COLLABORATIVE
COLLISION @FSU

COVID-19

April 10th, 2020

Office of Research Development
ORD.FSU.EDU

COLLABORATIVE COLLISION @FSU

Thank you to all who attended this event, whether as presenters or just listening in. This PowerPoint presentation is being sent to all those who registered for the event today, along with a spreadsheet of contact information.

If there is anything else the Office of Research Development can do to help facilitate conversations, or help develop your projects, please do not hesitate to reach out to us.

Mike Mitchell
Program Manager
Strategic Initiatives and
Proposal Development

Mike.mitchell@fsu.edu

Beth Hodges
Director
Office of Research Development

bhodges@fsu.edu

COLLABORATIVE COLLISION @FSU

Welcome Remarks
Dr. Gary Ostrander
Vice President for Research

Collaborative Collision Overview
Mike Mitchell
Program Manager for Strategic Initiatives and Proposal Development

Participant Presentations
FSU Researchers and Community Partners

Closing Remarks
Beth Hodges
Director, Office of Research Development

How Collaborative Collision Works

- All participants are muted, and chat is disabled.
  - If there is an urgent issue, please email mike.mitchell@fsu.edu

- Presenters have the option to enable or disable their own video.

- Each presenter has three minutes to discuss their background, and COVID-19 project.

- Host will unmute presenters when it is their turn, and re-mute them when their time is up.

- All participants will receive a copy of the presentations, and a list of all those who attended with contact information.

- ORD will facilitate discussions after the event

Order of Presenters

1. Qinchun Rao
2. Robert Tomko Jr. (Robb)
3. Shawn Kantor
4. Jingjiao Guan
5. Yuan Wang
6. Angelina (Gina) Sutin
7. Bruce R. Locke
8. Branko Stefanovic
9. Kristina Buhrman
10. Hengli Tang
11. Joe Schlenoff
12. David G. Meckes Jr
13. Laura Reid Marks
14. Gregg Stanwood
15. Bill Weissert
16. Yue Julia Wang
17. Hongyuan Cao
18. Guangxin Ni
19. Jamel Ali
20. Katrinell M. Davis
21. Leslie Powell-Boudreaux

21. Zhe He
22. Kelly Farquharson
23. Shuyuan Mary Ho
24. Xiuwen Liu
25. Jonathan Dennis & Juan R. Reza
26. Frankie Wong
27. Gordon Erlebacher
28. Amanda Driscoll
29. ExpertNet
30. Alva Striplin
31. Jose Renato Pinto
32. Krissy Capitano
33. Machelle Madsen Thompson
34. Richard Nowakowski
35. Svetlana Pevnitskaya
36. Anke Meyer-Baese
37. Zucai Suo
38. Yanshuo Sun

Qinchun Rao

Dept. Nutrition, Food and Exercise Sciences

qrao@fsu.edu

Research Interests
- Food Safety
- Food Quality
- Food Nanotechnology

Background Information

My research interests lie in utilizing food chemistry, especially immunochemistry and physicochemistry, as a tool to answer questions arising in both food safety and quality disciplines. My food safety research primarily focuses on the development of rapid methods for the detection of harmful or prohibited substances in foods. My food quality research primarily focuses on studying 1) the fundamental mechanisms and external factors influencing the interactions of proteins and other ingredients; and 2) the bioavailability of nutrients and bioactive components in foods.

How I Can Help a COVID-19 Related Project

- Antibody development and characterization
- Immunoassay development

How Someone Can Help My COVID-19 Project

- Providing both positive and negative samples
- Antibody availability

Additional Content

1. Jiang, X. Y., Wu, M., Dong, W. Y., Rao, Q. C. , Huo, H. L., & Han, Q. A. (2020). Monoclonal antibody-based sandwich enzyme-linked immunosorbent assay for porcine hemoglobin quantification. Food Chemistry, under review.
2. Jiang, X. Y., Rao, Q. C., Mittl, K., & Hsieh, Y.-H. P.(2020). Monoclonal antibody-based sandwich ELISA for the detection of mammalian meats. Food Control, 110: 107045. DOI: 10.1016/j.foodcont.2019.107045.
3. Jiang, X. Y., Fuller, D., Hsieh, Y.-H. P., & Rao, Q. C. (2018). Monoclonal antibody-based ELISA for the quantification of porcine hemoglobin in meat products. Food Chemistry, 250, 170-179. DOI: 10.1016/j.foodchem.2018.01.032.

Up Next: Robb Tomko

Robert Tomko Jr. (Robb)

Dept of Biomedical Sciences, FSU-COM

robert.tomko@fsu.edu

Research Interests
- Proteolysis
- Ubiquitin and ubiquitin-like proteins
- Drug discovery

Background Information

We use biochemistry, biophysics, molecular modeling, genetics, and cell biology to study medically important aspects of the ubiquitin system. Ubiquitin signaling is frequently co-opted or disrupted by pathogens. Betacoronaviruses contain a protease with two functions critical for viral replication. First, this protease cleaves a large viral polyprotein into functional units. Second, it removes ubiquitin and ubiquitin-like proteins from host cell proteins (and likely also viral proteins) to suppress the host cell's immune response. We are interested in identifying small molecule inhibitors of this protease as lead compounds for development into therapeutics. We have established several *in vitro* activity assays for this protease and are working to convert them into a high-throughput screen for inhibitors.

How I Can Help a COVID-19 Related Project

Expertise:
- Ubiquitin system
- Protein degradation and homeostasis
- Assembly of multisubunit complexes
- Protein-protein interactions

Skills and tools:
- Ubiquitin/ligase/protease reagents
- Protein expression and purification
- Enzymology and functional assays
- Assay design and miniaturization
- Fluorescence spectroscopy
- Atomic/molecular modeling

How Someone Can Help My COVID-19 Project

Expertise:
- Medicinal chemistry
- Computational drug screening or computational molecular docking
- Virology

Skills and tools:
- Access to small molecule, natural product, or peptide/peptoid libraries
- Organic synthesis
- Cell-based models of coronavirus infection or pathogenesis

Molecular modeling

Selectivity and mutational analysis

Activity assay and kinetics
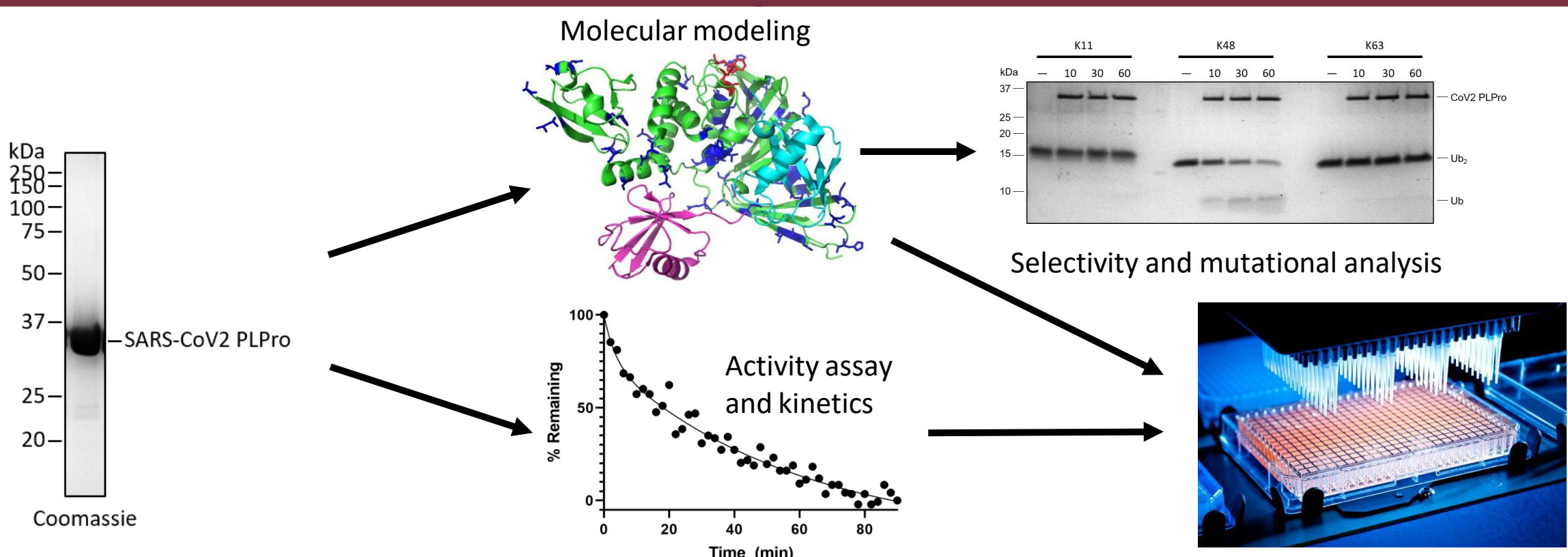
Up Next: Shawn Kantor

Shawn Kantor

Economics & Hilton Center
skantor@fsu.edu

Research Interests:
- Economic impacts of crises and policy responses
- Impact of social insurance on local economies
- Regional economic development

Background Information

Shawn Kantor is the L. Charles Hilton Jr. Distinguished Professor of Economics and Director of the COSSPP's Hilton Center for the Study of Economic Prosperity and Individual Opportunity. Research interests and experience relevant to Covid-19 relate to the impact of economic crises on local economies and the subsequent effects of fiscal policy responses. Past work that relates to this question examined the impact of New Deal spending on a variety of important economic and social outcomes, such as infant mortality, migration, labor market responses, crime, and macroeconomic effects. His work has been extensively supported by external grant agencies, primarily the National Science Foundation.

How I Can Help a COVID-19 Related Project

- Interdisciplinary approach to studying economic issues, especially related to economic crises and policy responses
- Econometric research experience
- Access to research support (students & seed funding)
- Long history of funding from federal agencies
- Experience publishing in top journals

How Someone Can Help My COVID-19 Project

- Raise new research questions from alternative disciplinary perspectives
- Access to interesting data
- Motivation to add an economic / social scientific element to an interdisciplinary project

Additional Content

Up Next: Jingjiao Guan

Jingjiao Guan

Department of Chemical and Biomedical Engineering, FAMU-FSU College of Engineering
guan@eng.famu.fsu.edu

Research Interests
- Developing a Novel Vaccine Adjuvant Platform for COVID-19

Background Information

- Messenger RNA (mRNA) is a promising candidate vaccine antigen for developing a COVID-19 vaccine
- A clinically proven adjuvant for mRNA vaccine does not exist.
- An effective adjuvant system requires a high efficiency in cytosolic delivery of mRNA and an ability to activate the immune system of the host.
- Meeting both requirements is challenging for the conventional adjuvants, but it is attainable by using a top-down microfabrication technique developed by the PI of this proposal and coworkers.

How I Can Help a COVID-19 Related Project

- We have preliminarily established a novel method for delivery of macromolecules into cytosol of macrophages
- The method is based on top-down microfabrication of microparticles with PNIPAM, which is a temperature sensitive polymer.
- The method can potentially be modified to deliver mRNA to antigen-presenting cells including macrophages and dendritic cells

How Someone Can Help My COVID-19 Project

- We need someone with expertise in developing vaccines
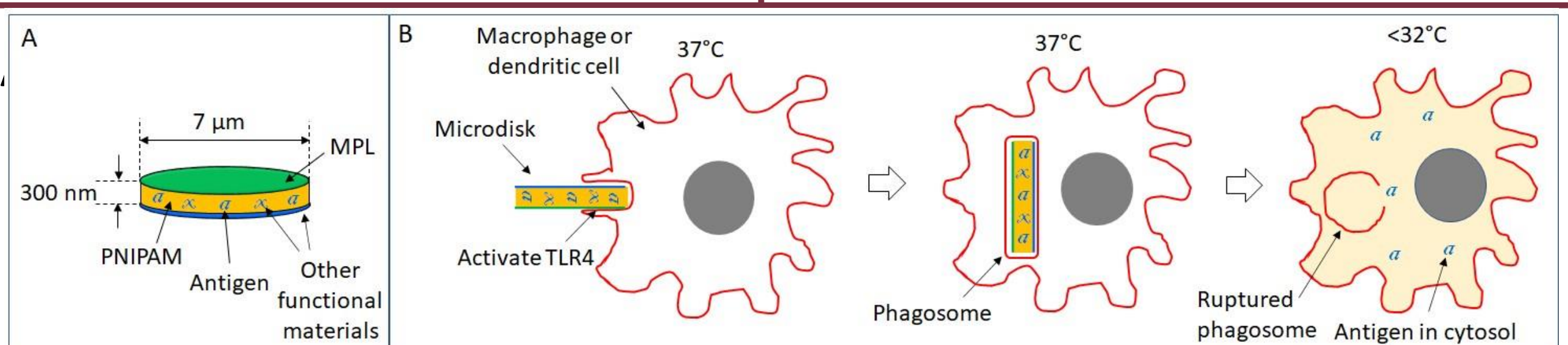
(A) Design of the proposed mRNA vaccine platform. (B) Envisioned process of action.

Up Next: Yuan Wang

Yuan Wang

Department of Biomedical Sciences, College of Medicine

yuan.wang@med.fsu.edu

Research Interests
- Brain development
- Prenatal environmental exposure & genetic mutations (e.g., autism)
- Sensory information processing

Background Information

My long-term research interest is to explore principle mechanisms that guide the development of a healthy brain, by determining how brain units (neural circuits) become structurally and biochemically specialized during development and how a disruption of this process leads to neurological disorders. We use molecular, neuroanatomical, and physiological approaches to investigate neuronal development and dynamics under normal and pathological conditions, both in animal models and in human tissue.

How I Can Help a COVID-19 Related Project

Characterize acute and long-lasting effects of COVID-19 exposure to prenatal and postnatal brain development

How Someone Can Help My COVID-19 Project

Provide brain tissue samples from experimental animals that are exposed to COVID-19 as well as their offspring.

