JAMES KENNETH CHEN

Herbert and Marguerite Jauch Professor
Professor and Chair, Department of Chemical and Systems Biology
Professor, Department of Developmental Biology
Professor, Department of Chemistry

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EDUCATION

Harvard College, Cambridge, MA — 1987 – 1991
A. B. degree in Chemistry, *Summa cum laude*
Research Advisor: George M. Whitesides

Harvard University, Cambridge, MA — 1991 – 1998
Ph.D. degree in Chemistry and Chemical Biology
Research Advisor: Stuart L. Schreiber

Marine Biological Laboratory, Woods Hole, MA — Summer 1998
Embryology: Concepts and Techniques in Modern Developmental Biology

Johns Hopkins School of Medicine, Baltimore, MD — 1999 – 2003
Postdoctoral Fellow, Department of Molecular Biology and Genetics
Research Advisor: Philip A. Beachy

PROFESSIONAL EXPERIENCE

Department of Chemical and Systems Biology, Stanford University, Stanford, CA
Assistant Professor — 2003 – 2010
Associate Professor — 2010 – 2016
Professor — 2016 – present
Chair — 2016 – present

Department of Developmental Biology, Stanford University, Stanford, CA
Associate Professor — 2012 – 2016
Professor — 2016 – present

Department of Chemistry, Stanford University, Stanford, CA
Assistant Professor (by courtesy) — 2003 – 2010
Associate Professor (by courtesy) — 2010 – 2016
Professor (by courtesy) — 2016 – 2019
Professor — 2019 – present

HONORS AND AWARDS

Harvard University Certification of Distinction in Teaching	1991
National Science Foundation Predoctoral Fellowship	1991 – 1994
American Chemical Society Organic Chemistry Predoctoral Fellowship	1994 – 1995
Damon Runyon-Walter Winchell Postdoctoral Fellowship	1999 – 2002
American Cancer Society Postdoctoral Fellowship	2002 – 2003
W. Barry Wood, Jr. Research Award, Johns Hopkins School of Medicine	2003
Kimmel Scholar Award, Sidney Kimmel Foundation for Cancer Research	2004 – 2006
Basil O'Connor Starter Scholar Research Award, March of Dimes Foundation	2005 – 2007

Terman Fellow, Stanford University	2005 – 2008
Astellas USA Foundation Award	2005
Faculty Fellow, Stanford School of Medicine	2006
Brain Tumor Society/Rachel Molly Markoff Research Chair	2006 – 2008
American Cancer Society Research Scholar Award	2008 – 2011
NIH Director's Pioneer Award	2008 – 2013
Nature SciCafe Award for Outstanding Research Achievement	2009
Alex's Lemonade Stand Foundation Innovation Award	2013 – 2015
NSF INSPIRE Award	2013 – 2017
Rocek Lectureship in Chemical Biology, University of Illinois at Chicago	2019
Herbert and Marguerite Jauch Professorship, Stanford University	2019 – present
Stanford Leadership Academy, Stanford University	2022 – 2023

PROFESSIONAL SERVICE AND MEMBERSHIPS (STANFORD UNIVERSITY)

Institute Memberships

Associate Member, Stanford Institute for Stem Cell Biology and Regenerative Medicine	2003 – present
Member, Bio-X, Stanford University	2003 – present
Member, Stanford Cancer Institute	2005 – present
Associate Member, Stanford Digestive Disease Center	2009 – 2012
Fellow, Stanford ChEM-H Institute	2013 – present
Member, Child Health Research Institute	2013 – present
Member, Stanford Neurosciences Institute	2017 – present

Graduate Education and Training

Member, Quantitative Chemical Biology Program Steering Committee, Stanford School of Medicine	2004 – 2009
Member, Medical Scientist Training Program Admissions Committee, Stanford School of Medicine	2004 – present
Member, Advisory Committee for the Scholarly Concentrations Program in the Molecular Basis of Medicine, Stanford School of Medicine	2006 – present
Director, Advisory Committee for the Scholarly Concentrations Program in the Molecular Basis of Medicine, Stanford School of Medicine	2011 – present
Faculty Mentor, Stanford Clinical and Translational Networking Program	2010
Departmental Representative, Stanford Biosciences Committee on Graduate Admissions and Policy	2012 – 2014
Advisor, Stanford Biosciences Grant Writing Academy	2014, 2017 – present
Member, Graduate Student Advisory Committee, Chemical and Systems Biology Stanford School of Medicine	2016 – present
Co-Program Director, Molecular Pharmacology Training Program Stanford School of Medicine	2021 – present

Administrative Activities

Faculty Director, High-Throughput Bioscience Center, Stanford School of Medicine	2003 – 2022
Member, Stanford School of Medicine Faculty Diversity Committee	2004 – 2005
Departmental Representative, Stanford School of Medicine Faculty Senate	2005 – 2006 2009 – 2016
Steering Committee Member, Stanford School of Medicine Faculty Senate	2012 – 2016
Alternate Member, Stanford Administrative Panel on Laboratory Animal Care	2012 – 2014
Co-Organizer, Stanford Chemical Biology Symposium	2012 – 2014
Executive Committee Member, Stanford ChEM-H Institute	2013 – present

Member, Radiation Oncology Faculty Search Committee, Stanford School of Medicine 2013
Chair, Junior Faculty Search Committee, Stanford ChEM-H Institute 2013
Executive Committee Member, Stanford School of Medicine Faculty Senate 2014 – 2016
Co-Chair, Junior Faculty Search Committee, Stanford ChEM-H Institute 2015
Member, Pediatric Chair Search Committee, Stanford School of Medicine 2015
Member, Junior Faculty Search Committee, Stanford ChEM-H Institute 2018
Chair of the Basic Science Chairs, Stanford School of Medicine 2020 – 2021
Member, Search Committee for the Senior Associate Dean of Graduate Education and Postdoctoral Affairs, Stanford School of Medicine 2020
Member, Service Center Advisory Board, Stanford School of Medicine 2020 – present
Member, Stanford-SLAC Engagement Workgroup, Stanford University 2021
Faculty Lead, High-Throughput Screening, Innovative Medicines Accelerator, Stanford University 2021 – present
Member, Stanford Research Rigor and Reproducibility Advisory Board, Stanford School of Medicine 2021 – present
Member, Grant Administration Faculty Oversight Committee, Stanford School of Medicine 2021 – present
Member, Search Committee for the Chief Financial Officer/Associate Dean, Stanford School of Medicine 2021 – 2022
Member, Search Committee for the Chief Diversity and Inclusion Officer, Stanford School of Medicine 2022
Faculty Director, High-Throughput Screening Knowledge Center, Stanford University 2022 – present

PROFESSIONAL SERVICE AND MEMBERSHIPS (NATIONAL AND INTERNATIONAL)

Society Memberships
Member, American Chemical Society 1989 – present
Member, Society for Developmental Biology 2009 – present
Member, International Zebrafish Society 2016 – present
Member, Zebrafish Disease Models Society 2017 – present

Editorial Board Memberships
Editorial Board Member, *Zebrafish* 2008 – present
Editorial Board Member, *Cell Chemical Biology* 2009 – present

Industrial Activities
Consultant, Infinity Pharmaceuticals 2004
Consultant, Fate Therapeutics 2008 – 2011
Scientific Advisor Board Member, Vibliome Therapeutics 2017 – 2021

