JOSEPH C. CHEN

Professor
Department of Biology
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132

Phone: 415-405-2762
Fax: 415-338-2295
E-mail: chenj@sfsu.edu

Education

1995 - 2001 **Harvard University**, Cambridge, MA.
Ph.D., Program in Biological and Biomedical Sciences, Division of Medical Sciences. Thesis advisor: Jon Beckwith, Dept. of Microbiology and Molecular Genetics, Harvard Medical School. Dissertation: The role of an essential membrane protein (FtsQ) in *Escherichia coli* cell division. **National Science Foundation Pre-doctoral Fellow.**

1991 - 1995 **Harvey Mudd College**, Claremont, CA.
Bachelor of Science in Biology (Honors). Graduated with High Distinction. Overall GPA: 3.95/4.00. Letters of Commendation received: general chemistry, mechanics, linear algebra, and the Freshman Division. Awards: **Barry M. Goldwater Scholarship, William K. Purves Prize in Biology, W. A. Brandenburger Prize, and Dean's List.**

1994 **Cambridge University**, Jesus College, Cambridge, U.K.
Pomona College Study Abroad Program. Course work included immunology, cell biology, English literature, European literature, and archaeology.

Professional Experience

2020 - present **Professor, Dept. of Biology, San Francisco State University**, San Francisco, CA.
2013 - 2020 **Associate Professor**, Dept. of Biology, San Francisco State University, San Francisco, CA.
2006 - 2013 **Assistant Professor**, Dept. of Biology, San Francisco State University, San Francisco, CA.
Research: bacterial factors that contribute to competitive advantage during infection of host plants by the nitrogen-fixing endosymbiont *Sinorhizobium meliloti*; cell polarity and subcellular architecture in alpha-proteobacteria.

2014 - 2015 **Visiting Faculty, Joint BioEnergy Institute**, Emeryville, CA.
Research: genome editing of *Escherichia coli* strains to improve production of desired compounds, regulated gene expression in diverse bacteria using synthetically designed promoters.

2002 - 2006 **Post-doctoral Fellow, Stanford University**, Stanford, CA.
Advisor: Lucy Shapiro, Dept. of Developmental Biology, School of Medicine. Topic: Regulated proteolysis in *Caulobacter* asymmetric cell division and polar differentiation. **Ruth L. Kirschstein National Research Service Award (National Institutes of Health)**.

2001 **Intern, AstraZeneca Pharmaceuticals**, Waltham, MA.
Developed assays to confirm the mode of action of antifungal compounds in the candidate drug pipeline. Established tools for studying mechanisms of resistance in *Candida* species.

Select Honors and Awards

2014, 2019 **Annual Biomedical Research Conference for Minority Students (ABRCMS) Judges' Travel Subsidy**. Received subsidy for conference registration and housing to participate as a judge for oral and poster presentations by students. Reviewed applications for student registration

waivers. ABRCMS is the largest professional conference for underrepresented students in the country, with over 5000 attendees in 2019.

2008 **American Society for Microbiology (ASM) General Meeting Minority Travel Grant**
Grants are awarded to increase the participation of underrepresented minority (URM) groups in the ASM General Meeting. Received funds to cover meeting-related expenses.

2003 - 2005 **Ruth L. Kirschstein National Research Service Award**, National Institute of General Medical Sciences (NIGMS), National Institutes of Health (NIH), Bethesda, MD. Competitive funding for post-doctoral research.

1995 - 1998 **NSF Pre-doctoral Fellowship**, National Science Foundation, Arlington, VA.
Competitive scholarship that provides three years of financial support for graduate study.

1994 - 1995 **Barry M. Goldwater Scholar**, Barry Goldwater Scholarship and Excellence in Education Foundation, Springfield, VA. The purpose of the Foundation, established by Congress in 1986, is to provide a continuing source of highly qualified scientists, mathematicians, and engineers by awarding scholarships to college students who intend to pursue careers in these fields.

Service Activities (Partial List)

2020 **Reviewer, Beckman Scholars Program**
Assessed and ranked institutional applications for the limited-submission, invitation-only program that funds a 15-month mentored research experience for exceptional undergraduate students in chemistry, biological sciences, or interdisciplinary combinations thereof.

