Jiang Shu

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Employment

Research Assistant, Systems Biology and Biomedical Informatics Lab
Department of Computer Science & Engineering
University of Nebraska - Lincoln
January 2014 – August 2018

Teaching Assistant
Department of Computer Science & Engineering
University of Nebraska - Lincoln
January 2018 – May 2018

Research Assistant, Computational Biology Lab
Department of Statistics
University of Nebraska - Lincoln
May 2012 – December 2013

Education

Ph.D. Computer Science (*Bioinformatics Specialization*), University of Nebraska - Lincoln, 2018

Advisor: Dr. Juan Cui
Committee: Drs. Juan Cui, Ashok Samal, Stephen Scott, Etsuko Moriyama
Dissertation: "A data-driven discovery system for studying extracellular microRNA regulation and trafficking"

Invited Participant, Open Science Grid Summer School, 2016

Host Institute: Computer Sciences Department, University of Wisconsin — Madison

M.S. Statistics (*Minor in Computer Science*), University of Nebraska - Lincoln, 2013

Advisor: Dr. Istvan Ladunga
Committee: Drs. Istvan Ladunga, Kent Eskridge, Peter Revesz
Project: "Statistical ensemble regulation of a large system of genes"

B.S. Mathematics and Applied Mathematics, Huazhong Normal University, *Wuhan, China*, 2007

Advisor: Dr. Dongfang Zhao
Thesis: "Mathematical analysis of economic cycle in China".

Publications

[#] Co-first authors.

Peer–Reviewed Journal Publications

1. Aguilar-Lozano A, Baier S, Grove R, **Shu J**, Giraud D, Mercer K, Cui J, Badger T, Adams S, Adamec J, Andres A, Zempleni J (2018). Concentrations of purine metabolites are elevated in fluids from adults and infants and in livers from mice fed diets depleted of Bovine milk exosomes and their RNA cargos *Journal of Nutrition*. In press.
2. Hu G, Liao K, Niu F, Yang L, Dallon B, Callen S, Tian C, **Shu J**, Cui J, Sun Z, Lyubchenko Y, Ka M, Chen X, Buch S (2018). Astrocyte EV-induced lincRNA-Cox2 regulates microglial phagocytosis: Implications for morphine-mediated potentiation of neurodegeneration. *Molecular Therapy - Nucleic Acids*. doi: 10.1016/j.omtn.2018.09.019
3. Hakguder Z, **Shu J**, Liao C, Pan K, Cui J (2017). Genome-scale MicroRNA target prediction through clustering with Dirichlet process mixture model. *BMC Genomics*. doi: 10.1186/s12864-018-5029-7.
4. Leiferman A, **Shu J**, Grove R, Cui J, Adamec J, Zempleni J (2017). A diet defined by its content of bovine milk exosomes and their RNA cargos affects four KEGG pathways but does not amino acid profiles and grip strength in skeletal muscle in C57BL/6 mice. *Journal of Nutritional Biochemistry.* doi:10.1016/j.jnutbio.2018.06.007.
5. Gao T[#], **Shu J**[#], Cui J (2018). A systematic approach to RNA-associated motif discovery. *BMC Genomics.* doi:10.1186/s12864-018-4528-x.
6. **Shu J**, Vieira Resende e Silva B, Gao T, Xu Z, Cui J (2017). Dynamic and modularized microRNA regulation and its implication in human cancers. *Scientific Reports.* doi:10.1038/s41598-017-13470-5.
7. Salas E, **Shu J**, Cserhati M, Weeks D, Ladunga I (2016). Pluralistic and stochastic gene regulation: examples, models and consistent theory. *Nucleic Acids Research.* doi:gkw042v1-gkw042.
8. **Shu J**, Chiang K, Zempleni J, Cui J (2015). Computational characterization of exogenous microRNAs that can be transferred into human circulation. *PLOS ONE.* doi:10.1371/journal.pone.0140587.
9. Chiang K, **Shu J**, Zempleni J, Cui J (2015). Dietary MicroRNA Database (DMD): An archive database and analytic tool for microRNAs in human foods. *PLOS ONE.* doi:10.1371/journal.pone.0128089.

