Mercoledì 20 Novembre 2024 – ore 10.30
Sala del Chiostro - Facoltà di Ingegneria Civile e Industriale
Via Eudossiana 18 - 00184 Roma

Il CRAS (Centro Ricerche Aerospaziali Sapienza) e lo Space Biomedicine Laboratory Sapienza University – Thales Alenia Space presentano il

Prof. **AFSHIN BEHESHTI**

Director, Space Biomedicine Program, University of Pittsburgh, Pittsburgh, PA
Principal Investigator, NASA Ames Research Center, Mountain View,
Director of the Space Biomedicine Program, NASA Ames Research Center

«Mitochondrial Stress as the Epicenter of Spaceflight Impact and microRNAs as Promising Countermeasures»

Saluti di benvenuto: **Prof. Carlo Massimo Casciola** – Preside Facoltà Ingegneria Civile e Industriale

Presenta: **Prof. Francesco Nasuti** – Direttore CRAS
Introduce: **Prof. Mariano Bizzarri** – Direttore Space Biomedicine Laboratory Sapienza-TASI
Interviene: **Ing. Mario Cosmo** – Direttore Scientifico ASI

CRAS Centro Ricerca Aerospaziale Sapienza

SBGLab System Biology Group

ThalesAlenia Space

BIOGRAPHICAL SKETCH

In my current research, I explore a broad spectrum of scientific domains, including COVID-19, cancer, space biology, cardiovascular systems, and radiation biology. My primary focus lies in unraveling the intricate interplay between microRNAs (miRNAs) and mitochondria within these realms, leveraging these systems to advance the development of biomarkers and therapeutic interventions. With expertise in systems biology, I seamlessly integrate computational (e.g., AI/ML tools) and wet lab methodologies, enabling a comprehensive investigation of these diverse research areas. During my tenure as part of a NASA NSCOR-funded grant (2006-2011), I researched and published findings on cancer risk attributed to space irradiation. I also applied a novel systems biology approach to understand the impact of aging on tumor growth dynamics. Upon joining the faculty at Tufts University School of Medicine, I expanded on this foundation, identifying a miRNA signature associated with lymphoma and employing bioinformatics to elucidate key molecular changes influencing lymphoma, resulting in multiple manuscripts. My involvement in the NASA GeneLab project from 2017 to 2020 contributed to the development of the NASA omics platform for public access. Utilizing publicly available omics data, I have generated hypotheses to decipher biological responses to spaceflight. Supported by funding from diverse sources, including NASA and the Department of Defense (DoD), I continue to explore the multifaceted influence of miRNAs and mitochondria on space biology, cancer, and COVID-19. Additionally, I have taken on leadership roles in the nonprofit sector, founding and leading the COVID-19 International Team (COV-IRT) a consortium of 200+ scientists dedicated to collaborative research on COVID-19, and Kwaai AI, a new nonprofit focused on democratizing AI and creating a free personal assistant for global use. As the President of the COVID-19 International Research Team (nonprofit), we have conducted comprehensive investigations into COVID-19 and long COVID, covering mitochondrial biology, inflammation, modeling, miRNAs/ncRNAs, and tool development. Throughout my extensive research journey, I have employed a diverse array of methodologies, including systems biology approaches, AI/ML computational tools, multi-omics analysis and pipelines, spatial RNA-seq, mitochondrial research and assays, miRNA research, in vivo models, normal and cancer stem cells, exploration of DNA double-strand breaks in relation to cancer progression, investigation of cell fusion and developmental processes, and exploration of radiation effects on tumor progression and initiation. Starting in September 2024, I joined University of Pittsburgh as Professor of School of Surgery, Director of the Space Biomedicine Program, and Associated Director of the McGowan Institute for Regenerative Medicine. This position will allow me to further integrate my expertise in radiation biology, space biology with my ongoing research in miRNAs, AI/ML, and mitochondrial function. By leveraging my diverse skills, expertise, and experience, I am well-positioned to provide strong leadership and guidance for various projects. This will drive our understanding for development of novel radiation countermeasures strategies to allow for quick and efficient response to mitigate health risks that will arise to radiation exposure. Below are a few publications that underscore the depth and breadth of my work.