

NEW DISCOVERIES. NEW METHODS. NEW PATHWAYS.



PATHWAYS  
*of*  
PROMISE

THE CAMPAIGN FOR  
UMASS MEDICAL SCHOOL



***From cultivating a promising development in RNA biology to encouraging a talented first-generation college graduate to achieve their dream of a medical education, UMass Medical School stands as a place that advances, nurtures and supports Pathways of Promise.***

Our comprehensive campaign celebrates and advances the mission of this unique institution.

We will invest in outstanding scholars, physicians and scientists working to resolve daunting challenges of human disease through dynamic research and incisive discovery.

We will increase our capacity to educate tomorrow's medical, science and nursing leaders by enhancing our curriculum and expanding technologies.

And we will build upon our legacy of achievement with new partnerships and programs focused on community and global health.

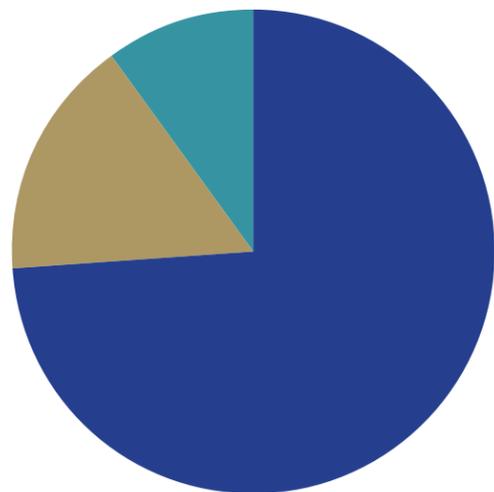
***The pathways lie before us. Here's the map.***

*Chancellor Michael F. Collins*



## THREE PRIORITIES. VAST POTENTIAL.

With an overall goal of \$250 million, the *Pathways of Promise* campaign will support the endeavors of our community across three vital areas: research, teaching and learning and community and global health. Pursuing these priorities will significantly enhance our ability to develop life-changing medicines and train the leading physicians, scientists and nurses of tomorrow.



- **Research – \$185 million**  
Investments in dynamic research collaborations on the frontiers of medicine
- **Teaching and Learning – \$25 million**  
Experiences that grow our students’ skills, empathy and confidence
- **Community and Global Health – \$40 million**  
Strengthening health systems in local communities and around the world

## RESEARCH | FROM THEORY TO THERAPY

*UMass Medical School is home to a unique community of scientists and clinicians who possess the brilliance, innate curiosity, skill and collective spirit needed to change the course of how we treat human disease.*

Our startup mentality and inspirational culture, which is deeply rooted in an exceptionally strong spirit of collaboration, create unparalleled opportunities for interdisciplinary experiments that unite the expertise of scientists across specialties — opening the door to novel discoveries and superior outcomes. Donor support will create new opportunities for investigation and provide renewed funding for ongoing efforts, bringing us closer to cures and treatments that will improve lives the world over.

The *Pathways of Promise* campaign supports investments in outstanding scholars across four areas that represent both existing strengths of UMass Medical School and promising frontiers for combating disease: RNA therapeutics, neuroscience, host defense and precision medicine.

## RESEARCH | RNA THERAPEUTICS

***Over the past 50 years, DNA research has drastically changed the way we study disease. RNA research constitutes the next phase of that revolution.*** At UMass Medical School, we have not only witnessed the tremendous promise of this revolution, we have played an active role in advancing it. The work of our researchers in manipulating RNA to inhibit gene expression, which was awarded the Nobel Prize, continues to fuel innovations in both academic research and industry.

UMass Medical School is home to the world's greatest collection of RNA scientists. Within our RNA Therapeutics Institute (RTI), they translate insights from the lab into real-world therapies for diseases that include ALS, Huntington's disease and diabetes, as well as unmet public health needs like preeclampsia.

The *Pathways of Promise* campaign will bolster our exceptionally robust RNA portfolio by supporting a greater number of world-class clinical researchers who will apply new technologies to human trials and serve their patients with compassion and skill.

### Funding opportunities in RNA therapeutics include:

- ***Funding for Master Clinician Researchers:*** RTI researchers have made significant progress around discovering new pathways for turning genes on and off; support for the campaign would enable them to bring these innovations to clinical trials.
- ***Bridge to Breakthroughs Incubator:*** An incubator would defray many of the costs associated with bringing RNA-based discoveries from bench to bedside by streamlining the process used to test new treatments within clinical settings.
- ***RNA Biology of Neurodegeneration and Aging:*** Many diseases that affect the brain, spinal cord and retina increase in prevalence with age (such as Alzheimer's and Parkinson's); this initiative would bring together physicians and researchers to identify and develop RNA-based treatments for these debilitating conditions.