2020 **Reviewer, Goldwater Scholarship Program**
Evaluated undergraduate students' applications for the prestigious, national award, given to ~400 students across the U.S. in the natural sciences, engineering, and mathematics.

2020 **Reviewer, National Science Foundation Graduate Research Fellowship Program (GRFP)**
Scored graduate students' applications from across the country for the competitive award (in the discipline of microbiology).

2018 - 2019 **Member, Microbiology Search Committee**, SFSU Biology Department
Reviewed applications for tenure-track microbiology faculty position; planned on-campus visits, evaluated candidates, and recommended rankings to the department.

2017 **Member, University Sabbatical Committee**, SFSU
Reviewed and ranked faculty applications for leave with pay.

2016 - 2017 **Organizer, Microbial Genetics and Genomics Meeting**, Asilomar Conference Grounds, CA.
Helped organize the meeting by compiling list of attendees and presentation titles. Provided information for attendees and answered questions by electronic mail.

2015 - present **California State University Program for Education and Research in Biotechnology (CSUPERB)** grant reviewer. Evaluated grant applications from campuses across the CSU system and then attended all-day session to discuss and provide final scores. Reviewed only travel grant applications in 2020.

2015 - 2018 **Member, NSF REU Selection Committee**, SFSU Biology Department
Assessed student applications for SFSU's NSF-sponsored Research Experiences for Undergraduates (REU) summer program.

2014 - present **Member, Instructionally Related Activities (IRA) Advisory Board**, SFSU

Evaluate applications for university IRA funds and recommend allocation of awards.

2014, 2017, 2019 **Judge, Annual Biomedical Research Conference for Minority Students (ABRCMS)**
Evaluated posters at the conference and scored student travel award applications. Reviewed applications for student registration waivers in 2020.

2011 - 2018 **Northern California American Society for Microbiology** volunteer
Help organize the fall and spring local meetings, each attended by over 100 people.

2009 - 2011 **Secretary, Northern California American Society for Microbiology (NCASM)**
NCASM serves over 200 members in the region.

2007 - present **Mentor, Beckman Scholars Program**, SFSU College of Science and Engineering
Supply information for the college's application to the program. Review applications to select student scholars. Directly supervised one scholar.

Publications (since 2006)

Peer-reviewed research articles

1. Eng T, Herbert RA, Martinez U**, Wang B, **Chen JC**, Brown JB, Deutschbauer AM, Bissell MJ, Mortimer JC, Mukhopadhyay A. Iron Supplementation Eliminates Antagonistic Interactions Between Root-Associated Bacteria. *Front Microbiol*. 2020;11:1742. doi: 10.3389/fmicb.2020.01742. eCollection 2020. PubMed PMID: 32793173; PubMed Central PMCID: PMC7387576. (** indicates Master's student at SFSU.)
2. Herbert RA, Eng T, Martinez U**, Wang B, Langley S, Wan K, Pidatala V, Hoffman E, **Chen JC**, Bissell MJ, Brown, JB, Mukhopadhyay A, Mortimer JC. 2019. Rhizobacteria mediate the phytotoxicity of a range of biorefinery -relevant compounds. *Environ Toxicol Chem*. 2019 May 20. doi: 10.1002/etc.4501. PubMed PMID: 31107972. (** indicates Master's student at SFSU.)
3. Ruegg TL, Pereira JH, **Chen JC**, DeGiovanni A, Novichkov P, Mutalik VK, Tomaleri GP, Singer SW, Hillson NJ, Simmons BA, Adams PD, Thelen MP. 2018. Jungle Express is a versatile repressor system for tight transcriptional control. *Nat Commun*. 9(1):3617. doi: 10.1038/s41467-018-05857-3. Erratum in: *Nat Commun*. 2018 Oct 30; 9(1):4596. PubMed PMID: 30190458; PubMed Central PMCID: PMC6127294.
4. Bezryadina, A., D. Preece, **J.C. Chen**, Z. Chen. 2016. Optical disassembly of cellular clusters by tunable "tug-of-war" tweezers. *Light Sci Appl.* **5**, e16158. doi:10.1038/lsa.2016.158. PubMed PMID: 27818838; PubMed Central PMCID: PMC5091843.
5. Samadi, A., C. Zhang, **J. Chen**, S.N.S. Reihani, and Z. Chen. 2015. Evaluating the toxic effect of an antimicrobial agent on single bacterial cells with optical tweezers. *Biomed Opt Express*. 6(1):112-7. doi: 10.1364/BOE.6.000112. PubMed PMID: 25657879; PubMed Central PMCID: PMC4317123.
6. Mostafavi, M.**, J.C. Lewis**, T. Saini*, J.A. Bustamante*, I.T. Gao*, T.T. Tran*, S.N. King**, Z. Huang, and **J.C. Chen**. 2014. Analysis of a taurine-dependent promoter in *Sinorhizobium meliloti* that offers tight modulation of gene expression. *BMC Microbiol*. 14(1):295. PubMed PMID: 25420869; PubMed Central PMCID: PMC4254191. (** indicates Master's student, while * indicates undergraduate, at SFSU.)
7. Fields, A.T.**, C.S. Navarrete**, A.Z. Zare*, Z. Huang, M. Mostafavi**, J.C. Lewis**, Y. Rezaeihaghighi**, B.J. Brezler**, S. Ray, A.L. Rizzacasa, M.J. Barnett, S.R. Long, E.J. Chen, and **J.C. Chen**. 2012. The conserved polarity factor PodJ1 impacts multiple cell envelope-associated functions in *Sinorhizobium meliloti*. *Mol. Microbiol.* 84(5):892-920. PubMed PMID: 22553970; PubMed Central PMCID: PMC3359409. (** indicates Master's student at SFSU.)
8. Zhang, P., D. Hernandez*, D. Cannan*, Y. Hu, S. Fardad, S. Huang, **J.C. Chen**, D.N. Christodoulides, and Z. Chen. 2012. Trapping and rotating microparticles and bacteria with moiré-based optical propelling beams. *Biomed Op. Express.* 3(8): 1891-1897. (* indicates student at SFSU.)

