million in contributions and pledges."

Indeed, leaders from across Johns Hopkins Medicine who attended the retreat were unanimous in their passionate support for the mission of the Institute for Humanizing Medicine.

Noting that getting to know patients as people "goes to the very core of what it means for us to be great caregivers," **Theodore DeWeese**, interim dean of the School of Medicine, says the new Institute for Humanizing Medicine will pursue that mission "the Hopkins way" — through research, applying the fruits of that research to improve patient care, and then teaching best practices to learners at Johns Hopkins and beyond. "The good news is that we have a great head start, since all of you gathered here are already practicing a humanistic form of medicine," DeWeese said, gesturing to the clinicians seated around him.

"Getting to know patients as people goes to the very core of what it means for us to be great caregivers."

Theodore DeWeese

CONTINUED ON PAGE 4

In his role as president and CEO of the Kennedy Krieger Institute, physician **Bradley Schlaggar** noted that a humanistic approach to care is more needed than ever in the treatment of young patients with disorders of the brain, the population his institute serves. Unfortunately, he says, American health care policy has led to significant “mental health disparities,” whereby many families can’t afford to get the kind of care their children need.

“If we are going to prioritize patient-centered care [for mental health],” he said, “we must build our policies around it.”

A key element of the Institute for Humanizing Medicine is its far-ranging reach across Johns Hopkins Medicine. It will bring together clinicians and scientists from medicine, public health, business and — importantly — from nursing. That’s critical, said **Deb Baker**, senior vice president for nursing for the Johns Hopkins Health System, because, she said, “nurses are the ‘patient whisperers.’” She noted, “There’s an emotional intimacy in the relationship that nurses have with patients. Nurses are the connectors.”

The new institute will transform the delivery of medical care at Johns Hopkins and beyond so that every patient is known as a person, with a “key focus on respect, trust and empathy.”

Allen Kachalia

The Institute for Humanizing Medicine will also draw upon the proven effectiveness of the Johns Hopkins Armstrong Institute for Patient Safety and Quality, which has galvanized Johns Hopkins to focus on eliminating harm to patients and has changed the way the world views patient safety. In a similar fashion, the new institute will transform the delivery of medical care at Johns Hopkins and beyond so that every patient is known as a person, with a “key focus on respect, trust and empathy,” said Armstrong Institute Director **Allen Kachalia**. While establishing an institute “won’t make health care’s problems go away,” he said, “it *will* allow us to set institutional priorities in a clear way and advance the science of humanizing medicine.”

Professors of Medicine **Mary Catherine Beach** and **Cynthia Rand** will lead the new Institute for Humanizing Medicine in its tripartite mission — of educating trainees and students, identifying the most impactful research questions, and defining the

“As the nature of medicine has become increasingly transactional, we have lost a core part of the therapeutic relationship. Humanism is that core part of being a health care provider.”

