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Biological Sciences at Peking University

Biological Sciences at PKU aspires to advance education and research in the broad spectrum of life sciences through learning, discovery, and multidisciplinary team science. As one of the oldest biology departments in China, our education and research span a wide spectrum of subjects, from single molecules and individual cells in the laboratory to endangered animals in our Conservation Biology Field Stations. Our overarching missions are: (1) To encourage students to achieve academic excellence through an interdisciplinary curriculum, inquiry-based learning and extracurricular activities, so that they can explore and develop their full potential; and to educate students to be responsible citizens and leaders who can be called upon to serve society; (2) To encourage and respect the creativity of individuals, to generate new knowledge and ideas through innovative research and discovery; and to disseminate new discoveries for the benefit of education, scientific development and human health; (3) To build long-term sustainable research programs by encouraging teamwork and collaborative efforts, and to focus on cutting-edge research through multidisciplinary recruitment and national/international collaborations.

We have benefited from significant increases in the national budget for education and research, as well as new and flexible national recruitment programs and policies. The size of our faculty has nearly doubled in the past 10 years, while the number of annual citations of our publications has increased more than 20 times. Among the 78 principal investigators (PIs), 5 are members of the Chinese Academy of Sciences, 3 are members of the American Academy of Sciences, 10 are Cheung Kong Scholars, 21 have been designated as National Natural Science Foundation Distinguished Young Scholars, and 6 and 17 are recent “1000 Talents” and “1000 Young Talents” recruits, respectively. In addition, we house 3 National and Ministry of Education Key Laboratories. Our user-friendly core facility provides essential services and supports for our research community. The 2018 QS World University Subject Rankings ranked Biological Sciences at PKU 38th in the world.

Here we highlight some major achievements in the research areas we are pushing forward at PKU:

Regenerative medicine: Regenerative medicine holds great promise for treating challenging diseases such as diabetes and neurodegenerative disorders. One major question in regenerative medicine is how to generate pluripotent stem cells that can give rise to any desired cell type of the body for clinical applications. Professor Hongkui Deng achieved a groundbreaking milestone by using small molecules to reprogram somatic cells into pluripotent stem cells, establishing a fundamentally new, chemical-based method of manipulating cellular identity and functionality. Using a new chemical cocktail, his group established mouse and human extended pluripotent stem (EPS) cells that possessed both embryonic and extra-embryonic developmental potential, a key functional feature of totipotency. These pioneering undertakings provide new resources for regenerative medicine, as well as deep insight into cell fate regulation and developmental potency.

Anti-virus infection: Viral infection causes major global public health problems. In an attempt to decipher the molecular mechanisms of host defense against viral infection, Dr. Zhengfan Jiang’s team identified several critical genes required for innate immune activation by viruses, and revealed molecular mechanisms governing the coordination among viral infection-induced cytokine production, inflammation and apoptotic cell death. They also discovered that a trace amount of Mn++ can alert cells to viral infection via sensitization and activation of the cGAS-STING pathway. These findings provide new ideas for reestablishment of homeostasis of the host immune system after a viral infection.

Maintaining genomic stability: Within each round of the cell cycle, all genomic DNA must be accurately replicated and packed into the nucleosome in order to propagate the gene expression state and cell identity to daughter cells. Dr. Li Qing’s group revealed a novel mechanism that couples DNA replication with nucleosome assembly. They established that replication protein A binds directly with histone H3-H4 in a process mediated by multiple histone chaperones and promotes nucleosome assembly on nascent DNA. Dr. Kong Daochun’s group discovered that fission yeast protein Sap1 is a DNA replication initiation protein that directly participates in assembling the pre-replication complex. ATP-dependent helicase/nuclease DNA2 functions during the S-phase checkpoint to prevent fork reversal, thus stabilizing stalled replication forks during replication stress. These achievements have advanced our knowledge on chromatin replication, epigenetic inheritance and genome stability. Such knowledge may help in preventing replication errors and genome instability in precancerous cells.