9. Curtis, P.D., E.M. Quardokus, M.L. Lawler, X. Guo, D. Klein, **J.C. Chen**, R.J. Arnold, and Y.V. Brun. 2012. The scaffolding and signalling functions of a localization factor impact polar development. *Mol. Microbiol.* 84(4):712-735. PubMed PMID: 22512778; PubMed Central PMCID: PMC3345042.
10. Arellano, B.H.*, J.D. Ortiz*, J. Manzano*, and **J.C. Chen**. 2010. Identification of a dehydrogenase required for lactose metabolism in *Caulobacter crescentus*. *Appl. Environ. Microbiol*. 76(9): 3004-3014. (* indicates undergraduate student at SFSU.)
11. **Chen, J.C.**, A.K. Hottes, H.H. McAdams, P.T. McGrath, P.H. Viollier, and L. Shapiro. 2006. Cytokinesis signals truncation of the PodJ polarity factor by a cell cycle-regulated protease. *EMBO J.* 25(2): 377-86.

Invited guest commentary or paper

1. Lamstein, J.**, A. Bezryadina, D. Preece, **J.C. Chen**, Z. Chen. 2017. Optical tug-of-war tweezers: shaping light for dynamic control of bacterial cells. *Chin Opt Lett*. 15(3): 030010. (** indicates Master's student at SFSU.)
2. Bezryadina, A., D. Preece, **J.C. Chen**, Z. Chen. 2016. "Tug-of-War" Optical Tweezers to Fight Biofilms. *Optics & Photonics News*. Dec 2016.
3. **Chen, J.C.** and C. Stephens. 2007. Bacterial cell cycle: completing the circuit. *Curr. Biol.* 17(6): R203-6.

