



## Benam Lab at University of Pittsburgh is Recruiting **Postdoctoral Fellow!**

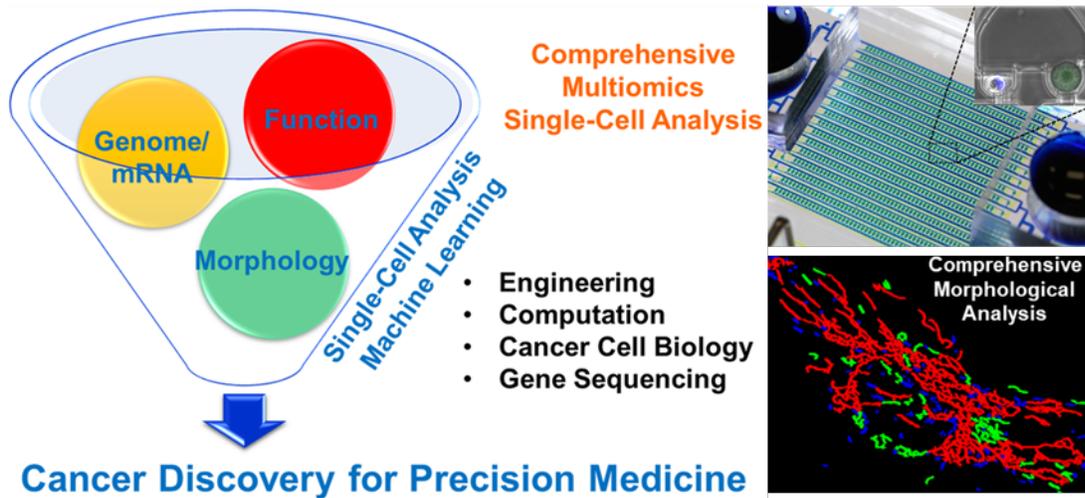
Our lab (<https://benamlab.net/>) applies a **multidisciplinary** approach to design and develop **bio-inspired technologies** (e.g., **Organs-on-Chips**) that enable us to elucidate cellular and molecular mechanisms that govern tissue pathology or offer protection during **lung injury, infection and inflammation**. Our research lies at the intersection of **respiratory medicine, immunomicrobiology, tissue engineering, and systems and synthetic biology**. Ultimately, our goal is to **discover novel druggable targets and personalized diagnostics** using microengineered systems that recreate complex human organ pathophysiology in vitro. We pursue **high-risk research**, are **translationally focused**, and thrive to **positively impact human health and our society** through our discoveries.

We are **immediate opening** for a talented and enthusiastic candidate to join our lab as **Postdoctoral Research Fellow**. The candidate will advance our **Lung and Immune Organ Chip** models and apply them for **discovery, drug development and understanding of disease biogenesis processes**.

Interested and would like to learn more? Then contact **Dr. Benam** at [kambez.benam@pitt.edu](mailto:kambezenam@pitt.edu).

## Chen Lab - Single-Cell Analysis and Deep Learning for Cancer Precision Medicine

Due to genomic and epigenetic instability of cancer cells, inter-patient and intra-patient heterogeneity in tumors creates formidable challenges in identifying optimal treatments. To address the challenges, we aim to establish comprehensive high-throughput multi-omics single-cell analysis including genome, epigenome, transcriptome, proteome, functional, and morphological methods. With large amounts of data collected from high-throughput single-cell multi-omics analysis, machine learning techniques can predict patient prognosis and suggest treatments for precision medicine. The integrated approach will change how we understand and treat cancer and ultimately improve outcomes for patients.



### Contact

Yu-Chih Chen Ph.D.

E-mail: [cheny25@upmc.edu](mailto:cheny25@upmc.edu)

**We are recruiting both PhD students and postdocs.**



## **NTE Laboratory**

The [Neural Tissue Electrode Interface and Neural Tissue Engineering Laboratory](#) at the University of Pittsburgh is directed by Professor Tracy Cui. Our research focuses at the interface between neural tissue and smart materials and implantable devices. Several fields of technology innovation require the fundamental understanding of such interfaces, including neural interface technologies, neural tissue engineering, implantable biosensors and drug delivery. Our overarching goal is to achieve high quality, stable and long-lasting neural interface by seamlessly integrating the device within the host tissue. We develop comprehensive multimodal analysis to characterize the biological and material changes at the interface, and use the findings to guide the design of functional materials and devices that will intimately integrate with the host neural tissue and effectively perform the intended functions including neural recording and stimulation, chemical sensing and drug delivery.

The NET lab has both graduate and postdoctoral positions open immediately. We welcome candidates who strong research background and training experiences in some of the following areas: biomaterials, microfabrication, electrophysiology, molecular and cellular neurobiology, confocal and 2 photon imaging. Interested candidates should contact Professor Tracy Cui ([xic11@pitt.edu](mailto:xic11@pitt.edu)). Detailed information can be found on the NTE Laboratory website: <https://www.engineering.pitt.edu/cui/>.





