Ivanov Lab
Ivaylo Ivanov, Ph.D., 2012 Pew scholar
Department of Microbiology and Immunology
Columbia University
New York, NY

Research Area: Microbiota/Immune networks, Mucosal Immunology, Commensal microbes and regulation of tumorigenesis

Research in the Ivanov lab focuses on understanding the role of the gut microenvironment (e.g. commensal microbiota, metabolism) in modulating immune function in health and disease. We use genetic techniques and disease models to study these mechanisms in vivo. Postdoctoral positions are immediately available in the lab to study: 1) immune networks controlled by commensal microbes and their metabolites, and their role in immune homeostasis and cancerogenesis and 2) role of intestinal epithelial cells in the microbiota-immune crosstalk in vivo.

Candidates with prior experience in epithelial cell biology, lymphocyte biology, membrane and cytoskeleton biology, mucosal immunology, cell metabolism, animal disease models or high-resolution imaging are especially encouraged to apply. At least one first author peer-reviewed publication is required.

Interested candidates should send their CV along with the contact information of three referees to Dr. Ivaylo Ivanov at ii2137@cumc.columbia.edu. For more information: http://www.microbiology.columbia.edu/faculty/ivanov.html

Selected Publications:


A postdoctoral position is available in the lab of former Pew scholar Judy Lieberman. The lab has recently identified two new mechanisms by which pore-forming immune proteins kill microbes. We are looking for postdocs to work on elaborating their mechanism and identifying the in vivo situations in which they are important. The two new defenses, both innate and adaptive, are as follows. Microbial infection triggers potent immediate (innate) immune responses that marshal defenses needed to clear the infection. Immune cells responsible for recognizing infection and the barrier cells that line the surfaces of the body where microbes enter (skin, gut, respiratory tract) have alarm systems that detect bacterial products within them, a sign of microbial invasion. These alarm systems, called inflammasomes, activate death-inducing enzymes that trigger death of the infected cell (called pyroptosis) and release of chemical signals that spread the alarm throughout the body. Activation of pyroptosis helps defend against bacterial infection through unclear mechanisms. The current theory was that pyroptosis indirectly inhibits bacterial multiplication by expelling bacteria from their niche within cells, where they grow best. An important substrate of the death-inducing enzymes is gasdermin D. Gasdermin D cleavage causes cell death thorough an unknown mechanism. We recently found in a paper in press at Nature that the cleaved fragment of gasdermin D forms membrane pores that destroy the cell’s membrane, leading to the release of cytosolic proteins, including cleaved gasdermin D itself. The active fragment of gasdermin D binds to phospholipids on the inner leaflet of the cell membrane and to cardiolipin on bacterial membranes. Because of its lipid-binding preferences, activated gasdermin D kills from within the cell, but does not harm neighboring mammalian cells, limiting tissue damage. It also directly kills intracellular and cell-free bacteria. Thus activation of gasdermin D not only kills infected or injured mammalian cells, but also directly kills the bacteria that activate pyroptosis, providing a new defense against invasive bacteria. Innate and adaptive killer lymphocytes (NK cells and cytotoxic T cells) recognize infected cells and kill them by releasing cytotoxic granule death-inducing proteases, called granzymes, and pore-forming proteins that deliver the granzymes into target cells. What happens to intracellular microbes during this process is unclear. We found that the antimicrobial cytotoxic granule pore-forming protein, granulysin (absent in mice) delivers granzymes into extracellular and intracellular bacteria, parasites and fungi, where they generate superoxide, inactivate oxidative defense enzymes and kill microbes oxidatively (Cell 2014, Nat Med 2016). Microbe death occurs within minutes before the host cell is killed, limiting the spread of infection. Anaerobes, which don’t generate superoxide, are still killed, but more slowly. Proteomics analysis of granzyme substrates in 3 bacteria suggests that cleavage of essential proteins disrupts critical metabolic and biosynthetic pathways. We term this microbe programmed cell death ‘microptosis’. In 3 intracellular infection models (L. monocytogenes, T. cruzi, T. gondii), granulysin-transgenic mice clear infection better and survive infections that are lethal to wild-type mice.
Research in the DiRita lab is aimed at understanding molecular biology of bacterial pathogens and the mechanisms by which they interact with hosts. Two microbes under investigation are *Vibrio cholerae*, agent of human cholera, and *Campylobacter jejuni*, a prevalent foodborne pathogen that causes gastroenteritis and diarrhea. Projects concerning *V. cholerae* include understanding the regulatory pathway that controls the two major pathogenicity determinants of the microbe, the cholera toxin and the toxin-coregulated pilus. With *Campylobacter jejuni*, we are studying basic mechanisms underlying its biology and pathogenicity.