Peer-Review Activities
Reviewer, NIH Study Section (Innovative Technologies for the Molecular Analysis of Cancer) 2005 – 2006
Reviewer, Wellcome Trust/DBT India Alliance Early Career Fellowships 2009
Reviewer, NIH Special Emphasis Panel (ZRG1 BDA-A 52R: hESC Challenge Grant) 2009
Reviewer, NIH Study Section (PAR-08-138: Zebrafish Screens) 2010
Reviewer, NIH Study Section (PAR-08-139: Tools for Zebrafish Research) 2010
Member, NIH Development-1 Study Section (DEV1) 2010 – 2012
Reviewer, ChemThem Chemical Biology 2011
Reviewer, NSF CAREER Award 2011, 2013 – 2015
Reviewer, NIH Study Section (PAR-11-221 and PAR-13-305: Collaborative Interdisciplinary Team Science in NIDDK Research Areas) 2013 – 2014

Reviewer, American Institute for Cancer Research 2013
Reviewer, NIH Special Emphasis Panel (PA-11-184: T32 NRSA Institutional Research Training Grants and PA-14-044: K01 Mentored Research Scientist Development Award) 2015
Reviewer, NIH Synthetic and Biological Chemistry B Study Section (SBCB) 2015
Reviewer, NIH Special Emphasis Panel (ZRG1 BCMB-A(51R): NIH Transformative Research Awards) 2018
Reviewer, NIH Synthetic and Biological Chemistry A Study Section (SBCA) 2018
Reviewer, NIH Synthetic and Biological Chemistry B Study Section (SBCB) 2021
Reviewer, NIH Special Emphasis Panel (ZHD1 DSR-M(56): Contraceptive Development Research Centers Program; P50) 2021
Manuscript Reviewer, *Accounts of Chemical Research*, *ACS Central Science*, *ACS Chemical Biology*, *ACS Medicinal Chemistry Letters, Angewandte Chemie*, *Bioorganic Medicinal Chemistry*, *Bioorganic Medicinal Chemistry Letters*, *Chem*, *Chemical Science, Clinical Cancer Research*, *Cancer Research*, *Cell*, *Cell Chemical Biology*, *Chembiochem*, *Chemical Reviews*, *Development*, *Developmental Biology*, *Disease Models and Mechanisms*, *eLife*, *Journal of the American Chemical Society*, *Journal of Cell Science*, *Journal of Medicinal Chemistry*, *Journal of Organic Chemistry*, *Molecular Cancer Research*, *Molecules*, *Nature*, *Nature Chemical Biology*, *Nature Communications*, *Nature Structural and Molecular Biology*, *PLoS Biology*, *PLoS Genetics*, *PLoS ONE*, *Proceedings of the National Academy of Sciences U. S. A.*, *Science*, *Science Translational Medicine*, *Scientific Reports*

Other Professional Service

Discussion Leader, Bioorganic Gordon Research Conference 2007
Workshop Co-Chair, 8th International Conference on Zebrafish Development and Genetics 2008
Research Committee Member, American Heart Association, Western States Affiliate 2012 – 2016
Co-Instructor, Introduction to Chemical Biology Short Course, University of São Paulo, São Paulo, Brazil 2012, 2014, 2015
Co-Editor, Molecular imaging section in *Current Opinion in Chemical Biology* 2013
Panelist, NIH Workshop (From Tank to Bedside: Zebrafish and Translational Research) 2013
Panelist, Chemical Biology Workshop, 7th Strategic Conference of Zebrafish Investigators 2017
Co-Organizer, 2017 Society for Developmental Biology West Coast Meeting 2017

PUBLICATIONS (PEER-REVIEWED)

1. Chu, Y.-H., **Chen, J. K.**, and Whitesides, G. M. (1993) Affinity electrophoresis in multisectional polyacrylamide slab gels is a useful and convenient technique for measuring binding constants of aryl sulfonamides to bovine carbonic anhydrase B. *Anal*. *Chem*. 65: 1314-1322.
2. **Chen, J. K.**, Lane, W. S., Brauer, A. W., Tanaka, A., and Schreiber, S. L. (1993) Biased combinatorial libraries: novel ligands for the SH3 domain of phosphatidylinositol 3-kinase. *J. Am. Chem. Soc.* 115: 12591-12592.
3. Yu, H., **Chen, J. K.**, Feng, S., Dalgarno, D., Brauer, A. W., and Schreiber, S. L. (1994) Structural basis for the binding of proline-rich peptides to SH3 domains. *Cell* 76: 933-945.
4. Gomez, F. A., **Chen, J. K.**, Tanaka, A., Schreiber, S. L., and Whitesides, G. M. (1994) Affinity capillary electrophoresis: insights into the binding of SH3 domains by peptides derived from an SH3-binding protein. *J. Org. Chem*. 59: 2885-2886.
5. **Chen, J. K.** and Schreiber, S. L. (1994) SH3 domain-mediated dimerization of an N-terminal fragment of the phosphatidylinositol 3-kinase p85 subunit. *Bioorg. Med. Chem. Lett*. 4: 1755-1760.
6. Feng, S., **Chen, J. K.**, Yu, H., Simon, J. A., and Schreiber, S. L. (1994) Two binding orientations for peptides to the Src SH3 domain: development of a general model for SH3-ligand interactions. *Science* 266: 1241-1247.

