

PHT180 News: Winter 2026

Upcoming Events

Grant Workshop: Writing Competitive NIH Proposals

Thursday, January 29 | 12-1:30pm | Simone Center for Innovation (SIH-1600)

PHT180 invites you to join us for our upcoming grant workshop focused on writing competitive NIH grant proposals. The workshop will begin with an overview and strategies for NIH proposals, followed by a panel discussion featuring perspectives from a research administrator, early stage investigator, and established investigators, and a Q&A session. Lunch will be provided!

Please RSVP by January 21: <https://forms.gle/LemsFqZ5U1ivmt7D7>

Join us to hear from our panelists on their experiences with NIH!



Terry Koo

Assistant Director, Proposal
Development
Sponsored Research
Services



Zhiqiang Tao

Assistant Professor
School of Information



Tom Gaborski

Department Head
Department of Biomedical
Engineering



Linwei Wang

Bruce B Bates Professor
Department of Computing
and Information Sciences
PhD

PHT180 Website

PHT180 has added general research areas to our website to showcase the research interests of our faculty and make it easier for potential collaborators to find faculty with a certain expertise. The research areas, as well as a list of affiliated faculty within each area, can be found on our [Healthcare Research](#) and [Affiliated Faculty](#) pages.

If you would like to update your research areas, please email pht180@rit.edu.



Accessibility

Accessible technology, physical interventions and therapies

Dan Phillips, KGC OE



Intelligent Systems

AI, ML, data science, imaging

Linwei Wang, GCCIS



Behavioral Health

Telehealth, web and mobile interactive platforms, mental and behavioral health

Pamela Beach, CHST



Biotechnology

Bioengineering, tissue engineering, fluid mechanics, medical devices

Karin Wuertz-Kozak, KGC OE



User Experience Design

Interactive user engagement, design, human-computer interaction, data visualization, marketing

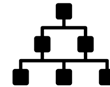
Adam Smith, CAD



Social and Human Computing

Language science, human factors, public health, psychology

Esa Rantanen, CLA



Systems, Processes, and Workflows

Data analytics, healthcare systems, information science, economics

Chris Bondy, GCCIS



Fundamental/Basic Science

Drug development, chemical synthesis, computational and mathematical biology, biochemistry, biophysics

Andre Hudson, COS

Featured Research

Did you know that PHT180 features the research of affiliated faculty on our [Healthcare Research](#) page? If you would like your research featured on our website, please email Gina Lamanna at pht180@rit.edu.

New Research Awards



PI: Kathleen Lamkin-Kennard, Associate Professor, Department of Mechanical Engineering

Sponsor: NSF

Project: BRITE Relaunch: Toward a Broad Framework for Modeling and Control of 3D/4D Fiber-Reinforced Actuators with Embedded Sensing

The field of soft robotics offers significant potential for advancing how robots interact with humans. Soft, fiber based, pneumatic artificial muscle (PAM) actuators have been around since the 1950s. However control remains challenging due to inadequate models of the nonlinear mechanics associated with the actuators. Furthermore, although many novel designs have been presented in the literature, each PAM is often slightly different.

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and characterize a custom fiber-based pneumatic artificial muscle (PAM) actuator with integrated strain sensing fibers; to develop a finite element model (FEM) of the PAM actuator and use model predictions and experimental data to train a Physics-informed neural network (PINN) model; and develop and implement a PINN based control strategy using the PINN model and feedback from strain sensing fibers.

PI: Stefan Schulze, Assistant Professor, School of Life Sciences

Sponsor: NSF/Virginia Polytechnic Institute and State University

Project: Unraveling nickel delivery pathways in methanogenic archaea

Methanogenic archaea are microorganisms which rely on anaerobic respiration, reducing simple oxidized carbon compounds to generate methane. Their role in global carbon cycles, as well as their biotechnological potential, render them promising candidates for metabolic engineering. Nickel-dependent enzymes in methanogens play key roles at the interface of energy metabolism and carbon assimilation. Thus, controlling the availability and delivery of nickel represents an innovative approach to direct metabolism toward the production of desired molecules. Therefore, we will combine genetics, biochemical characterizations, and quantitative proteomics to gain a system-wide understanding of nickel homeostasis, and to identify key players, such as metallochaperones that deliver nickel to specific enzymes. In addition, phenotypic analyses will provide insights into how metabolic pathways can be steered through genetic engineering and controlling the availability of metal ions.