Additional Content

- COVID-19 may spread from moms to infants: https://www.cidrap.umn.edu/news-perspective/2020/03/covid-19-may-spread-moms-infants-and-seemingly-healthy-kids

- Prenatal exposure to virus increases the chance to a number of neurological disorders later in the life: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222883/

Up Next: Gina Sutin

Angelina (Gina) Sutin
Behavioral Sciences and Social Medicine
Angelina.sutin@med.fsu.edu

Research Interests
- Personality
- Subjective well-being
- Cognitive aging

Background Information

My research focuses broadly on psychological traits and well-being and cognitive aging. My group currently has a study of participants who were tested the first week of February and then again approximately 6 weeks later during the President's initial 15 Days to Slow the Spread guidelines. We are examining acute changes in psychological, emotional, and social well-being in response to COVID-19, as well as predictors of behavior change and concerns about the pandemic. I am interested in developing more research on how social distancing is affecting the well-being of older adults, particularly those already at high risk for loneliness.

How I Can Help a COVID-19 Related Project

Expertise in trait psychological functioning and well-being

Expertise in older adulthood and other high-risk populations

Potential administrative supplement for COVID-19-related work

How Someone Can Help My COVID-19 Project

Access to nursing homes or other aging populations

Expertise in communication

Expertise in dyads

Additional Content

Name: Bruce R. Locke

Department: Chemical and Biomedical Engineering

Email Address: locke@eng.famu.fsu.edu

Research Interests
- Interest 1: non-thermal plasma reactor analysis and design
- Interest 2: chemical reactions in gas-liquid plasma

Background Information

We conduct research in the area of non-thermal plasma, a type of plasma state where the energy of the free electrons is much higher than that of the background gas. When contacting the plasma with liquid water we generate a range of reactive oxygen species (ROS)(hydroxl radicals , atomic oxygen and hydrogen peroxide) and reactive nitrogen species (RNS) (when using air as the carrier gas we generate peroxynitrite, nitric acid, and other nitrogen oxides). These species are known to have anitmicrobial and antiviral activity.

How I Can Help a COVID-19 Related Project

We are constructing small portable plasma reactor systems that can be used for disinfection and that require only electricity, air, and water to generate the ROS and RNS.
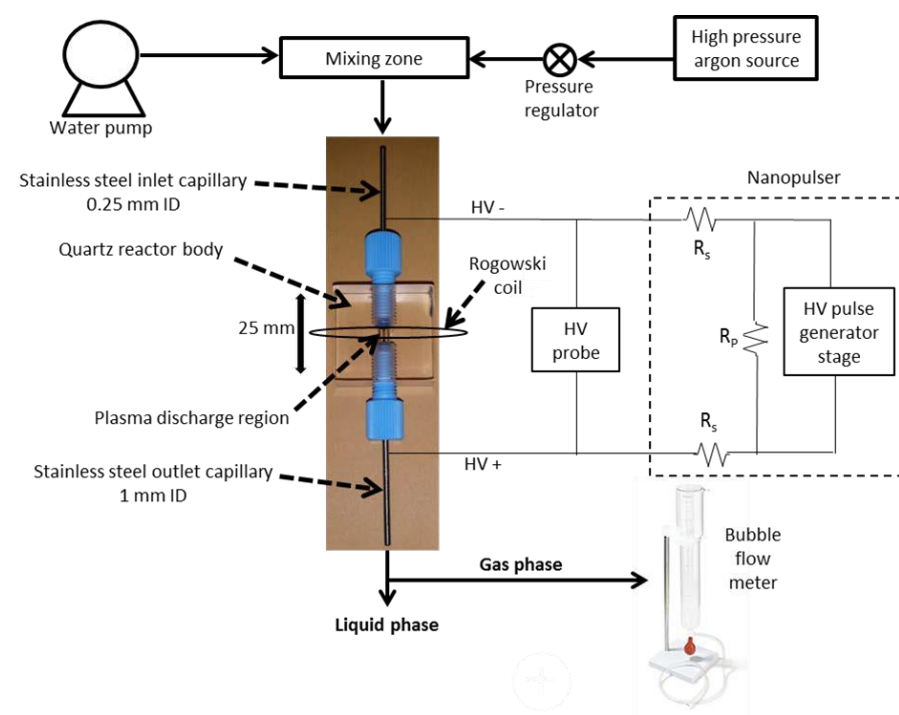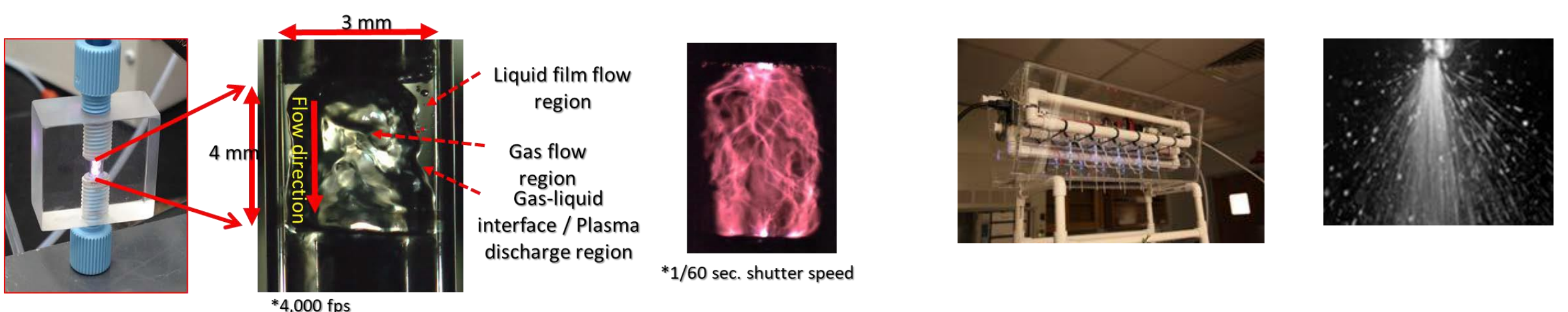
Recent publications describing our system and work.

https://doi.org/10.1007/s11090-019-09981-w.
https://doi.org/10.1088/1361-6463/aaf132
https://doi.org/10.1088/1361-6463/ab431a

How Someone Can Help My COVID-19 Project

I am seeking collaborators who can assist in testing our reactor for destruction of viruses.

Additional Content

Up Next: Branko Stefanovic

Branko Stefanovic
College of Medicine, Biomedical Science
branko.stefanovic@med.fsu.edu

Research Interests:
Mechanism of fibrosis
Antifibrotic drugs

Background Information

My research is focused on elucidation of the molecular mechanism of tissue fibrosis and finding specific antifibrotic drugs. We have recently described one antifibrotic compound and its efficacy in hepatic fibrosis. This is to extend the use of this compound in COVID-19 induced cardiac fibrosis. Myocarditis is commonly associated with viral infections. Cardiac complications of influenza virus, including fibrosis, have been found in 48% of fatal cases of influenza. Dissemination of influenza virus into the heart is 3 days post-infection. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is also causing acute myocardial injury and chronic heart damage (Nature Reviews Cardiology (2020). Chronic heart damage results from fibrosis development. This is why cardiac patients are severely affected by COVID-19 infection.

How I Can Help a COVID-19 Related Project

- Treatment with our antifibrotic drug at the onset of COVID-19 infection may prevent fibrotic heart damage after the infection.
- IFN-induced transmembrane protein 3 (IFITM3) knock out (KO) mouse will be used as a model to study cardiotoxic effects of COVID-19. This model has been used to study cardiotoxcicity of influenza virus.
- The KO mice will be treated with our drug at the onset of COVID-19 infection and cardiac fibrosis will be assessed at various times postinfection.
- This will validate the drug as cardioprotective in COVID-19 infections.

How Someone Can Help My COVID-19 Project

- **Propagate the virus**
- **Determine the virus titer**
- **Help with the animal model**
- **Assess the cardiac function**

Additional Content

This is an opportunity to assess if cardio-protection is possible during COVID-19 infection. It will use our proprietary antifibrotic compound and a well-established mouse model of viral cardiotoxicity. The project is feasible at FSU if the appropriate biosafety level can be provided.

Up Next: Kristina Buhrman

Kristina Buhrman
Religion
kbuhrman@fsu.edu

Research Interests
- History of Science
- Community and Household Religious Life
- Disasters

Background Information

I have been researching historical disasters for 14 years (since while in graduate school). I am particularly interested in how disasters are categorized and responded to, and recently I have come to study how disasters are remembered, memorialized, mobilized, and the effects a disaster has on a community as it recovers or changes. After the Japanese tsunami of 2011, and with the current pandemic, I am nurturing research questions about the ways in which people adapt religious observances to displacement or social distancing. I have already presented and published on tsunami stones in Japan, and look forward to doing follow up work on religious life among the displaced and returning communities. With COVID-19, I see a unique opportunity to do a longitudinal study of disaster and recovery on various communities.

How I Can Help a COVID-19 Related Project

- Identify new funding sources
- Help develop interdisciplinary grant proposals
- Bring connections to Japanese subjects and communities
- Provide insight on the world's religious practices and beliefs for sociological and political studies; disaster planning studies; international historical parallels
- Develop connections to non-FSU researcher communities in Science Technology and Medicine Studies, disaster studies, religious studies

How Someone Can Help My COVID-19 Project

- Provide insights from other disciplinary fields
- Develop interdisciplinary grant proposals
- Bring connections to other communities to research
- Bring links to other non-FSU collaborators
- Help with Human Subject research design and implementation (over internet/phone initially)
- Identify funding sources

Additional Content

Buhrman, K. M. (in press). Monoimi: Days of Abstinence, Days of Danger. In Christina Laffin, Joan R. Piggott, & Yoshida Sanae (Eds.), *Birth of a Monarch: Selections from Fuiwara No Munetada's Journal Chuyuki* (7 pages). Ithaca, NY: Cornell East Asia Series.

Buhrman, K. (2017). Remembering Future Risk: Considering Technologies of the Archive for Discussion of Tohoku's Seismological Past After 2011. *Technology and Culture*, *58*(1), 159-169.

Buhrman, K. (2017). Knowledge of Nature and Craft: Researching the History of Science, Mathematics and Technology in Japan before 1600. In Karl Friday (Ed.), *Routledge Handbook of Premodern Japanese History*. London: Routledge.

Up Next: Hengli Tang

Hengli Tang
Biological Science
tang@bio.fsu.edu

Research Interests
- Virus-host interactions
- Stem cell technologies
- Intervention of viral infections

Background Information

My lab studies emerging and re-emerging viruses that pose significant threats to human health. Researchers use molecular biology techniques and tissue culture models, including stem cell-derived 3-dimensional models, to investigate the mechanisms by which significant human pathogens, such as Zika and dengue viruses, disseminate and cause diseases. Our research is supported by grants from National Institute of Allergy and Infectious Diseases (NIAID).

How I Can Help a COVID-19 Related Project

Cell culture models for viral infection

Platform to develop rapid serological assay for COVID-19 diagnostics

Small molecule candidate that can potential inhibit SARS-CoV-2 replication

Access to key scientists and labs engaging in COVID-19 research

Knowledge related to various aspects of SARS-CoV-2 biology, and RNA viruses in general

How Someone Can Help My COVID-19 Project

We are developing, with an existing collaboration with industry partner, a rapid serological test forCOVID-19, we are seeking partners who have clinical samples to help validate the test

Additional Content

Optional Content Textbox

Up Next: Joe Schlenoff

Joe Schlenoff

Chemistry & Biochemistry

jschlenoff@fsu.edu

Research Interests
- Charged polymers
- Interactions of bio with surfaces
- Nanoscience

Background Information

Polyelectrolytes with opposite charges associate into complexes or coacervates. As thin films, these complexes control surface properties including bioadhesion. Coacervates, found in nature as membraneless organelles in cells, are held together by multiple "sticky" charge-charge interactions. This special type of attraction can be moderated by salt ("saloplasticity") providing unprecedented control over the materials properties of this fascinating form of amorphous condensed matter.

How I Can Help a COVID-19 Related Project

- We have made a new copolymer designed to attack the coronavirus class of viruses. The polymer is water soluble.

How Someone Can Help My COVID-19 Project

- We know how to characterize the general materials properties of this polymer, such as molecular weight, composition, formulation, solubility, size in solution.
- We need collaborators who are familiar with pathogens and have the ability to evaluate the toxicity of the polymer when deposited on a surface.