7. Combs, A. P., Kapoor, T. M., Feng, S., **Chen, J. K.**, Daude-Snow, L. F., Schreiber, S. L. (1996) Protein structure-based design of combinatorial libraries: discovery of non-peptide binding elements to the Src SH3 domain. *J. Am. Chem. Soc.* 118: 287-288.
8. Liang, J., **Chen, J. K.**, Schreiber, S. L., and Clardy, J. (1996) Crystal structure of PI3K SH3 domain at 2.0 Å resolution. *J. Mol. Biol.* 257: 632-643.
9. **Chen, J. K.**, Lane, W. S., and Schreiber, S. L. (1999) The identification of myriocin-binding proteins. *Chem. Biol.* 6: 221-235.
10. Taipale, J., **Chen, J. K.**, Cooper, M. K., Wang, B., Mann, R. K., Milenkovic, L., Scott, M. P., and Beachy, P. A. (2000) The effects of oncogenic mutations in Smoothened and Patched can be reversed by cyclopamine. *Nature* 406: 1005-1009.
11. Berman, D. M., Karhadkar, S. S., Hallahan, A. R. Pritchard, J. I., Eberhart, C. G., Watkins, D. N., **Chen, J. K.**, Cooper, M. K., Taipale, J., Olson, J. M., and Beachy, P. A. (2002) Medulloblastoma growth inhibition by Hedgehog pathway blockade. *Science* 297: 1559-1561.
12. **Chen, J. K.**, Taipale, J., Cooper, M. K., and Beachy, P. A. (2002) Inhibition of Hedgehog signaling by direct binding of cyclopamine to Smoothened. *Genes Dev.* 16: 2743-2748.
13. **Chen, J. K.**, Taipale, J., Young, K. E., Maiti, T., and Beachy, P. A. (2002) Small molecule modulation of Smoothened activity. *Proc. Natl. Acad. Sci. U. S. A.* 99: 14071-14076.
14. Chen, W., Ren, X., Nelson, C. D, Barak, L. S., **Chen, J. K.**, Beachy, P. A., de Sauvage, F., and Lefkowitz, R. J. (2004) Activity-dependent internalization of Smoothened mediated by beta-Arrestin 2 and GRK2. *Science* 306: 2257-2260.
15. Sinha, S. and **Chen, J. K.** (2006) Purmorphamine activates the Hedgehog pathway by targeting Smoothened. *Nat. Chem. Biol.* 2: 29-30.
16. Meloni, A. R., Fralish, G. B., Kelly, P., Salahpour, A., **Chen, J. K.**, Wechsler-Reya, R. J., Lefkowitz, R. J. and Caron, M. G. (2006) Smoothened signal transduction is promoted by G-protein coupled receptor kinase 2. *Mol. Cell. Biol.* 26: 7550-7560.
17. Esengil, H., Chang, V., Mich, J. K., and **Chen, J. K.** (2007) Small-molecule regulation of zebrafish gene expression. *Nat. Chem. Biol.* 3: 154-155.
18. Shestopalov, I. A., Sinha, S., and **Chen, J. K.** (2007) Light-controlled gene silencing in zebrafish embryos. *Nat. Chem. Biol*. 3: 650-651.
19. Esengil, H. and **Chen, J. K.** (2008) Gene regulation technologies for zebrafish. *Mol. BioSystems* 4: 300-308.
20. Shestopalov, I. A. and **Chen, J. K.** (2008) Chemical technologies for probing embryonic development. *Chem. Soc. Rev.* 37: 1294-1307.
21. Low, W.-C., Wang, C., Pan, Y., Huang, X.-Y., **Chen, J. K.**, and Wang, B. (2008) The decoupling of Smoothened from G-alpha-i proteins has little effect on Gli3 protein processing and Hedgehog-regulated chick neural tube patterning. *Dev. Biol.* 321: 188-196.
22. Stanton, B. Z., Peng, L. F., Maloof, N., Nakai, K., Wang, X., Herlihy, K. M., Duffner, J. L., Taveras, K. M., Hyman, J. M., Lee, S. W., Koehler, A. N., **Chen, J. K.**, Fox, J. L., Mandinova, A., and Schreiber, S. L. (2009) A small molecule that binds Hedgehog and blocks its signaling in human cells. *Nat. Chem. Biol.* 5: 154-156.
23. Cupido, T., Rack, P. G., Firestone, A. J., Hyman, J. M., Han, K., Sinha, S., Ocasio, C. A, and **Chen, J. K.** (2009) The imidazopyridine derivative JK184 reveals dual roles for microtubules in Hedgehog signaling. *Angew. Chem. Int. Ed.* 48: 2321-2324.
24. Mich, J.K., Blaser, H., Thomas, N. A., Firestone, A. J., Yelon, D., Raz, E., and **Chen, J. K.** (2009) Germ cell migration in zebrafish is cyclopamine-sensitive but Smoothened-independent. *Dev. Biol.* 328:342-354.
25. Yang, H., Xiang, J., Wang, N., Zhao, Y., Hyman, J., Jiang, J., **Chen, J. K.**, Yang, Z., and Lin, S. (2009) Converse conformational control of Smoothened activity by structurally related small molecules. *J. Biol. Chem.* 284: 20876-20884.
26. Hyman, J. M., Firestone, A. J., Heine, V. M., Zhao, Y., Ocasio, C. A., Han, K., Sun, M., Rack, P. G., Sinha, S., Wu, J. J., Solow-Cordero, D. E., Jiang, J., Rowitch, D. H., and **Chen, J. K.** (2009) Small-

molecule inhibitors reveal multiple strategies for Hedgehog pathway blockade. *Proc. Natl. Acad. Sci. U. S. A*. 106: 14132-14137.
27. Ouyang, X., Shestopalov, I. A., Sinha, S., Zheng, G., Pitt, C. L. W., Li, W.-H., Olson, A. J., and **Chen, J. K.** (2009) Versatile synthesis and rational design of caged morpholinos. *J. Am. Chem. Soc.* 131: 13255-13269.
28. Firestone, A. J. and **Chen, J. K.** (2010) Controlling destiny through chemistry: Small-molecule regulators of cell fate. *ACS Chem. Biol.* 5: 15-34.
29. Shestopalov, I. A. and **Chen, J. K.** (2010) Oligonucleotide-based tools for studying zebrafish development. *Zebrafish* 7: 31-40.
30. Ouyang, X. and **Chen, J. K.** (2010) Synthetic strategies for studying embryonic development. *Chem. Biol.* 17: 590-606.
31. Clanton, J.A., Shestopalov, I., **Chen, J. K.**, and Gamse, J. T. (2011) Lineage labeling of zebrafish cells with laser uncageable fluorescein dextran. *J. Vis. Exp.* doi: 10.3791/2672
32. Sakata, T. and **Chen, J. K.** (2011) Chemical 'Jekyll and Hyde's: Small-molecule inhibitors of developmental signaling pathways. *Chem. Soc. Rev.* 40: 4318-4331.
33. Park, K.-S., Martelotto, L. G., Peifer, M., Sos, M. L., Karnezis, A. N., Mahjoub, M. R., Bernard, K., Conklin, J., Szczepny, A., Yuan, J., Guo, R., Opsina, B., Falzon, J., Bennett, S., Brown, T. J., Markovic, A., Devereux, W. L., Ocasio, C. A., **Chen, J. K.**, Stearns, T., Thomas, R. K., Dorsch, M., Buonamici, S., Watkins, D. N., Peacock, C. D., and Sage, J. (2011) A crucial requirement for Hedgehog signalling in small cell lung cancer. *Nature Med.* 17: 1504-1508.
34. Heine, V. M., Griveau, A., Chapin, C., Ballard, P. L., **Chen, J. K.**, and Rowitch, D. H. (2011) Small-molecule Smoothened agonist prevents glucocorticoid-induced neonatal cerebellar injury. *Science Transl. Med*. 3: 105ra104.
35. Hillman, R. T., Feng, B. Y., Ni, J., Woo, W.-M., Milenkovic, L., Hayden Gephart, M. G., Teruel, M. N., Oro, A. E., **Chen, J. K.**, and Scott, M. P. (2011) Neuropilins are positive regulators of Hedgehog signal transduction. *Genes Dev*. 25: 2333-2346.
36. Mich, J.K. and **Chen, J.K.** (2011) Hedgehog and retinoic acid signalling cooperate to promote motoneurogenesis in zebrafish. *Development* 138: 5113-5119.
37. England, S., Batista. M. F., Mich, J. K., **Chen, J. K.**, and Lewis, K. E. (2011) Roles of Hedgehog pathway components and retinoic acid signalling in specifying zebrafish ventral spinal cord neurons. *Development* 138: 5121-5134.
38. Shestopalov, I. A., Pitt, C. L. W., and **Chen, J. K.** (2012) Spatiotemporal resolution of the Ntla transcriptome in axial mesoderm development. *Nat. Chem. Biol.* 8: 270-276.
39. Kuo, A. J., Song, J., Cheung, P., Ishibe-Murakami, S., Yamazoe, S., **Chen, J. K.**, Patel, D. J., and Gozani, O. (2012) ORC1 BAH domain links H4K20me2 to DNA replication licensing and Meier-Gorlin syndrome. *Nature* 484: 115-119.
40. Firestone, A. J., Weinger, J. S., Maldonado, M., Barlan, K., Langston, L. D., O'Donnell, M. D., Gelfand, V. I., Kapoor, T. M.*, and **Chen, J. K.*** (2012) Small-molecule inhibitors of the AAA+ ATPase motor cytoplasmic dynein. *Nature* 484: 125-129.
41. Yamazoe, S., Shestopalov, I. A., Provost, E., Leach, S. D., and **Chen, J. K.** (2012) Cyclic caged morpholinos: Conformationally gated probes of embryonic gene function. *Angew. Chem. Int. Ed.* 51: 6908-6911.
42. Cho, Y. S., Jung, H. J., Soek S. H., Payumo, A. Y., **Chen, J. K.**, and Kwon, H. J. (2013) Functional inhibition of UQCRB suppresses angiogenesis in zebrafish. *Biochem. Biophys. Res. Comm.* 433: 396-400.
43. Liu, X., Kapoor, T. M., **Chen, J. K.**, Huse, M. (2013) Diacylglycerol promotes centrosome polarization in T cells via reciprocal localization of dynein and myosin II. *Proc. Natl. Acad. Sci. U. S. A*. 110: 11976-11981.
44. Yi, J., Wu, X., Chung, A. H., **Chen, J. K.**, Kapoor, T. M., and Hammer, J. A. (2013) Centrosome repositioning in T cells is biphasic and driven by microtubule end-on capture-shrinkage. *J. Cell. Biol*. 202: 779-92.

