HU JIN

Phone: 217-898-7356 ◇ E-mail: hujin2@illinois.edu ◇ hujin.weebly.com

Carl R. Woese Institute for Genomic Biology, Room 2132, 1206 W. Gregory Dr., Urbana, IL 61801

EDUCATION

University of Illinois, Urbana-Champaign, Urbana, IL   August 2013 - May 2018 (expected)
Ph.D. candidate in Physics. Overall GPA: 3.90/4.0.
- Dissertation: Statistical analysis and modeling of nucleosome positioning.
- Advisor: Dr. Jun S. Song.

Zhejiang University, Hangzhou, China   August 2009 - June 2013
B.S. in Physics. Overall GPA: 3.92/4.0. Average score: 91.64/100.
- Science and Engineering Honors Class (top 5%), Chu Kochen Honors College.
- Thesis: Point-contact experiments using low-temperature atomic force microscope.
- Advisor: Dr. Jian Wei.

RESEARCH EXPERIENCE

University of Illinois, Urbana-Champaign, Urbana, IL   June 2014 - Present
Research Assistant. Advisor: Dr. Jun S. Song. Department of Physics.
- *2014-present: Thesis research.* Unraveling the principles guiding nucleosome positioning using categorical spectral analysis and statistical mechanics.
- *2016-2017: Leading role in bioinformatics analysis.* Collaboration with the laboratory of Dr. Robert Blelloch, UCSF. Studying the role of ILF2/ILF3 in regulating embryonic stem cell pluripotency and differentiation.
- *2016: Leading role in bioinformatics analysis.* Collaboration with the laboratory of Dr. Miguel Ramalho-Santos, UCSF. Studying an induced paused pluripotent state through mTOR inhibition.
- *2016-present: Leading role in bioinformatics analysis.* Collaboration with the laboratory of Dr. Miguel Ramalho-Santos, UCSF. Studying the mechanism of CHD1-mediated regulation of transcription, DNA repair, and chromatin structure in embryonic stem cells.
- *2016-present: Study design and bioinformatics analysis.* Collaboration with the laboratory of Dr. Pablo Perez-Pinera, UIUC. Studying the role of DNA methylation through exogenous expression of methyltransferases in yeast.
- *2015-present: Bioinformatics analysis.* Collaboration with the laboratory of Dr. Jaehyuk Choi, Northwestern University. Using next-generation sequencing to identify genetic and epigenetic basis of cutaneous T-cell lymphoma (CTCL).

Peking University, Beijing, China   September 2012 - May 2013
Research Assistant. Advisor: Dr. Jian Wei. International Center for Quantum Materials.
- Development of a point-contact measurement setup based on a low-temperature atomic force microscope.

University of California, Davis, Davis, CA   July 2012 - August 2012
Visiting Student. Advisor: Dr. Rena Zieve. Department of Physics.
- Development of a manganin-foil manometer for small uniaxial stress.

TEACHING EXPERIENCE

Teaching assistant   August 2013 - May 2014
University of Illinois, Urbana-Champaign, Department of Physics.
- PHYS 404 - Electronic Circuits and PHYS 211 - University Physics: Mechanics.

Lecturer July 2016 & 2017

University of Illinois, Urbana-Champaign, Center for the Physics of Living Cells (CPLC) Summer School.
- High-throughput sequencing data analysis with a focus on Loop-seq data analysis.

FELLOWSHIPS AND AWARDS

- Drickamer Research Fellowship, University of Illinois, Urbana-Champaign. 2018
- Physics Graduate Travel Award, University of Illinois, Urbana-Champaign. April 2015
- University Fellowship, University of Illinois, Urbana-Champaign. March 2014
- Outstanding Research Award in the Global Research Experience in Advanced Technologies (GREAT) program, University of California, Davis. August 2012
- National Scholarship of the People's Republic of China, Zhejiang University. 2009 - 2010

PUBLICATIONS

1. **Hu Jin**, Alex I. Finnegan, and Jun S. Song. "A unified computational framework for modeling genome-wide nucleosome landscape." bioRxiv/2017/202580 (2017), doi: https://doi.org/10.1101/202580.

2. Julia Ye*, **Hu Jin***, Aleksandr Pankov, Jun S. Song**, and Robert Blelloch** (*co-first authors, **co-corresponding authors). "NF45 and NF90/NF110 coordinately regulate ESC pluripotency and differentiation." **RNA** (2017) 23: 1270-1284. _Led bioinformatics analysis._

3. Miles Frampton, Nathan McLaughlin, **Hu Jin**, and Rena Zieve. "Manganin foil sensor for small uniaxial stress." **Review of Scientific Instruments** (2017) 88 (4): 046106.