University of  
Pittsburgh

**Research Engineer Position  
Department of Orthopedic Surgery**

Description

The department of Orthopedic Surgery at the University of Pittsburgh is seeking a qualified Research Engineer. The position of Research Engineer is located in the Orthopedic Robotics Laboratory. The Research Engineer will primarily be responsible for the design, development, and implementation of new programs, fixtures, and protocols associated with the robotic equipment in the Orthopedic Robotics Laboratory. The Research Engineer will coordinate and manage research projects, organize and oversee the daily and special activities of the laboratory, manage the laboratory space, advise and train new laboratory members, integrate hardware and software into the laboratory, troubleshoot equipment and software, develop protocols process and analyze data, and assist laboratory-affiliated investigators in the analysis of their data, dissemination of their scientific findings, and the planning of new research. Given that the candidate will be responsible for all aspects of running a robotics testing system and other pieces of testing equipment, the candidate must have technical knowledge of robotic and materials testing equipment and must be familiar with kinematic and kinetic data in order to analyze the function and stability of diarthrodial.

Qualifications

Master's of Science degree in an engineering or biomechanics-related discipline and a minimum of 2-3 years of experience working in a biomechanics laboratory with materials testing and robotic equipment is required. Equivalent combination of relevant education and experience may be substituted for degree requirement. Must have working knowledge of various software packages used in the collection, processing and analysis of biomechanical data, e.g. Labview, Matlab, statistical analysis packages. Must have excellent communication and organizational skills. Must be self-motivated, independent and work well in a group. Must have technical knowledge of robotic and materials testing equipment.

Applications can be submitted at the University of Pittsburgh Talent Center:

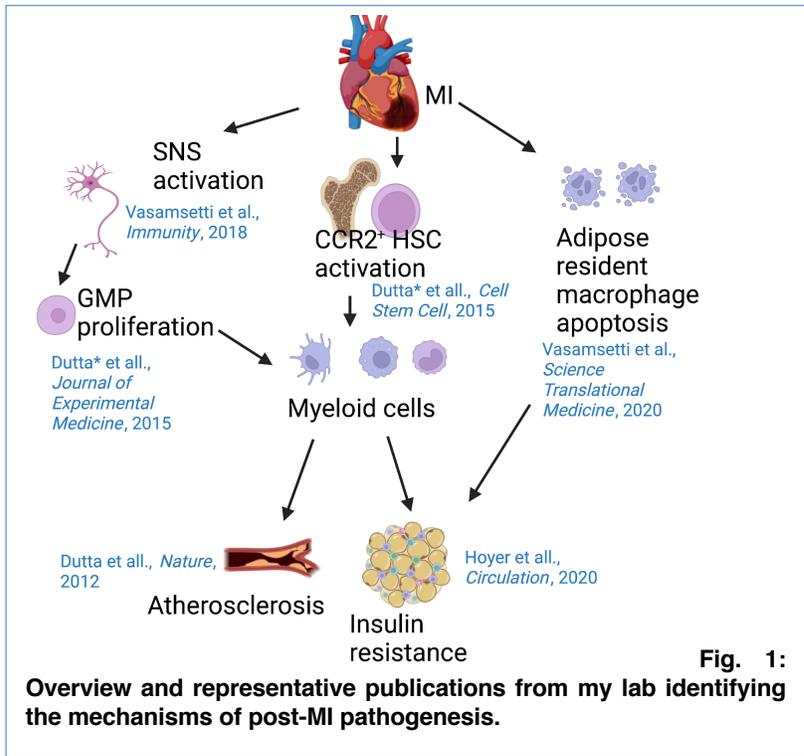
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## Human Engineering Research Laboratory

The [Human Engineering Research Laboratories \(HERL\)](#) within the VA Pittsburgh Healthcare System and the University of Pittsburgh, is seeking a highly motivated, goal-oriented and hard-working candidate at PhD or Postdoctoral level to work on a funded research project on biomechanics of walking with a knee exoskeleton in people with knee osteoarthritis. The position will work with an interdisciplinary team of engineers and clinicians at HERL and at the James J Peters VA Medical Center at Bronx, NY. The candidate should have a MS or PhD in biomedical/mechanical engineering or movement sciences, experience in gait biomechanics, proficiency in computer programming languages, excellent written, spoken, and interpersonal communication skills, and strong research publication record. Experience with musculoskeletal modeling systems (e.g., OpenSim) and working with patient populations is preferred but not required. Please email Dr. Dan Ding ([dad5@pitt.edu](mailto:dad5@pitt.edu)) your application including your CV, a cover letter describing background and relevant experience and contact information for three references.