Peer–Reviewed Conference Publications

10. **Shu J**, Cui J (2017). MiRDR-OSG: MicroRNA dynamic regulation analysis utilizing open science grid. *Bioinformatics and Biomedicine (BIBM) Workshop*, 2017 IEEE International Conference on. doi: 10.1109/BIBM.2017.8217941.
11. Hakguder Z, Liao C, **Shu J**, Cui J (2017). A new statistical model for genome-scale microRNA target prediction. *Bioinformatics and Biomedicine (BIBM)*, 2017 IEEE International Conference on. doi: 10.1109/BIBM.2017.8217633.
12. Han J, **Shu J**, Cui J (2016). A new system for human microRNA functional evaluation and network. *Bioinformatics and Biomedicine (BIBM)*, 2016 IEEE International Conference on. doi: 10.1109/BIBM.2016.7822531.
13. **Shu J**, Chiang K, Zhao D, Cui J (2015). Human absorbable microRNA prediction based on an ensemble manifold ranking model. *Bioinformatics and Biomedicine (BIBM)*, 2015 IEEE International Conference on. doi: 10.1109/BIBM.2015.7359697.

Refereed Peer–Reviewed Abstracts

1. Zempleni J, Zhou F, Wu D, **Shu J**, Paz H, Cui J, Fernando S (2018). The communication of animal and bacterial kingdoms through exosomes and their RNA cargos in bovine milk. *Bioactive Compounds in Health and Disease*, 1(1): 116-118
2. Fratantonio D, **Shu J**, Cui J, Zempleni J (2018). MicroRNAs in chicken egg exosomes: content and bioavailability in healthy humans. *Bioactive Compounds in Health and Disease*, 1(1): 111-112
3. Zempleni J, Zhou F, Wu D, Manca S, Sadri M, Fernando S, Paz H, **Shu J**, Cui J (2017). Bovine milk exosomes and their cargos may regulate metabolism through non-canonical pathways in non-bovine species. *Functional Foods and bioactive compounds in health and disease*, Martirosyan D (ed.), Volume 21:144-145
4. **Shu J**, Chiang K, Cui J (2015). Computational characterization of microRNA-mediated association between obesity and cancer. *Cancer Research*, 75(15 Supplement):234
5. Baier S, Howard K, Cui J, **Shu J**, Zempleni J (2015). MicroRNAs in chicken eggs are bioavailable in healthy adults and can modulate mRNA expression in peripheral blood mononuclear cells. *The FASEB Journal*, 29(1 Supplement):LB322
6. Zempleni J, Howard K, Cui J, **Shu J**, Baier S (2015). Humans absorb dietary microRNAs from chicken eggs, and the postprandial increase of plasma microRNAs includes a microRNA that humans cannot synthesize endogenously. *Journal of Extracellular Vesicles*, 4:27783

Honors & Awards

Travel Award, Conference on Predictive Inference and Its Applications, May 2018.

Young Investigator Travel Award, 1st Midwest Statistical Machine Learning Colloquium, May 2018.

Outstanding Graduate Student Research Award, Dept. of Computer Science & Engineering, UNL, April 2018.

Best Poster Awardee, Nebraska Center for the Prevention of Obesity Diseases, September 2016.

Fellowship, Open Science Grid Summer School, University of Wisconsin–Madison, July 2016.

Best Poster Awardee, Nebraska Center for the Prevention of Obesity Diseases, September 2015.

Winning Abstract, NetSciReg'14 - Network Models in Cellular Regulation, June 2014.

Best Poster Awardee, Nebraska Gateway to Nutrigenomics, June 2014.

Best Internship Group, Huazhong Normal University, 2006.

Selected Conference Talks & Posters

First-author presentations only.

Poster: "A new method for constructing the population-specific gene regulatory networks based on the meta-LASSO regression model", *1st Midwest Statistical Machine Learning Colloquium*, Ames, IA, May 9, 2018.

Poster: "A new method for constructing the population-specific gene regulatory networks based on the meta-LASSO regression model", *The Conference on Predictive Inference and Its Applications*, Ames, IA, May 7–8, 2018.

Talk: "MiRDR-OSG: MicroRNA dynamic regulation analysis utilizing open science grid", *Workshop on High Throughput Computing in Bioinformatics and Biomedicine using Open Science Grid, BIBM 2017*, Kansas City, MO, November 13, 2017.

Invited Talk: "A large-scale metagenomic analysis using OSG", *Open Science Grid All Hands Meeting 2017*, San Diego, CA, March 7, 2017.