Genome editing: Genome editing technology has profoundly impacted biomedical research and the pharmaceutical industry by enabling efficient and precise genetic modifications. Dr. Wensheng Wei and his team have focused on the development of various genome editing tools, especially for high-throughput functional genomics. After establishing one of the first functional CRISPR screening methods for identification of protein-coding genes, they subsequently developed a series of new approaches for investigating long noncoding RNAs, topologically active chromatin hubs, and functional domain mapping at single-amino-acid resolution. Wei and his team aim to facilitate the development of better therapeutics by generating and dissecting functional big data in biological contexts to provide critical insight into disease mechanisms.

Plant biology: Unlike animals, the sperm cells of the angiosperm are unable to swim...
The School of Advanced Agricultural Sciences at Peking University

In late 2014, at a critical stage of rural reform and transformation in China, Peking University formally launched a brand new school: the School of Advanced Agricultural Sciences (SAAS). Benefiting from the existing research and educational disciplines at Peking University, including natural sciences, social sciences, and humanities, the mission of this new school is to become a new international hub in modern agricultural research and the cultivation of professional talents in agriculture and related fields. The initial plan of SAAS is to develop four disciplines, including plant genetics and development, agricultural biotechnology, food nutrition and safety, and agricultural economics and management. In 2017, the school collaborated with Shandong Province and set out to establish an associated institute in Weifang branch campus (a leading agricultural zone in Shandong): the Research Institute of Advanced Agricultural Sciences.

In January 2018, Professor Zhihong Xu, academician of the Chinese Academy of Sciences (CAS) and the Third World Academy of Sciences (TWAS), was appointed as the first dean of SAAS. Under his direction, the School is endeavoring to accomplish its mission and goal of constructing a world-class institution of advanced agricultural technologies and management.

Since its founding, SAAS has recruited 10 full-time faculty members in the field of agricultural economics and has another 24 adjunct faculty members, most of them from the School of Life Sciences at Peking University, in the field of plant genetics and development. The school has developed curriculums for undergraduates and graduates in the fields of agricultural sciences and agricultural economics, and has taken in two classes of PhD candidates since 2016.

Among its full-time faculty, Professor Xingwang Deng, a former Yale University endowed professor and member of the US National Academy of Sciences, is renowned internationally for his research on “plant responses to light environments”. Since returning to China, he has dedicated himself to developing new agricultural sciences and biotechnologies, such as the molecular base of plant heterosis and the new generation of hybrid breeding technology for rice and wheat. His team was the winner of both the Creative Research Group grant award from the National Natural Science Foundation of China (NSFC) in 2016 and the National Key Research and Development Program award from the Ministry of Sciences and Technology (MOST).

In addition to basic research and scientific publications, our faculty has also contributed significantly to society through various outreach and educational programs, national and international forums, as well as through advisory roles for local and central governments on environmental and conservation policies. That our faculty, staff, students and alumni carry a tremendous sense of pride, belonging and responsibility is the most important foundation of Biological Sciences and the driving force for our future growth.

Feel free to contact us:

Website: http://bio.pku.edu.cn/en/
Email: hqf@pku.edu.cn

Professor Jikun Huang, fellow of TWAS for the advancement of science in developing countries and Honorary Life Member of the International Association of Agricultural Economists (IAAE), is another world-renowned scholar in agricultural economics. He is the founder and director of the China Center for Agriculture Policy (CCAP), which was the first winner of the Creative Research Group grant award from NSFC in 2001. He has conducted a wide range of research in agricultural and rural development and generated an enormous impact on academics and policy makers domestically and internationally.