National Institutes
of Health

PI: Benjamin Chin, Assistant Professor, Center for Imaging Science

Sponsor: NIH

Project: Accommodation to polychromatic stimuli

The human eyeball contains a crystalline lens made of transparent fibers. This lens focuses light entering the eye, allowing us to see clearly. As we shift our gaze between objects at different distances, muscles in the eye rapidly adjust the thickness of the lens to bring these objects into focus. This process is known as visual accommodation, and is similar to the auto-focus of a camera. Prior to middle age, visual accommodation is effortless for most people. Although accommodation feels effortless, its underlying processes are in fact highly complex, involving signals from the brain that are not well-understood by science. The goal of my research is to better understand these processes. I work towards this goal by investigating how different shapes and colors of objects affect

accommodation in the eyes of paid volunteers. Then, I use the resulting data to build computer models of the eye as it accommodates.

PI: Stefan Schulze, Assistant Professor, School of Life Sciences

Sponsor: NIH

Project: Elucidating the roles of protein glycosylation in prokaryotes through functional glycoproteomics

Protein glycosylation, the attachment of carbohydrates to proteins, is crucial for a multitude of cellular processes across all domains of life. Yet, for most bacteria, little is known about which proteins are glycosylated, and how this modification affects processes that are crucial for bacterial pathogenicity. Using the opportunistic pathogen *Pseudomonas aeruginosa* as a model system, we have shown that protein glycosylation impacts both biofilm formation and antibiotic resistance. Following up on these fascinating preliminary results, we will use a combination of proteomics, bioinformatics, and cell biological assays, to gain a functional, system-wide understanding of glycoproteins in this bacterium. The results of this project will allow us to elucidate which glycoproteins play crucial roles in the formation of biofilms and in withstanding antibiotics, and in turn will provide targets for new biomedical treatment approaches.

PI: Linwei Wang, Bruce B Bates Professor, Department of Computing and Information Sciences PhD

Sponsor: NIH

Project: Elucidating 3D Constructs of Reentrant Circuits via a Novel Noninvasive Hybrid-AI System

Life-threatening episodes of ventricular tachycardia (VT) are often caused by a reentrant circuit situated in 3D within the heart wall. While this reentrant circuit can be targeted by catheter ablation to treat VT, the current decision support for catheter ablation relies on a 2D interpretation of the reentrant circuit on one surface of the heart. This research will develop a one-of-its-kind hybrid-AI system to augment VT ablation by elucidating the 3D construct of scar-mediated reentrant circuits using noninvasive data routinely available in standard of care.

PI: Haibo Yang, Assistant Professor, Department of Computing and Information Sciences PhD

Sponsor: NIH

Project: Optimizing Nanobody Sequence Design through Multi-Objective Engineering

Nanobodies, small single-domain antibodies, are a leading class of protein therapeutics for treating cancer, autoimmune disorders, and infectious diseases. The global antibody market is projected to reach \$266.83 billion in 2024, with an anticipated annual growth rate of 8.1% from 2024 to 2033. However, the success of nanobody therapeutics heavily depends on the developability of nanobody sequence design, which must simultaneously achieve multiple critical physicochemical and biological attributes such as affinity, stability, selectivity, and solubility. Any inadequacy in one of these attributes can lead to the failure of nanobody therapeutic development, making the design process particularly challenging. Optimizing these attributes simultaneously poses a significant scientific challenge due to inherent trade-offs—improving one attribute often compromises others. In this project, we propose leveraging multi-objective learning to improve the nanobody sequence design.

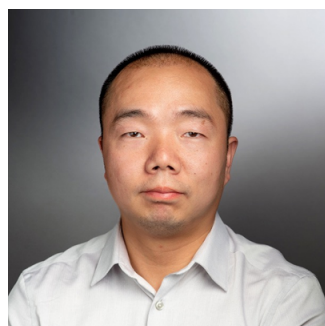
Welcome New Affiliates!