45. Moore, J. C., Sheppard, S., Shestopalov, I. A., Yamazoe, S., **Chen, J. K.**, and Lawson, N. (2013) Post-translational mechanisms contribute to Etv2 repression during vascular development. *Dev. Biol*. 384: 128-140.
46. Bonger, K. M., Rakhit, R., Payumo, A. Y., **Chen, J. K.**, and Wandless, T. J. (2014) A general method for regulating protein stability with light. *ACS Chem. Biol*. 9: 111-115.
47. Sikirzhytski, V., Magidson, V., Steinman, J, He, J., LeBerre, M., Tikhonenko, I., Ault, J. G., McEwen, B. F., **Chen, J. K.**, Sui, H., Piel, M., Kapoor, T. M., and Khodjakov, A. (2014) Direct kinetochore-spindle pole connections are not required for chromosome segregation. *J. Cell Biol.* 206: 231-243.
48. Mich, J. K., Payumo, A. Y., Rack, P. G., and **Chen, J. K.** (2014) In vivo imaging of Hedgehog pathway activation with a nuclear fluorescent reporter. *PLoS One* 9:e103661.
49. Lee, J. J., Perera, R. M., Wang, H., Wu, D.-C., Liu, X. S., Han, S., Fitamant, J., Jones, P. D., Ghanta, K. S., Kawano, S., Nagle, J. M., Deshpande, V., Boucher, Y., Kato, T., Chen, J. K., Willmann, J. K., Bardeesy, N., and Beachy, P. A. (2014) Stromal response to Hedgehog signaling restrains pancreatic cancer progression. *Proc. Natl. Acad. Sci. U. S. A*. 111: E3091-E3100.
50. Rack, P. G., Ni, J., Payumo, A. Y., Nguyen, V., Crapster, J. A., Novestadt, V., Kool, M., Jones, D. T. W., Mich, J. K., Firestone, A. J., Pfister, S. M., Cho, Y.-J., and **Chen, J. K.** (2014) Arhgap36-dependent activation of Gli transcription factors. *Proc. Natl. Acad. Sci. U. S. A*. 111: 11061-11066.
51. Yamazoe, S., Liu, Q., McQuade, L. E., Deiters, A.*, and **Chen, J. K.*** (2014) Sequential gene silencing using wavelength-selective caged morpholinos. *Angew. Chem. Int. Ed.* 53: 10114-10118.
52. Yamazoe, S., McQuade, L. E., and **Chen, J. K.** (2014) Nitroreductase-activated caged morpholino oligonucleotides for in vivo gene silencing. *ACS Chem. Biol.* 9: 1985-1990.
53. Payumo, A. Y., Walker, W. J., McQuade, L. E., Yamazoe, S., and **Chen, J. K.** (2015) Optochemical dissection of T-box gene-dependent medial floor plate development. *ACS Chem. Biol.* 10: 1466-75.
54. See, S. K., Hoogendoorn, S., Chung, A. H., Ye, F., Steinman, J. B., Sakata-Kato, T., Miller, R. M., Cupido, T., Zalyte, R., Carter, A. P., Nachury, M. V., Kapoor, T. M., and **Chen, J. K.** (2016) Cytoplasmic dynein antagonists with improved potency and isoform selectivity. *ACS Chem. Biol.* 11: 53-60.
55. **Chen, J. K.** (2016) I only have eye for ewe: the discovery of cyclopamine and development of Hedgehog pathway-targeting drugs. *Nat. Prod. Rep.* 33: 595-601.
56. Payumo, A. Y., McQuade, L. E., Walker, W. J., Yamazoe, S., and **Chen, J. K.** (2016) Tbx16 regulates *hox* gene activation in mesodermal progenitor cells. *Nat. Chem. Biol.* 12: 694-701.
57. Schmitt, A. M., Garcia, J. T., Hung, T., Flynn, R. A., Shen, Y., Qu, K., Payumo, A. Y., Peres-da-Silva, A., Kenzelmann Broz, D., Baum, R., Guo, S., **Chen, J. K.**, Attardi, L. D., and Chang, H. Y. (2016) An inducible long noncoding RNA amplifies DNA damage signaling. *Nat. Genet.* 48: 1370-1376.
58. Lee, J., Rothenberg, M., Seeley, E. S., Zimdahl, B., Kawano, S., Lu, W. J., Shin, K., Sakata-Kato, T., **Chen, J. K.**, Diehn, M., Clarke, M., and Beachy, P. A. (2016) Control of inflammation by stromal Hedgehog pathway activation restrains colitis. *Proc. Natl. Acad. Sci. U. S. A.* 113: E7545-E7553.
59. Ouyang, X., Panetta, N. J., Talbott, M. D., Payumo, A. Y., Halluin, C., Longaker, M. T., and **Chen, J. K.** (2017) Hyaluronic acid synthesis is required for zebrafish tail fin regeneration. *PLoS ONE* 12: e0171898.
60. Wong, W. T., Tian, X., Matrone, G., Tomoiaga, S. A., Au, K. F., Meng, S., Yamazoe, S., Chen, K., Burns, D. M., **Chen, J. K.**, Blau, H. M., and Cooke, J. P. (2017) Discovery of novel determinants of endothelial lineage using chimeric heterokaryons. *eLife* 6: e323588.
61. Kowalik, L. and **Chen, J. K.** (2017) Illuminating developmental biology through photochemistry. *Nat. Chem. Biol.* 13: 587-598.
62. Steinman, J. B., Santarossa, C. C., Miller, R. M., Yu, L. S., Serpinskaya, A. S., Furukawa, H., Morimoto S., Tanaka, Y., Nishitani, M., Asano, M., Zalyte, R., Ondrus, A. E., Johnson, A. G., Fan Y., Nachury M. V., Fukase, Y., Aso, K., Foley, M. A., Gelfand, V. I., **Chen, J. K.**, Carter, A. P. and Kapoor, T. M. (2017) Chemical structure-guided design of dynapyrazoles, cell-permeable dynein inhibitors with a unique mode of action. *eLife* 6: e25174.
63. Crapster, J. A., Hudgins L., **Chen, J. K.**, and Gomez-Ospina, N. (2017) A novel missense variant of the GLI3 zinc finger domain in a family with digital anomalies. *Am. J. Med. Genet. A.* 173: 3221-3225.