Cynthia Rand

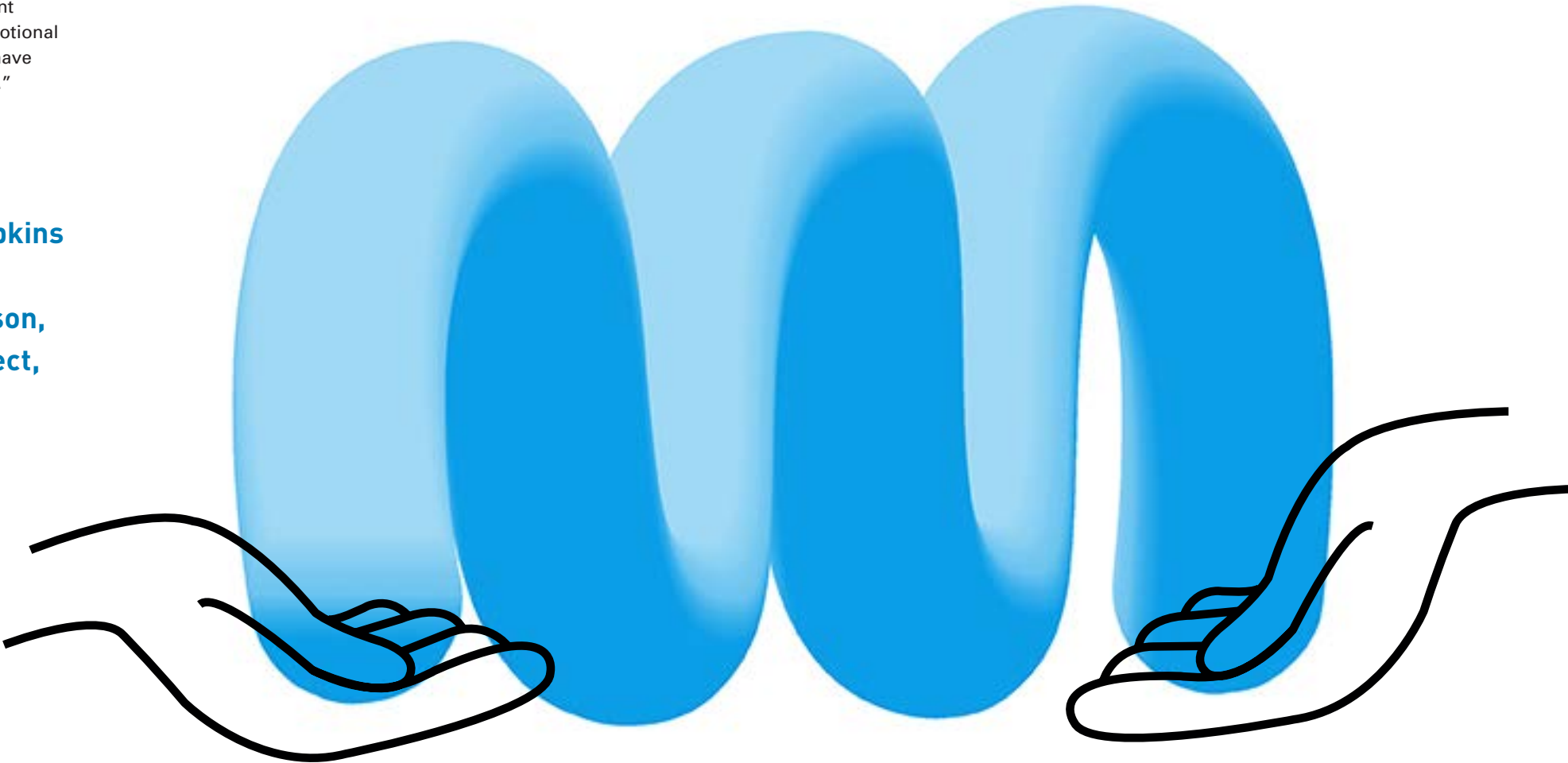
best patient care interventions that are supportive of clinicians. Both Beach and Rand, internationally renowned for research relevant to humanizing medicine, have been appointed the first *CIM Institute for Humanizing Medicine Scholars*.

The duo are optimistic about what the new institute can accomplish and are committed to its mission.

Beach, a bioethicist, has devoted much of her 26-year career in medicine to investigating how respect and communication play out between patients and clinicians, with the goal of improving care for each patient. She noted that too many research models examining clinician communication focus on “what we do wrong, rather than on what clinicians do well.” She said, “We have remarkable clinicians here at Johns Hopkins, and we must take a ‘bottom-up’ approach to learn from them.”

Rand, who is senior associate dean for faculty, said, “As the nature of medicine has become increasingly transactional, we have lost a core part of the therapeutic relationship.” She added, “Humanism is that core part of being a health care provider.”

Rand continued, “With the new institute, we will create a connective tissue across Johns Hopkins that will allow us to rebuild the health care system and make Johns Hopkins a model for the world.” ■



The ‘Personomics Projects’

When Johns Hopkins cardiologist **Roy Ziegelstein** coined the term “personomics” in a widely cited editorial in *Journal of the American Medical Association* in 2015, he launched a movement that would have an important impact on the medical community at Johns Hopkins and far beyond.



His premise? In the rush to embrace the high-tech advances of precision medicine, too many doctors can lose sight of the individual patient’s unique life experiences. “Patients, in what some describe as a ‘no me’ experience, can wind up feeling left out, and that’s not what doctors want,” says Ziegelstein, a Miller Coulson master clinician and the *Sarah Miller Coulson and Frank L. Coulson, Jr. Professor of Medicine*.

The enthusiastic embrace of “personomics” on the part of physicians, Ziegelstein believes, “reflects the disconnect that many doctors have been feeling — and want to fix.”

