

Zhongyou Li

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Department of Microbiology and Immunology

Geisel School of Medicine at Dartmouth

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EDUCATION

- **Ph.D.** Aug. 2015 — 2022
Microbiology & Immunology Department, Geisel School of Medicine at Dartmouth College
 - Advisor: Dr. Bruce A. Stanton
 - Thesis: The anti-inflammatory effect of tRNA fragments in *Pseudomonas aeruginosa* outer membrane vesicles induced by tobramycin
- **Master of Science in Genome Sciences** 2011 — 2013
Institute of Genome Sciences, National Yang-Ming University, Taipei, Taiwan
 - Advisor: Dr. Ching-Wei Luo
 - Thesis: Characterization of the effects of TSHR signaling on ovarian cancer progression
- **Bachelor of Science in Life Sciences** 2007 — 2011
Department of Life Sciences, National Yang-Ming University, Taipei, Taiwan

RESEARCH EXPERIENCES

- **Ph.D. candidate** 2017 — 2022
Microbiology & Immunology Department, Geisel School of Medicine at Dartmouth College
 - Advisor: Dr. Bruce A. Stanton
 - The anti-inflammatory effect of 5' tRNA^{fMet} halves in *Pseudomonas aeruginosa* outer membrane vesicles induced by tobramycin.
 - Developing algorithm for automated and high-throughput annotation of Gene Expression Omnibus datasets to facilitate meta-analysis
- **Research Assistant** 2013 — 2015
Institute of Biochemistry and Molecular Biology, National Yang-Ming University, Taipei, Taiwan
 - Supervisor: Dr. Cheng-Wen Wu, Academician, Academia Sinica, Taipei, Taiwan
 - Oct4A induced chemoresistance via ABCB1 expression

- Nicotinic acetylcholine receptor alpha5 mediates low-dose nicotine effects in lung adenocarcinoma
- **Research Assistant, Master Level** 2011 — 2013
 Institute of Genome Sciences, National Yang-Ming University, Taipei, Taiwan
 - Advisor: Dr. Ching-Wei Luo
 - Thesis: Characterization of the effects of thyrostimulin-TSHR signaling on ovarian cancer progression
 - Thyrostimulin-TSHR signaling activation promotes ovarian cancer progression via up-regulation of proliferation, metastasis, and angiogenesis abilities of ovarian cancer cells
- **Research Assistant, Undergraduate Level** 2010 — 2011
 Department of Life Sciences, National Yang-Ming University, Taipei, Taiwan
 - Advisor: Dr. Ching-Wei Luo
 - Bachelor thesis: Characterization of the downstream signal of THSR upon thyrostimulin treatment

TEACHING EXPERIENCES

- **Instructor** 2018—2021
 Applied Bioinformatics course, MDI Biological Laboratory, Bar Harbor, ME
<https://mdibl.org/course/applied-bioinformatics-2021/>
 - Faculty of the course since 2018
 - A week-long hands-on workshop for advanced graduate students, post-doctoral trainees, and researchers.
 - Developed and presented lectures on pathway analysis, microbiome data analysis, and accessing the National Library of Medicine databases with R, Unix, and web-based tools
 - Solved students coding questions and helped the hands-on sessions
- **Teaching assistant** 2017
 Applied Bioinformatics course, MDI Biological Laboratory, Bar Harbor, ME
 - A hands-on workshop for advanced graduate students, post-doctoral trainees, and researchers.
 - Solved students coding questions and helped the hands-on sessions
- **Teaching assistant** 2016
 Cell Structure and Function, Dartmouth College, Hanover, NH
 - Undergraduate student course
 - Prepared and lectured the laboratory course, office hours
- **Teaching assistant** 2008
 Experimental Technique in Yeast, Department of Life Sciences, National Yang-Ming University, Taipei, Taiwan

- Undergraduate student course
- Conducted and demonstrated the experiment technique in yeast
- Prepared the experiment material

