

William K (Kuang-Wei) Chang

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Education and postgraduate training

- 2015–present **Postdoctoral fellow**, *Albert Einstein College of Medicine*, Department of Systems and Computational Biology, Bronx, NY.
PI: Libusha Kelly.
Metagenomics and ecology of bacteria and bacteriophages in complex human and marine microbiomes.
- 2015 **PhD**, *Cornell University*, Program in Physiology, Biophysics, and Systems Biology, New York, NY.
PI: João Xavier, Memorial Sloan Kettering Cancer Center (joint appointment).
Thesis: Mathematical models of the tumor ecosystem.
- 2008 **BA with General Honors**, *Johns Hopkins University*, Biophysics, Baltimore, MD.

Other scientific experience

- 2015 **Complex Systems Summer School**, *Santa Fe Institute*, Santa Fe, NM.
- 2008–2009 **Research technician**, *Johns Hopkins University*, Department of Biophysics, Baltimore, MD.
PI: Greg Bowman.
- 2006–2008 **Undergraduate researcher**, *Johns Hopkins University*, Department of Materials Science and Engineering, Baltimore, MD.
PI: Kalina Hristova.

Publications

- [1] William K. Chang and Libusha Kelly. “Inferring the quasipotential landscape of microbial ecosystems with topological data analysis”. In: *bioRxiv* (Mar. 21, 2019), p. 584201. DOI: 10.1101/584201. URL: <https://www.biorxiv.org/content/10.1101/584201v1> (visited on 04/04/2019).
- [2] Kathryn M. Kauffman et al. “A major lineage of non-tailed dsDNA viruses as unrecognized killers of marine bacteria”. In: *Nature* 554.7690 (Feb. 2018), pp. 118–122. ISSN: 1476-4687. DOI: 10.1038/nature25474. URL: <https://www.nature.com/articles/nature25474>.
- [3] Jo{\textbackslash}\textasciitilde}ao Xavier and William Chang. “Agent based models to investigate cooperation between cancer cells”. In: *Handbook of Mathematical Methods in Cancer Biology*. National Cancer Institute, 2016, p. 031070. URL: <http://www.biorxiv.org/content/early/2015/11/09/031070> (visited on 06/06/2016).
- [4] W. K. Chang, C. Carmona-Fontaine, and J. B. Xavier. “Tumour-stromal interactions generate emergent persistence in collective cancer cell migration”. In: *Journal of the Royal Society Interface Focus* 3.4 (June 2013), pp. 20130017–20130017. ISSN: 2042-8898. DOI: 10.1098/rsfs.2013.0017. URL: <http://rsfs.royalsocietypublishing.org/cgi/doi/10.1098/rsfs.2013.0017>.
- [5] D. Bell et al. “Integrated genomic analyses of ovarian carcinoma”. In: *Nature* 474.7353 (June 2011), pp. 609–615. ISSN: 0028-0836. DOI: 10.1038/nature10166. URL: <http://www.nature.com/doi/10.1038/nature10166>.

- [6] Phaedra Agius et al. “High resolution models of transcription factor-DNA affinities improve in vitro and in vivo binding predictions.” In: *PLoS Computational Biology* 6.9 (Jan. 2010). ISSN: 1553-7358. DOI: 10.1371/journal.pcbi.1000916. URL: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2936517&tool=pmcentrez&rendertype=abstract>.
- [7] William K Chang et al. “Characterization of antimicrobial peptide activity by electrochemical impedance spectroscopy.” In: *Biochimica et Biophysica Acta* 1778.10 (Oct. 2008), pp. 2430–6. ISSN: 0006-3002. DOI: 10.1016/j.bbame.2008.06.016. URL: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2577611&tool=pmcentrez&rendertype=abstract>.

See also my Google Scholar page: <https://scholar.google.com/citations?user=RCTd8bcAAAAJ&hl=en>.

Presentations

Talks

- 2019 Inferring the quasipotential landscape of microbiomes using topological data analysis. American Society for Microbiology annual Microbe meeting, San Francisco, CA.
- 2016 The possibility of you: How do biological entities from enzymes to brains achieve both coherence and diversity of behavior? Riffing on evolutionary theory and speculating on the properties of thought. YHouse Consciousness Club, New York, NY.
- 2015 Modeling ecological therapy against tumor-associated macrophages in glioblastoma. International Biannual Evolution and Cancer Conference. University of California, San Francisco, CA.
- 2015 Ecological therapy of cancer—withdrawal of the pro-tumoral phenotype in tumor-associated macrophages is sufficient for effective treatment. Meeting on Cell Dynamics & Models. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2014 Mathematical modeling the ecological therapy of cancer with application to glioblastoma. Weill Cornell Graduate School Physiology, Biophysics, and Systems Biology program annual retreat.

Posters

- 2019 Inferring the quasipotential landscape of microbiomes using topological data analysis. Integrating theory and experiment in microbial communities, Princeton University, Princeton, NJ.
- 2015 Mathematical modeling of the tumor-stromal ecosystem. Integrative Cancer Biology Program–Physical Science and Oncology Program Joint Meeting. Moffit Cancer Center, Tampa, FL.
- 2014 Mathematical modeling of tumor-macrophage interactions and ecological therapy in glioblastoma. Bioinformatics: Medical Applications Symposium. Hunter College, New York, NY.
- 2013 Tumor-stromal interactions generate emergent persistence in collective cancer cell migration. Meeting on Computational Cell Biology, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2011 Evolution of cooperation in tumor growth. Meeting on Computational Cell Biology, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2008 Impedance spectroscopy analysis of antimicrobial peptide action on a tethered bilayer. Biophysical Society Annual Meeting, Long Beach, CA.