At the Center for Innovative Medicine, the latest exciting effort to address that disconnect is the *Barbara and Peter K. Miller Scholars Personomics Initiative*. The initiative, which falls under the umbrella of CIM’s new *Institute for Humanizing Medicine*, will provide funding to support residents and fellows across a diverse range of specialties to lead “transformative projects” aimed at developing learners’ skills “in the science and art of personomics,” explains **Jessica Bienstock**, senior associate dean for graduate medical education.

When her team put out a call for proposals, they were heartened by the broad range and scope of projects that trainees put forth. Ultimately, seven “Personomics Projects” have been selected for funding this first year. They include:



PHOTOJOURNALISM

A photojournalism project, led by plastic and reconstructive surgery residents Cecil Qui and Patrick Keller, that will follow 12 patients over two years, with the aim of placing the patients’ reconstructive surgeries “in the context of their larger medical journey, their day-to-day lives and their personal identities.”

The duo, both amateur photographers, will also conduct interviews with the patients and their surgeons. “Through these interactions, we will highlight moments of hope, unforeseen challenges and the transformative experience of reconstructive surgery,” note the trainees, who ultimately aim to share the photos and interviews in an online publication viewable by staff and the public.



MISSED APPOINTMENTS

A study aimed at identifying the factors that lead to patients failing to show up for medical appointments. Too often, note dermatology residents Eugene Park and Angel Diaz, “‘no-shows’ often remain nothing more than meaningless names on a screen ... and we often fail to register that in each of these cases, there is a real human who at one time sought our help, with his or her own struggles, needs and obstacles.”

Through standardized surveys and interviews, the residents aim to aggregate common reasons that lead to “no-shows” — such as transportation issues, language barriers or childcare needs — and ultimately identify measures to prevent missed appointments in the future. “There may be worlds of empathy to gain from these patients we never know,” write Park and Diaz in their proposal.

CONTINUED ON PAGE 8



WHOLE-PERSON CARE

Implementation of a “Whole-Person Care” clinical documentation template within the electronic medical record. The goal of the template, says internal medicine resident Amy Shah, is to “give physicians a systematic way of connecting with their patients holistically” by integrating discussion of belief systems, social determinants of health and personal values. “The aim of this note template is to learn about patients beyond their medical issues and use their individual values to guide their health care decisions,” Shah writes.

“We’ll be creating a ‘community of practice’ — a learning collaborative of Barbara and Peter K. Miller Scholars who are passionate about getting to know patients as people.”

Jessica Bienstock

An Initiative with Impact

Planners predict that the *Barbara and Peter K. Miller Scholars Personomics Initiative* will have an important impact on several fronts:

- Better clinical outcomes for patients
- Improved experiences for those who provide clinical care
- Lower costs, when preventive therapies and disease treatments align better with individual patient characteristics

While these two-year projects themselves will yield important results, notes Bienstock, there’s an additional, crucial element of the personomics initiative. “We’ll be creating a ‘community of practice’ — a learning collaborative of Barbara and Peter K. Miller Scholars who are passionate about getting to know patients as people,” she says. The scholars will meet monthly for skill-building and peer mentoring workshops, providing ample opportunity for networking and collaboration.

Such collaboration will go a long way toward addressing the factors that can contribute to physician burnout, which is a growing crisis in the American health care system today, Bienstock notes.

“People generally go into medicine because they care about relieving suffering and about connecting with patients to help guide them through some of the most vulnerable times of their lives. But during medical school and residency, there’s so much to learn and so much time pressure — time spent getting to know your patients can easily get buried under all the other pressures,” she says. “One way to combat burnout is through connection with meaning and purpose. And the key way to make these connections with meaning is through having the time to get to know your patients.” ■