4. Aydan Bulut-Karslioglu, Steffen Biechele, **Hu Jin**, Trisha A. Macrae, Miroslav Hejna, Marina Gertsenstein, Jun S. Song, and Miguel Ramalho-Santos. "Inhibition of mTOR induces a paused pluripotent state." **Nature** (2016) 540: 119-123. _Led bioinformatics analysis._

5. **Hu Jin**, H. Tomas Rube, and Jun S. Song. "Categorical spectral analysis of periodicity in nucleosomal DNA." **Nucleic Acids Research** (2016) 44 (5): 2047-2057.

PRESENTATIONS

- _Examination of reversal asymmetry in the sequence preference of histone-DNA interaction_, 2017 Annual Meeting of the International Physics of Living Systems (iPoLS) Network, Paris, France (poster). June 2017
- _Categorical spectral analysis of periodicity in nucleosomal DNA and reversal asymmetry in the sequence preference of histone-DNA interaction_, 2016 Gordon Conference on Chromatin Structure and Function, Les Diablerets, Switzerland (poster). May 2016
- _Categorical spectral analysis of periodicity in nucleosomal DNA_, IGB Fellows Symposium, Carl R. Woese Institute for Genomic Biology, University of Illinois, Urbana-Champaign, Urbana, IL (poster). April 2016
- _Spectral analysis of nucleosome positioning sequences in yeast_, CPLC Student/Postdoc Biannual Symposium, Center for the Physics of Living Cells, University of Illinois, Urbana-Champaign, Urbana, IL (talk). May 2015

TECHNICAL SKILLS AND TRAINING

Programming/Scripting languages
- Currently using: Python, R, Mathematica, Bash.
- Previously used: C, MATLAB.

High-throughput sequencing data analysis
- MNase-seq, ChIP-seq, DNase-seq, ATAC-seq, RNA-seq, RIP-seq, HITS-CLIP, PAR-CLIP, eCLIP.

New England Biolabs Molecular Biology Summer Workshop, Northampton, MA July 2015

- Two-week course emphasizing hands-on molecular biology laboratory work.

OTHER ACADEMIC ACTIVITIES

Advanced classes taken
- Computational Statistics (with a focus on Markov Chain Monte Carlo), General Field Theory, Fundamental Algorithms, Statistical Physics, Biomolecular Physics.

Student seminars organized/participated
- Led "Statistical Learning Study Group", 19 seminars, about 12 participants.
- Participated in "Deep Learning Study Group", 10 seminars, about 12 participants.

REFERENCES

Dr. Jun S. Song
Founder Professor of Physics, Professor of Mathematics (0%)
University of Illinois, Urbana-Champaign
Institute for Genomic Biology, Room 2105, 1206 W. Gregory Dr.
Urbana, IL 61801
Phone: (217) 244-7750
Fax: (217) 244-2496
E-mail: songj@illinois.edu

Dr. Taekjip Ha
Bloomberg Distinguished Professor of Biophysics and Biophysical Chemistry, and Biomedical Engineering
Investigator with Howard Hughes Medical Institute
Johns Hopkins University
620 Wood Basic Sciences Building, 725 N. Wolfe Street
Baltimore, MD 21205
Phone: (410) 614-4039
Fax: (410) 955-0637
E-mail: tjha@jhu.edu

Dr. Robert Blelloch
Professor of Urology, Ob/Gyn & Reproductive Sciences, and Pathology
Peter R. Carroll, MD, MPH, Endowed Chair
Vice Chair Basic Science Research, Department of Urology
University of California, San Francisco
Dolby Regeneration Medicine Building, 35 Medical Center Way
San Francisco, CA 94143
Phone: (415) 476-2838
Fax: (415) 514-2346
E-mail: Robert.Blelloch@ucsf.edu

Dr. Miguel Ramalho-Santos
Associate Professor of Ob/Gyn & Reproductive Sciences
University of California, San Francisco
Dolby Regeneration Medicine Building, Room 912, 35 Medical Center Way
San Francisco, CA 94143
Phone: (415) 502-8543
Fax: (415) 514-2346
E-mail: Miguel.Ramalho-Santos@ucsf.edu