The DiRita lab is seeking a highly skilled and motivated immunologist/microbiologist for a Postdoctoral Research Associate to study the molecular pathogenesis of intestinal bacterial pathogens.

The successful candidate will have a PhD degree in microbiology, immunology or a DVM with specialty in pathology and be able to work with different animal models for bacterial colonization/infection.

Required skills include immunology and animal work. Experience with intestinal bacterial pathogens and molecular biology is a plus.

If interested email Dr. Victor DiRita at diritavi@msu.edu.
Leo Q. Wan Lab
Postdoctoral Research Associate Position In Developmental Biophysics

DESCRIPTION:
The Laboratory for Tissue Engineering and Morphogenesis (http://www.rpi.edu/~wanq) in the Department of Biomedical Engineering at Rensselaer Polytechnic Institute invites applications for Postdoctoral Research Associate position in the research areas of Developmental Biophysics. This position is open immediately until filled.

We seek highly motivated individuals who enjoy working in a team while concomitantly desiring to pursue their own ideas in a very supportive environment. Our lab combines microtechnology, molecular and cellular biology, cell biomechanics, and imaging techniques to better understand the biophysics of tissue morphogenesis in development. Specifically, this position is focused on understanding a newly discovered property of cells, cell chirality (also known as cellular left-right asymmetry) and exploring its application in developmental biology and drug screening. Research experiences in development morphogenesis, cell biophysics, and/or numerical simulation are desired. This project is currently funded by NIH, NSF, AHA and The Pew Charitable Trusts.

Candidates must possess an earned Ph.D. or a foreign degree equivalent in a relevant area at the time of appointment. Research training in cellular biophysics and developmental biology is highly desired.

We offer an excellent benefits package including health, dental, life insurance, retirement, tuition, etc. Please visit our Human Resources website at: http://hr.rpi.edu

To Apply
Application materials accepted until the position is filled. Interested individuals should send a CV with contact information of three references to wanq@rpi.edu or the address below:

Rensselaer Polytechnic Institute
Professor Leo Q. Wan: Postdoctoral Research Associate Opening
Biomedical Engineering Department
110 8th Street, Troy, NY 12180-3590

We welcome applications from candidates who will bring diverse cultural, ethnic, and national and international perspectives to Rensselaer’s work and campus communities.

Rensselaer is an Equal Opportunity/Affirmative Action Employer.
Ben tenOever Lab

A postdoctoral fellow position is available in Benjamin tenOever’s laboratory as part of its Virus Engineering Center for Therapeutic Research (VECTOR). The center is located in New York City and maintains close affiliation with the Pasteur Institute in Paris. VECTOR is focused on the manipulation of RNA viruses as a means to control their biology and generate innovative biological tools. For more information, please send a brief cover letter, C.V., and contact information for people who can speak to your qualifications to Benjamin.tenOever@mssm.edu.
Juan Carlos Izsusa Belmonte Lab

Laboratory research focuses on how genes and molecules orchestrate the development of an embryo. The lab studies how one cell gives rise to millions, how cells come to be organized into complete structures, how stem cells differentiate and give rise to over 200 cell types, and how certain animals are able to regenerate their tissues and organs.

http://belmonte.salk.edu/
Jonathon Howard Lab

Postdocs available at Yale: the biophysics and biochemistry of cell shape and motion

1. Postdoctoral positions are available to work on a new project to understand the morphology of dendrites in neurons. Dendritic branching determine how the neuron receives information from other cells or from the environment. How are branches formed? How do lengths & diameters change at branch points (are there scaling laws)? What sets the total number of branches? How does branching impact signaling function? We are focusing on the microtubule-based cytoskeleton and use the Class IV dendritic arborization mechanoreceptors in flies as a model system. These cells have high complexity, similar to that of Purkinje cells in the mammalian brain, can be manipulated genetically using Class-IV specific drivers, and are amenable to imaging in living animals. We are looking for postdocs with expertise in fly genetics, neurobiology and/or theory.

