

Arjun Krishnan

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EDUCATION

2010	Ph. D. Genetics, Bioinformatics & Computational Biology Topic: <i>Systems Analysis of Stress Response in Plants</i>	Virginia Tech Blacksburg, VA, USA
2006	B. Tech. Industrial Biotechnology Centre for Biotechnology, AC College of Technology	Anna University Chennai, India

PROFESSIONAL APPOINTMENTS

2013-Present	Associate Research Scholar Lewis-Sigler Institute for Integrative Genomics	Princeton University Princeton, NJ, USA
2011-2013	Postdoctoral Research Associate Lewis-Sigler Institute for Integrative Genomics	Princeton University Princeton, NJ, USA
2010-2011	Postdoctoral Research Associate Virginia Bioinformatics Institute	Virginia Tech Blacksburg, VA, USA
2006-2010	Graduate Research Assistant Virginia Bioinformatics Institute	Virginia Tech Blacksburg, VA, USA
2005-2006	Student Researcher Bioinformatics Centre	Indian Institute of Science Bangalore, India

PUBLICATIONS

[* Equal contribution]

In Preparation

1. **Krishnan A**, Troyanskaya OG. Gene expression signatures of tissue-specific sex-differences across the human lifespan.
2. **Krishnan A**, Ambavaram MM, Gupta C, Basu S, Batlang U, Pereira A. Systems analysis of transcriptional modules involved in drought response in rice.
3. Homilius M*, **Krishnan A***, Troyanskaya OG. Network-based prioritization of models phenotypes for human traits and diseases robust to missing genetic knowledge. [* Co-first authors listed alphabetically.]
4. Lee Y, **Krishnan A**, Dolinski K, Troyanskaya OG. A data-driven, unified framework for genome-wide characterization of human diseases.

In Revision

1. **Krishnan A***, Zhang R*, Yao V, Theesfeld CL, Wong AK, Tadych A, Volfovsky N, Packer A, Lash A, Troyanskaya OG. Genome-wide characterization of genetic and functional dysregulation in autism spectrum disorder. In revision at *Nature Neuroscience*. [* Co-first authors listed alphabetically.] [Web-interface: asd.princeton.edu]

Selected Peer-Reviewed Journal Articles

1. Greene C*, **Krishnan A***, Wong AK*, Ricciotti E, Zelaya R, Himmelstein D, Zhang R, Hartmann BM, Zaslavsky E, Sealfon SC, Chasman D, FitzGerald G, Dolinski K, Grosser T, Troyanskaya OG. (2015) Understanding multi-cellular function and disease with human tissue-specific gene interaction networks. *Nature Genetics*, 47:569-576. [* Co-first authors listed alphabetically.] [Web-interface: giant.princeton.edu]

2. Zhu Q, Wong AK, **Krishnan A**, Aure MR, Tadych A, Zhang R, Corney DC, Greene CS, Bongo LA, Kristensen VN, Charikar M, Li K, Troyanskaya OG (2015) Targeted exploration and analysis of large cross-platform human transcriptomic compendia. *Nature Methods*, 12:211-214. [Web-interface: seek.princeton.edu]
3. Park C, **Krishnan A**, Zhu Q, Wong AK, Lee Y, Troyanskaya OG (2015). Tissue-aware data integration approach for the inference of pathway interactions in metazoan organisms. *Bioinformatics*, 31:1093-1101. [Web-interface: pathwaynet.princeton.edu]
4. Ambavaram MM, Basu S, **Krishnan A**, Venkategowda R, Batlang U, Rahman L, Baisakh N, Pereira A (2014). Coordinate regulation of photosynthetic carbon metabolism for yield and environmental stress response in rice. *Nature Communications*, 5:5302.
5. Lee Y, **Krishnan A**, Zhu Q, Troyanskaya OG (2013). Ontology-aware classification of tissue and cell-type signals in gene expression profiles across platforms and technologies. *Bioinformatics*, 29:3036-3044. [Web-interface: ursa.princeton.edu]
6. Ambavaram MM*, **Krishnan A***, Trijatmiko KR, Pereira A (2011) Coordinated activation of cellulose and repression of lignin biosynthesis pathways in rice. *Plant Physiology*, 155:916-931. [* Co-first authors listed alphabetically.]
7. Harb A, **Krishnan A**, Pereira A. (2010) Molecular and physiological analysis of drought stress in Arabidopsis reveals early responses leading to acclimation in plant growth. *Plant Physiology*, 154:1254-1271.
8. **Krishnan A**, Greco R, Pereira A (2009) Diversity of En/Spm transposons in maize and rice. *Maydica*, 53:181-187.
9. **Krishnan A**, Guiderdoni E, An G, Hsing YC, Han C, Lee MC, Yu SM, Upadhyaya N, Ramachandran S, Zhang Q, Sundaresan V, Hirochika H, Leung H, Pereira A. (2009) Mutant resources in rice for functional genomics of the grasses. *Plant Physiology*, 149:165-170.
10. **Krishnan A**, Greco R, Pereira A. (2008) Integrative approaches for mining transcriptional regulatory programs in Arabidopsis. *Briefings in Functional Genomics and Proteomics*, 7:264-274.

