

Dechao Tian

*Sun Yat-sen University
Shenzhen, Guangdong 510275*

*tiandch@mail.sysu.edu.cn
<http://dechao.tian.com>*

Current Employment

Associate Professor

2020 - Present

School of Public Health (Shenzhen), Sun Yat-sen University, China

- Method development for 3D chromatin organization
- Machine learning applications in precision public health

Past Employment

Mathematical Statistician

2019 - 2020

Centers for Disease Control and Prevention, US

- Surveillance, Information Management, and Statistics Office: research on anomaly cluster detection using heterogeneous and high dimensional time-to-event data

Postdoctoral Research Associate

2015 - 2019

Carnegie Mellon University, US

- Computational Biology Department: research on regulatory network and 3D chromatin organization by developing advanced statistical and machine learning algorithms

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

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

Publications

11. Hua D*, Hua D*, Hua D*, Qi L, Du X, Bai ZD, Zhu X, **Tian D**, Diffdomains: Discovery of statistically significantly reshaped chromatin domains using random matrix theory, *RECOMB 2022, LNBI* **13278**, (2022).
10. **Tian D***, Zhang R*, Zhang Y, and Ma J, MOCHI enables discovery of heterogeneous interactome modules in 3D nucleome, *Genome Research* **30**, 2 (2020).
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**
Research Assistant. Advisor: Kwok Pui Choi, Ph.D.

2014 - 2015

- 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

Cytoscape, MEME Suite, BEDTools, JUCIER, UCSC Genome Browser, ENCODE, TCGA

Presentation

1. DRIVE: an open source web application using Data Reduction for Interactive Visualization and Analysis of Epidemiologic and Genomic Data , DataViz day, CDC, 2019

Posters

3. Advanced Molecular Detection day, CDC, 2019
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

Kwok Pui Choi, Ph.D.

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