2. Postdocs are also available to work on the motility of cilia and flagella.

Visit our lab website (http://medicine.yale.edu/mbb/faculty/jonathon_howard.profile) or our Facebook (https://www.facebook.com/thehowardlab/?ref=profile)

Please e-mail your CV, a summary your current research, a short statement on why you are interested in these projects, and the names of two references to jonathon.howard@yale.edu
Helen Piwnica-Worms Lab

Postdoctoral positions are available in the laboratory of Dr. Helen Piwnica-Worms at The University of Texas MD Anderson Cancer Center. The Piwnica-Worms laboratory focuses on identifying omic changes with functional significance to the development and progression of invasive triple negative breast cancer (TNBC) and translating results from basic, omic and preclinical studies into improved clinical interventions for cancer patients. Recognizing that a key challenge facing breast cancer researchers today is the lack of good preclinical models for studying human breast cancer the lab works with primary human breast tumors obtained directly from patients with TNBC. These tumors are being propagated in the humanized mammary fat pads of immune compromised mice for discovery, omic and preclinical studies. Potential projects include (1) identifying drivers of breast cancer metastasis, (2) identifying, characterizing and targeting chemoresistant tumor cells present in treatment naïve TNBC; (3) determining the contribution of p53 mutations to early stage TNBC (4) delineating molecular mechanisms of early breast cancer progression.
Shelly Peyton Lab

The Peyton lab in the department of Chemical Engineering at the University of Massachusetts Amherst is looking for post-docs available for an immediate start date. The Peyton lab consists of eight PhD students and three post-docs and offers unique training and research opportunities in the fields of biomaterials, cancer biology, and regenerative medicine. The post-doc position will focus on gaining a fundamental understanding of the interactions between metastatic breast cancer cells and their microenvironment. The position will involve tissue culture, high throughput signaling assays, as well as the adaptation of novel hydrogel materials as tissue mimics.

http://www.peytonlab.org/
@peytonlab
Clarissa Nobile Lab
Recruitment Period: Open May 4th, 2017 through June 30th, 2017

Description
A postdoctoral position is available in the research group of Professor Clarissa Nobile in the areas of biology, microbiology, microbial pathogenesis, and/or genetics with a focus on microbial community formation, such as biofilm formation, by fungal, bacterial, and/or archaical microorganisms, such as Candida species, Staphylococcal species, Methanobrevibacter species and others. The postdoctoral scholar will develop, lead, and participate in projects aimed at understanding features of microbial community formation at the molecular level.

The University of California, Merced is an affirmative action/equal opportunity employer with a strong institutional commitment to the achievement of diversity among its faculty, staff, and students. The University is supportive of dual career couples.

A Ph.D. in Life Sciences (e.g. biology, microbiology or related science) is required. Applicants must have excellent writing and verbal communication skills and be able to supervise Master, Ph.D. and Undergraduate students. Applicants must also be able to perform independent and team-oriented work. Practical research experience in microbiology, molecular biology, genetics and biochemistry is essential. Additional experience in one or more of the following subjects is desirable: pathogenesis, mycology, computational biology, genomics and evolution.

Salary is based on the University of California Academic Salary Scales.

Review of applications will begin on 06/01/2017. The position will remain open until filled. The final end date for this position is June 30, 2017.

Interested applicants are required to submit 1) a cover letter 2) curriculum vitae 3) a list of 2 references with contact information including mailing address, phone number and e-mail address submitted through AP Recruit during the application process 4) diversity statement and 5) a Statement of Research Interests.

For more information, please contact Clarissa Nobile at cnobile@ucmerced.edu.

Job location
Merced, CA

Requirements
Documents
- Curriculum Vitae - Your most recently updated C.V.
- Cover Letter
- Statement of Research Interests
- Statement of Contributions to Diversity - Statement addressing past and/or potential contributions to diversity through research, teaching, and/or service.

References
2 references required (contact information only)

To apply: https://aprecruit.ucmerced.edu/apply/JPF00491