Tony J. Lam

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PROFILE

PhD candidate in Bioinformatics, working on research related to Indiana University's Precision Health Initiative. Projects focus on studying the human microbiome, their effects on human health, and the development of tools and methods to leverage omics data in precision health.

RESEARCH INTEREST

Bioinformatics, Microbiome, Meta-omics Integration, Next-Generation Sequencing (NGS), Data Analysis, Precision Health, Machine Learning, Bacteria-Drug Interactions, CRISPR-Cas Systems, Pharmacodynamics.

SKILLS

Research
DNA Sequencing Analysis, RNA Sequencing Analysis, Sequence Assembly, Sequence Alignment, Genome Annotation, Variant Calling, Gene Set Enrichment Analysis (GSEA), Data Analytics, Data Visualization, Statistics, Machine Learning, Natural Language Processing (NLP).

Tools
Python, R, Shell Script, LaTeX, Command line, UNIX, HPC Systems, Git and Version Control, APIs, Pandas, NumPy, Cytoscape, NetworkX.

Language
English, Cantonese (Chinese), Mandarin (Chinese)

EDUCATION

Ph.D., Bioinformatics (Informatics)
2016 – Present | Indiana University, Bloomington, IN | Advisor: Dr. Yuzhen Ye

M.S., Computer Science
2016 – 2018 | Indiana University, Bloomington, IN

B.S., Microbiology
2009 – 2013 | University of Hawaii at Manoa, Honolulu, HI

PROFESSIONAL EXPERIENCE

Research Consultant, Microbiome and Me LLC
August 2019 – Present
- Provide bioinformatics consultancy to academic and private company stake holders.
- Build customized pipelines, analyze omics and NGS datasets.
- Deliverables include: experimental design, taxonomic classification, phylogenetic analysis, genomic analysis, variant calling, and detailed analysis reports.

Research Intern, Vertex Pharmaceuticals
Human Genomics Department, Computational Genomics Team
June 2018 – August 2018
- Assisted in disease mechanism and biomarker discovery of an ongoing drug discovery and disease program.
- Performed transcriptomic analysis of disease models to gain insight into disease etiology.
- Characterized gene expression changes in response to various compound treatments.
- Implemented RNAseq variant calling pipeline for cell line mutation validation.

Environmental Health Specialist, State of Hawaii
Hawaii Occupational Safety and Health (HIOSH)
March 2014 – October 2015
- Enforcement of Occupational Safety and Health Standards, 29 CFR Parts 1910 and 1926
- Duties include: Hazard Assessment, Air Monitoring, Noise Monitoring, Audits.

ADDITIONAL EXPERIENCE

Undergraduate Research Assistant, University of Hawaii
John A. Burns School of Medicine, Institute for Biogenesis Research
September 2013 – February 2014
- Working in the lab of Dr. Richard Allsopp, studying the role of Hypoxia-inducible factor 1-alpha (HIF-1-alpha) on Telomerase Reverse Transcriptase (TERT) gene expression.
- Performed basic wet-lab work (e.g. media preparation, PCR, and histochemical staining).

Undergraduate Research Assistant, University of Hawaii
Microbiology Department
August 2012 – July 2013
- Undergraduate research assistant in the lab of Dr. Guangyi Wang and Dr. Xin Wang, studying consolidated bioprocessing (CBP), the conversion of biomass into biofuels, through the bioengineering of facultative anaerobes.
- Performed basic wet-lab work (e.g. bacterial isolation, bacterial culturing, and PCR).

SELECTED PUBLICATIONS

Lam, T. J., and Ye, Y. (2019). Long reads reveal the diversification and dynamics of CRISPR reservoir in microbiomes. *BMC genomics, 20.1,* 567.

Lam, T. J., and Ye, Y. (2019). CRISPRs for Strain Tracking and Their Applications to Microbiota Transplantation Data Analysis. The CRISPR journal, 2(1), 41-50.