

Afshin Beheshti, PhD

Professor at the School of Surgery and Computational and Systems Biology at University of Pittsburgh

Director of the Center for Space Biomedicine at University of Pittsburgh

Associate Director at the McGowan Institute of Regenerative Medicine at University of Pittsburgh

Afshin Beheshti, PhD is a Professor of Surgery and of Computational & Systems Biology at the University of Pittsburgh School. He serves as Director of the newly launched Space Center for Space Biomedicine and as Associate Director of the McGowan Institute for Regenerative Medicine at Pitt. In addition, Dr. Beheshti holds a visiting scientist appointment at the Broad Institute of MIT and Harvard.

Dr. Beheshti earned his PhD in physics from Florida State University in 2002 before transitioning to postdoctoral research in cancer biology, systems biology, space biology, and radiation biology. From 2006 to 2011, he was part of a NASA Specialized Center of Research (NSCOR) project focused on the cancer risks of space radiation, during which he published several influential studies. During this period, he also applied systems biology approaches to explore how aging affects tumor growth dynamics.

In 2014, Dr. Beheshti joined Tufts University School of Medicine/Tufts Medical Center as an Assistant Professor, where his research as a systems biologist centered on cancer, particularly microRNAs (miRNAs), aging, cancer drug targets, and the development of novel immunotherapies. In April 2017, he moved to NASA's Ames Research Center, contributing to the development of the **GeneLab** genomics platform. Shortly thereafter, he secured multiple research grants from NASA, the Department of Defense, and other agencies. These projects expanded his work into the roles of miRNAs and mitochondria in space biology, the development of countermeasures against space radiation and microgravity, as well as studies of COVID-19, long COVID, cancer, and the effects of high altitude on human biology.

In late 2024, Dr. Beheshti left NASA to join the University of Pittsburgh, where he was appointed Professor of Surgery and Computational & Systems Biology, Director of Pitt's new Center for Space Biomedicine, and Associate Director of the McGowan Institute. In these roles, he launched a university-wide space biomedicine initiative to explore space health issues, develop countermeasures for spaceflight-induced health risks, and create outreach/education programs in space biology. He brings leading expertise in mitochondrial function and microRNA biology to this program, bridging spaceflight research with terrestrial medicine, for example, his work on spaceflight-induced cellular changes also informs understanding of Earth-bound conditions such as long COVID.

Dr. Beheshti also leads two non-profit organizations. He is the President of the [**COVID-19 International Research Team \(COV-IRT\)**](#), an alliance he founded in March 2020 to focus on COVID-19 and long COVID research. Under his leadership, COV-IRT has produced numerous publications and brought together researchers worldwide to tackle the COVID-19 pandemic. In August 2023, he launched a second non-profit initiative aimed at democratizing access to artificial

intelligence, this effort led to the design and implementation of a free personal AI assistant named [Kwaai](#).

As a scientific leader, Dr. Beheshti has spearheaded several high-impact collaborative projects. He was one of the leads of the [Space Omics and Medical Atlas \(SOMA\)](#) project, a partnership with *Nature* Portfolio that coordinated the largest-ever collection of space biology papers. This global effort involved over 100 institutions across more than 25 countries and resulted in a comprehensive compendium of manuscripts, data, protocols, and tools for aerospace medicine and space biology. Dr. Beheshti contributed to 22 papers in the SOMA collection (serving as senior author on nine), and his contributions were pivotal in securing a cover feature for the August 2024 issue of *Nature*, which highlighted several of the project's studies (including one of his as senior author).

Currently, Dr. Beheshti also leads the **Human Adaptation to Spaceflight** study, a NASA-funded international collaboration examining health data from more than 70 astronauts over 12 years of International Space Station missions. This project, one of the most comprehensive longitudinal studies of space health, aims to determine the key factors that impact astronauts during long-duration space travel (such as bone loss, cardiovascular and renal issues, circadian rhythm disruptions, potential cancer risks, and ocular disorders) and to develop strategies to mitigate these risks. Notably, his team is integrating advanced machine-learning techniques to predict potential therapeutics that could target the biological changes caused by spaceflight, in order to counteract spaceflight-induced metabolic and molecular disruptions.

In addition to his space-related work, Dr. Beheshti remains at the forefront of biomedical research on Earth. One recent study he is co-senior author of in December 2024 in *Proceedings of the National Academy of Sciences (PNAS)* elucidated how COVID-19 causes widespread organ damage. This study showed that SARS-CoV-2 infection disrupts mitochondrial function and over activates the renin-angiotensin-aldosterone system (RAAS), triggering a cascade of inflammation that damages multiple organs. These findings helped explain the mechanisms behind severe COVID-19 and long COVID and pointed to new therapeutic targets for preventing or mitigating such outcomes. The project exemplified Dr. Beheshti's collaborative approach: as president of COV-IRT, he convened a multi-institution team (including researchers from Johns Hopkins, the Children's Hospital of Philadelphia, Weill Cornell Medicine and others) to tackle this complex study.

Dr. Beheshti's contributions have earned him wide recognition and numerous honors. His awards include the **International Space Station Research & Development Award for Compelling Results in Biology** (from the American Astronautical Society and NASA), the **NASA Exceptional Scientific Achievement Medal**, the **"One KBR" Award**, and the **NASA Outstanding Service Award** (NASA Ames Safety Award Program II).

Outside of work, Dr. Beheshti is also an avid musician. He performs with a Boston-based band called [Medical Maps](#), which released an album titled *That is That* in 2023 (available on their [Bandcamp page](#)).