## RESEARCH | NEUROSCIENCE

***For all that has been discovered about the intricate workings of the human brain, much remains a profound mystery. Unlocking that mystery has untold potential for revolutionizing how we think about and respond to conditions related to memory, learning, addiction and disease.***

Addressing the complex pathologies of the brain requires rigorous interdisciplinary collaboration; no institution is better positioned to perform that work than UMass Medical School. The campaign supports the creation of the NeuroNexus Initiative (NNI), which will function as an institute without walls. The NNI will bring together researchers from diverse disciplines who share a commitment to address the mysteries of the brain in areas that range from basic research in brain development to targeted treatments that use gene therapy to attack disease. These efforts will help lay the groundwork for innovative treatments and cures for neurological disorders.

### Funding opportunities in neuroscience include:

- ***Neuroinflammation:*** This interdisciplinary program brings together neurologists, immunologists, and microbiome researchers to address the role inflammation plays in diseases such as Alzheimer's and autism.
- ***Neurotherapeutics:*** This program would support the expert physicians and nurses — as well as the technical and regulatory infrastructure — needed to bring genetic therapies to trial for the treatment of brain and spinal cord diseases.
- ***Neurogenetics and Development:*** Support for this program would enable neurobiologists to use advanced tools and techniques to study the brain's structure and development in areas that range from learning and memory formation to compulsion and addiction.
- ***Initiative to Cure Stroke:*** This strategic alignment among experts in neurology, neurosurgery and radiology would pioneer the use of new devices and treatments for stroke patients.

## RESEARCH | HOST DEFENSE

***The Host Defense and Inflammation Initiative (HDII) represents a concerted effort by researchers who seek to better understand the body's immune system and the diseases that threaten it.*** While the study of immunology began with allergic reactions and autoimmune disorders, we now know that inflammation and immunological mechanisms play a central role in many other diseases. Within these areas lies incredible potential for new solutions to old problems, from rapid cures for infectious disease epidemics to longer, healthier lives for those affected by chronic disease.

UMass Medical School boasts an outstanding array of clinicians and researchers whose expertise spans the spectrum of immune biology, and who have developed unique capabilities — from a leading-edge program using humanized mouse models, to a partnership with MassBiologics focused on the design and production of vaccines and antibodies. We remain well prepared to lead the way in furthering our understanding of the role that the immune system plays across a range of ailments, and in developing innovative treatment solutions in response.

### Funding opportunities in host defense include:

- ***Human Disease and Immunology:*** This program combines UMass Medical School's strength in immunology with our strength in neurogenetics by forging a link between the HDII and the NNI.
- ***Immunotherapy Institute:*** Support for the Immunotherapy Institute will accelerate our ability to develop antibodies and vaccines that combat cancer, autoimmune diseases and infectious diseases.
- ***Drug Design and Resistance:*** We are adept at designing small-molecule drugs and biologics-based therapies for cancer and infectious diseases; support for advanced technology and skilled researchers will increase our impact in this area.
- ***RNA-based Solutions to Mosquito-Borne Illnesses:*** By supporting research into innovative, RNA-based solutions that impede the transmission of mosquito-borne illnesses, we hope to reduce the spread of infectious diseases such as Zika and malaria.

## RESEARCH | PRECISION MEDICINE

***Precision medicine focuses on contextual factors that affect an individual patient's expression of a disease, such as genetic variations and environmental and lifestyle factors.*** By giving care providers a broad understanding of these interrelated elements and enhancing our ability to target the root causes of illness, precision medicine yields more effective treatment options that are customized to the needs of the patient. While medical professionals are already using these techniques to develop treatments for some types of cancer, their potential extends far beyond current applications.

Through the Precision Medicine Initiative (PMI), UMass Medical School will leverage the power of precision medicine to alleviate a number of pervasive public health burdens, and to create new treatments and therapies for diseases that affect millions. The *Pathways of Promise* campaign will enable us to increase our investments as we work to make treatments more personalized and efficacious.