Additional Content

One of our latest on antifouling surfaces:

J.D. Delgado, R.L. Surmaitis, C.J. Arias, J.B. Schlenoff*; Biomaterials Science, 7, 3213-3225 (2019). "Surface Sulfonates Lock Serum Albumin into a "Hard" Corona." DOI: 10.1039/c9bm00475k

Up Next: David Meckes

David G. Meckes Jr., Ph.D.
Associate Professor
Biomedical Sciences
david.meckes@med.fsu.edu

Research Interests
- Virus-host interactions
- Extracellular vesicles
- Cancer biology

Background Information

The overall objective of my research program is to understand the mechanisms of extracellular vesicle (EV) biogenesis and protein and RNA trafficking to exosomes in the context of viral infections. It is clear from our studies and others that EVs play an important role in viral pathogenesis. Importantly, molecular information present within EVs can be harnessed as biomarkers of disease or to monitor the successfulness of therapy. The goal of the proposed research study is to utilize virus and EV purification strategies developed in my lab to better define EVs released from coronavirus infected cells and study their role in viral transmission and pathogenesis. I have extensive training and experience in molecular virology, extracellular vesicle biology, biochemistry, and proteomics that is evident by my publication record. Since starting my own lab 2013, I have leveraged my expertise in EV biology and virology to make advances in the role of EVs in other diseases including cancer, wound healing, and neurodegenerative diseases.
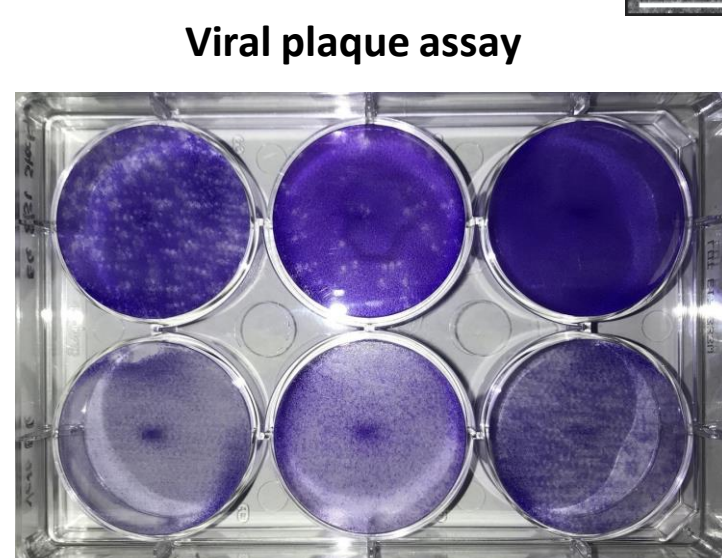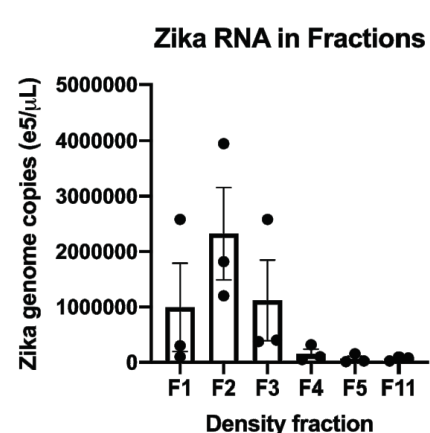
How I Can Help a COVID-19 Related Project

- Provide expertise in virology
- Access to specialized equipment for virus growth, purification, quantitation and biochemical and biophysical analyses
- Successful history of receiving funding from state, federal, foundations, and private industry.
- Experience publishing in top journals
- Experience in proteomics and RNA-Seq for circulating biomarker discovery

How Someone Can Help My COVID-19 Project

- Access to BSL-3 laboratory space or experience in converting BSL-2 labs to BSL-3 for SARS-CoV-2 research
- Clinical isolates of SARS-CoV-2
- Compounds or biologics to test efficacy of inhibiting virus growth in culture and/or animals
- Novel approaches to inactivate viruses on solid surfaces
- Provide funding for COVID-19 work

Additional Content

Zika RNA in Fractions

Viral plaque assay

TEM of EVs

100 nm

Virus particles | Extracellular Vesicles

host RNA
host protein
host membrane protein
viral glycoprotein
viral protein
viral RNA
HIV gag

Nolte-'t Hoen et al., 2018 *PNAS*

Publications:
https://scholar.google.de/citations?user=n9lIb6AAAAAJ&hl=en
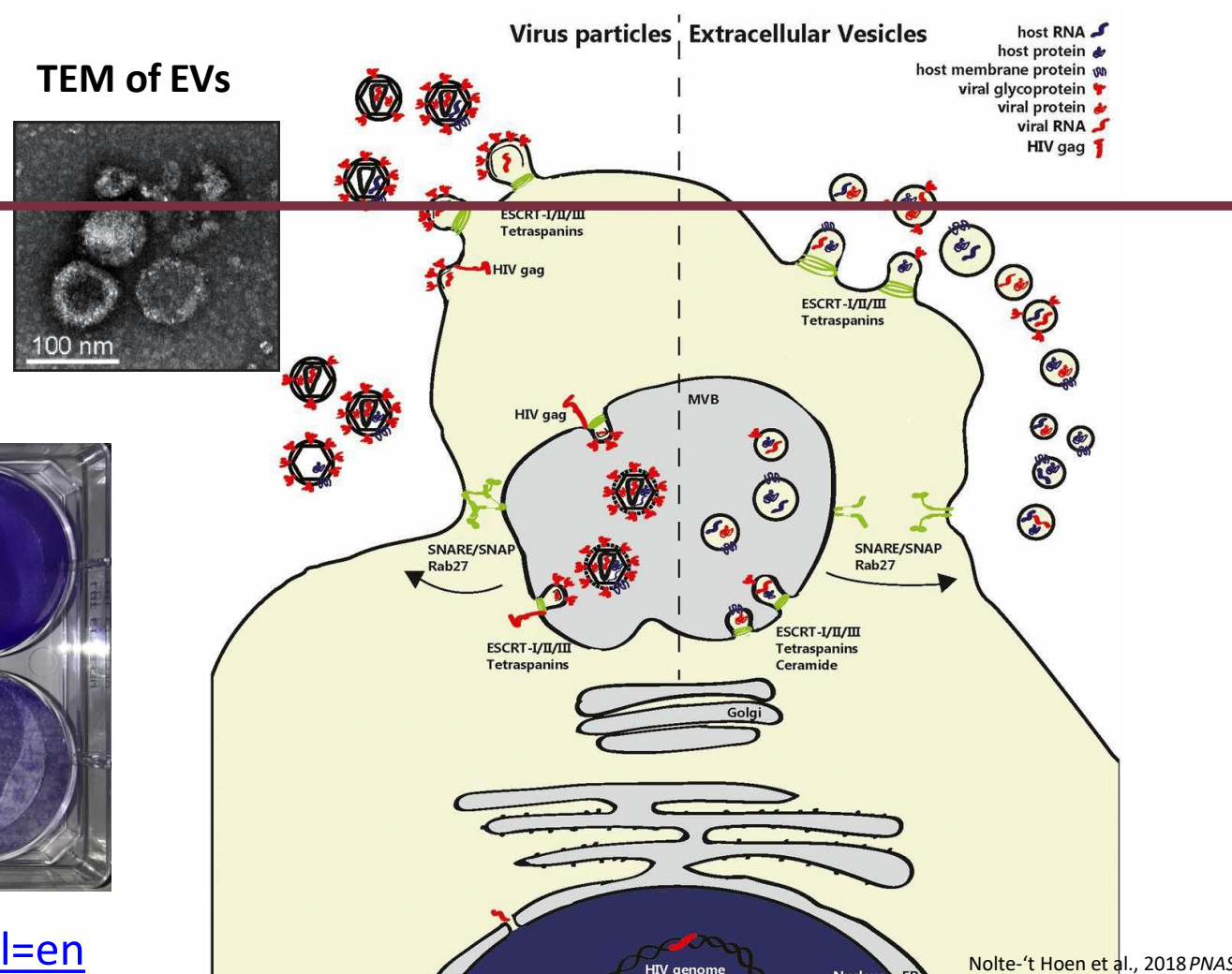
Up Next: Laura Reid Marks

Laura Reid Marks
Educational Psychology and Learning Systems
Combined Counseling and School Psychology
Laura.ReidMarks@fsu.edu

Research Interests
- Racial Microaggressions
- Mental Health
- Alcohol misuse
- Health Disparities

Background Information

I am a psychologist whose program of research falls in the realm of multicultural psychology. My research focuses on minority stressors (e.g., racism, microaggressions, sizeism) and its effects on the lives of adults from marginalized groups (e.g., people of color, women). My recent research projects have focused on two primary strands: (a) health disparities in people of color (microaggressions, mental health, and health behaviors) and (b) career and professional development issues.

How I Can Help a COVID-19 Related Project

- Background in mental health practice and research
- Research focus on health disparities, with an interest in exploring the emerging health disparities with COVID-19 and the role of racial discrimination
- Experience with quantitative and qualitative methodologies

How Someone Can Help My COVID-19 Project

- Access to populations/dataset
- Study design
- Interdisciplinary approaches
- History of applying for research grants

Additional Content

I am in the beginning stages of thinking about how my research interests intersect with the COVID-19 crisis and have interest in applying for an external grant exploring health disparities with COVID-19. More specifically, I would like to explore how experiences of discrimination have influenced African American COVID-19 patients and their families, and what other underlying factors are contributing to the emerging COVID-19 health disparities within the African American population.

Gregg Stanwood

Department of Biomedical Sciences

gregg.stanwood@med.fsu.edu

Research Interests

- Neuroscience
- Pharmacology
- Developmental Biology
- Translational Research

Background Information

My laboratory studies how neurotransmitters medicinal drugs, environmental toxicants, and behavioral therapies alter brain development, structure and function. Studies in laboratory animals (mice) focus on the developmental basis of mental health and neurological disorders. Human work currently focuses on neuroendocrine and inflammatory signals that contribute to adaptive and maladaptive stress responses, and measurement of pesticide levels in agricultural workers.

How I Can Help a COVID-19 Related Project

Could help create and/or study a mouse model to study neural changes after COVID-19 exposure. Neurological complications have been noted in several case reports.

Transplacental concerns? Could virus itself, or changes in maternal inflammatory markers, alter body or brain development in utero?

Measurement of stress hormones, inter-leukins, and other biological molecules in human saliva, urine or blood.

How Someone Can Help My COVID-19 Project

If data emerges suggesting prominent neuronal complications of COVID-19 (especially during pre- or postnatal development) my group would be well positioned to examine the neurobehavioral, cellular and molecular consequences of COVID-19 in the central nervous system.

Additional Content
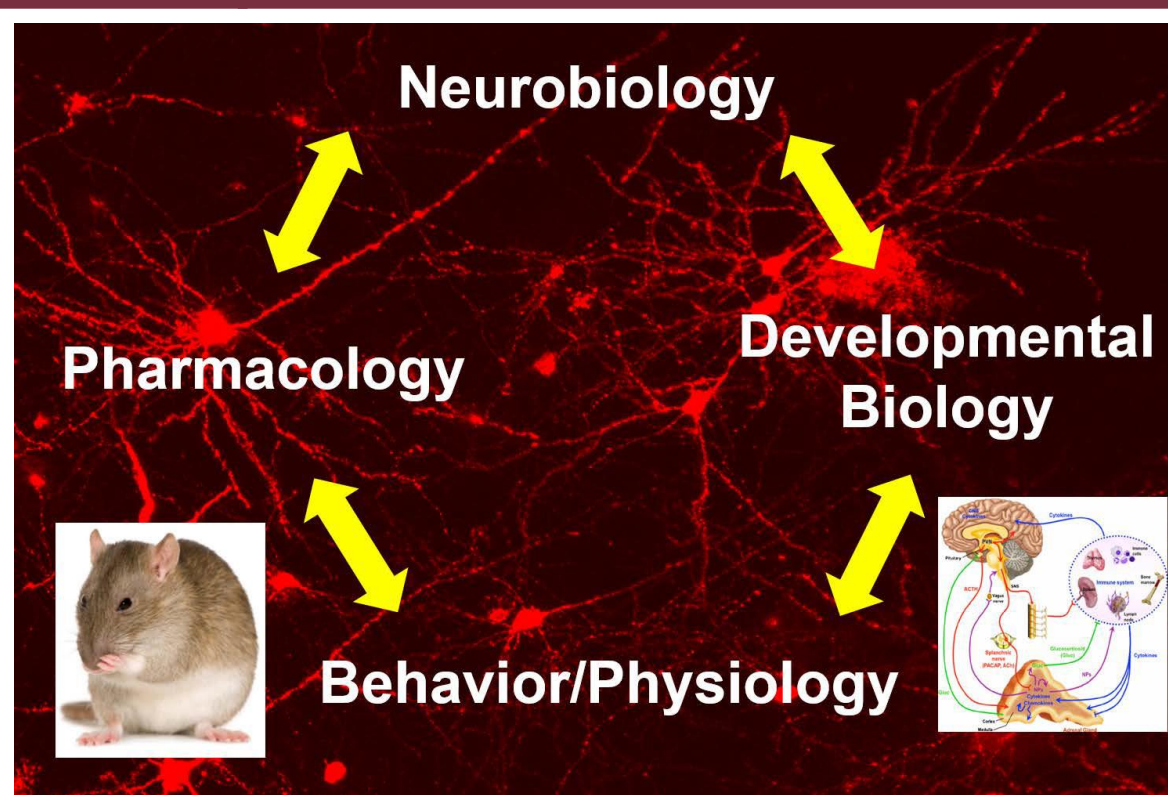
Up Next: Bill Weissert

Bill Weissert

Department Public Health/Political Sci Email Address
wweissert@fsu.edu

Research Interests

Interest 1 Health Politics & Policy

Interest 2 Long-term care policy

Pay for performance; information & performance

Background Information

Professor, Political Science, Founding Director FSU MPH program. Professor Emeritus University of Michigan School of Public Health. Senior Research Manager, USDHHS. Public Policy Research Director, TransCentury Corp. Co-Author *Governing Health: The Politics of Health Policy*, Johns Hopkins U. Press. 75 ISI journal articles on health politics, health policy, long-term care policy, home care policy, home care cost-effectiveness. Principal Investigator 2 large randomized social experiments in (1) expanded health services delivery; and (2) pay for performance in nursing homes; (3) one small randomized trial testing effects on decision making of providing risk, effectiveness, & value information to case mangers. Teach Health Services Organization& Policy; & Health Politics and Policy Analysis.

How I Can Help a COVID-19 Related Project

Effects of policy choices related to the pandemic on structure, process and outcomes of responses by policy makers   to COVID-19.   Project design.