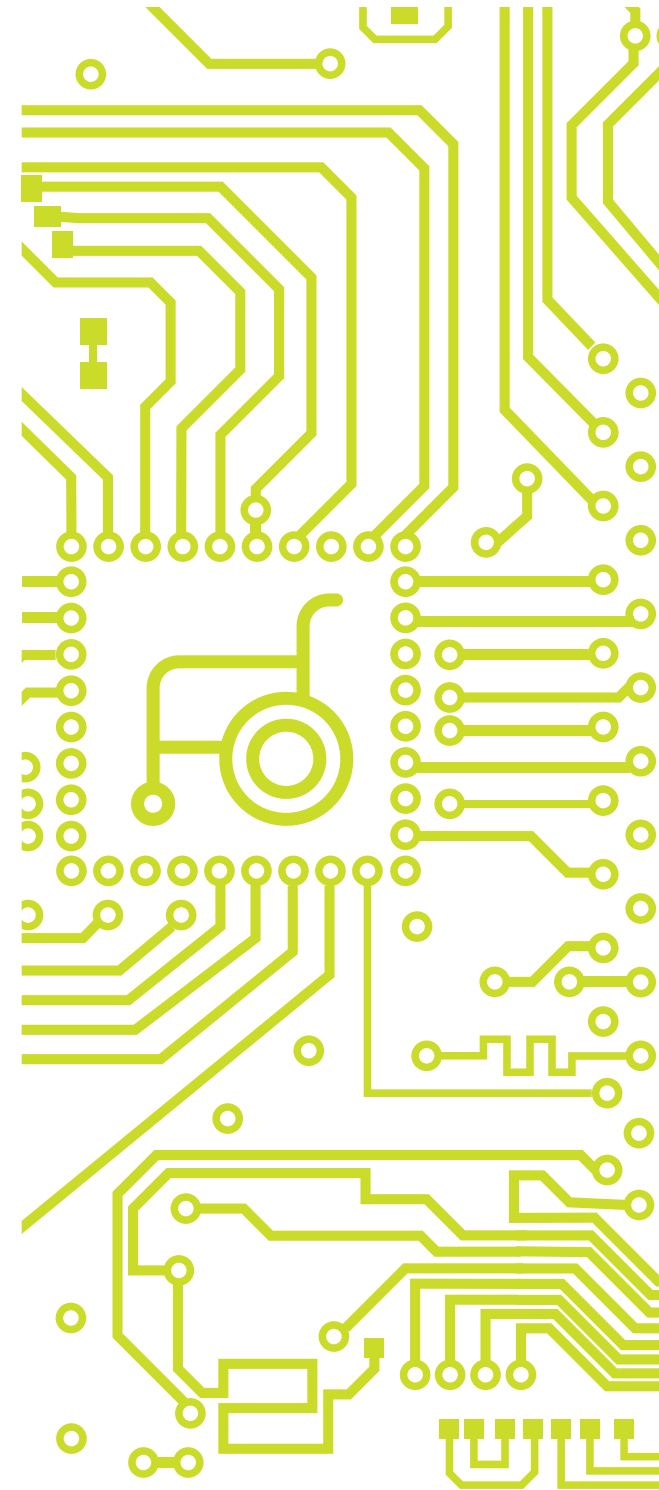
HUMAN AGING PROJECT

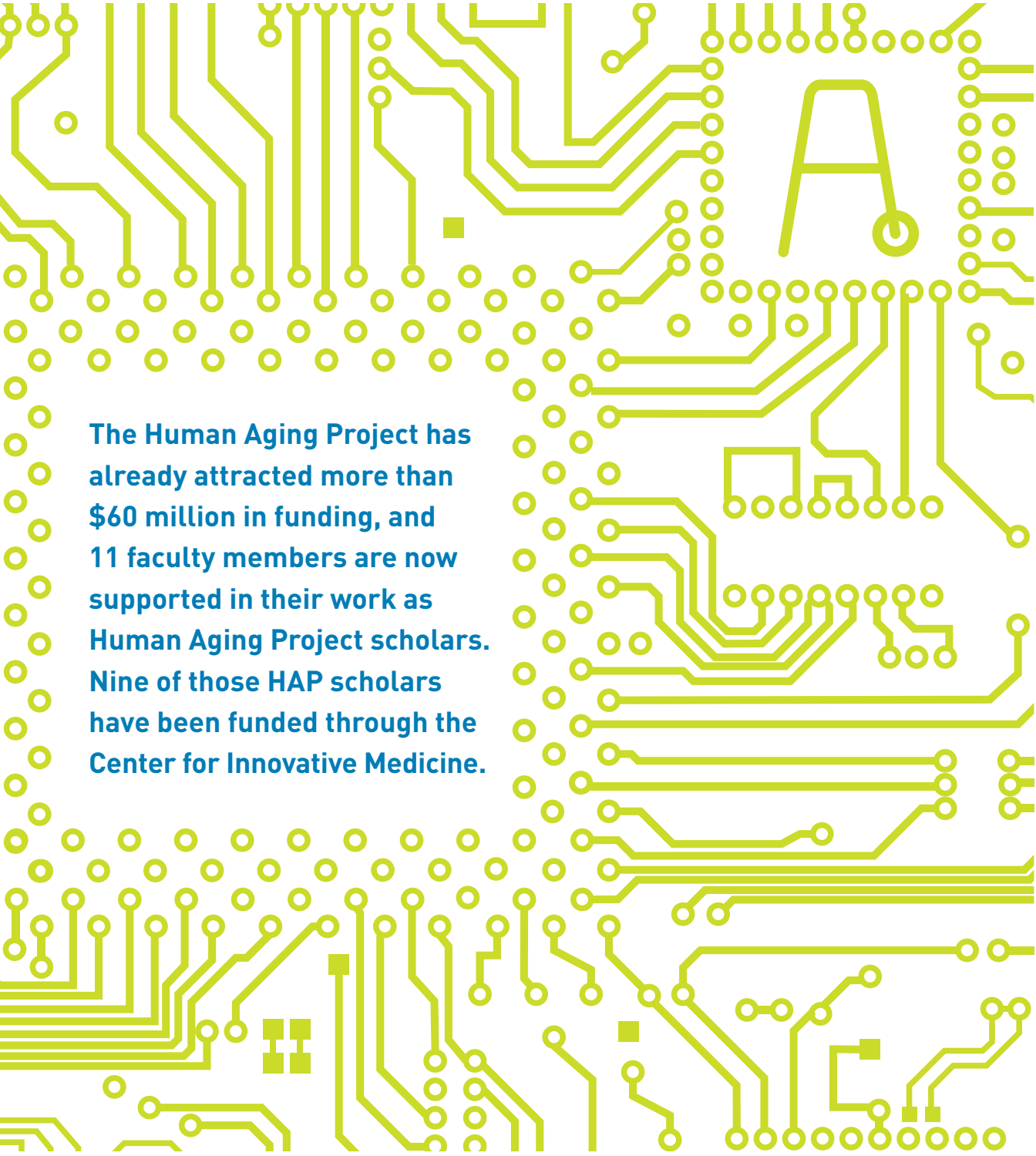
High-Tech Solutions for Healthier Aging

Among older adults, a good night’s sleep can be elusive: An estimated 50% suffer from a sleep disorder, putting them at risk for a cascade of poor health outcomes, including short- and long-term cognitive decline, falls, and a reduced ability to perform daily tasks.

Now imagine a device, worn comfortably on a headband, that could gently stimulate an older wearer’s brain to enhance the “deep sleep” portion of their nightly slumber. That’s the ultimate goal of a student team that is the first to advance through the Gerotech Incubator Program (see p.11), launched in spring 2020 as part of the Johns Hopkins Human Aging Project (HAP). The team will develop and test their prototype in the months ahead and has plans to create a startup company to produce it.

CONTINUED ON PAGE 10





The Human Aging Project has already attracted more than \$60 million in funding, and 11 faculty members are now supported in their work as Human Aging Project scholars. Nine of those HAP scholars have been funded through the Center for Innovative Medicine.

Crucial to advancing this team's efforts is funding and support the students have received from the Johns Hopkins Artificial Intelligence & Technology Collaboratory for Aging Research (AIRC), which was established in November 2021 with \$20 million in funding from the National Institute on Aging. The goal of the AIRC, which also falls under the umbrella of the Human Aging Project, is "to spur development of artificial intelligence devices to improve the health of older adults and help them live independently for longer," notes HAP Director **Jeremy Walston**, the *Salisbury Family Foundation CIM Scholar*.

"So many older adults accumulate health problems that impact their ability to stay in their own homes and enjoy meaningful social interactions," says Walston. "With the Gerotech projects and the many exciting ideas already coming out of the AIRC, we're tapping into the power of technology to 'disrupt' these problems."

In the year since the AIRC put out a call for proposals, a variety of promising projects — submitted by stakeholders across Johns Hopkins and beyond — have already gotten the green light for funding and development. They run the high-tech gamut, from wearable devices to robots, and many tap into powerful advances in sensor technology.