Christian Bean

Assistant Professor
Department of Psychology

Research Areas: Depression risk, emotion regulation, perinatal mental health, ecological momentary assessment/experience sampling, passive mobile sensing



Zhongwang Dou

Assistant Professor
Department of Biomedical Engineering

Research Areas: Cerebral aneurysm hemodynamics, valvular heart disease and flow structure interaction, thrombosis and aspiration device



Pritam Ganguly

Assistant Professor
School of Chemistry and Materials Science

Research Areas: Small molecule therapeutics targeting cross-seeding in protein aggregation in neurodegenerative diseases, peptide-surface interactions for drug delivery and antimicrobial applications, thermodynamic stability of proteins in multicomponent cosolute mixtures



Maggie Manges

Assistant Professor
Department of Psychology

Research Areas: LGBTQ+ community and serious mental illness (SMI), risk factors, sexual violence, suicide, substance use, bullying, prevention, intervention development, implementation



Marcello Maniglia

Assistant Professor
Department of Psychology

Research Areas: Translational vision research and neural plasticity, behavioral training interventions for macular degeneration, tablet-based visual assessments, accessibility of eye exams, non-invasive brain stimulation and VR, visual training, simulating central vision loss



Yiming Tang

Assistant Professor
Department of Software Engineering

Research Areas: Software logging, software privacy, empirical software engineering, healthcare application logs



John Thomas

Assistant Professor
Department of Electrical and Computer Engineering Technology

Research Areas: Neural Signal Processing, Brain–Computer Interfaces, AI & Deep Learning, Neurological Disorders, Scalp & Intracranial EEG, Neurotechnology, and Neurostimulation, Health AI

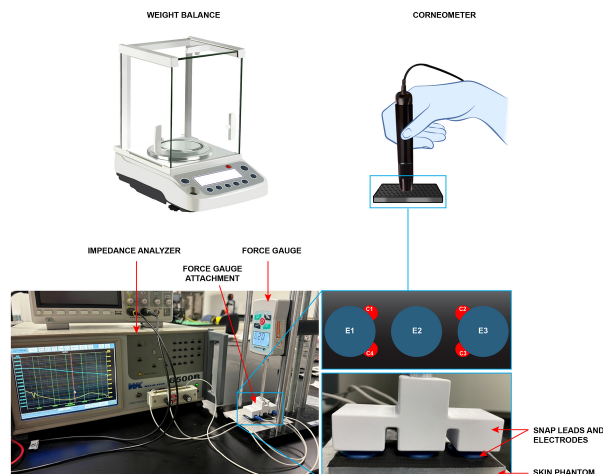


Julie Thomas

Associate Professor
School of Life Sciences

Research Areas: Bacterial viruses (phages), phage genetics, genomics and proteomics, virion structure and assembly, phage infection mechanisms, wet bench basic research

Illustrations



Charlie Flock created an illustration for **Krittika Goyal** for her manuscript that is currently under review.

Affiliate Highlights

Other Awards and Honors

- ◆ **Lea Michel** (Professor, School of Chemistry and Materials Science) received the Maryann Mendel Award for Volunteer Service to the Rochester Section of the American Chemical Society.
 - ◆ **Xiangcheng Sun** (Assistant Professor, Department of Chemical Engineering) has been selected as a Scialog Fellow in the Sustainable Minerals, Metals, and Materials initiative.
 - ◆ **Karin Wuertz-Kozak** (Harvey J. Palmer Professor, Department of Biomedical Engineering) was named one of five new deputy editors for the *European Spine Journal*.
 - ◆ **Amlan Ganguly** (Department Head, Department of Computer Engineering) received a small business grant through NSF's SBIR/STTR program for the company DHICHIPS INC.
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PHT180 Affiliates in the News

- ◆ **Kristoffer Whitney** (Associate Professor, Department of Science, Technology, and Society) co-published the article "Crabs, cures and conservation" in *The Biologist* about the biomedical use of horseshoe crabs.
<https://thebiologist.rsb.org.uk/biologist-features/crabs-cures-and-conservation>
- ◆ **Rebecca Houston** (Associate Professor, Department of Psychology) was featured on RIT Research Minute for her work on the neuroscience of addiction.
https://www.youtube.com/watch?v=_y1SxZF1ANA

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