



# Brigham Clinical & Research News

## Look Who's Talking: Research Predictions for 2024

*Each month, Look Who's Talking features voices from across the Brigham answering the same question. As we head into the new year, we asked our experts what scientific breakthroughs or discoveries they anticipate will revolutionize research or significantly impact patient care. Join the conversation by leaving your research prediction for 2024 below.*

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“In 2024, machine learning and artificial intelligence (AI) will drive significant advancements in neurosurgery and medicine. These technologies will enable the creation of personalized treatment plans by analyzing patient data, improving surgical precision and enhancing post-operative monitoring. AI-powered diagnostic tools will assist neurosurgeons in early disease detection and accurate characterization. Additionally, AI-driven data analysis in neuroscience research will uncover valuable insights, potentially leading to breakthroughs in understanding and treating neurological disorders. Overall, AI will continue to revolutionize neurosurgery, offering more effective, personalized care and advancing our knowledge of the brain.” — Omar Arnaout, MD, Neurosurgeon, Department of Neurosurgery, Brigham and Women's Hospital



“We will see a breakthrough that will allow us to efficiently update and edit generative AI models, such as large language models, so that they are safe, effective and current with clinical knowledge. This will be a major leap toward transformative clinical-AI integration because we will have more control to ensure high-quality output that adapts to new standards of care. Reliable models, refined for expert-level decision-support and education, will be key for clinical translation.” — Danielle Bitterman, MD, Assistant Professor, Department of Radiation Oncology, Brigham and Women’s Hospital and Faculty Member, Artificial Intelligence in Medicine Program, Mass General Brigham



“In 2023 there was an explosion of new cell and gene therapies for previously untreatable conditions, so I predict that 2024 will be the year that we see population genomics expand into the public consciousness and the healthcare workstream. This means that everyone can choose to have genome sequencing and analysis for themselves and their children, to help predict future risk of preventable or treatable disorders.” — Robert Green, MD, MPH, Professor, Division of Genetics, Brigham and Women’s Hospital



“In 2024, I anticipate that the Food and Drug Administration (FDA) will approve additional gene therapies for inherited disorders. I also predict artificial intelligence (AI) will be proven and adopted to help make decisions during brain surgery.” — E. Antonio Chiocca, MD PhD, Chair, Department of Neurosurgery, Brigham and Women’s Hospital



“I think in 2024, we will see a significant shift in the perceived threat of climate change as it relates to our health. A recent turning point in the field occurred at the United Nation’s Climate Change Conference, when the UAE Declaration on Climate and Health was signed by over 140 countries, including the U.S. This breakthrough at an international level will have positive ripple effects in the years to come. The declaration reinforces the urgent need to address climate change, as it will benefit planetary and human health. Such a statement bodes well for research, clinical practice and educational curricula making connections between climate change and health.” — Aterah Nusrat, MSc, DIC, Director of Programming in Integrative and Planetary Health, Osher Center for Integrative Health



“The emerging data confirming the ability of weight loss drugs to not only help people lose weight and prevent diabetes but to reduce the risk of cardiovascular disease will transform our approach and treatment of obesity as a chronic disease that is a potent, modifiable risk factor for a cardiometabolic disease. I also believe the integration of artificial intelligence into our electronic health records will have profound implications on how we communicate and care for our patients.” — Christian T. Ruff, MD, MPH, Director of General Cardiology and Senior Investigator for the TIMI Study Group, Division of Cardiovascular Medicine, Brigham and Women’s Hospital