64. Cho, U., Riordan, D. P., Ciepla, P., Kocherlakota, K. S., **Chen, J. K.***, and Harbury, P. B.* (2018) Ultrasensitive optical imaging with lanthanide lumiphores. *Nat. Chem. Biol.* 14: 15-21.
65. Breslow, D. K.*, Hoogendoorn, S., Kopp, A. R., Morgens, D. W., Vu, B. K., Han, K., Li, A., Hess, G. T., Bassik, M C., **Chen, J. K.***, and Nachury, M. V.* (2018) A CRISPR-based screen for Hedgehog signaling provides insights into ciliary function and ciliopathies. *Nat. Genet.* 50: 460-471.
66. Hwang, S., Mruk, K., Rahighi, S., Raub, A. G., Chen, C.-H., Dorn, L. E., Horikoshi, N., Wataksuki, S., **Chen, J. K.**, and Mochly-Rosen, D. (2018) Correcting glucose-6-phosphate dehydrogenase (G6PD) deficiency with a small molecule activator. *Nat. Commun.* 9: 4045.
67. Gutzman, J. H., Graeden, E., Brachmann, I., Yamazoe, S., **Chen, J. K.**, and Sive, H. (2018) Basal constriction during midbrain-hindbrain boundary morphogenesis is mediated by Wnt5b and focal adhesion kinase. *Biol. Open* 7: bio034520.
68. Crapster, J. A.*, Rack, P. G., Hellmann, Z. J., Behr, B., Li, Y., Lin, J., Zeng, H., and **Chen, J. K.*** (2020) HIPK4 is essential for mammalian spermiogenesis. *eLife* 9:e50209.
70. Hom, M. E., Ondrus, A. E., Sakata-Kato, T., Rack, P. G., and **Chen, J. K.** (2020) Bicyclic imidazolium inhibitors of Gli transcription factor activity. *ChemMedChem* 15: 1044-1049.
71. Cho, U.* and **Chen, J. K.*** (2020) Lanthanide-based optical probes of biological systems. *Cell Chem. Biol*. 27: 921-936.
72. Mruk, K.*, Ciepla, P., Piza, P. A., Alnaqib, M. A., and **Chen, J. K.*** (2020) Targeted cell ablation in zebrafish using optogenetic transcriptional control. *Development* 147: dev183640.
73. Xu, J., Zheng, X., Feng, Z., Lu, Z., Zhang, Z., Huang, W., Li, Y., Vuckovic, D., Li, Y., Dai, S., Chen, G., Wang, K., Wang, H., **Chen, J. K.**, Mitch, W., and Cui, Y. (2021) Organic wastewater treatment by single-atom catalyst and electrolytically produced H_2O_2. *Nat. Sustain*. 4: 233-241.
74. Nano, P. R., Johnson, T. K., Kudo, T., Mooney, N. A., Ni, J., Demeter, J., Jackson, P. K., and **Chen, J.K.** (2021) Structure-activity mapping of ARHGAP36 reveals regulatory roles for its GAP homology and C-terminal domains. *PLoS One* 16: e0251684.
75. Darrah, K., Wesalo, J., Lukasak, B., Tsang, M., **Chen, J. K.**, and Deiters, A. (2021) Small-molecule control of morpholino antisense oligonucleotide function through a Staudinger reduction. *J. Am. Chem. Soc.* 143: 18665-18671.
76. Feng, Z., Hom, M. E., Bearrood, T. E., Rosenthal, Z. C., Fernández, D., Ondrus, A. E., Gu, Y., McCormick, A. K., Tomaske, M. G., Marshall, C. R., Kline, T., Chen, C.-H., Mochly-Rosen, D., Kuo, C. J., and **Chen, J. K.** (2022) Targeting colorectal cancer with small-molecule inhibitors of ALDH1B1. *Nat. Chem. Biol*. 18: 1065-1075.
77. Pattanayak S., Sarode, B. R., Deiters, A., and **Chen, J. K.** (2022) Bicyclic caged morpholino oligonucleotides for optical gene silencing. *ChemBioChem* 23: e202200374.

PUBLICATIONS (NON-PEER-REVIEWED)

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78. Prime, K. L., Chu, Y.-H., Schmid, W., Seto, C. T., **Chen, J. K.**, Spaltenstein, A., Zerkowski, J., and Whitesides, G. M. (1992) Molecular recognition in gels, monolayers, and solids. *In* "Macromolecular Assemblies in Polymeric Systems" (P. Stroeve and A. C. Balazs, Eds). ACS Symposium Series 493. American Chemical Society, Washington, DC, pp. 228-239.
79. **Chen, J. K.** and Schreiber, S. L. (1995) Combinatorial synthesis and multidimensional NMR: an approach to understanding protein-ligand interactions. *Angew. Chem. Int. Ed. Engl.* 34: 953-969.
80. **Chen, J.K.** (2008) Fish 'n clicks. *Nat. Chem. Biol.* 4: 391-392.
81. **Chen, J.K.** and Hurlstone, A. F. (2008) Targeted and conditional gene expression workshop, 8th International Conference on Zebrafish Development and Genetics. *Zebrafish* 5: 193-195.
82. Firestone, A. J. and **Chen, J. K.** (2011) Small-molecule inhibitors of the Hedgehog pathway. *In* "Hedgehog signaling activation in human cancer and its clinical applications" (J. Xie, Ed.) Springer, New York, NY, pp. 163-186.
83. Shestopalov, I. A. and **Chen, J. K.** (2011) Spatiotemporal control of embryonic gene expression using caged morpholinos. *Methods Cell Biol.* 104:151-172.

84. **Chen, J. K.** and Kikuchi, K. (2013) Emerging technologies in molecular imaging: new windows into biology. *Curr. Opin. Chem. Biol.* 17: 635-636.
85. **Chen, J. K.**, Du Bois, J., Glenn, J., Herschlag, D., and Khosla, C. (2013). The Stanford Institute for Chemical Biology. *ACS Chem. Biol.* 8: 1860-1861.
86. Mruk, K. and **Chen, J. K.** (2015) Thinking big with small molecules. *J. Cell Biol.* 209: 7-9.
87. Pattanayak, S., Vázquez-Maldonado, L. A., Deiters, A.*, and **Chen, J. K.*** (2019) Combinatorial control of gene function with wavelength-selective caged morpholinos. *Methods Enzymol.* 624: 69-88.
88. Ciepla, P., Cho, U., and **Chen, J. K.** (2020) trLRET microscopy: ultrasensitive imaging of lanthanide luminophores. *Methods Enzymol.* 640: 225-248.