### Funding opportunities in precision medicine include:

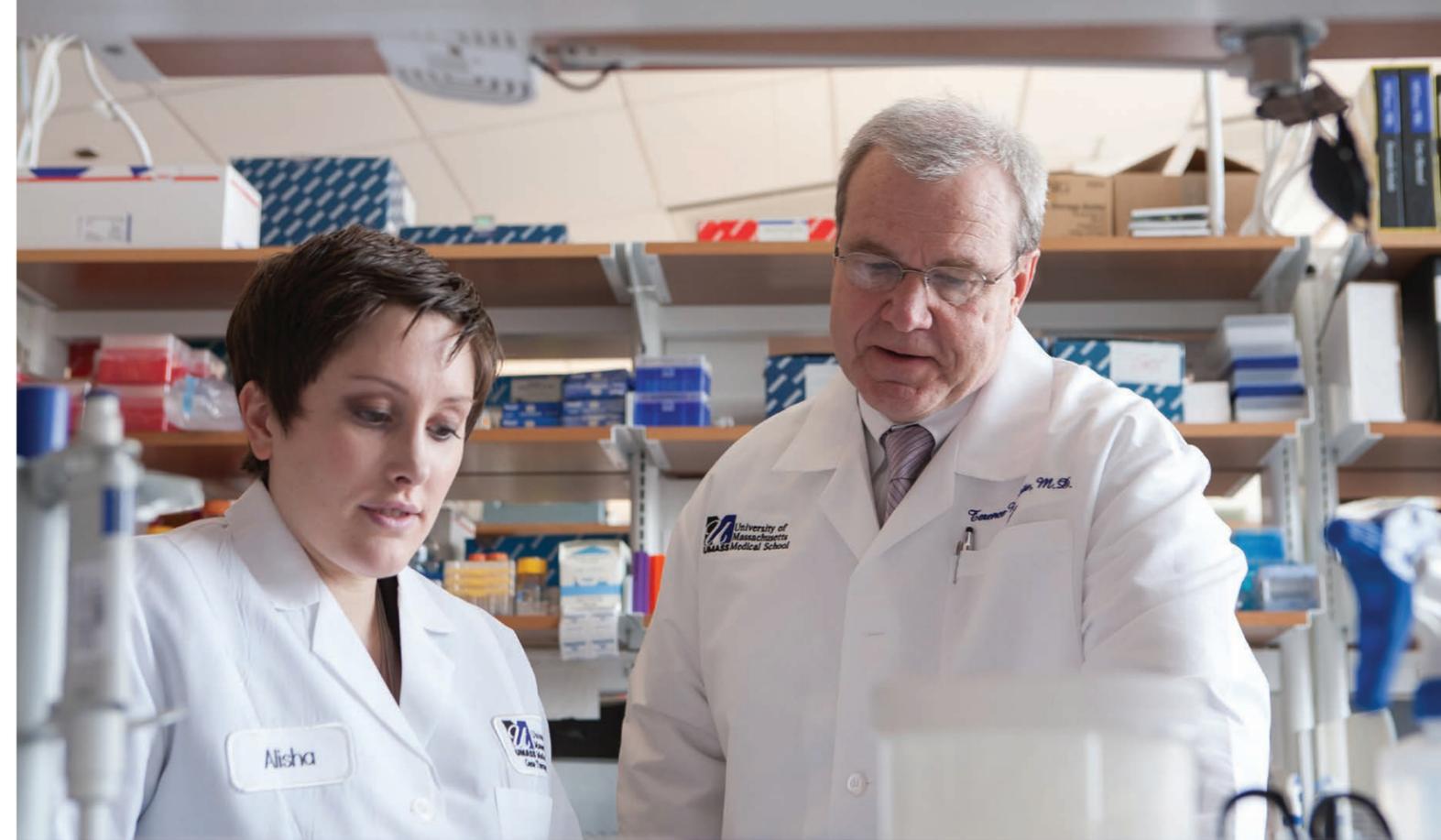
- ***Epigenetics of Human Disease:*** Epigenetics focuses on the expression of genes, rather than on the genetic code itself. Our researchers are at the forefront of this burgeoning field; support from the campaign will aid in the creation of new treatments for diseases such as developmental disorders and cancer.
- ***Precision Addiction Medicine:*** Addictions — including food, tobacco, and opioid addictions — are well suited to precision medicine solutions. With support from the campaign, our researchers will bring new targeted therapies to clinical applications.
- ***Cardiometabolic Disease Initiative:*** This program will fund precision solutions to widespread health problems such as heart disease and type 2 diabetes.
- ***Center for Microbiome Research:*** The microbiome is the unique population of microbes that live inside the human body and vary widely from person to person. Increased support for the center will fund collaborations among basic researchers and physician scientists who are working to understand how variations in the microbiome affect health and wellness.

## TEACHING AND LEARNING | COURAGE TO LEAD, POWER TO HEAL

*As the commonwealth's only public academic health sciences center – and one of the world's preeminent medical schools — UMass Medical School delivers an exceptional education that combines deep knowledge with superb and compassionate training.* Our enduring mission — to produce the scientists, advanced nurse practitioners and physicians who will lead advances in medical science, deliver compassionate and unrivaled care, and create a lasting impact on human health — remains central to who we are, and how we hope to grow.