To enhance our research and teaching capacities, the school is actively recruiting new faculty members for its facility on the main campus of Peking University as well as its Shandong-branch research institute for all relevant disciplines at all ranks. The school welcomes both research and education collaboration from China and the rest of world. More information is available on the website: http://www.saas.pku.edu.cn/. You may also inquire for information or send an application through the following contact:

Contact Person: Ms. Qian Wan
Email Address: stellawan@pku.edu.cn
Mailing Address: the 4th Floor, Wangkezhen Building, Peking University, No. 5 Yiheyuan Road, Haidian District, Beijing 100871

and have to be transported in pollen tubes as cargo to female gametes to accomplish fertilization. Professor Li Jia Qu’s group recently revealed the precise regulatory mechanism underlying the control of pollen tube integrity and rupture. They demonstrated that a receptor complex receives RALF4/19 autocine peptide signals secreted from the pollen tube to maintain pollen tube integrity. However, after pollen tubes arrive at the ovule, the same receptor complex now receives ovule-produced RALF34 and triggers pollen tube rupture, thus releasing sperm cells for fertilization. This exciting study substantially advances our understanding of how and when a pollen tube maintains its integrity.

The research and educational disciplines at Peking University, including natural sciences, plant heterosis and the new generation of hybrid breeding technology for rice and wheat. His team was the winner of both the Creative Research Group grant award from the National Natural Science Foundation of China (NSFC) in 2016 and the National Key Research and Development Program award from the Ministry of Sciences and Technology (MOST).
POSTDOCTORAL RESEARCH POSITIONS AVAILABLE
Virginia Commonwealth University School of Medicine

Postdoctoral positions are available for talented scientists to be part of exciting projects directed by Dr. Sarah Spiegel, Chair of Biochemistry and Molecular Biology, Virginia Commonwealth University School of Medicine, Richmond, VA. We study the functions of the bioactive sphingolipid metabolite sphingosine-1-phosphate in novel signaling pathways important for inflammation and cancer (see Nature. 510:58, 2014). Additional information about the Spiegel laboratory that includes publications is found at https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/40908097/?sort=date&direction=ascending

Candidates must have a Ph.D., or M.D., or M.D.-Ph.D. and should have experience in biochemistry, molecular biology, or other relevant fields. Must be a U.S. citizen or have legal permanent resident status. For highly qualified individuals with postdoctoral experience, appointments as Instructor or Research Assistant Professor will be considered.

Submit a cover letter with curriculum vitae, and three reference letters by email to: Dr. Sarah Spiegel (sarah.spiegel@vcuhealth.org) and cc michael.maceyka@vcuhealth.org.

University of Pittsburgh Tenure-track Faculty Positions in the Department of Structural Biology

The University of Pittsburgh is conducting a broad faculty candidate search for creative individuals who use structural and biophysical methods to address fundamental biomedical questions. The ideal candidate will be motivated to explore applications of his or her structural expertise to disease related questions. We particularly encourage individuals with research activities in cryo-electron microscopy/tomography for in situ structural biology to apply. At present, the cryo-EM facility in the Department comprises 3 Thermo Fisher (FEI) microscopes – a Polara equipped with a Falcon 3 DED camera and Gatan US4000 and Orius CCD cameras; a TF20 equipped with a TVIPS XF416 camera and two Gatan 626 cryoholders; and a T12 equipped with Gatan US 1000 and Orius CCD cameras. The University has funding to replace the Polara with a Krios 3Gi instrument. Additional accessory instrumentation is also available. The department also possesses dedicated computing resources suitable for handling and storing large datasets. Applications at any rank are invited.

The University of Pittsburgh is the fifth most highly ranked domestic institution of higher education in terms of NIH funding, and a very wide spectrum of collaborative opportunities exists. The research resources in the Department of Structural Biology and the intellectual environment at the University are truly extraordinary, from state-of-the-art instrumentation to expert support and creative investigators. Successful applicants are expected to develop and lead independent research programs that address important problems in biomolecular systems of wide scientific and medical interest.

Competitive salaries and start-up packages will be offered. Applicants should hold PhD and/or MD or equivalent degrees and have demonstrable expertise and scholarly achievement in structural biology or biophysics. Proposed starting date is October 1, 2018 or thereafter. In order to ensure full consideration, applications must be received by August 31, 2018.