PATENTS

1. Beachy, P. A., **Chen, J. K.**, and Taipale, A. J. N. Regulators of the Hedgehog pathway, compositions and uses related thereto. U.S. Patent 7,098,196. August 29, 2006.
2. Beachy, P. A., **Chen, J. K.**, and Taipale, A. J. N. Regulators of the Hedgehog pathway, compositions and uses related thereto. U.S. Patent 7,476,661. January 13, 2009.
3. Beachy, P. A., **Chen, J. K.**, and Taipale, A. J. N. Modulators of the Hedgehog signaling pathway, compositions and uses related thereto. U.S. Patent 7,655,674. February 2, 2010.
4. **Chen, J. K.**, Sinha, S., Shestopalov, I., and Ouyang, X. Photocleavable linker methods and compositions. U. S. Patent 7,923,562. April 11, 2011.
5. **Chen, J. K.**, Kapoor, T. M., Firestone, A. J., and Weinger, J. S. Quinazolinone inhibitors of dynein. U. S. Patent 9,145,376. September 29, 2015.
6. **Chen, J. K.**, Kato, T. S. and Ondrus, A. E. Imidazo bicyclic iminium compounds as antitumor agents. U.S. Patent 9,611,276. April 4, 2017.

INVITED LECTURES

1. Symposium on Drug Discovery through Chemical Genomics, Reverse Proteomics Research Institute (Tokyo, Japan). September 30, 2003.
2. Exploratory Research Laboratories, Fujisawa Pharmaceuticals Co., Ltd. (Tsukuba City, Japan). October 1, 2003.
3. Developmental Biology Seminar Series, Center for Developmental Biology, RIKEN (Kobe, Japan). October 3, 2003.
4. Organic Chemistry Seminar, Department of Chemistry, Stanford University (Stanford, CA). October 15, 2003.
5. Cardiovascular Research Center Seminar Series, Massachusetts General Hospital (Charlestown, MA). November 25, 2003.
6. Beyond Genome 2005 Conference: Future of Medicine (San Francisco, CA). June 16, 2005.
7. 1st Annual Strategic Conference of Zebrafish Investigators (Mount Desert Island Biological Laboratory, Salisbury Cove, ME), September 17, 2005.
8. Pacifichem 2005 Congress (Honolulu, HI). December 16, 2005.
9. Discovery on Target 2006 Conference: Chemogenomics (Boston, MA). October 24, 2006.
10. 2nd Annual Strategic Conference of Zebrafish Investigators (Asilomar, CA). February 3, 2007.
11. China-USA Early Career Workshop on Chemical Biology (Shanghai, China). May 22, 2007.
12. Bio-organic Gordon Conference (Andover, NH). June 11, 2007.
13. Chemistry and Biochemistry Seminar Series, Department of Chemistry and Biochemistry, University of Delaware (Newark, DE). February 13, 2008.
14. Biochemistry and Molecular Biology Seminar Series, Department of Biochemistry and Molecular Biology, Mayo Clinic (Rochester, MN). March 4, 2008.
15. Medicinal Chemistry Seminar Series, Department of Medicinal Chemistry, University of Michigan (Ann Arbor, MI). March 13, 2008.

16. Pharmacology and Molecular Sciences Seminar Series, Department of Pharmacology and Molecular Sciences, Johns Hopkins University School of Medicine (Baltimore, MD). March 19, 2008.
17. Hedgehog Signaling in Development and Disease, Stanford School of Medicine (Stanford, CA). June 22, 2008.
18. 8th International Conference on Zebrafish Development and Genetics, University of Wisconsin-Madison (Madison, WI). June 26, 2008.
19. Neuroscience Consortium Cutting Edge Seminar, National Institute on Drug Abuse, National Institutes of Health (Bethesda, MD). August 14, 2008.
20. Department of Biology Seminar Series, Department of Biology, Indiana University (Bloomington, IN). October 2, 2008.
21. Technogeek Seminar Series, Division of Translational Research, University of Texas-Southwestern Medical Center (Dallas, TX). November 4, 2008.
22. 2008 RIKEN Conference on Chemical Biology (Narita, Japan). November 13, 2008.
23. Gene Inactivation Workshop, 3rd Annual Strategic Conference of Zebrafish Investigators (Asilomar, CA). January 27, 2009.
24. Chemical Biology Seminar Series, Department of Chemistry, University of Illinois at Urbana-Champaign (Urbana, IL). February 5, 2009.
25. MCDB Seminar Series, Department of Molecular, Cell, and Developmental Biology, University of California-Los Angeles (Los Angeles, CA). February 26, 2009.
26. Lectures in the Chemical Sciences, Organic Chemistry Seminar, Department of Chemistry and Chemical Biology, Harvard University (Cambridge, MA). March 10, 2009.
27. Biophysics/Chemistry and Chemical Biology Seminar Series, University of California-San Francisco (San Francisco, CA). March 20, 2009.
28. 237th American Chemical Society National Meeting (Salt Lake City, UT). March 25, 2009.
29. MCDB Seminar Series, Department of Molecular, Cellular, and Developmental Biology, Yale University (New Haven, CT). April 8, 2009.
30. 100th Annual American Association for Cancer Research Meeting (Denver, CO). April 18, 2009.
31. San Francisco Nature SciCafe, Gladstone Institute, University of California-San Francisco (San Francisco, CA). April 24, 2009.
32. Chemical Biology Seminar Series, Rockefeller University (New York City, NY). May 6, 2009.
33. Genentech (South San Francisco, CA). June 16, 2009.
34. Exelixis (South San Francisco, CA). June 26, 2009.
35. 6th European Zebrafish Genetics and Development Meeting (Rome, Italy). July 17, 2009.
36. Pfizer (La Jolla, CA). July 29, 2009.
37. 10th International Conference on Systems Biology, Stanford University (Stanford, CA). September 1, 2009.
38. Center for Biosciences Seminar, Karolinska Institutet (Stockholm, Sweden). October 6, 2009.
39. Genes and Development Seminar Series, National Institute for Medical Research-Mill Hill (London, United Kingdom). October 8, 2009.
40. Molecular Biology and Biochemistry Seminar Series, University of California-Irvine (Irvine, CA). February 26, 2010.
41. 239th American Chemical Society National Meeting (San Francisco, CA). March 22, 2010.
42. 9th International Conference on Zebrafish Development and Genetics, University of Wisconsin-Madison (Madison, WI). June 17, 2010.
43. 2nd Biennial 'Chemical Insights into Biological Processes' Symposium, Molecular Discovery Program/National Cancer Institute, Hood College (Frederick, MD). August 10, 2010.
44. 2010 YBRI International Symposium, Yonsei University (Seoul, South Korea). October 20, 2010.
45. Organic Seminar Series, University of Colorado-Boulder (Boulder, CO). October 25, 2010.
46. Biochemistry and Molecular Biophysics Seminar Series, Columbia University Medical Center (New York City, NY). November 18, 2010.