How Someone Can Help My COVID-19 Project

Collaborators text box

Additional Content

Optional Content Textbox
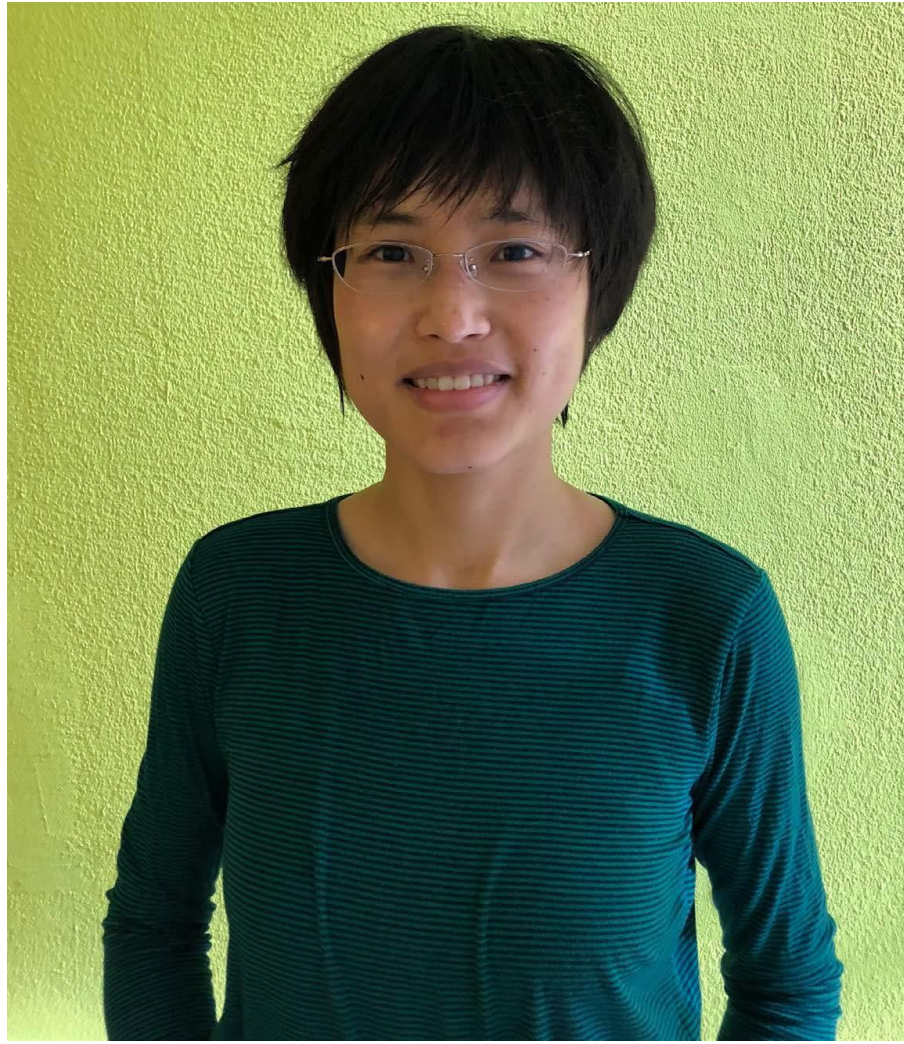
Yue Julia Wang

Department of Biomedical Sciences

FSU College of Medicine

julia.wang@med.fsu.edu

Research Interests
- Molecular mechanisms of diabetes
- Single-cell RNA-seq
- Genomic data integration

My Research Background

My research interest is to develop and apply high throughput omics approaches to understand the molecular mechanism of human disease. The current research focus is to identify novel therapeutic targets for beta cell regeneration therapy in treating diabetes.

How I Can Help Collaborators

- Genomics study design
- Genomics data analysis
- Access to genomics datasets
- Building biological assays to validate targets

How Collaborators Can Help

- In-depth multi-omic data integration
- Identifying genotype-phenotype correlation
- Developing novel statistical and bioinformatics approach for omics data analysis

Additional Content

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Up Next: Hongyuan Cao
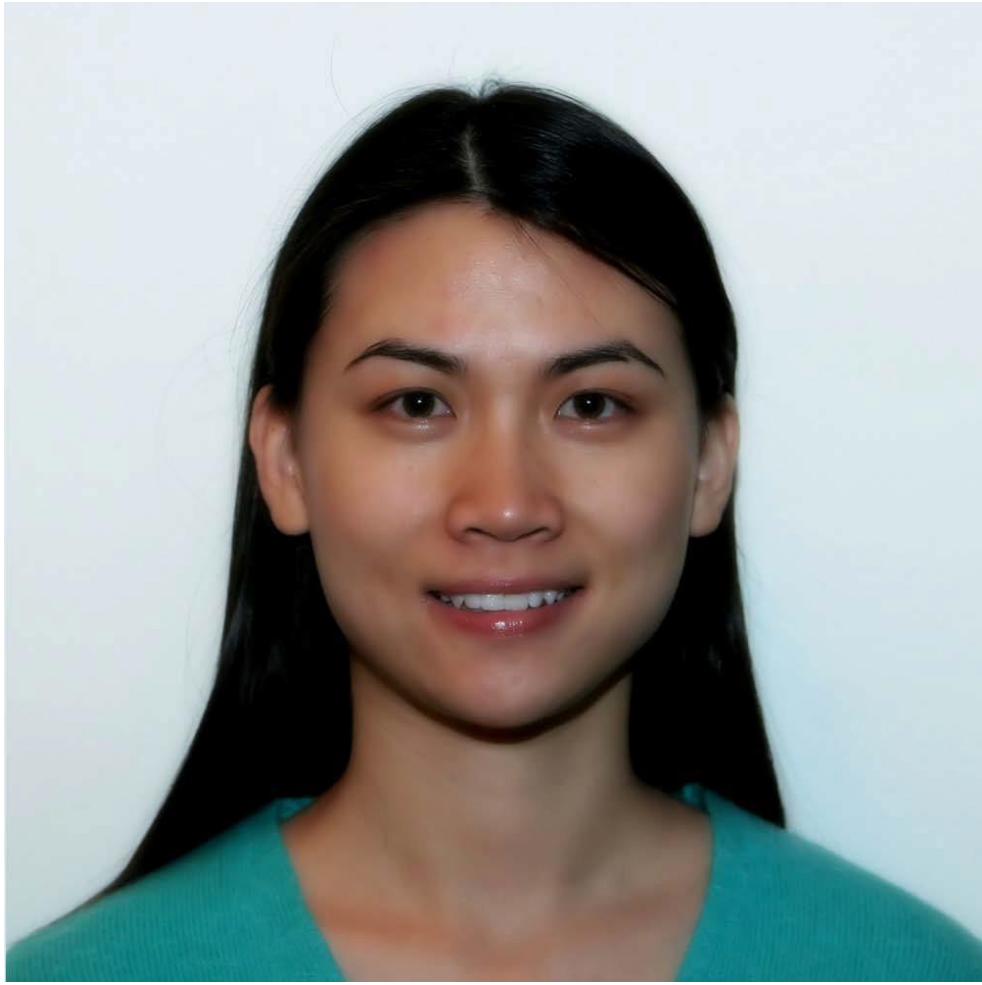
Hongyuan Cao

Associate professor of Statistics

hcao@fsu.edu

Research Interests

- Longitudinal data analysis
- Survival analysis
- Causal inference
- Machine learning methods

Background Information

I got my Ph.D. in statistics from UNC-Chapel Hill in 2010. Between 2010 and 2014, I worked as an assistant professor in the Health Studies Department at the University of Chicago. From 2014 to 2018, I worked as an assistant professor in the Statistics Department at the University of Missouri-Columbia. I joined FSU's statistics department in the fall of 2018 as an associate professor. My main research program includes statistical methodological development and statistical applications in social, biological and medical sciences. Since the time at UNC, I collaborated with clinicians and epidemiologists on study design, statistical modeling, data analysis, manuscript preparation and grant proposal writing. I appreciate the interdisciplinary approach to scientific problems and believe that in order to have impact in science, statisticians have to partner with domain experts.

How I Can Help a COVID-19 Related Project

- Treatment effect estimation
- Identification of time-dependent biomarkers in predicting patients' outcome
- Evaluation of effect of public policy
- Matching medical resources with anticipated number of patients
- Data analysis
- Statistical modeling

How Someone Can Help My COVID-19 Project

- Access to populations/dataset
- Domain knowledge of the scientific problem
- Different perspectives on the problem
- Study design
- Explore challenges in the field
- Interdisciplinary approaches

Additional Content

COLLABORATIVE COLLISION @FSU

Up Next: Guangxin Ni

Guangxin Ni
Department of Physics
gni@fsu.edu

Research Interests
- Nano-optical imaging & spectroscopy
- Low-dimensional quantum materials
- Photonics and polaritonics

Background Information

My background is materials science and condensed matter physics. We use nano-optics to explore new phase of matter in quantum materials. This includes the programmable two-dimensional (2D) van der Waals (vdWs) heterostructures, where novel quantum states could be identified and investigated using nano-light excitations.

We utilize the near-field experimental approaches to study the light-matter interactions at the nanometer length scales to elucidate exotic phenomena including surface polaritonic waves, energy flow, chiral states in quantum systems at extreme conditions.

How I Can Help a COVID-19 Related Project

- Real-space nano-optical imaging

- Identify its optical resonances

- Explore light-induced effects in Covid-19

How Someone Can Help My COVID-19 Project

- Specific molecules and sample handling

- Internal collaborations on joint projects

Additional Content
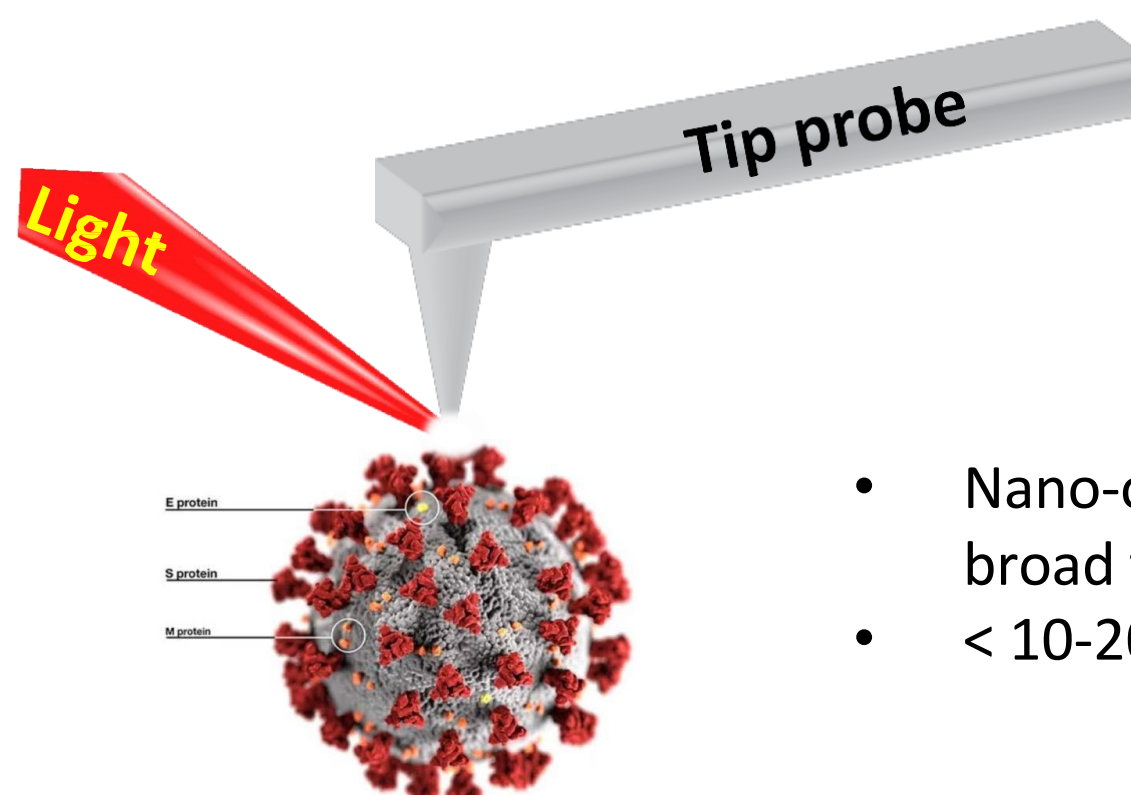
- Nano-optical imaging over broad frequency range
- < 10-20 nm spatial resolution

Up Next: Jamel Ali

Jamel Ali

Assistant Professor
Chemical and Biomedical Engineering
jali@eng.famu.fsu.edu

Research Interests
- Active Colloids / Nanorobotics
- Microbial Hydrodynamics
- Engineered Biomatierals

FAMU-FSU College of Engineering

Background Information

My group focuses on investigating and harnessing the unique physiochemical properties of stimuli-responsive nanobiomateirals for bio/biomedical applications, ranging from tools to investigate microbial hydrodynamics, to rheological tuned biofluids, and active colloidal machines and biomaterials for regenerative medicine. Research aims also include the development of self-assembled nanobiomaterais for sensing, actuation, and transport applications. In addition to the synthesis and characterization of these stimuli-responsive materials, we also investigate how fundament questions in biology can be addressed using our functional materials as tools to mimic biological processes.