PUBLICATIONS

• **Peer-reviewed journal articles**

- **Li Z**, Koeppen K, Ashare A, Hogan DA, Gerber SA, Stanton BA. (2021) Tobramycin-induced secretion of *P. aeruginosa* 5' tRNA-fMet halves suppresses lung inflammation via AGO2 gene silencing. *Preprint*; bioRxiv. DOI:10.1101/2021.09.23.461540
- **Li Z**, Stanton BA. (2021) tRNA-derived fragments, the underappreciated regulatory small RNAs in microbial pathogenesis. Mini Review, *Front. Microbiol.* DOI:10.3389/fmicb.2021.687632.
- **Li Z**, Koeppen K, Holden VI, Neff SL, Cengher L, Demers EG, Mould DL, Stanton BA, Hampton TH. (2021) GAUGE-Annotated Microbial Transcriptomic Data Facilitate Parallel Mining and High-Throughput Reanalysis To Form Data-Driven Hypotheses. *mSystems*. DOI: 10.1128/mSystems.01305-20.
- Koeppen K, Nymon A, Barnaby R, Bashor L, **Li Z**, Hampton TH, Liefeld AE, Kolling FW, LaCroix IS, Gerber SA, Hogan DA, Kasetty S, Nadell CD, Stanton BA. (2021) Let-7b-5p in vesicles secreted by human airway cells reduces biofilm formation and increases antibiotic sensitivity of *P. aeruginosa*. *PNAS*. DOI: 10.1073/pnas.2105370118
- Koeppen K, Nymon A, Barnaby R, **Li Z**, Hampton TH, Ashare A, Stanton BA. (2021) CF monocyte-derived macrophages have an attenuated response to extracellular vesicles secreted by airway epithelial cells. *Am J Physiol Lung Cell Mol Physiol*. DOI: 10.1152/ajplung.00621.2020.
- Huang WL, **Li Z**, Lin TY, Wang SW, Wu FJ, Luo CW. (2016) Thyrostimulin-TSHR signaling promotes the proliferation of NIH:OVCAR-3 ovarian cancer cells via trans-regulation of the EGFR pathway. *Scientific Reports*. DOI: 10.1038/srep27471
- * **Huang WL and Li Z contributed equally to this work**
- Lin TY, Wu FJ, Chang CL, **Li Z**, Luo CW. (2016) NMU signaling promotes endometrial cancer cell progression by modulating adhesion signaling. *Oncotarget*. DOI: 10.18632/oncotarget.7169.

• **Conference abstracts**

- **Li Z**, Koeppen K, Ashare A, Hogan DA, Stanton BA. (2020) The anti-inflammatory effect of 5' tRNA^{fMet} halves in *Pseudomonas aeruginosa* outer membrane vesicles induced by tobramycin. *Pediatric Pulmonology. Poster Session abstract*. DOI: 10.1002/ppul.25089
- **Li Z**, Koeppen K, Ashare A, Hogan DA, Stanton BA. (2019) Tobramycin reduces host inflammatory response to pseudomonas aeruginosa by increasing short rna_62790 abundance in outer membrane vesicles. *Pediatric Pulmonology. Poster Session abstract*. DOI:10.1002/ppul.22495

POSTERS & PRESENTATIONS

- **Li Z**, Koeppen K, Ashare A, Hogan DA, Stanton BA. The anti-inflammatory effect of 5' tRNA^{fMet} halves in *Pseudomonas aeruginosa* outer membrane vesicles induced by tobramycin. Oral presentation for Junior Investigators Best Abstract in Basic Science Award Session. North American Cystic Fibrosis Conference. 2020; Virtual Event
- **Li Z**, Koeppen K, Holden VI, Neff SL, Stanton BA, Hampton TH. ScanGEO and PAPA, portals for parallel mining of publicly available transcriptomic data. Poster presentation. Northeast Regional Institutional Development Award Conference, Bretton Woods, NH 2019
- **Li Z**, Koeppen K, Goodale BC, Stanton BA, Hampton TH. ScanGEO.AI: Applying Machine Learning to Large Environmentally Relevant Gene Expression Data Sets. Poster presentation. Superfund Research Program annual meeting, Sacramento, CA 2018
- **Li Z**, Koeppen K, Ashare A, Hogan DA, Stanton BA. Tobramycin Reduces Host Inflammatory Response to *Pseudomonas aeruginosa* by Increasing Short RNA 62790 Abundance in Outer Membrane Vesicles. Poster presentation. Gordon Research Conference on Extracellular Vesicles, Newry, ME 2018
- **Li Z**, Luo CW. The effects of TSHR signaling on ovarian cancer progression. Oral presentation. Master Thesis Award. National Yang-Ming University, Taipei, Taiwan 2013

AWARDS & HONORS

- **Finalist of the Junior Investigators Best Abstract in Basic Science Award**
North American Cystic Fibrosis Conference 2020
- Dean's Award for Outstanding Master Thesis 2013
- Member of Phi Tau Phi Scholastic Honor Society of Taiwan 2013
- Advanced Award of Poster Competition of Bachelor Thesis 2011
- Excellent Award of Poster Presenting. National Yang-Ming University, Taipei, Taiwan 2011

FELLOWSHIPS & SCHOLARSHIPS

- Molecular and Cellular Biology Graduate Program at Dartmouth Fellowship 2015
- Apex Biotechnology Corp. Scholarship 2012
- College Student Research Fellowship, National Science Council, Taiwan 2010