47. New Frontiers of Functional Nucleic Acids: Chemistry, Biology, and Applications, Pacifichem 2010 (Honolulu, HI). December 19, 2010.
48. Technology Blast Session, 4th Annual Strategic Conference of Zebrafish Investigators (Asilomar, CA). January 30, 2011.
49. Organic Seminar Series, Colorado State University (Fort Collins, CO). February 21, 2011.
50. ACS Chemical Biology Lecture: Symposium in honor of Stuart L. Schreiber, 241st American Chemical Society National Meeting (Anaheim, CA). March 29, 2011.
51. Biochemistry Colloquium. University of Wisconsin-Madison (Madison, WI). April 11, 2011.
52. Gladstone Institute of Cardiovascular Disease/Cardiovascular Research Institute Seminar Series, University of California-San Francisco (San Francisco, CA). April 18, 2011.
53. Biochemistry and Molecular Pharmacology Seminar Series, University of Massachusetts-Worcester (Worcester, MA). May 4, 2011.
54. 14th Yale Chemical Biology Symposium. Yale University (New Haven, CT). May 13, 2011.
55. Gradient Sensing and Cell Migration Gordon Conference. (Les Diablerets, Switzerland). June 9, 2011.
56. Development and Aging Seminar Series, Burnham Medical Research Institute (La Jolla, CA). July 14, 2011.
57. A New Wave of Chemical Genomics Symposium, Kinki University (Osaka, Japan). September 24, 2011.
58. 11th iCeMS International Symposium: Chemical Control of Cells, Kyoto University (Kyoto, Japan). December 6, 2011.
59. Addressing the Challenges of Drug Discovery—Novel Targets, New Chemical Space, and Emerging Approaches. Keystone Symposium (Tahoe City, CA). March 20, 2012.
60. American Association for Cancer Research Special Conference on Chemical Systems Biology (Boston, MA). June 30, 2012.
61. EMBO Workshop on Single Cell Physiology. École Normale Supérieure (Paris, France). July 25, 2012.
62. Vanderbilt Institute of Chemical Biology Annual Student Symposium, Vanderbilt University (Nashville, TN). August 9, 2012.
63. Cell Biology Seminar Series, University of Georgia (Athens, GA). October 16, 2012.
64. Chemistry Seminar Series, North Carolina State University (Raleigh, NC). November 2, 2012.
65. Brazilian Biosciences National Laboratory (Campinas, Brazil). November 26, 2012.
66. Department of Biochemistry, University of São Paulo (São Paulo, Brazil). November 30, 2012.
67. Chemical Biology Seminar Series, Princeton University (Princeton, NJ). March 20, 2013.
68. Cutting Symposium: SPARK at Stanford, Stanford University (Stanford, CA). March 27, 2013.
69. Chemistry Colloquium Series, Brown University (Providence, RI). April 25, 2013.
70. Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne (Lausanne, Switzerland). July 15, 2013.
71. Scripps-Florida (Jupiter, FL). November 7, 2013.
72. Pharmacology Seminar Series, University of Texas-Southwestern Medical Center (Dallas, TX). December 13, 2013.
73. Medulloblastoma in the Mountains 2 (St. Moritz, Switzerland). January 14, 2014.
74. Society for Laboratory Automation and Screening 2014 Conference (San Diego, CA). January 21, 2014.
75. Sanford-Burnham Medical Research Institute (La Jolla, CA). March 17, 2014.
76. Pharmaceutical Sciences and Pharmacogenomics Seminar Series, University of California-San Francisco (San Francisco, CA). April 8, 2014.
77. Brazilian Biosciences National Laboratory (Campinas, Brazil). May 22, 2014.
78. Federal University of Rio Grande do Norte (Natal, Brazil). May 23, 2014.
79. Hedgehog 2014 Meeting (Ann Arbor, MI). August 6, 2014.
80. Department of Biochemistry, University of São Paulo (São Paulo, Brazil). October 9, 2014.

81. Institute for Biophysical Dynamics Interdisciplinary Research Seminar Series, University of Chicago (Chicago, IL). November 4, 2014.
82. 6th Strategic Conference of Zebrafish Investigators (Asilomar Conference Center, Pacific Grove, CA), January 19, 2015.
83. Medulloblastoma in the Mountains 3 (Lake Tahoe, CA). February 9, 2015.
84. Society for Developmental Biology West Coast Meeting (Fish Camp, CA). March 25, 2015.
85. 9th European Zebrafish Meeting (Oslo, Norway). June 30, 2015.
86. 2nd Zebrafish for Personalized/Precision Medicine Conference (Toronto, Canada). September 25, 2015.
87. Introduction to Chemical Biology Workshop, University of São Paulo (São Paulo, Brazil). October 2, 2015.
88. In Vivo Chemical Strategies for Functional and Translational Studies of Biological Networks and Pathways, Pacifichem 2015 (Honolulu, HI). December 19, 2015.
89. Medulloblastoma in the Mountains 4 (Waterville Valley, NH). January 25, 2016.
90. Academic Drug Discovery 2016 (Cambridge, UK). March 22, 2016.
91. Chemistry Colloquia, University of Pittsburgh (Pittsburgh, PA). September 29, 2016.
92. Medulloblastoma in the Mountains 5 (Steamboat Springs, CO). January 24, 2017.
93. Chemical Tools for Complex Biological Systems, HHMI/Janelia (Ashburn, VA). April 25, 2017.
94. Developmental and Cell Biology Seminar Series, University of California-Irvine (Irvine, CA). November 9, 2017.
95. Molecular and Cell Biology Seminar Series, University of California-Merced (Merced, CA). December 5, 2017.
96. Medulloblastoma in the Mountains 6 (Pra Loup, France). January 23, 2018.
97. Organic Chemistry Seminar Series, Caltech (Pasadena, CA). February 21, 2018.
98. Organic Chemistry Seminar Series, University of Washington (Seattle, WA). March 29, 2018.
99. Bridge Medicines (New York City, NY). June 8, 2018.
100. Medulloblastoma in the Mountains 7 (Whistler, Canada). February 5, 2019.
101. Pharmacology and Molecular Sciences Seminar Series, Johns Hopkins School of Medicine (Baltimore, MD). April 4, 2019.
102. Rocek Distinguished Lectureship Series, University of Illinois-Chicago (Chicago, IL). May 16-17, 2019.
103. Drug Discovery Research Interest Group, Zebrafish Disease Models 2019 (Boston, MA). July 16, 2019.
104. 2019 NICHD Contraceptive Development Meeting (Houston, TX). November 5, 2019.
105. Medulloblastoma in the Mountains 8 (Obergurgl, Austria). January 11, 2020.
106. Chemical Biology and Therapeutics Symposium (virtual), St. Jude Children's Hospital (Memphis, TN). September 25, 2020.
107. 2020 NICHD Contraceptive Development Meeting (virtual). December 4, 2020.
108. Chemical Physiology and Biochemistry Seminar Series (virtual), Oregon Health and Science University (Portland, OR). April 6, 2021.
109. Medical Biotechnology Seminar Series (virtual), University of Windsor (Windsor, Canada). February 18, 2022.
110. 2022 NICHD Contraceptive Development Meeting (Boston, MA and virtual). April 8, 2022.
111. QBI Chemical Biology Symposium, University of California-San Francisco (San Francisco, CA). September 27, 2022.
112. Biology Seminar Series, San Jose State University (San Jose, CA). November 2, 2022.
113. Toxic Metabolites in the Biology of Ageing and Cancer, The Company of Biologists, Buxted Park (East Sussex, United Kingdom). December 6, 2022.