Among the AIRC projects underway:

- A smartphone attachment that would make diagnosing cataracts quicker, easier and less expensive
- A robot that could be used in nursing homes and uses facial recognition technology to detect whether a resident is confused or agitated
- A software platform for use in the emergency department to detect patients with early dementia
- A "virtual apprentice," accessed through an iPad or virtual reality goggles, aimed at helping older people to overcome social isolation

The AIRC is structured so that advances like these won't remain academic pursuits but will be ushered

Incubating Promising Solutions

The Gerotech Incubator Program at Johns Hopkins brings together teams that include two to three engineering students, one medical resident or nursing doctoral candidate, two business students from Hopkins' Carey Business School and several faculty mentors, with each team focusing on a particular challenge of aging, such as fall prevention or neurodegenerative diseases.

In Phase 1 of their work, the teams identify a specific problem to solve, perform a market analysis and ultimately develop a prototype or product. Phase 2 is the "accelerator" mode, during which the teams find funding, test prototypes and develop patents, and solicit support from industry.

along a pathway of eight cores, or workgroups, that will bring devices into the marketplace.

Walston is optimistic that, given the synergy at play, commercialization will happen quickly. "Because we're working closely with industry, that will facilitate our ability to move these products from academia and into the marketplace," he says. "With some of these engineered devices, I expect that we'll be pushing them out the door in the next year or two."

Walston notes that the AIRC projects are emblematic of the broader mission of the Johns Hopkins Human Aging Project, which brings together faculty members and students from the schools of medicine, engineering, nursing and business to collaborate on improving the health of the nation's rapidly graying population.

"We are leveraging assets from across Johns Hopkins so that clinicians can identify the health issues that older adults face and engineers can come up with carefully crafted solutions," he says.

The Human Aging Project has already attracted more than \$60 million in funding, and 11 faculty members are now supported in their work as Human Aging Project scholars. Nine of those HAP scholars have been funded through the Center for Innovative Medicine.

"We are incredibly grateful to the Center for Innovative Medicine and to David Hellmann for his tireless advocacy," says Walston. "David's vision, and the generosity of CIM's donors, have been crucial to moving the Human Aging Project forward." ■

Music as Medicine for Older Adults

Annapolis resident Dale Tepper, 71, was diagnosed with Parkinson's disease in 2019. Since she enrolled in online drumming classes with drum therapist and instructor Jason Armstrong Baker, she says her tremors have calmed and her hands have strengthened.

Working in a group setting, learning new participants' names, and remembering rhythms and movements for different songs gets her brain firing, she says, noting, "The hardest thing in Jason's class for me is using my hands and feet at different rhythms. That makes your brain just work and work. It's great for Parkinson's."

The Zoom drumming classes build on pathbreaking studies by Johns Hopkins neurologist **Alexander Pantelyat**, the *Alafouzos Family CIM Human Aging Project Scholar* and co-founder and director of the Johns Hopkins Center for Music and Medicine. He has shown that for those with Parkinson's disease, drumming can improve overall quality of life and mobility.

"Just listening to music activates more brain regions simultaneously than any other human

activity," says Pantelyat, a talented violinist, who treats patients with various movement disorders and also directs the Johns Hopkins Atypical Parkinsonism Center.

In what is heartening news for the nation's "silver tsunami" of older adults, Pantelyat and colleagues with the *Johns Hopkins Human Aging Project* believe music — making it, as well as listening to it and moving to it — could hold a key to healthier aging. In particular, he says, "It's becoming more and more clear that music- and rhythm-based interventions can do a lot to help specific symptoms of neurodegenerative, age-related disorders, such as Parkinson's and Alzheimer's disease."

Thanks to funding from CIM supporters **Eugene and Anne Fife**, Pantelyat recently began research to determine whether engaging with personally meaningful music could strengthen memory-related brain connections in patients with Alzheimer's disease. "We're using MRI scanning to look at brain structure and function over the course of

An evidence-based music therapy program would bring therapists into Alzheimer's patients' homes twice a week to sing and play music that helps to rebuild damaged neural connections.

CONTINUED ON PAGE 14



eight weeks,” he explains. The goal: to develop an evidence-based music therapy program that would bring therapists into Alzheimer’s patients’ homes twice a week to sing and play music that helps to rebuild damaged neural connections.