Best Poster Award: "Dynamic and modularized microRNA regulation and its implication in human cancers", *Nebraska Center for the Prevention of Obesity Diseases 2nd Annual Symposium*, Lincoln, NE, September 28, 2016.

Poster: "Dynamic and modularized microRNA regulation and its involvement in human cancer", *International Conference on Intelligent Systems for Molecular Biology*, Orlando, Florida, July 8–12, 2016.

Poster: "Reconstruction and analysis of dynamic microRNA regulation in Cancers", *Nebraska Center for the Prevention of Obesity Diseases 8th Annual Retreat*, Lincoln, NE, April 18, 2016.

Talk: "Human absorbable dietary microRNAs prediction based on an ensemble Manifold ranking model", *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Washington D.C., November 9–12, 2015.

Best Poster Award: "microRNA cooperative regulation in obesity and cancers", *Nebraska Center for the Prevention of Obesity Diseases 1st Annual Symposium*, Lincoln, NE, September 28, 2015.

Poster: "Computational characterization of microRNA-mediated association between obesity and cancer", *American Association for Cancer Research Annual Meeting 2015*, Philadelphia, PA, April 18–22, 2015.

Poster: "Computational characterization of exogenous microRNAs transfer into human circulation", *Nebraska Center for the Prevention of Obesity Diseases 7th Annual Retreat*, Lincoln, NE, March 13, 2015.

Poster: "Complex network mechanisms of transcriptional activation", *International Conference on Intelligent Systems for Molecular Biology*, Boston, MA, July 13–15, 2014.

Best Poster Award: "Dynamic microRNA regulation in human gene network", *Nebraska Gateway to Nutrigenomics 6th Annual Retreat*, Lincoln, NE, June 9, 2014.

Contributed Talk: "Stochastic, large-scale ensembles in the co–regulation network of human genes encoding ribosomal proteins", *NetSciReg'14–Network Models in Cellular Regulation*, Berkeley, CA, June 3, 2014.

Poster: "Ensemble regulation of large gene systems", *International Conference on Functional and Comparative Genomics & Pharmacogenomics*, Chicago, IL, November 12–14 2013.

Poster: "Regulation of ribosomal protein genes in human based on ENCODE experiments", *Systems Biology: Networks*, Cold Spring Harbor, New York, March 13–16 2013.

Professional Activities

Reviewer for Journals:

PLOS ONE, *Scientific Reports*, *Bioinformatics*, *Cancer Medicine*, *Journal of Bioinformatics and Computational Biology*, *Complexity*, *Electronic Commerce Research*, *Cellular Physiology and Biochemistry*, *Technology in Cancer Research & Treatment*, *OncoTargets and Therapy*

Reviewer for Conference:

IEEE International Conference on Multimedia Information Processing and Retrieval (IEEE MIPR), 2019

International Conference on eHealth, Telemedicine, and Social Medicine (eTELEMED), 2018

The 7th International Conference on Global Health Challenges, 2018

International Conference on Intelligent Computing (ICIC), 2018

IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2018

Student Council Symposium, Intelligent Systems for Molecular Biology and 16th European Conference on Computational Biology (ISMB/ECCB), 2017

ACM International Conference on Bioinformatics and Computational Biology (ACM–BCB), 2015

Services on Conferences and Workshops:

Technical Program Committee, International Conference on eHealth, Telemedicine, and Social Medicine (eTELEMED), 2018

International Scientific Committee, The 2nd International Conference on Applied Mathematics, Modeling and Simulation, 2018

Technical Program Committee, The 7th International Conference on Global Health Challenges, 2018

Co–Organizer, High Throughput Computing in Bioinformatics and Biomedicine using Open Science Grid, IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2017

Organizing Committee Member, Student Council Symposium, ISMB/ECCB, 2017

Co–Organizer, UNL Bioinformatics Workshop on Microarray and NGS Data Analysis, 2014

University Services:

Reviewer, Graduate Travel Awards Program, University of Nebraska - Lincoln, 2017

Student Speaker Committee, Nebraska Center for the Prevention of Obesity Diseases, 2015

Professional Membership:

Student Member, International Society for Computational Biology (ISCB), 2016 – present

Student Member, Institute of Electrical and Electronics Engineers (IEEE), 2015 – present

Associate Member, American Association for Cancer Research (AACR), 2014 – present

Student Member, American Statistical Association (ASA), 2012 – present