Pedagogy publication

1. Owens, M.T., G. Trujillo, S.B. Seidel, C.D. Harrison, K.M. Farrar, H.P. Benton, J.R. Blair, K.E. Boyer, J.L. Breckler, L.W. Burrus, D.T. Byrd, N. Caporale, E.J. Carpenter, Y.-H.M. Chan, **J.C. Chen**, L. Chen, L.H. Chen, D.S. Chu, W.P. Cochlan, R.J. Crook, K.D. Crow, J.R. de la Torre, W.F. Denetclaw, L.M. Dowdy, D. Franklin, M. Fuse, M.A. Goldman, B. Govindan, M. Green, H.E. Harris, Z.-H. He, S.B. Ingalls, P. Ingmire, A.R.B. Johnson, J.D. Knight, G. LeBuhn, T.L. Light, C. Low, L. Lund, L.M. Márquez-Magaña, V.C. Miller-Sims, C.A. Moffatt, H. Murdock, G.L. Nusse, V.T. Parker, S.G. Pasion, R. Patterson, P.S. Pennings, J.C. Ramirez, R.M. Ramirez, B. Riggs, R.V. Rohlfs, J.M. Romeo, B.S. Rothman, S.W. Roy, T. Russo-Tait, R.N.M Sehgal, K.A. Simonin, G.S. Spicer, J.H. Stillman, A. Swei, L.C. Tempe, V.T. Vredenburg, S.L. Weinstein, A.G. Zink, L.A. Kelley, C.R. Domingo, K.D. Tanner. 2018. Collectively Improving Our Teaching: Attempting Biology Department-wide Professional Development in Scientific Teaching. *CBE: Life Sciences Education.* 17(1):ar2.

Research Funding

SC3 GM096943 Status: Active (8/1/2020 - 7/31/2024)
NIH/NIGMS $465,000 (total direct + indirect costs)
NIH Support of Competitive Research (SCORE) Research Continuance (SC3) Award: *Sinorhizobium meliloti* factors that affect biofilm formation and symbiosis efficiency. Role: principal investigator.

SC3 GM096943 Status: Completed (8/1/2016 - 7/31/2020)
NIH/NIGMS $448,500 (total direct + indirect costs)
NIH Support of Competitive Research (SCORE) Research Continuance (SC3) Award: Regulation of polar adhesion during *Sinorhizobium meliloti* infection. Role: principal investigator.

MRI: 1626611 Status: Completed (1/1/2017 - 12/31/2019)
NSF $472,818 (total costs)
NSF Major Research Instrumentation (MRI): Acquisition of an Atomic Force Microscope to Enhance Research and Student Research Training in Engineering, Biochemistry, Biology and Physics departments at SF State Univ. Role: Co-principal investigator. PI: Mojtaba Azadi.

SFSU CCLS Mini-Grant Status: Completed (1/31/2017 - 6/30/2018)
Center for Computing for the Life Sciences $4,000 (total costs)

Developing AFM-based quantitative assessment tools and finite element poroelastic models to examine subtle changes in soft biological materials. Role: co-principal investigator. PI: Mojtaba Azadi.

SC3 GM096943 Status: Completed (8/1/2012 - 7/30/2016)
NIH/NIGMS $457,140 (total direct + indirect costs)
NIH Support of Competitive Research (SCORE) Research Continuance (SC3) Award: Regulatory network of a conserved polar factor in *Sinorhizobium meliloti*. Role: principal investigator.

Entrepreneurial Joint Venture Grant Status: Completed (7/1/2014 - 11/30/2015)
CSUPERB $22,319 (total costs)
Streamlining gene deletions in bacteria, in collaboration with the Joint BioEnergy Institute in Emeryville, CA. Role: principal investigator.

ORSP FOA 2010-01 Status: Completed (7/1/2010 - 6/30/2011)
SFSU ORSP $15,000 (total costs)
Facilitating Research and Creative Activity: Novel optical manipulation of biological samples. Role: co-principal investigator. PI: Zhigang Chen.

SC2 GM082318 Status: Completed (6/1/2008 - 4/30/2012)
NIH/NIGMS $344,969 (total direct + indirect costs)
NIH Minority Biomedical Research Support SCORE grant: Regulated assembly of subcellular structures in alpha-proteobacteria. Role: principal investigator.

SC2 GM082318-S1 Status: Completed (9/1/2010 - 4/30/2012)
NIH/NIGMS $34,664 (total direct + indirect costs)
NIH SCORE ARRA Administrative Supplement: Regulated assembly of subcellular structures in alpha-proteobacteria. Role: principal investigator.

Trainees

Master's Students: primary mentor for 30 total, of which 13 self-identify as underrepresented minorities; 4 current students

Undergraduates: 35 total, of which 14 self-identify as underrepresented minorities; 0 current students (research laboratory unable to accommodate undergraduate students under social distancing guidelines)