Application materials including the candidate’s curriculum vitae, the names and contact information for three references, and a brief statement of research interests should be sent to: Dean Duncan, Administrator, Department of Structural Biology, 1050 BST3, 3501 5th Avenue, Pittsburgh, PA 15260; dxd8@pitt.edu

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Advance. Transform.

Join us. The University of California, San Francisco has been the top public recipient of NIH funding for the past seven years, and offers a diverse, inclusive environment for research and teaching.

UCSF is currently accepting applications for diverse faculty in Basic Science, Dentistry, Medicine, Nursing and Pharmacy. For more information about our community, visit aprecruit.ucsf.edu/.

Saul Villeda, first-generation PhD, assistant professor of anatomy, shown here in the Villeda Lab.

Geisinger
Geisinger National Precision Health
Washington, DC Area

As part of a major expansion of its innovative and patient-centered programs in genomics and precision health, Geisinger has launched a new national initiative, based in the Washington, DC area. Under the leadership of Huntington F. Willard, PhD, Geisinger National Precision Health will accelerate implementation in genomics and data science and develop novel national partnerships to broaden Geisinger’s impact in precision and population health.

To spearhead this effort, Geisinger is seeking candidates for several new positions based at Geisinger National headquarters in North Bethesda, MD.

**Early Career Investigators:** We will recruit multiple Geisinger National Early Career Investigators to develop and extend programs of collaborative research that build upon and leverage the extensive data-rich resources of the MyCode Community Health Initiative. Early Career candidates will have received an advanced degree, such as PhD, MD, or Masters in Genetic Counseling, within the past five years, with a history of creative, non-traditional, and entrepreneurial experiences, a record of contributions in emerging areas of science, technology, and implementation, and a commitment to a career with national impact. Successful candidates will have experience in the development and application of analytical and translational approaches in relevant fields such as genomics, computational biology, clinical/bioinformatics, or health policy/economics, as well as a demonstrated commitment to creative and mission-oriented multidisciplinary research. While these are independent faculty-level appointments, candidates will be expected to collaborate with other investigators throughout the Geisinger network of research and clinical sites in Pennsylvania, New Jersey, and Maryland. Early Career Investigators will receive an initial three-year appointment and will be eligible for a faculty appointment at an appropriate level.

**Bioinformatics Core Director:** To expand our infrastructure in bioinformatics and implementation science and to facilitate collaborative research throughout the Geisinger network of research and clinical sites, we seek candidates for the position of Director of the Bioinformatics Core, one of several core facilities that facilitate and accelerate research by Geisinger scientists and clinicians, leveraging the MyCode Community Health Initiative and other data-rich resources across Geisinger. The successful candidate will be expected to build, develop, and oversee operation of a new and progressive Bioinformatics Core, including planning, supervision of staff, and collaborations with other core directors and investigators across the full spectrum of data analysis in bioinformatics, clinical informatics, and genomics. Candidates should possess a doctoral degree in one of the following areas: bioinformatics, genomics, genetics, computational biology, biomedical informatics, computer science, medicine, biostatistics, or a related discipline. A record of published collaborative research in bioinformatics and genomics and potential for obtaining extramural funding are essential. The ideal candidate will have experience in developing and operating a successful core facility and will be eligible for a faculty appointment at an appropriate level.

Applicants should send a letter of application, curriculum vitae, and a statement of research interests as a single PDF file C/O Skjoseph@geisinger.edu or apply online at www.geisinger.org/careers. Letters of reference should not be sent at this time but will be sought during the evaluation process. Review of applications is ongoing and will continue until the positions are filled.

Geisinger is an integrated health services organization widely recognized for its innovative use of the electronic health record and the development of innovative care delivery models. Geisinger has an long-standing commitment to research, medical education, and community service.

*Geisinger is an Affirmative Action, Equal Opportunity Employer. Women and minorities are encouraged to apply. All qualified applicants will receive consideration for employment and will not be discriminated against on the basis of disability or their protected veteran status.*