How I Can Help a COVID-19 Related Project

- High Resolution Optical Microscopy for Single Molecule Imaging
- Experience in Microfabrication and Microfluidics
- Tools for wireless manipulation of cells and subcellular compartments
- Flow-field characterization expertise ; Particle Tracking Velocimetry, Particle Image Velocimetry
- Access to 3D-Bioprinters
- BSL 2 Lab in the NHMFL

How Someone Can Help My COVID-19 Project

- SARS-CoV-2 Surface Proteins Samples
  - Spike Glycoprotein (S)
- Native Biofluids
  - Human Tracheal Mucus Samples
- Expert in Protein Biochemistry
- Expert in Molecular Dynamics Simulations
- Access to Primary Cell Lines

Additional Content
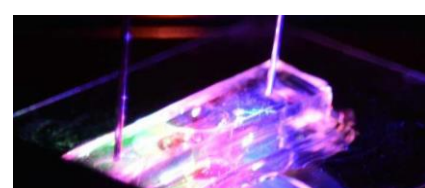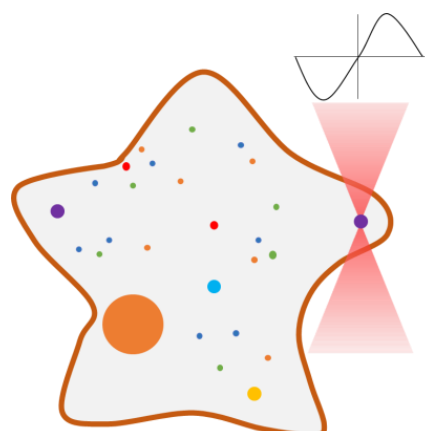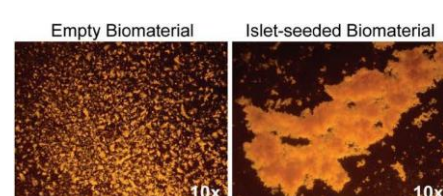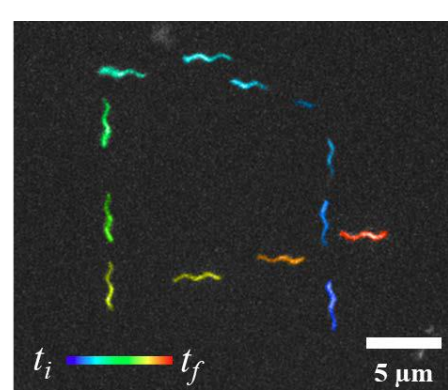
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- Elizondo DM, NZD Brandy, J Ali, D Yang, MW Lipscomb, Pancreatic islets seeded in a novel bioscaffold forms an organoid to rescue insulin production and reverse hyperglycemia in models of type 1 diabetes. *Scientific Reports*, **2020** 10, 4362.
- J Ali, H Kim, UK Cheang, MJ Kim, (2016). MicroPIV measurements of flows induced by rotating microparticles near a boundary. *Microfluidics and Nanofluidics*, **2016** 20, 131.
- H Kim, J Ali, UK Cheang, J Jeong, JS Kim, MJ Kim, Micro manipulation using magnetic microrobots. *Journal of Bionic Engineering*, **2016** 13, 515-524.

Up Next: Katrinell Davis

Name Katrinell M. Davis

Department Sociology, AFA

Email Address kmdavis3@fsu.edu

Research Interests
- Economic Sociology
- Social Determinants of Health
- Sociology of Poverty

Background Information

I am inspired by the struggles of working-class people in urban areas who contend with extraordinary socioeconomic constraints, despite their best efforts. Through teaching and scholarship, I explore how racial, gender and class biases as well as institutional constraints shape the accessibility of quality neighborhood resources and how social groups and/or communities navigate existing hurdles. Overall, I study the social, economic, and health effects of inequality. I have published studies concerning the socioeconomic status of low-skilled African American women workers after industrial restructuring and how they manage persistent inequalities in workplace. I have also examined health outcomes among children in low resource areas contending with lead contamination from the public drinking water.

How I Can Help a COVID-19 Related Project

Mixed-Method Researcher

Survey Research
Semi Structured Interviews
IPUMS data ready to go

Experienced Grant writer

Lively research questions/concerns about the status of poor people

How Someone Can Help My COVID-19 Project

Access to administrative data (unemployment claims, etc.)

Knowledge of welfare state policy relating to low-skilled/low-resource populations

Advanced statistical modeling (e.g., predictions)

Additional Content

Up Next: Leslie Powell-Boudreaux

Leslie Powell-Boudreaux

Executive Director
Legal Services of North Florida
Leslie@LSNF.org

Area of Law:
Evictions

Background Information

COVID-19 The Impact of Eviction Moratoria

In response to predicted lost income and inability to pay rent, the Florida Supreme Court, HUD, Circuit Courts, County Courts, Sheriff Departments, Clerks of Court, and the Governor issued orders and engaged in various practices to show a desire to delay evictions. Yet none of these orders or practices amounted to a true eviction moratorium and many landlords continued to find ways to pursue eviction. Clerks continued to accept filings; Sheriffs continued to serve them; and judges continued to hold video hearings.

QUESTIONS RAISED

- What if any impact did this patchwork of solutions have on preventing evictions?

- Were tenants negatively impacted in other ways (for ex. Landlords tried to evict them without legal process; or misinformation not responding to legal documents (thus losing legal rights in defending the eviction)?

- How could we, as legal aid programs, improve our community education to prevent these challenges in the future, whether it's a community impact event (hurricane, etc.) or just day-to-day misinformation?

- Does an eviction moratorium increase the number of foreclosures on rental properties?

- Were there differences in homelessness in communities without robust eviction moratoria?

- Were infection rates different depending on protections from eviction?

How I can Help in this project:

Legal aid organization have started gathering some data and are willing to work with researchers to identify available data to support any research needed. Each legal aid program has a robust data base of cases handled that will support research as well.

How Someone can help in this project:

We are lawyers, not researchers. We are hopeful someone is interested in this topic and willing to engage in answering any of these questions using the appropriate methods.

Zhe He
Assistant Professor, School of Information
Informatics Lead, FSU-UF Clinical and Translational Science Award
Email: zhe@fsu.edu. Website: zhehe.info

Research Interests
- Biomedical and Health Informatics
- Artificial Intelligence in Medicine
- Big Data in Health

Background Information

My research lies in biomedical and health informatics, machine learning, clinical research informatics, knowledge representation, and data analytics. My overarching goal is to improve the population health and advance biomedical research through the collection, analysis, and application of electronic health data from heterogeneous sources. I have published over 70 papers in major informatics venues including JAMIA and JBI. I received two Distinguished Paper Award from American Medical Informatics Association. My research has been funded by National Institutes of Health, Eli Lilly and Company, Amazon, NVIDIA, and Institute for Successful Longevity. I am the PI of an NIA R21 on clinical trial generalizability and a Co-I of an NIA R01 project on building an AI intervention for early detection of cognitive decline.

How I Can Help a COVID-19 Related Project

- Data mining, machine learning, and predictive modeling
- Database management
- AI/informatics approaches for predicting COVID-19 transmission
- Access to a large clinical data warehouse – OneFlorida Data Trust (longitudinal clinical data for over 20 million patients)
- Informatics approaches for grant proposals

How Someone Can Help My COVID-19 Project

- Analysis of COVID-19 clinical trials on ClinicalTrials.gov
- Making sense of the text mining results of COVID-19 Open Research Dataset (published literature on PubMed)
- Statistical modeling of complex datasets
- Longitudinal data analysis
- Implementation science
- Software development

Additional Content

Current Grants:
1. The Adherence Promotion with Person-centered Technology (APPT) Project: Promoting Adherence to Enhance the Early Detection and Treatment of Cognitive Decline (NIA R01 2019 – 2024) PI: Walter Boot
2. Systematic Analysis of Clinical Study Generalizability Assessment Methods with Informatics (NIA R21 2019 - 2020) PI: Zhe He
3. Posttransplant Health Outcomes in Pediatrics Organ Transplantation (NCATS CTSA 2019 – 2010) MPI: Michael Killian and Zhe He

Up Next: Kelly Farquharson

Kelly Farquharson
School of Communication Science and Disorders
kfarquharson@fsu.edu

Research Interests
- Speech sound production
- Literacy development and disorders
- K-3 (special) education

Background Information

I am a speech language pathologist who studies the intersection of speech sound production abilities and literacy development and disorders. The mission of my research lab is to help children with speech and language impairments achieve classroom success. I have a specific focus on children who have speech sound disorders and/ or dyslexia, with a particular interest in school-based service delivery. Recently, my focus has shifted to the service provider – namely speech language pathologists – and the extent to which characteristics of the service provider influence child outcomes.

How I Can Help a COVID-19 Related Project

Content expert:
- Phonology
- Literacy/ reading disorders
- Speech language pathology/ pathologists
- School-based practice
- School-age child development

Methodologies:
- Survey design and development
- Recruitment for surveys

How Someone Can Help My COVID-19 Project

-Methodology/ study design
-Statistical analyses

Additional Content

Up Next: Shuyuan Mary Ho

Shuyuan Mary Ho
School of Information
smho@fsu.edu

Research Interests
- Trusted human-computer interaction
- Predictive analytics
- Social media dis-/misinformation
- Cyberbullying, political polarization

My Research Background

My research interests are in trusted human-computer interactions, specifically addressing issues of computer-mediated deception, cyber insider threats, dis-/misinformation, and cyberbullying. Recent projects include the study of predictive analytics for identifying online deception and cyberbullying in social forums, as well as polarization in political forums. My iSensor Lab analyzes and extracts language-action cues, such as in charged language for identifying hate speech. My research discovers and identify subtle but noticeable computational differences in communicative intent that can be observed, triangulated and codified.

I can collaborate on detecting COVID-19 social media dis-/misinformation campaign and societal impacts. I build research experimentations to explore and collect conversational artifacts from social simulations. I'm also interested in building an AI-based system that can assist the Centers for Disease Control and Prevention in devising containment strategies based on live data.

How I Can Help Collaborators

- Scenario-based experimentation
- User-centered interactive system design
- Behavioral modeling & prediction
- Modeling of language-action cues with analytics, social factors/ computing
- Detecting social media dis/misinformation campaign and societal impacts

How Collaborators Can Help

- Bring your biggest problems for analysis
- Access to big datasets (e.g., COVID-19, healthcare, social data, utilities, etc.)
- Machine learning, artificial intelligence
- Statistical analysis and modeling
- Coding and programming

Additional Content

I founded the iSensor Lab in 2010 to conduct sociotechnical research related to human factors in cyberspace. Experiments are conducted in live and virtual environments using online games. Research data is collected through confined resources and interactions that are based on real-world cyber trust and deception simulations. We generate data based on real world scenarios that are created for specific purposes. This is done through the deployment of online games that contain identical variables as in real-world situations. Statistical modeling and machine learning are used to parse out the cues of conversations and make sense of the data collected.

Up Next: Xiuwen Liu

Xiuwen Liu

Professor, Computer Science

liux@cs.fsu.edu

Research Interests
- Intrinsic deep learning
- Computational models for NLP
- Deep learning models for biomedical applications

My Research Background

I have worked on machine learning, pattern recognition, and computer vision for 20+ years. I have also worked on computational biology. My recent interests are to develop effective deep learning algorithms to overcome the fundamental limitations of language models as BERT and XLNet. While they are empirically very successful, they are "accidental" in nature in that they learn their parameters based on optimizing surrogate objective functions. In addition, due to their end-to-end training, what the methods have learned are not comprehensive to experts, limiting their underlying interpretability and utilities in scientific and critical applications. My recent efforts focus on characterizing and quantifying inherent generalization of deep learning models and explore their applications to natural language processing, biomedical applications and more.

How I Can Help Collaborators

- Deep learning and machine learning expertise
- Development, implementation and analysis of machine and deep learning based solutions
- Experience with training deep neural networks for classification and recurrent neural networks for sequence modeling
- Development of new deep learning architectures and training algorithms
- Inner workings of deep learning and natural language processing models
- Hands on experience with BERT and XLNet
- Reinforcement learning expertise

How Collaborators Can Help

- Interesting and significant applications where machine learning methods can have a big impact such as the open COVID-19 dataset
- Emerging areas where data are abundant and new analysis tools are needed
- Interesting applications of natural language processing for social media platforms
- Customized semantic search problems
- Reinforcement learning problems in computational engineering
- Deep and reinforcement learning problems for automated learning
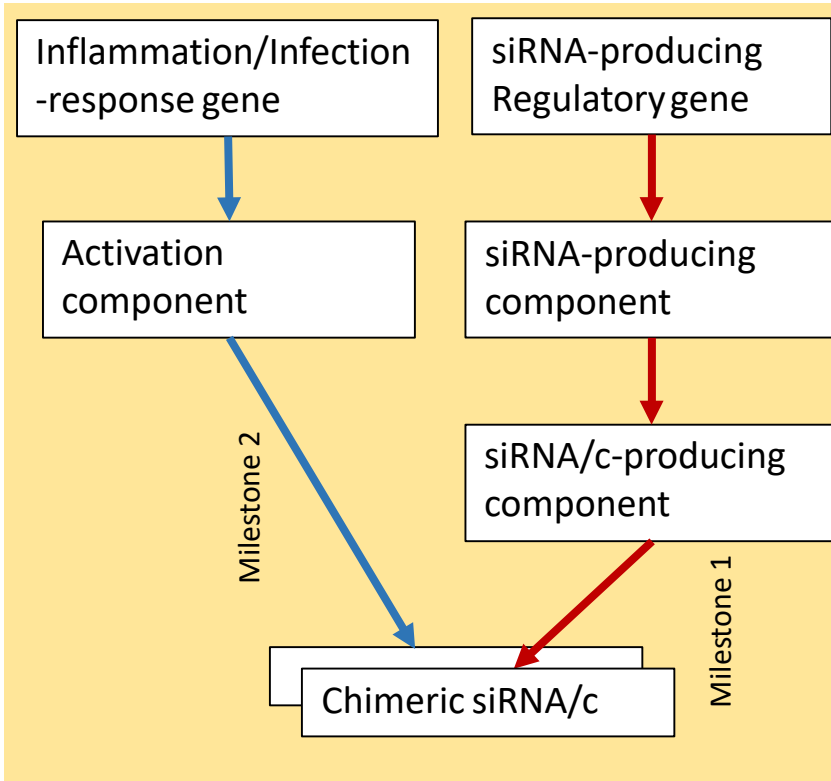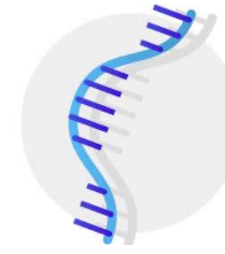- Support proposals related to COVID-19

Additional Content

I have a number of PhD students working on deep learning fundamentals and natural language processing. They together have developed and implemented a number of algorithms and models. They can help and work with your students on machine learning aspects of research.

