Dechao Tian

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Current Employment

ORISE Fellow 2019 - Present
Center for Disease Control and Prevention

- Surveillance, Information Management, and Statistics Office - Machine Learning: research on anomaly cluster detection

Past Employment

Postdoctoral Research Associate 2015 - 2019
Carnegie Mellon University

- Computational Biology Department, Ma Laboratory - Computational Genomics: research on regulatory network, systems biology, and 3D chromatin organization

Education

Ph.D. in Statistics and Applied Probability 2010 - 2015
National University of Singapore, Singapore
Thesis title: Biological Network Analysis and Comparison
Thesis advisor: Dr. Kwok Pui Choi

M.S. in Probability and Mathematical Statistics 2009 - 2011
Northeast Normal University, China
Thesis title: Random Network Models' Discrimination
Thesis advisor: Dr. Zhidong Bai

B.S. in Mathematics and Applied Mathematics 2005 - 2009
Northeast Normal University, China

Manuscripts in Preparation

3. **Tian D***, Zhang R*, Zhang Y, and Ma J, MOCHI enables discovery of heterogeneous interactome modules in 3D nucleome. bioRxiv, doi: https://doi.org/10.1101/542092. Preparing for resubmission to *Genome Research*.

2. **Tian D***, Zhu X*, and Ma J, Diffdomains: model-based identification of significantly reshaped chromatin domains from Hi-C contact matrices between normal and disease conditions.

1. **Tian D** and Ma J, Exploiting the interplay between chromatin interactome and transcriptional regulatory network.

Publications

9. **Tian D**, Gu Q and Ma J, Identifying gene regulatory network rewiring using latent differential graphical models, *Nucleic Acids Research* **44**, 17 (2016).

8. Koh V, Cheung C, Li X, **Tian D**, Wang J.J, Mitchell P, Cheng C.Y, and Wong T.T, Retinal vein occlusion in a multi-ethnic asian population: the singapore epidemiology of eye disease study, *Ophthalmic Epidemiology* **23**, 1 (2016).

7. Chen L, Cheng C.Y, Choi H, Ikram M.K, Sabanayagam C, Tan G.S, **Tian D**, Zhang L, Venkatesan G, Tai E.S, Wang J.J, Mitchell P, Cheung C.M.G, Beuerman R.W, Zhou L, Chan E.C.Y, Wong T.T, Plasma metabonomic profiling of diabetic retinopathy, *Diabetes* **65**, 4 (2016).

6. Yam G.H.F, Yusoff N.Z.B.M, Kadaba A, **Tian D**, Myint H.H, Beuerman R.W, Zhou L, Mehta J.S, Ex vivo propagation of human corneal stromal "activated keratocytes" for tissue engineering, *Cell Transplantation* **24**, 9 (2015).

5. Chen L, Li J, Guo T, Ghosh S, Koh S.K, **Tian D**, Zhang L, Jia D, Beuerman R.W, Aebersold R, Chan E.C.Y, Zhou L, Global metabonomic and proteomic analysis of human conjunctival epithelial cells (IOBA-NHC) in response to hyperosmotic stress, *Journal of Proteome Research* **14**, 9 (2015).

4. Tong L, Zhou X, Jylha A, Aapola U, Liu D.N, Koh S.W, **Tian D**, Quah J, Uusitalo H, Beuerman R.W, Zhou L, Quantitation of 47 human tear proteins using high resolution multiple reaction monitoring (HR-MRM) based-mass spectrometry, *Journal of Proteomics* **115**, (2015).

3. Zhang S*, **Tian D***, Tran N.H, Choi K.P, and Zhang L.X, Profiling human cell-type specific transcription factor regulatory networks, *Nucleic Acids Research* **42**, 20 (2014).

2. Barathi V.A, Chaurasia S.S, Poidinger M, Koh S.K, **Tian D**, Ho C, Iuvone P.M, Beuerman R.W, Zhou L, Involvement of GABA transporters in atropine-treated myopic retina as revealed by iTRAQ quantitative proteomics, *Journal of Proteome Research* **13**, 11 (2014).

1. **Tian D** and Choi K.P, Sharp bounds and normalization of wiener-type indices, *PLOS ONE* **8**, 11 (2013).

Note: $\star$ represents co-first authors.

Research Experience

3. **National University of Singapore, Singapore** 2014 - 2015
   Research Assistant. Advisor: Kwok Pui Choi, Ph.D.
   - Develop model to identify essential genes by network motifs in regulatory networks

2. **Singapore Eye Research Institute (SERI), Singapore** 2011 - 2015
   Research Collaborator with Lei Zhou, Ph.D.
   - Provide statistical analysis and consultation for Proteomics & Microanalysis Laboratory
   - Collaborate with other members from SERI

1. **Center for Quantitative Medicine, Duke-NUS, Singapore** 2012 - 2015
   Associate Member

Teaching Assistant

Introduction to R
ST1131 Introduction to Statistics
ST1232 Statistics for Life Science
ST2131 Probability

Skills

Programming (Most used first)
R, Python, Unix/Linux bash script command, SAS programming language (Certified Base Programmer for SAS 9)
Bioinformatics tools & databases
MEME Suite, bedtools, jucier, UCSC Genome Browser, ENCODE, TCGA

Posters

3. Advanced Molecular Detection day, CDC, 2019
2. Systems Biology, Global Regulation & Gene Expression, CSHL, 2018
1. 4DN Annual Meeting, NIH, 2017

References

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