Other Peer-Reviewed Journal Papers

1. Wong AK, **Krishnan A**, Yao V, Tadych A, Troyanskaya OG. (2015) IMP 2.0: A multi-species functional genomics portal for integration, visualization and prediction of protein functions and networks. *Nucleic Acids Research*, 43:W128-133.
2. Goya J*, Wong AK*, Yao V*, **Krishnan A**, Homilius M, Troyanskaya OG. (2015) FNTM: a server for predicting Functional Networks of Tissues in Mouse. *Nucleic Acids Research*, 43:W182-W187.
3. Chikina MD, Gerald CP, Li X, Ge Y, Pincas H, Nair VD, Wong AK, **Krishnan A**, Troyanskaya OG, Raymond D, Saunders-Pullman R, Bressman SB, Yue Z, Sealfon SC (2015) Low variance RNAs identify Parkinson's disease molecular signature in blood. *Movement Disorders*, 30:813-821.
4. Batlang U, Ambavaram MMR, **Krishnan A**, Pereira A (2014). Drought responsive genes and their functional terms identified by GS FLX Pyro sequencing in maize. *Maydica* 59: 306-314.
5. Venkategowda R, Basu S, **Krishnan A**, Pereira A (2014). Rice GROWTH UNDER DROUGHT KINASE is required for drought tolerance and grain yield under normal and drought stress conditions. *Plant Physiology*, 166:1634-1645.
6. Poirel CL, Rahman A, Rodrigues RR, **Krishnan A**, Addesa JR, Murali TM (2013) Reconciling differential gene expression data with molecular interaction networks. *Bioinformatics*, 29:622-629.
7. Xu X, Kumar N, **Krishnan A**, Kulkarni R (2013) Stochastic modeling of dwell-time distributions during transcriptional pausing and initiation. *52nd IEEE Conference on Decision and Control*, 4068-4073.

8. Kakumanu A, Ambavaram MM, Klumas C, **Krishnan A**, Batlang U, Myers E, Grene R, Pereira A (2012) Effects of drought on gene expression in maize reproductive and leaf meristem tissue revealed by RNA-Seq. *Plant Physiology*, 160:846-867.
9. Bassaganya-Riera J, Skoneczka J, Kingston DG, **Krishnan A**, Misyak S, Carter A, Pereira A, Guri AJ, Tumarkin R, Hontecillas R. (2009) Mechanisms of action and medicinal applications of abscisic acid. *Current Medicinal Chemistry*, 17:467-478.
10. Karaba A, Dixit S, Greco R, Aharoni A, Trijatmiko KR, Marsch-Martinez N, **Krishnan A**, Nataraja KN, Udayakumar M, Pereira A. (2007) Improvement of water use efficiency in rice by expression of HARDY, an Arabidopsis drought and salt tolerance gene. *Proc Natl Acad Sci USA*, 104:15270-15275.