I also have many years of collaborative research experience and a number of joint research projects in Engineering, Mathematics, Biology, Medicine, and more.

My group has also a number of dedicated GPU workstations and servers that are capable of training large scale deep learning models.

Up Next: Jonathan Dennis and Juan Reza

Poster 1

Jonathan Dennis, Ph.D.
Asst Professor, CMB
dennis@bio.fsu.edu

Research Interests
- Chromatin Structure
- Viruses
- Cancer

Project:
Betacorona Knock-out by
Engineered Chimeric siRNA Construct

Juan R. Reza,
CBM doctoral student
jreza@fsu.edu

Research Interests
- (Bio)Engineering / Software
- Gravity Continuum
- Molecular Biology, design

Abstract
Covid-19 is a member of a large class of RNA virus known as betacoronavirus, (β-CoVs) that includes SARS, MERS, certain common colds and others in a number of species + human. They share conserved sequences "/c" in four subgenomic (**sgRNA**) regions, each critical alone to CoVid-19 replication.

Background Information
The goal of my research is to apply techniques to analyze chromatin structure, and reveal the relationship between chromatin regulation and mechanisms of disease.

Milestone 1 — These sgRNA/c are candidate targets for development of an engineered gene-molecular construct to disable the targeted sgRNA modules upon invasion in lung alveoli cells using an existing a base-pair matching defense mechanism involved in human gene regulation: siRNA, Short Interfering RNAs.

Current status of this effort.
Use and structure existing Database data to identify the components: betacorona-wide conserved /c sequences, existing mammalian siRNA +IS genes: baseline for engineering design.

How We Can Help a COVID-19 Related Project
- Start a larger-long term grant proposal
- Lab facilities and hands-on
- Virus research experience
- Cell/Tissue culture experience
- Focus on the delivery mechanism
- Software development & database

… and willingness to learn

Milestone 2 — In order to activate the designer siRNA (targeted to sgRNA/c) a co-construct is to be developed in parallel using the activation mechanism of an existing IS (immune system) human/mammalian gene that, in nature, responds to transduced inflammation signals. The combination of this co-construct with the siRNA/c yields a chimeric module to deploy through conventional means.

The objective of this project is to design, implement and test the proposed chimeric siRNA/c construct with all due haste.

How someone can Help my COVID-19 Project
- Experience with siRNA design & use
- A549 lung type-II epithelial cell line experience
- Funding
- CRISPR-cas9 experience
- Access to Bio Safety Level 3
- Gene drive experience

… and/or willingness to learn

It has not escaped our notice that this technology would be a ***pan*-corona virus** immunity, robust against resistance evolution, one-time treatment regimen, durable, configurable to multiple species.

COLLABORATIVE COLLISION @FSU

We recognize a number of challenges, however, while listing just positives here. A parallel aim is the basic science: answer questions we have not yet conceived, etc.

Poster 2

Jonathan Dennis, Ph.D.
Asst Professor, CMB
dennis@bio.fsu.edu

Research Interests
- Chromatin Structure
- Viruses
- Cancer

Project:
Betacorona Knock-out by
Engineered Chimeric siRNA Construct

Research & Development Process Concept:

Juan R. Reza,
CBM doctoral student
jreza@fsu.edu

Research Interests
- (Bio)Engineering / Software
- Gravity Continuum
- Molecular Biology, design

Background Information
The goal of my research is to apply techniques to analyze chromatin structure, and reveal the relationship between chromatin regulation and mechanisms of disease.

Diagram:
- Inflammation/Infection-response gene → Activation component
- siRNA-producing Regulatory gene → siRNA-producing component
- siRNA-producing component → siRNA/c-producing component (Milestone 1)
- Activation component → Chimeric siRNA/c (Milestone 2)
- siRNA/c-producing component → Chimeric siRNA/c

Current status of this effort.
Use and structure existing Database data to identify the components: betacorona-wide conserved /c sequences, existing mammalian siRNA +IS genes: baseline for engineering design.

How We Can Help a COVID-19 Related Project
- Start a larger-long term grant proposal
- Lab facilities and hands-on
- Virus research experience
- Cell/Tissue culture experience
- Genetics, genomics, project management
- Software development, database design

… and willingness to learn

How someone can Help my COVID-19 Project
- Experience with siRNA design & use
- A549 lung type-II epithelial cell line experience
- Funding
- CRISPR-cas9 experience
- Access to Bio Safety Level 3
- Gene drive experience

… and/or willingness to learn

It has not escaped our notice that this technology would be a ***pan*-corona virus** immunity, robust against resistance evolution, one-time treatment regimen, durable, configurable to multiple species.

COLLABORATIVE COLLISION @FSU

We recognize a number of challenges, however, while listing just positives here. **Milestone 1** alone would be a success. A parallel aim is the basic science: answer questions we have not yet conceived, etc.

Up Next: Frankie Wong

Name: Frankie Wong
Department: College of Nursing
e-mail Address: fwong@fsu.edu

Research Interest

HIV and other non-HIV sexually transmitted infections
HIV disease progression and management
Substance abuse
Collaborative team development

Background Information

My overall scientific research interests focus on health disparities among sexual minorities as well as other marginalized and/or vulnerable populations such as immigrants and refugees. Notably, I am known for my epidemiological work (ranging from behavioral, clinical, to social) addressing risks for HIV and other non-HIV sexually transmitted infections (e.g., syphilis), as well as substance abuse, affecting the aforementioned populations here in the United States, China, South Africa, Tajikistan, and Viet Nam. This line of research has consistently been received support from the National Institutes of Health since 2000.

How Can I Help a COVID-19 Related Project

Mixed-method design (including social network)
Successful history of funding from federal agencies
Have national connections to Asian and Native Hawaiian health sectors as well as access to these populations

Additional Content

Before returning to academia full-time in 2000, I spent 7 years of my professional career delivering social and health prevention services that targeted under-served and vulnerable populations such as immigrants and refugees (in Boston) and ex-offenders as well as people living with HIV (in New York City). For about 3 of those years I served on executive management positions. In these capacities I had to interface with a diverse audience including funders (federal and private foundations), community leaders, politicians, and frontline staff, and most of all my clients who were my key constituents.

Up Next: Gordon Erlebacher

Gordon Erlebacher

Department of Scientific Computing
gerlebacher@fsu.edu

Research Interests
- Machine Learning with PDEs
- Natural Language Processing
- Innovative ideas in deep learning
- Deep Learning in general

My Research Background

I earned an M.S. in Physics at the Polytechnic Institute at the Free University of Brussels, and a Ph.D. in 1983 at Columbia University in the field of Plasma Physics, for which I developed an adaptive algorithm on triangular meshes to simulate containment in plasma devices. This was followed by six years at NASA Langley Research Center and another seven years at the Institute for Computer Applications in Science and Engineering. During this period, I participated in projects, such as wind tunnel design, scientific visualization, and the numerical simulation of fluid transition and turbulence. I now chair the Department of Scientific Computing. Five years ago, I switched disciplines and entered the fields of computational neuroscience and machine learning with particular emphasis on the mechanics and applications of Deep Learning. I am particularly interested in Natural Language Processing.

How I Can Help Collaborators
- Knowledge of continuous and discrete algorithms
- Multidisciplinary background
- Broad knowledge of Natural Language Processing
- Strong programming abilities
- Develop new applications that combine the power of PDEs/ODEs and Deep Learning

How Collaborators Can Help
- Possess strong knowledge of statistics
- Offer knowledge of linguistics and semantic analysis
- Suggest large-scale or complex applied problem in need of a solution
- Combine PDEs with ML in innovative ways
- Provide knowledge of data assimilation
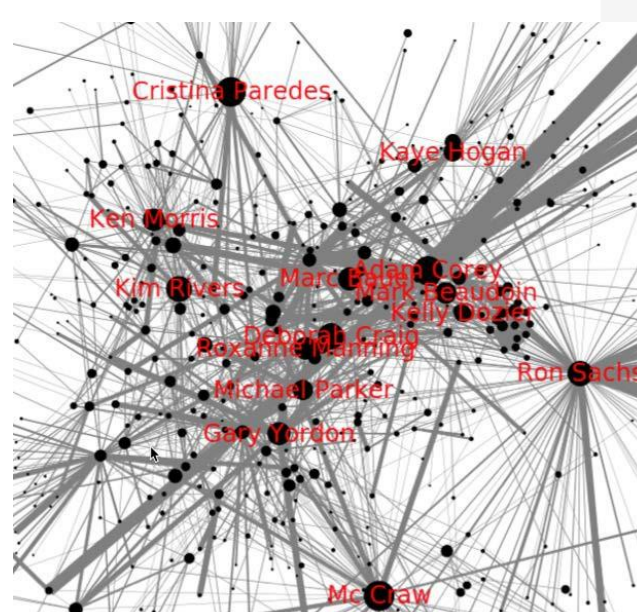- Contribute graphical modeling expertise
- Provide detailed datasets

Current Project: *Seek to apply time-dependent embedding methods to identify deception via style identification*

Parts of Speech

POS visualization via top Three components of SVD
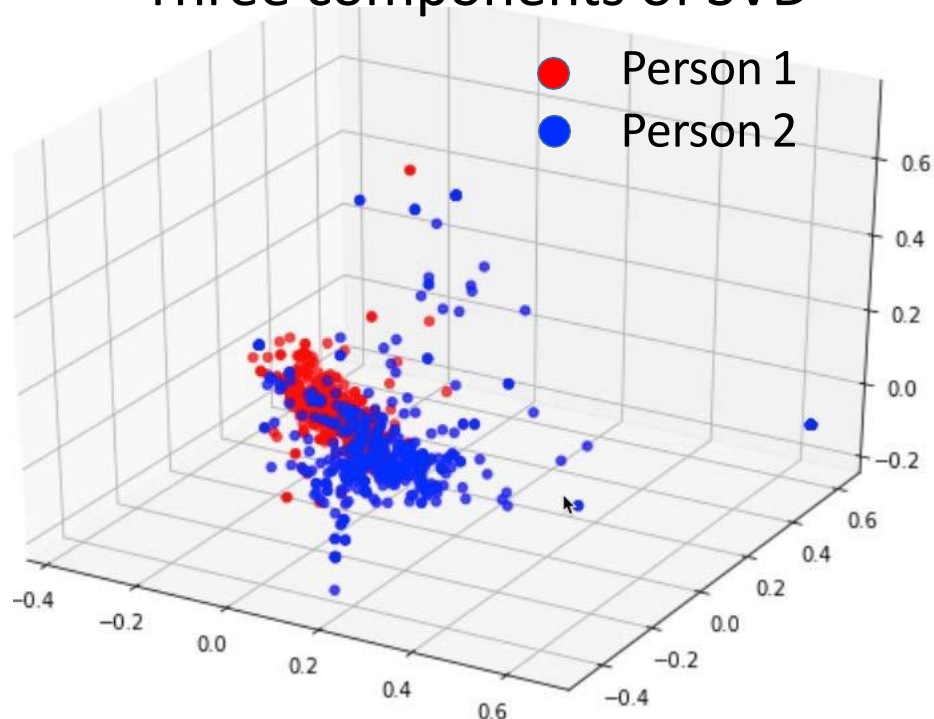
Email network

Abbreviation	Meaning
CD	cardinal digit
DT	determiner
EX	existential there
FW	foreign word
IN	preposition/subordinating conjunction
JJ	adjective (large)
JJR	adjective, comparative (larger)
JJS	adjective, superlative (largest)

Up Next: Amanda Driscoll

Amanda Driscoll

Amanda Driscoll
Associate Professor of Political Science
adriscoll@fsu.edu

Research Interests
- Political Institutions
- Comparative Politics
- Judicial Politics and the Rule of Law

Background Information

I have recently received, along with my coauthors at WVU and Penn State, an NSF RAPID grant to study how the severity of the COVID-19 pandemic and local government responses impact the public's support for the rule of law. The study will field nationally representative surveys in the U.S., the United Kingdom and Spain over the next four weeks, comparing how citizens' proximity to the crisis undermines support for the rule of law, or boosts the willingness to concede civil liberties to state authorities. Finally, a four-wave panel study of the German public will examine the stability of citizens' attitudes over the evolution of the crisis. For additional details: please see https://coss.fsu.edu/node/681

How I Can Help a COVID-19 Related Project
- Field and survey experimental research designs, cross-national and cross-sectional quantitative analyses, qualitative work based on archival resources and elite interviews.
- Experience working with "big data" and super computing resources
- Advanced statistical analysis
- Experience publishing in top journals
- Successful history of funding from federal agencies
- Fluent in Spanish and Portuguese, regional expertise in Latin America

How Someone Can Help My COVID-19 Project

Additional Content

Thanks!

COVID-19
RESOURCES FROM FLORIDA'S UNIVERSITIES

Background Information

Florida universities are home to some of the best and brightest talent in the fight against COVID-19. ExpertNet's new site brings together resources across Florida universities that are involved in COVID-19 or that potentially have expertise to help create teams to address the pandemic. Resources include research faculty, centers and institutes, academic departments, colleges of medicine and public health, departments of infectious disease, discussion groups, videos, publications, and more.