As new technologies and discoveries transform our approach to diagnosis and treatment, our approach to education must evolve to reflect the changing landscape of medical knowledge and pedagogy. We must increase investments in experiential opportunities that strengthen students' empathy and grow their confidence, and are supported by cutting-edge technologies that simulate the conditions clinicians encounter in real-world settings. We must develop interdisciplinary, cross-professional programs that ensure our students receive an education that is both broad and deep. Finally, we must continue to invest in the students, faculty and staff at the heart of our enterprise through scholarships and endowed chairs.

Through the *Pathways of Promise* campaign, we will expand our technological infrastructure, develop new opportunities to learn and collaborate across disciplines, and attract exceptionally qualified students who are committed to making a positive, tangible difference in our local and global communities.



### Funding opportunities in teaching and learning include:

- **Expanding Interprofessional Education:** Interdisciplinary, cross-professional medical practice leads to more effective patient care and accelerated scientific progress. Investment in the campaign will support efforts to integrate these strategies more effectively across our curriculum, resulting in an unmatched educational experience for our students.
- **Fostering Experiential Learning:** Effective communication and critical decision-making are two fundamental skills required of a successful medical professional; these abilities can only be truly cultivated through a curriculum that embraces team-based and experiential learning. Through the campaign, we will improve our ability to deliver these experiential opportunities through infrastructure and programmatic enhancements ranging from an innovative virtual anatomy table to training in the safe prescribing of opioids.
- **Supporting Dedicated Teachers and Learners:** Endowed faculty chairs will enable us to recruit renowned educators who are destined to change the course of medicine and fund those positions in perpetuity; endowed scholarships will create life-changing opportunities for the students who follow them on that path.

## COMMUNITY AND GLOBAL HEALTH | LEADERSHIP ON THE GLOBAL STAGE

**UMass Medical School is committed to developing solutions for pressing public health issues — both within our local communities and on the global stage.** In 2008, UMass Medical School was the first stand-alone medical school to be classified as a “community engaged” university by the Carnegie Foundation, a national honor conferred on top institutions in recognition of their impact on the world beyond their campus. In the following year, the UMass Medical School Office of Global Health (OGH) was founded to apply the collective expertise of our community toward solving widespread health problems, improving the well-being of people around the world and training the next generation of global health innovators.

These achievements represent our long-term commitment to invest in foundational solutions for infectious disease epidemics, and to devise innovative therapies for noncommunicable conditions to benefit individuals the world over. UMass Medical School faculty members are globally recognized for their expertise in the genomics and evolutionary biology of pathogens; our translational facilities enable us to rapidly synthesize preventative and curative medicines that can help curtail — or even avert — pandemics.

Abroad, the *Pathways of Promise* campaign will support the implementation of stronger disease surveillance systems, laboratory networks and educational programs that reduce health disparities. At home, campaign-related initiatives include stronger student pipelines that engage underrepresented populations and a Global Health Scholars Program that enables students to learn and perform research within the broader context of human health. As a result, we will play a vital role in creating stronger health systems that serve disadvantaged communities worldwide, and in training the exceptional medical professionals who will assume leadership positions throughout the region and around the world.



### Funding opportunities in community and global health include:

- **Center for Clinical and Translational Science (CCTS):** The CCTS facilitates the translation of scientific knowledge from the bench to the bedside, and from the bedside to the community. Funding for pilot and preclinical research in the OGH and CCTS could significantly improve our ability to bring new products and approaches to populations that need them most.
- **Strengthening Global Health Systems:** As we witnessed firsthand during the Ebola outbreak in Liberia, marginalized populations with poor health infrastructure are disproportionately affected by infectious disease outbreaks. New investment in international research programs could focus on understanding and reducing health disparities.
- **Global Cardiometabolic Disease Initiative:** This initiative would support UMass Medical School physicians and scientists who are conducting basic discovery and translational research around the globe to solve diseases caused by obesity.
- **Global Health Scholars Program:** This program will enable fellows, residents and medical students to participate in degree programs and research projects focused on pervasive global health challenges.
- **Community Student Outreach:** UMass Medical School is engaged in outreach partnerships to promote educational programs related to STEM (science, technology, engineering and mathematics) fields and the health professions among young people from underrepresented and disadvantaged groups. The campaign will support and expand these opportunities.

## HELP US CLEAR THE PATH

The *Pathways of Promise* campaign represents an unprecedented opportunity to celebrate and strengthen the power of UMass Medical School. Our circle of support includes faculty and alumni, visionaries and private-sector partners. It comprises a diverse array of individuals who believe — as we do — in the mission of creating a better, healthier future for us all. We hope you will join us.

If you would like to learn more about the campaign or speak with someone about making a gift, please contact the Office of Advancement at 508-856-5520 or send email to [giving@umassmed.edu](mailto:giving@umassmed.edu).





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