Building on our original discoveries (Fig. 1) and reports in the literature, we have recently proposed that inflammatory cells produced after myocardial infarction (MI) play pivotal roles in post-MI pathogenesis. Exaggerated inflammation in patients with MI has been linked to reinfarction and heart failure in mice and humans. Cardiac macrophages play seminal roles in post-MI inflammation and cardiac remodeling. The molecular mechanisms of exaggerated inflammation mediated by these macrophages are not well understood. Different pathways of cellular metabolism, such as fatty acid oxidation and oxidative phosphorylation, can modulate inflammatory cell function. However, little is known about how cellular metabolism in cardiac macrophages affects inflammation and cardiac remodeling. Here we propose to investigate the mechanisms by which various metabolic pathways, such as mitochondrial oxidation, mitochondrial biogenesis, fatty acid synthesis, and fatty acid oxidation, dictate macrophage-induced inflammation in the heart, and cardiac fibrosis and function after MI.





# Bio-Integrating Optoelectric Neural Interface & Cybernetics Lab

*Integrating Innovation with Imagination* @ University of Pittsburgh, Department of Bioengineering.

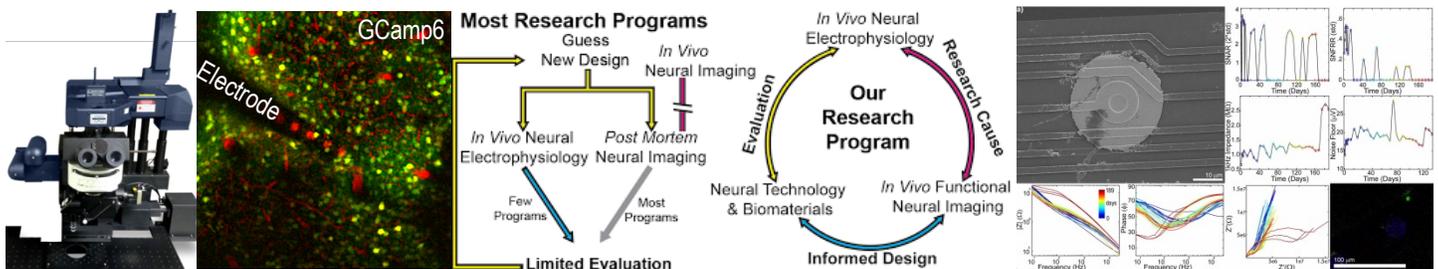
We are a collaborative team of engineering scientists that are pioneering the frontier at the intersect of neurophysiology and neural interface technology

The goals of the lab broadly fall into three categories:

(1) Manipulation of neuronal and non-neuronal cells to influence the function of neuronal networks, and understanding how to read from or write to the brain, (especially understanding what information is "lost-in-translation" between the brain and the interface),

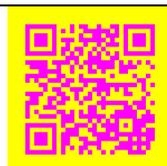
(2) Improving long-term performance of implanted electrodes and integrating man-made (engineered) technology with the human brain for the purpose of studying normal and injured/diseased nervous systems in vivo at the cellular level, as well as restoring function to patients,

(3) Understanding the role of neuroimmune cells in neuronal damage and regeneration, and using engineering approach to understand the mechanisms behind neurodegenerative diseases as well as exploring new treatments. (Multiple Sclerosis, Alzheimer's, Autism)



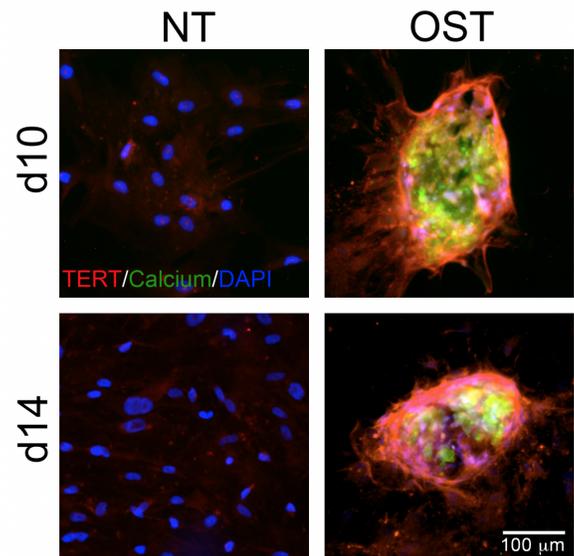
**Recruiting Graduate Students and Postdocs** Please send a CV and a one-page letter stating why you are interested in joining the lab, and what you hope to gain from the experience. Student expectations are outlined <https://www.bioniclaboratory.org/job-opportunities/lab-contract>