How I Can Help a COVID-19 Related Project

- We can help you:
  - Identify potential collaborators
  - Stay up to date on what your Florida colleagues are doing
  - Discover COVID-19 funding opportunities

How Someone Can Help My COVID-19 Project

- Let us know what you're doing so we can add your research to the COVID-19 resource page
- Update your Florida ExpertNet profile

Additional Content

Florida ExpertNet

Expertnet.org/COVID19

Up Next: Alva Striplin

Alva Striplin, CEO
ceo@bbbsbigbend.org

Big Brothers Big Sisters. OF THE BIG BEND

Background Information

90% - Attend Title I schools
52% - incarcerated parent
90% - Single parent home
82% - Attend Title I schools

- One to one matches

- 632 children ages 6-18

- 47% male/53% female

- 80% African American, 12% White

How I Can Help a COVID-19 Related Project

How Someone Can Help My COVID-19 Project

- Stressing importance of mentoring

- Transition of matches when things return to normal

- funding
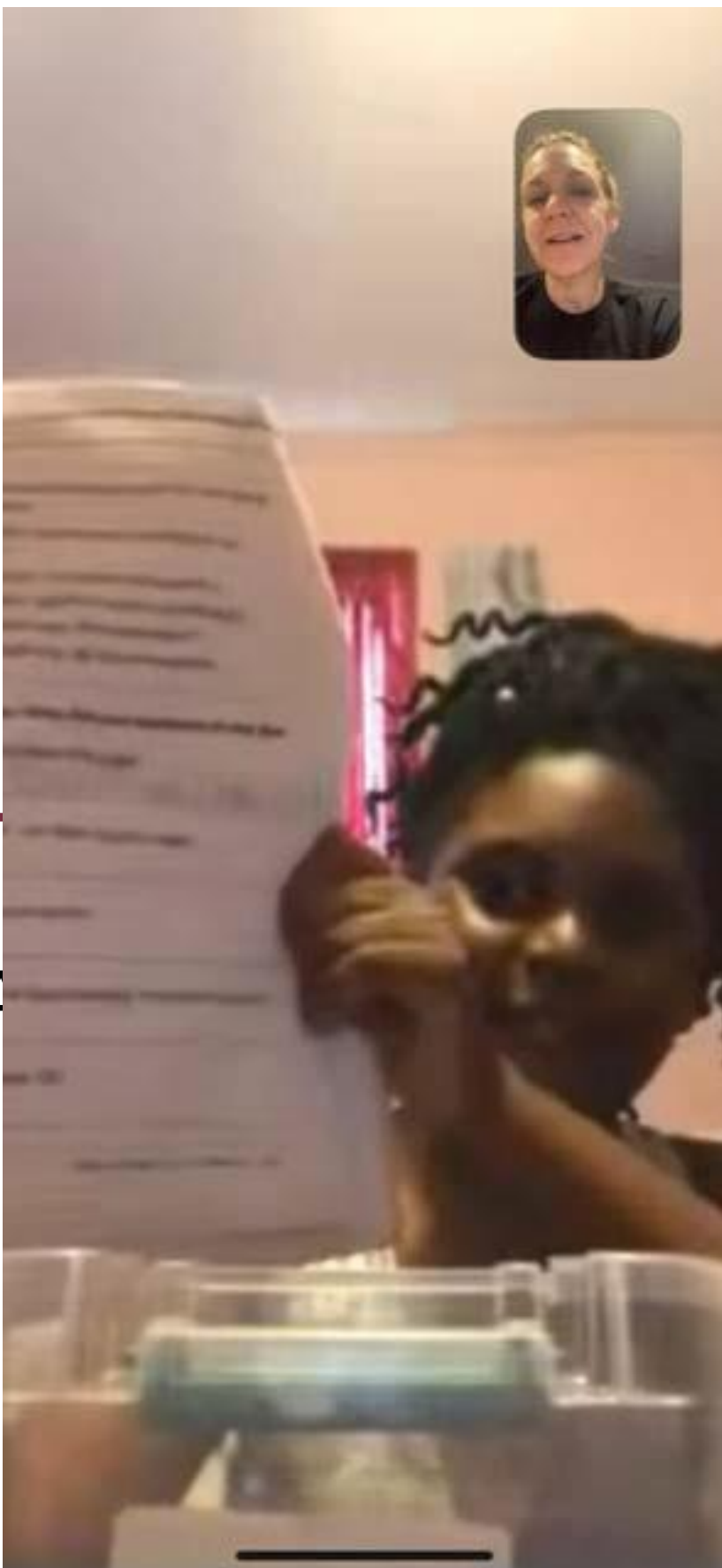
CREATE AND SHARE ART PROJECTS

START A JOURNAL TO SHARE

#BiggerTogether
#KeepKidsConnected

Big Brothers Big Sisters.

#BiggerTogether
#KeepKidsConnected

Big Brothers Big Sisters.

Up Next: Jose Pinto

Jose Renato Pinto, PhD
Associate Professor
Biomedical Sciences, COM
Jose.pinto@med.fsu.edu

Research Interests
- Cardiovascular Research
- Genetics of Heart Disease
- Molecular Mechanisms of Inherited Cardiomyopathies
- Molecular Basis of Muscle Contraction

Background Information

I am committed to and involved in numerous aspects of molecular and cellular cardiology. Currently, my research goals are (i) to define the role of nuclear proteins in heart development and disease; (ii) to develop new genetic and molecular strategies for the reversal of cardiomyopathies; (iii) to understand how allosteric mechanisms in muscle response to calcium-dependent activation (how proteins talk to each other at a distant site); and (iv) to understand how post-translational modifications fine-tune muscle contraction and their roles in cardiac disease. During my career, I received extensive training in techniques required to study regulation of muscle contraction, including high-throughput-screening methods, muscle biophysics and physiology, spectroscopic techniques, molecular biology, and transgenesis, all under the mentorship of experienced muscle investigators. I have been working in the striated muscle field and studying muscle mechanics and cardiomyocyte biology for ~21 years. Most recently we have been using human iPSC derived cardiomyocytes to study the mechanism of inherited cardiomyopathies.

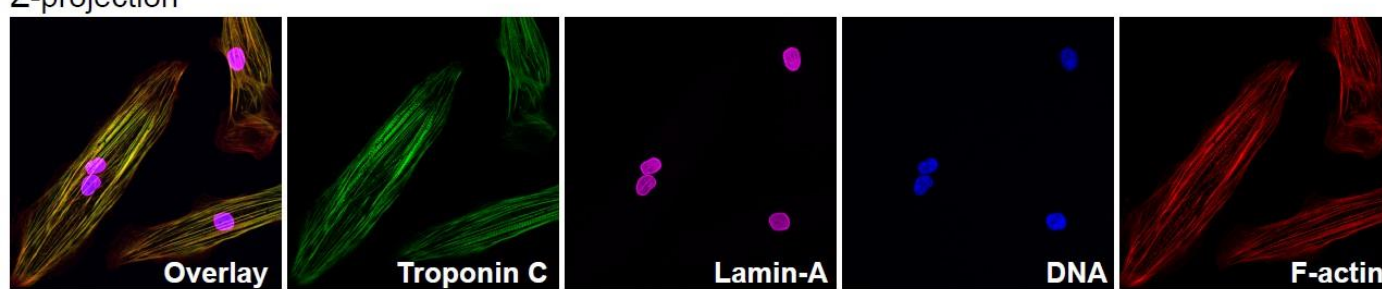## How I Can Help a COVID-19 Related Project

- Access to COVID 19 in a safety environment, i.e., BSL-3 lab
- Provide expertise and techniques in the cardiovascular field
- Use of animal models to study mechanisms of cardiac disease
- Use of human cardiac cells
- Experience publishing in top journals
- Track-record of NIH funding as well as AHA, JEK, etc.
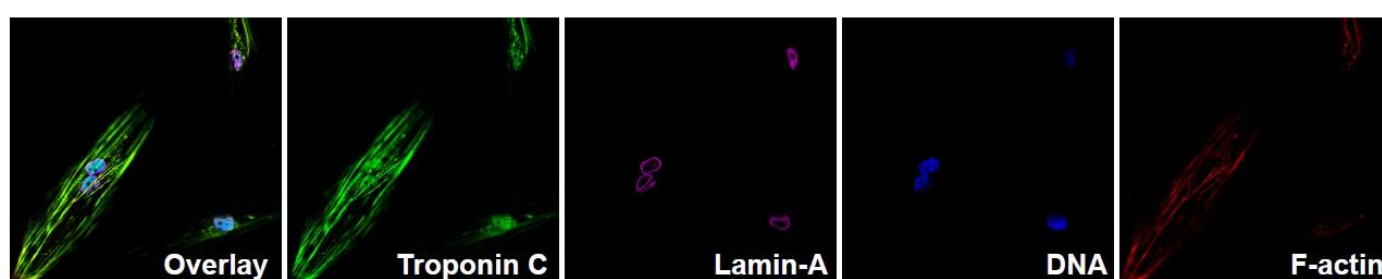
How Someone Can Help My COVID-19 Project

- Someone doing animal work with COVID 19 that could provide specimens (heart tissue)
- Someone doing cell biology with COVID 19 that would be interested in testing the virus effect in human iPSC-CM.
- Someone that could procure the hearts or heart tissue of COVID 19 deceased patients
- Someone that already display histological slices of heart tissue from COVID 19 patients

Additional Content

Z-projection

Overlay | Troponin C | Lamin-A | DNA | F-actin

XY section

Overlay | Troponin C | Lamin-A | DNA | F-actin

Human iPSC-derived cardiomyocytes
Project in collaboration with Dr. Jerome Irianto

Up Next: Krissy Capitano

Krissy Capitano, RN, BSN
Office for Clinical Research Advancement
kcapitano@fsu.edu

The Office for Clinical Research Advancement (OCRA) provides researcher support services to all FSU researchers conducting human subjects, clinical research and clinical trials

Background Information

I am a Registered Nurse with experience in both nursing and clinical research.   I was the Head Clinical Research Nurse at the University of Georgia (UGA) and served as the Clinical Navigator for UGA and Emory University.   At FSU, I work in the OCRA office as the Clinical Research Navigator. Our office can provide guidance, tools, resources and facilitation to help FSU clinical researchers successfully navigate the life cycle of a study at any point.

How I Can Help a COVID-19 Related Project

- Can be a "single point of contact" for getting answers and finding solutions
- Research consultations and study development assistance
- Regulatory guidance & ClinicalTrials.gov assistance
- IRB protocol consultation & submissions
- Data management and security guidance

How Someone Can Help My COVID-19 Project

Additional Content

OCRA is the FSU central administrator for ClinicalTrials.gov and can assist with creating new accounts and oversee maintenance of FSU-affiliated study records.

Up Next: Machelle Thompson

Machelle Madsen Thompson
Ph.D., LCSW, Florida Qualified Supervisor
FSU College of Social Work,
Director Resilience and Protective Factor Initiative
mthompson2@fsu.edu

Research Interests
- Trauma Resilience Measurement.
- Resilience Therapeutic Implementation Research.
- Applying Research to Real World Applications across developmental levels and cultures.

Machelle teaches/specializes in trauma interventions with youths. For 25+ years she has created resilience-based interventions and measurement for underserved youths experiencing trauma, poverty, and abuse. She is on the AVAhealth board of directors and presents nationally and internationally on implementing protective factors in school, counseling, foster care, medical, and high-risk community settings. She is lead researcher on the Trauma Resilience Scale, the Trauma Resilience Scale for Children, La Escala de Resiliencia de Trauma para Niños, and 儿童青少年抗逆力调查——保护性因素的测量 which have been used across the world.   She was a Fulbright U.S. Scholar to China & Hong Kong. She worked with UCF Florida Interactive Entertainment Academy to begin creating *My Little Buddy* resilience app. Her COVID19 Resilience Briefs are currently being disseminated by national organizations (AVA, APSAC, IVAT, & ACEs Connection, 2020).

How I Can Help a COVID-19 Related Project

- Provide Trauma Resilience Scales for Children & Adults across three languages.
- Access to mobile and hardware programmers and e-artists.
- Clinical application of research.
- Provide services to children across cultures living in stressed environments.
- Engage Interdisciplinary & international trauma consultants.
- Present findings at national multidisciplinary trauma conferences.

How Someone Can Help My COVID-19 Project

- Grant finding and write up.
- Help with Statistical Research Outcomes
- Organization of technical and final journal write up.

Additional Content

Up Next: Richard Nowakowski

Richard Nowakowski
Department of Biomedical Sciences
Richard.nowakowski@med.fsu.edu

Research Interests
- Transcriptomics of sex differenced
- Mathematical Modeling
- Development of the Brain

Background Information

I can do two things:

1) I can help with mathematical modeling

2) As department chair, I can facilitate collaborations with the other faculty in Biomedical Sciences at the College of Medicine

How I Can Help a COVID-19 Related Project

I can do two things:

1) I can help with mathematical modeling

2) I can facilitate collaborations with the other faculty in Biomedical Sciences text box

How Someone Can Help My COVID-19 Project

See box at left!

Additional Content

No additional content.

Up Next: Svetlana Pevnitskaya

Svetlana Pevnitskaya
Department of Economics
spevnitskaya@fsu.edu

Research Interests
Experimental Economics
Game Theory
Decision making under uncertainty

My Research Background

My research methodology can be described as **theory-driven experiments**. Once I formulate a research question, I write and solve the model of the process of interest, and use theoretical predictions to form hypotheses of behavior under specific conditions. I design economic experiment, and compare decisions in the lab (incentivized with real monetary payoffs) to the predictions of the model. In addition, I employ behavioral testing and elicitation instruments. The objectives of the studies include determining whether there are systematic deviations from theory, and how theory can be adjusted to account for them, leading to better understanding of human behavior and successful policies with economic impact.

My past and current research interests include: **Auctions** (effect of endogenous entry, uncertain number of bidders, biased beliefs, novel auction mechanisms), **Environmental decisions** (dynamic games with cost of pollution, effect of the option to invest in clean technologies, effect of environmental context), **Bargaining** (effect of endogenous rewards and punishments), **Decisions under uncertainty** (risk and ambiguity), **Networks** (information aggregation in networks).