**STRUMMING AND SINGING TO
OVERCOME DEFICITS**

In another study Pantelyat co-authored that was published last June in the journal *Parkinson’s Disease*, he examined the impact of six weeks of group guitar lessons on people with Parkinson’s. The “Guitar PD study,” which consisted of twice-weekly guitar lessons for six weeks, found that playing musical instruments may have positive effects on motor, emotional and cognitive deficits in people with Parkinson’s, Pantelyat says. The study found significant improvements in mood and anxiety, and showed that some improvements lasted six to 12 weeks after lessons ended.

As a direct result of that study, Johns Hopkins’ Peabody Institute, whose faculty ran the guitar

**With ongoing advances in
technology, there’s even hope
that music can be “prescribed”
to best meet an individual
patient’s needs and preferences.**

groups and partnered with the Johns Hopkins University School of Medicine on the study, now subsidizes group and individual guitar lessons, known as the PD Strummers Circle and Performance Ensemble, for people with Parkinson’s disease.

Pantelyat recently had another study published in the journal *Parkinson’s Disease* that examined the impact of a group singing intervention in patients with Parkinson’s. The 30-week trial examined the effects of singing in a weekly chorus on the voice, mood, memory and quality of life for people with Parkinson’s. One major finding is that participants saw significant improvements in their minimal voice volumes as a result of singing in a chorus.

“This is a big deal for patients with Parkinson’s disease,” Pantelyat explains. “As the disease advances, communication can be impaired by

the voice getting lower and becoming more monotonous.”

PREVENTING FALLS: THE HOLY GRAIL

Such advances are key to moving forward the mission of the new *Johns Hopkins Human Aging Project*, an ambitious initiative that is bringing together scientists and clinicians from across Johns Hopkins to work at increasing the length of time older adults spend in good health without cognitive or functional decline (see p. 9).

With ongoing advances in technology, there’s even hope that music can be “prescribed” to best meet an individual patient’s needs and preferences — a precision medicine approach that Pantelyat describes as “precision music medicine.”

One project he currently has underway uses a sensor placed on someone’s shoe that is linked via Bluetooth to a playlist in which the music plays with a metronome to the tempo of a person’s walk. The idea is that a steady rhythm will help people with movement disorders walk more steadily. The

device is being studied for various purposes across multiple research sites; Johns Hopkins is studying it for use in Parkinson’s.

In addition to improving gait, he says that patients who use the device — whether they’re partial to John Philip Sousa or the Beatles — seem to be motivated by music to exercise more. That’s important, he says, since the parts of the brain responsible for motivation are damaged by neurodegeneration. “Music can help people get back some of that motivation to move,” he believes.

“There’s early evidence suggesting that as little as 30 minutes a day, five days a week, of aerobic exercise during one month could help reduce falls in patients with Parkinson’s disease, which are a major cause of hospitalization and even death,” he says. “If we could prevent even one fall per month on average, this would be a major development because it’s not clear that there’s an intervention out there that can do that.”■

— *Marc Shapiro*



Notable News

Miller Coulson Academy
Inducts New Members

This fall, the Miller Coulson Academy of Clinical Excellence (MCACE) at Johns Hopkins inducted seven new clinicians — doctors who are the “best of the best” when it comes to providing patient care. And for the first time in the academy’s history, all of the new inductees are woman.

“It seems particularly fitting that 130 years after visionary philanthropist Mary Elizabeth Garrett provided much of the endowment to launch the Johns Hopkins University School of Medicine with the proviso that the school admit women on an equal basis with men, 100% of the MCACE inductees are women,” observes CIM Director **David Hellmann**. “I’m sure that somewhere, Mary Elizabeth Garrett is smiling.”

The new class of academy members joins 90-plus clinician members, from departments across The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center, who are all committed to establishing initiatives and programs to advance excellence in clinical care.

The 2022 Miller Coulson Academy inductees are:

Josephine Feliciano Oncology	Joanne Shay Anesthesiology and Critical Care Medicine
Thuy Ngo Pediatric Emergency Medicine	Karen Swartz Psychiatry and Behavioral Sciences
Elizabeth Reynolds Psychiatry and Behavioral Sciences	Karen Wang Gynecology and Obstetrics
Jamie Schwartz Anesthesiology and Pediatric Critical Care Medicine	

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