**Professor Takashi Kozai** ([tdk18@pitt.edu](mailto:tdk18@pitt.edu)).





The St. Hilaire Laboratory's research focuses on identifying and characterizing the mechanisms underlying the development of vascular and valvular calcification pathologies, with specific interest in defining the mechanisms by which inflammation and mechanical stress drive the transformation of a healthy cells into calcifying cells. Ongoing projects aim to understand how human mutations in the gene *NT5E/CD73* lead to lower-extremity non-atherosclerotic vascular calcification; the role of CD73 and adenosine signaling in mediating mechanical stretch signaling that regulate extracellular matrix homeostasis and vessel tortuosity; the role of non-canonical telomerase in osteogenic transition of cells in calcific aortic valve disease (CAVD), and the role of neutrophil extracellular traps (NETs) in initiating CAVD pathogenesis. Dr. St. Hilaire has an interest in recruiting a student or postdoctoral fellow who would work to develop 3D cell culture models/organoids of aortic valve leaflets for disease modeling.

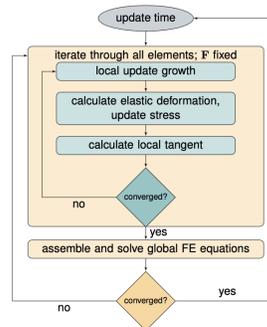
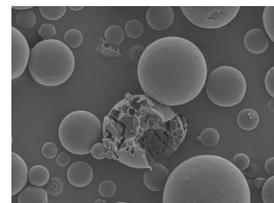
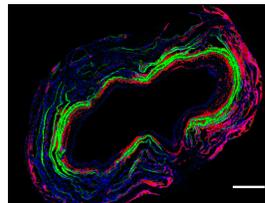




## Postdoctoral Research Associate and PhD Student Positions

Soft Tissue Biomechanics Laboratory ([www.stblvandegest.com](http://www.stblvandegest.com))  
University of Pittsburgh

The Soft Tissue Biomechanics Laboratory at the University of Pittsburgh seeks a Postdoctoral Research Associate and/or predoctoral student to advance computational models of vascular growth and remodeling. In close collaboration with a large interdisciplinary team, we are developing a fully biodegradable tissue engineered vascular graft that is compliance matched at implantation and utilizes a novel drug delivery approach to promote compliance maintenance in-vivo. A tightly integrated in-vitro and in-vivo (small and large animal) approach will be used to develop and test the predictive capabilities of a novel multiphysics model (solid, fluid, transport) that incorporates drug delivery and cellular response. This postdoctoral associate will have access to high performance computing resources as well as intravital in-vitro and in-vivo experimental data for validation and predictive studies. As a member of this research project, the postdoctoral associate will work in a collaborative and interdisciplinary group of scientists and clinicians from the Vascular Medicine Institute (VMI) and McGowan Institute for Regenerative Medicine (MIRM), including but not limited to Drs. Steven Little, William R. Wagner, Kang Kim, and Edith Tzeng.



$$t_{n+1} = t_n + \Delta t$$

$$\dot{\vartheta} = f(t, c, \text{tr}(\mathbf{M}^e)) \Rightarrow \vartheta$$

$$\mathbf{F}^e = \mathbf{F} / \vartheta; \quad \mathbf{S}(\mathbf{F}, \mathbf{F}^e)$$

$$\mathbb{L}_i = \mathbb{L}_i^e / \vartheta^4 + \dots$$

$$\nabla \cdot (\mathbf{F}\mathbf{S}) = 0;$$

$$\hat{\mathbf{K}}^* = \mathbf{A}_{i=1}^m \mathbb{L}_i$$

$$\hat{\mathbf{K}}^* \Delta \mathbf{p} = -\Psi \Rightarrow \mathbf{u}, \mathbf{F}, \mathbf{S}$$

Candidates for the Postdoctoral Associate position must hold a PhD in Biomedical Engineering, Mechanical Engineering, Applied Mathematics, Computer Science or a related field. A strong background in computational modeling and soft tissue growth and remodeling is desired.

Applicants interested in the postdoctoral position should apply to requisition number 22001022 at Pitt Talent Center by visiting <https://www.join.pitt.edu>. Interested individuals should submit: (1) CV, (2) statement of research interest and purpose, (3) unofficial copy of full UG and Grad transcripts, (4) email and phone number for three references. This position will remain open until filled. Undergraduate seniors interested in the PhD student position should apply here: <https://www.engineering.pitt.edu/graduateapplications>

The Department of Bioengineering is fully committed to a diverse academic environment, and we place high priority on identifying female and underrepresented minority candidates.

The University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer and values equality of opportunity, human dignity and diversity. EOE, including disability/vets

The University of Pittsburgh requires all Pitt constituents (employees and students) on all campuses to be vaccinated against COVID-19 or have an approved exemption. Visit <https://www.coronavirus.pitt.edu/> to learn more about this requirement.