How I Can Help Collaborators

- Analytical and experimental approach to investigating research question
- Economics (theoretical, experimental, behavioral) perspective/research
- Design of experiments, data collection, statistical/econometric analysis
- Interdisciplinary approach to problems

How Collaborators Can Help

- Experience with the phenomena that has economics component and unresolved objectives
- Combining methods of our respective disciplines
- Environmental decisions
- My new emerging interests are health, aging, diversity - please talk to me if any of those is your field of research

Additional Content

I look forward to hearing about your research and discussing and exchanging ideas that are outside of the topics on this slide

Up Next: Anke Meyer-Baese

Anke Meyer-Baese
Scientific Computing
Electrical and Computer Engineering
ameyerbaese@fsu.edu

Research Interests
- Epidemic and brain data analysis
- Dynamic graph theory
- Temporal networks
- Advanced machine learning

My Research Background

My research interests lie in epidemic and brain data analysis and modeling with application to disease spread and neurodegenerative diseases. I have applied advanced dynamical graph theory, temporal graph networks and modern control mechanisms to determine disease foci , and diffusion models and epidemic spreading modeling to predict disease spread.

How I Can Help Collaborators

- Advanced epidemic data analysis
- Expertise in dynamic graph theory
- Determine foci of disease propagation
- Models for disease propagation
- Advanced machine learning techniques

How Collaborators Can Help

- Provide epidemic data
- Research in epidemic diseases
- Clinical background

Additional Content

Left: Node and edge dynamic model with changing epicenters.   Right: Contact-based vs. path-based spread model.
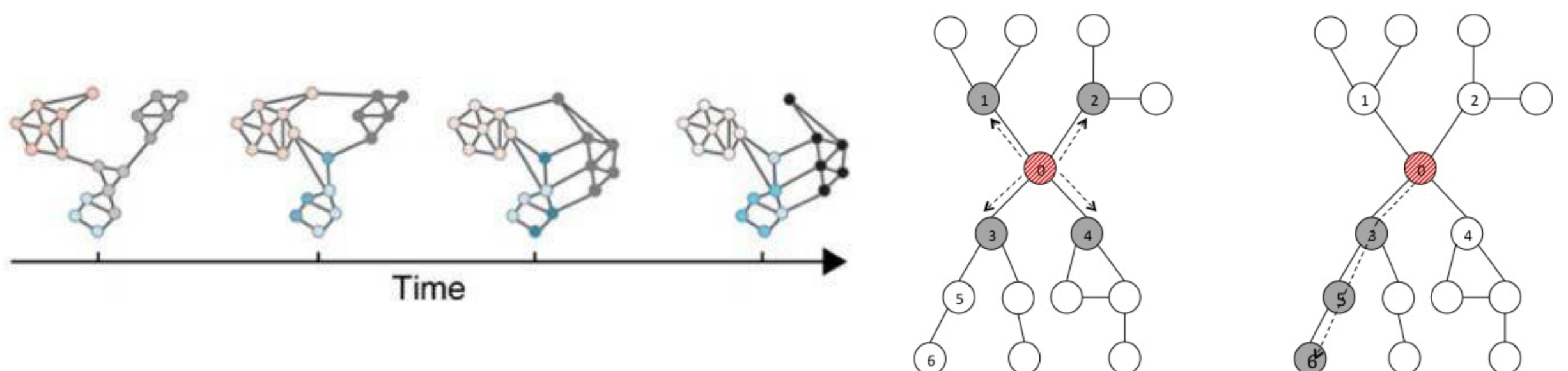
Up Next: Zucai Suo

Name: Zucai Suo

Department : Biomedical Sciences

Email Address : Zucai.Suo@med.fsu.edu

Research Interests

- We will kinetically investigate SARS-CoV-2 RNA-dependent RNA polymerase complex (RdRp).
- We will study how current Gilead Sciences' Phase III clinical trail drug remdesivir 5'-triphosphate is incorporated by SARS-CoV-2 RdRp and then terminate further RNA synthesis of SARS-CoV-2.
- We will screen for potential anti-COVID-19 nucleotide analog inhibitors from our Lab's small molecule library.

Background Information

In late 2019, Chinese health authorities reported an outbreak of pneumonia of unknown origin in Wuhan. This has gradually transitioned into a global pandemic, now known as COVID-19. A novel coronavirus named SARS-CoV-2 was found to be the causative agent for COVID-19. SARS-CoV-2 was initially sequenced in China and its RNA genome differs from previously identified viruses such as MERS-CoV and SARS-CoV. It is now considered as the 7th member of the family of coronaviruses that are known to infect humans. At present, the exact mechanism of viral replication by SARS-CoV-2 RNA-dependent RNA polymerase is unknown. In addition, remdesivir, an adenosine analogue, is in Phase III clinical trial and has the potential to be the drug for treating SARS-CoV-2 infections but its inhibitory mechanism remains unclear. Hence, we aim to establish these abovementioned mechanisms and develop more potent nucleoside analog drugs to fight COVID-19.

How I Can Help a COVID-19 Related Project

❑Currently, there are no antiviral drugs available for the treatment of COVID-19. In order to discover novel small molecules against SARS-CoV-2, it is extremely important to understand mechanism of viral replication by SARS-CoV-2 RNA-dependent RNA polymerase (RdRp). Although several groups have reported small molecules that can inhibit coronavirus RdRp, they have failed to establish the mechanism of inhibition.

❑We aim to employ our expertise to mechanistically characterize the novel SARS-CoV-2 RdRp and also to screen for novel inhibitors from the in-house collection of diverse nucleotide analogues.

# How Someone Can Help My COVID-19 Project

❑As discussed previously, we aim to screen for novel nucleotide analog inhibitors of SARS-CoV-2 RdRp through enzymatic assays. Once we are able to discover these molecules, we intend to collaborate with relevant experts in the field to test these inhibitors' efficacy and toxicity in cell- and animal-based models.

❑Further, we aim to collaborate with clinicians in order to conduct clinical trials for the treatment of COVID-19. This will help validate the *in vivo* safety and efficacy of potential inhibitors for the novel coronavirus .

Additional Content

Strengths

- Pre-steady-state kinetic methods
- Single molecule spectroscopy
- X-ray crystallography
- Cryo-EM
- Design of small molecule inhibitors
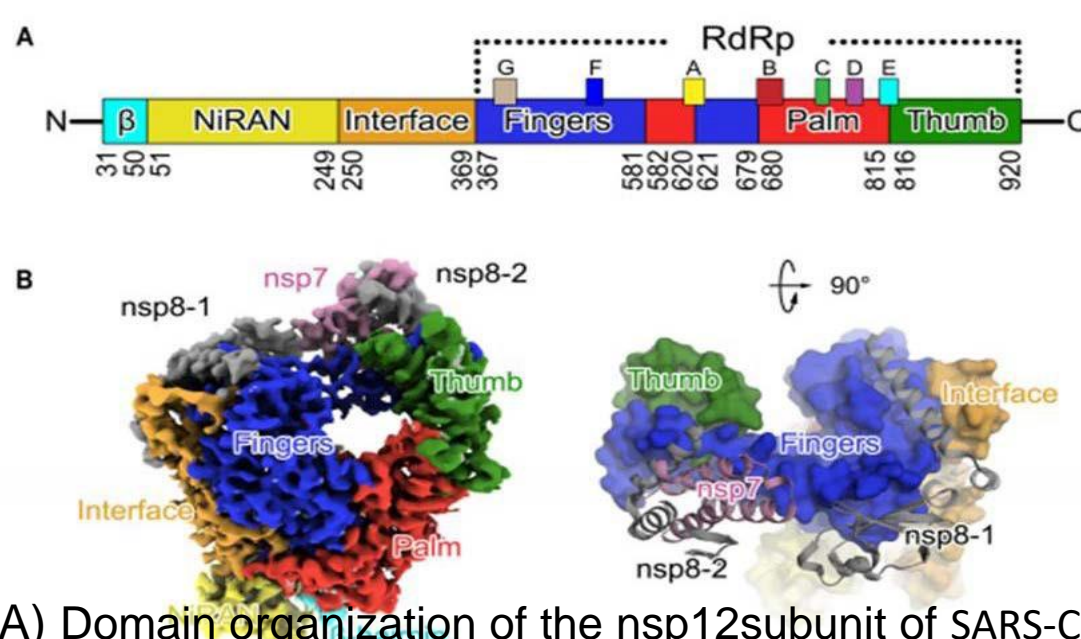
(A) Domain organization of the nsp12 subunit of SARS-CoV-2 RdRp
(B) An overview of the Cryo-EM reconstruction of the nsp12-nsp7-nsp8 complex

Gao, Yan et al.

2020; bioRxiv

Up Next: Yanshuo Sun

Yanshuo Sun

Industrial & Manufacturing Engineering

y.sun@fsu.edu

Research Interests
- Optimization theory & applications
- Transportation systems analysis
- Data analytics & visualization

My Research Background

My overall research objective is to improve the planning, operations, and management of transportation systems through the application of <u>mathematical modeling and optimization methods</u>. I am fascinated with a broad range of research topics and have strong track records in several core areas of transportation, including transportation networks, public transportation, freight transportation, airports, transportation economics, and transportation data analytics.

For this CC on COVID-19, I would like to propose the following potential topics:
- Implications of COVID-19 on the substitution of communications for transportation
- Grocery and medical supply delivery for mobility impaired population during COVID-19
- Hurricane evacuation planning under a public health crisis

How I Can Help Collaborators

- Operations research
- Big data analytics
- Transportation systems
- Civil infrastructure systems

How Collaborators Can Help

- Connections to local government agencies
- Nonrational decision making modeling

Additional Content

COLLABORATIVE COLLISION @FSU

Up Next: Beth Hodges

Mandip Sachdeva

College of Pharmacy and Pharmaceutical Sciences

Mandip.sachdeva@famu.edu

Research Interests

- Drug delivery using microneedles, topical nanoparticles
- Cancer drug delivery with nanoparticles and surface modified nanoparticles/liposomes and oral delivery of anticancer agents;e.g. TKIs, CBD etc
- 3D printing of scaffolds and Pharmaceuticals

My research involves working in the area of drug delivery systems using variety of approaches: liposomes, lipid emulsions, Nanoparticles and targeted nanoparticles for cancer drug delivery and also using surface modified nanoparticles for topical and transdermal delivery; 3D printing of pharmaceuticals like Microneedles, tablets and also printing of scaffolds for growing tumor cells, cornea printing; use of stem cells to differentiate them to retinal epithelial cells and photoreceptor cells;delivery of exosomes for microRNA and anticancer drugs and CBD.

I can be a good resource for delivering various proteins which(e.g. S protein) using approaches like microneedles to make it into a vaccine formulation. The proteins can also be encapsulated in microparticles and then coated on to microneedles for delivery into the skin. I have all the resources to conduct such experiments ;e.g. SLA and DLP printers.

I would like to work with some scientists who have the proteins they want to deliver either intranasaly or topically via microneedles to enhance antibody production against the virus. I have over 25 years of drug delivery experience. Since now we are trying to print microneedles, we have more flexibility as to how we can precisely deliver the proteins.

Please visit my website to look at my capabilities:
https://sites.google.com/site/mandipsinghsachdeva/home

Name: Tingting Zhao
Department: Geography
Email Address: tzhao@fsu.edu

Research Interests
- GIS
- Health disparity
- Disaster preparedness and response

I have broad trainings and ample research experience in geography, with an expertise in Geographic Information System and Science (GIS). My research integrates GIS, survey research methods, and statistics. It covers a broad range of geographic issues, varying from environmental issues (such as vegetation carbon dynamics and Deep Horizon oil spill pollution) to human behaviors (such as urbanization, energy conservation, cancer health disparity, and hurricane evacuation). These research projects have been conducted at a great geographic range, varying from individual-based survey to spatial analyses up to the national scale.

- Spatial data inquiry and analysis
- Web application of spatial information distribution and analysis
- Disaster risk perception evaluation
- Publication and grant application

- Publication and grant application
- Decision-making modeling
- Text data mining
- Social network analysis

My research team collected past evacuation orders and created this Web GIS Application: Historical hurricane evacuation orders and hurricane tracks
https://cosspp.maps.arcgis.com/apps/webappviewer/index.html?id=5bfae5e6c1bf405f9f1a47d921efa61a

Some of my cancer health disparity research with Zhang (Statistics) and Sang (Chemistry):
Identifying county-level factors for female breast cancer incidence rate through a large-scale population study accepted by Applied Geography with revisions

Office of Research Development

Research development encompasses a set of strategic, catalytic, and capacity-building activities that advance research, especially in higher education. As Research Development professionals, we help researchers become more successful communicators, grant writers, and advocates for their research. We help researchers bring new ideas to life!

- Funding opportunity identification
- Limited submissions management
- Successful proposals database
- Administration of CRC Programs
- Trainings and Workshops
- Proposal editing
- Collaborative Collisions
- Strategic planning for individuals and teams

- Contribute successful proposals to the database
- Volunteer to be a panelist at workshops
- Volunteer to be a proposal reviewer
- Tell others about our services
- Let us know how we can help you!

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Funding Opportunities Related to COVID-19

Funding Opportunities | Calls and Letters | Resources | Notices

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Date Posted	Agency Name	Program Name	Agency Deadline	Notes
04/02/2020	National Institutes of Health (NIH)	Administrative Supplement	02/06/2021	NIAID
04/02/2020	National Institutes of Health (NIH)	Notice of Special Interest (NOSI) regarding the Availability of Urgent Competitive Revisions for Research on the 2019 Novel Coronavirus (2019-nCoV)	04/08/2020	NIAID, NIGMS
04/02/2020	National Institutes of Health (NIH)	Notice of Special Interest (NOSI) regarding the Availability of Urgent Competitive Revisions for Research on Coronavirus Disease 2019 (COVID-19) and the Causative Virus SARS-CoV-2	02/05/2021	NIGMS

research.fsu.edu/research-offices/ord/funding-opportunities-related-to-covid-19/

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