Book Chapters

1. Mohapatra SK*, **Krishnan A***. (2009) Microarray data analysis. *Plant Reverse Genetics*. The Humana Press Inc., Totowa NJ, USA.
2. **Krishnan A**, Ambavaram MMR, Harb A, Batlang U, Wittich PE, Pereira A (2009) Genetic networks underlying plant abiotic stress responses. *Genes for Plant Abiotic Stress*. John Wiley & Sons, Inc., Ames IA, USA.

CONFERENCES, MEETINGS AND TALKS

Poster Presentations

- Networks Biology Workshop 2010, Mathematical Biosciences Institute, Ohio State University.
- Systems Biology, Networks 2011, Cold-Spring Harbor Laboratories.
- CIFAR: Genetic Networks Meeting 2014, Dana-Farber Cancer Institute, Harvard Medical School.
- CIFAR: Genetic Networks Meeting 2014, University of Washington.
- Genome Informatics 2015, Cold-Spring Harbor Laboratories. [*Best Poster Award; out of 167 posters*]

Oral Presentations

- ICSB-RECOMB Systems Genomics Conference 2014, San Diego.
- Leveraging Big Data and Predictive Knowledge to Fight Disease 2015, New York Academy of Sciences.
- Complex Systems Digital Campus 2015 World e-Conference.
- RECOMB/ICSB Conference on Regulatory and Systems Genomics 2015, Philadelphia.

Invited talks

- Integrated Science Shorts 2013, Princeton University.
- University of Hyderabad, 2014, India.
- Centre for Cell and Molecular Biology, 2014, India.
- National Center for Biological Sciences, 2014, India.
- Indian Institute of Technology - Madras, 2014, India.
- Institute for Mathematical Sciences, Chennai, 2014, India.
- Postdoctoral Seminar Series 2014, Princeton University.
- Systems Pharmacology and Translational Therapeutics Seminar, 2014, University of Pennsylvania.
- Princeton Area Yeast Meeting, 2015, Princeton University.
- Sanofi Big Data Symposium, 2015, Genzyme, Boston.

COLLABORATIVE RESEARCH EXPERIENCE

- Reproductive aging | Coleen Murphy, Princeton University.
- Network models for studying cardiovascular diseases | Tilo Grosser, Garret FitzGerald, U. Pennsylvania.
- Functional genomics for autism genetics | Alan Packer, Alex Lash, Simons Foundation.

- Genetic stratification of complex diseases | Aaditya Rangan, New York University.
- Tissue-sex-age-specificity of gene function and disease | Shirley Tilghman, Princeton University.
- Reconciling gene expression with molecular networks; Gene function prediction | T. M. Murali, Virginia Tech.
- Roles of plant hormones in mouse and human systems | Josep Bassaganya-Riera, Virginia Tech.
- Studying amino-acid residue coupling in plant carbohydrate enzymes | David Bevan, Virginia Tech.
- Stochastic modeling of transcriptional/translational initiation and pausing | Rahul Kulkarni, U. Massachusetts.

PROFESSIONAL EXPERIENCE

1. **Grant writing:** Assisted in developing of more than ten research project proposals for NSF, USDA and NIH. NSF planning grant proposal (as PI) under review.
2. **Peer review:** Bioinformatics; PLoS Computational Biology; BMC Bioinformatics; PLoS ONE; G3: Genes, Genomes, Genetics; Journal of Theoretical Biology; Pacific Symposium of Biocomputing; ACM-BCB; Circulation: Cardiovascular Genetics; Plant Physiology; Plant Molecular Biology; Molecular Breeding; F1000 Biology.
3. **Teaching:** Co-taught “COS557/MOL557: Analysis & Visualization of Large Scale Genomic Data Sets” Spring 2014; and “ISC 233/234: An Integrated, Quantitative Introduction to the Natural Sciences II” Spring 2015. Formal lectures in a number of interdisciplinary courses.
4. **Mentoring:** High-school, Undergraduate, and Graduate Students.
5. **Outreach:** Conducted hands-on education booths at Kid’s Tech University 2009, 2010, and USA Science & Engineering Festival 2010; Part of panel of judges for science and mathematics fairs at local schools.

REFEREES

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