

Dechao Tian

5000 Forbes Ave GHC 7415
Pittsburgh, PA, 15213

(412) 583-6800
dechao@andrew.cmu.edu
<https://tian-dechao.github.io>

Current Employment

Postdoctoral Research Associate 2015 - Present
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>.
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: ★ represents co-first authors.

Research Experience

- | | |
|---|-------------|
| 3. National University of Singapore, Singapore
<i>Research Assistant. Advisor: Kwok Pui Choi, Ph.D.</i> <ul style="list-style-type: none"> • Develop model to identify essential genes by network motifs in regulatory networks | 2014 - 2015 |
| 2. Singapore Eye Research Institute (SERI), Singapore
<i>Research Collaborator with Lei Zhou, Ph.D.</i> <ul style="list-style-type: none"> • Provide statistical analysis and consultation for Proteomics & Microanalysis Laboratory • Collaborate with other members from SERI | 2011 - 2015 |
| 1. Center for Quantitative Medicine, Duke-NUS, Singapore
<i>Associate Member</i> | 2012 - 2015 |

Teaching Assistant

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

2. Systems Biology, Global Regulation & Gene Expression, CSHL, 2018
1. 4DN Annual Meeting, NIH, 2017

References

Jian Ma, Ph.D.

Associate Professor, Computational Biology
Carnegie Mellon University
Contact Information
School of Computer Science
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213, USA
Tel:(412) 268-2776
jianma@cs.cmu.edu

Louxin Zhang, Ph.D.

Professor, Mathematics
National University of Singapore, Singapore
Contact Information
10 Lower Kent Ridge, Singapore 119076
Tel:(+65) 6516-6579
matzlx@nus.edu.sg

Kwok Pui Choi, Ph.D.

Associate Professor, Statistics
National University of Singapore, Singapore
Contact Information

National University of Singapore, 6 Science Drive 2, Singapore 117546
Tel:(+65) 6516-4387
stackp@nus.edu.sg

Zhidong Bai, Ph.D.

Professor, Probability
Northeast Normal University, China

Contact Information

School of Mathematics and Statistics
Northeast Normal University
5268 Renmin Street, Changchun, Jilin 130024, China
Tel:(+86) 0431-85098161
baizd@nenu.edu.cn