TEACHING

Cancer Biology 280: Journal club
Fall Quarter of 2003, Spring Quarter of 2011, Fall Quarter of 2015

Chemical and Systems Biology 210: Cell signaling (formerly Signaling networks and pathways)
Winter Quarters of 2006, 2007, 2009, 2010, 2012, 2013, 2014, 2015, 2016, and 2017

Chemical and Systems Biology 220: The chemistry of biological processes
Fall Quarters of 2004, 2005, and 2007; Spring Quarters of 2009 and 2015

Chemical and Systems Biology 260: Concepts and applications in chemical biology (formerly Quantitative chemical biology)
Spring Quarters of 2006, 2008, 2010, 2012, 2014, 2016, 2018, and 2020

Chemistry 111: Exploring chemical research at Stanford
Winter Quarter of 2006

Developmental Biology 210: Logic and circuitry of multicellular development
Spring Quarters of 2014, 2015, 2017, and 2018

Medicine 217: Medico-technological frontiers of digestive diseases
Spring Quarters of 2004, 2005, and 2006

Microbiology and Immunology 215: Principles of biological technologies
Spring Quarters of 2014 and 2015

Molecular Pharmacology 240: Drug discovery
Spring Quarter of 2005

Molecular Pharmacology 270: Research seminar
Fall Quarters of 2003 and 2004

Pathology 290: Pediatric non-malignant hematology and stem cell biology
Winter Quarter of 2015

Surgery 690: It's all in the head: understanding diversity, development and deformities of the face
Winter Quarters of 2007 and 2008

MENTORSHIP

Graduate Students

John K. Mich	2004 – 2010
Ari J. Firestone	2004 – 2011
Ilya A. Shestopalov	2005 – 2011
Paul G. Rack	2005 – 2012
Xiaohu (Shawn) Ouyang	2006 – 2013
Alexander Y. Payumo	2009 – 2015
Andrew H. Chung	2011 – 2014
Ukrae Cho	2011 – 2016
Patricia Nano	2014 – 2021
Marisa E. Hom	2015 – 2020

Postdoctoral Fellows

Surajit Sinha	2003 – 2006
Joel M. Hyman	2006 – 2010
Cory A. Ocasio	2007 – 2011
Brian Y. Feng	2007 – 2011
Lindsey E. McQuade	2010 – 2012
Sayumi Yamazoe	2010 – 2014
Jun Ni	2010 – 2017
Lukasz Kowalik	2011 – 2015
Karen Mruk	2012 – 2018
Alison E. Ondrus	2013 – 2016
Sascha Hoogendoorn	2013 – 2018
J. Aaron Crapster	2013 – 2019
Sankha Pattanayak	2015 – 2019
Paulina Ciepla	2015 – 2019
Zhiping Feng	2017 – present
Taylor K. Johnson	2017 – 2022
Bhagyesh Sarode	2019 – present
Steven M. Swick	2020 – present
Thomas E. Bearrood	2021 – present
Tamara Boltersdorf	2021 – present

Undergraduate Students

Erin Atkinson	2003 – 2005
Anna Cho	2003 – 2004
Parmita Dalal	2004
Mark Sun	2005 – 2007
Albert S. Chiou	2006 – 2007
Cameron L. W. Pitt	2007 – 2010
Jennifer Casabar	2009 – 2010
Maya D. Talbott	2010 – 2013
Whitney J. Walker	2012 – 2014
Patrick C. Lee	2013 – 2014
Zane J. Hellmann	2015 – 2016
Zachary C. Rosenthal	2015 – 2017
Patrick A. Piza	2016 – 2018
Mohammad Alnaqib	2016 – 2020
Spencer Guo	2017
Khan, Danielle	2017
Ashley M. Riley	2018
Olivia W. Gugliemini	2018 – 2019
Jason Guo	2021
Pooja Akella	2022 – present

Research Assistants/Associates

Vicky Chang	2003 – 2004
Hanife Esengil	2004 – 2007
Kiran Kocherlakota	2008 – 2011
Tomoyo S. Kato	2010 – 2013
Stephanie K. See	2011 – 2014
Patrick C. Lee	2014 – 2015

Caroline Halluin	2015 – 2018
Zane J. Hellmann	2016 – 2017
Zachary C. Rosenthal	2017 – 2018
Hannah M. Ryon	2018 – 2020
John Solitro	2019
Cody R. Marshall	2020 – 2021
Austen D. Le	2019 – 2022
Jehan Keval	2020 – 2022
Nick White	2021 – present
Zoe Ching	2022 – present

FUNDING (ACTIVE)

R35 GM127030 4/2018 – 3/2023
NIH/NIGMS
"Chemical tools for developmental biology"
Role: PI

R01 CA244334
NIH/NCI
"Targeting colorectal cancer stem cells with ALDH1B1 antagonists" 6/2021 – 5/2026
Role: PI

R33 HD099720 9/2021 – 8/2024
NIH/NICHD
"Development of allosteric HIPK4 inhibitors as non-hormonal male contraceptives"
Role: co-PI (co-PI: Chung, T.)

T32 GM136631 7/2021 – 6/2026
NIH/NIGMS
"Molecular Pharmacology Training Program"
Role: co-PD (co-PD: Bogyo, M.)

FUNDING (COMPLETED)

Beckman-Ludwig Translational Program in Cancer Research 1/2004 – 12/2005
Stanford University
"Isolation and characterization of novel Hedgehog antagonists for therapy of gastrointestinal malignancies"
Role: co-PI (PI: Kuo, C. J.)

OTL Research Incentive Award 6/2004 – 8/2006
Stanford University
"Constitutive and conditional gene silencing in zebrafish"
Role: PI

Kimmel Scholar Award 7/2004 – 6/2006
Sidney Kimmel Foundation for Cancer Research
"Chemical and genetic studies of the Hedgehog pathway"
Role: PI

Basil O'Connor Starter Scholar Research Award 2/2005 – 1/2007
March of Dimes Foundation
"Photochemical regulation of zebrafish gene expression for embryological studies"
Role: PI

R01 GM072600 7/2005 – 6/2010
NIH/NIGMS
"Chemical regulation of zebrafish gene expression"
Role: PI

Gift Funds to the Stanford High-Throughput Bioscience Center 8/2005
Anonymous Donor
"Stanford High-Throughput Bioscience Center"
Role: PI

Terman Fellow Award 9/2005 – 8/2008
Stanford University
"Spatiotemporal control of zebrafish gene expression"
Role: PI

Astellas USA Foundation Award 11/2005 – 10/2006
Astellas USA Foundation
Role: PI

Brain Tumor Society Award 9/2006 – 8/2008
Brain Tumor Society/Rachel Molly Markoff Foundation
"Novel Hedgehog pathway antagonists as potential medulloblastoma therapeutics"
Role: PI

RSG-08-041-01-DDC (ACS Research Scholar Award) 1/2008 – 12/2012
American Cancer Society
"Hedgehog signaling and vertebrate germ cell migration"
Role: PI

1-FY-08-433 6/2008 – 5/2012
March of Dimes Foundation
"No-tail patterning of the zebrafish mesoderm"
Role: PI

DP1 HD075622 (NIH Director's Pioneer Award) 9/2008 – 7/2014
NIH/NICHD
"Chemical embryology: Technologies for manipulating and visualizing development"
Role: PI

R01 CA136574 12/2008 – 11/2014
NIH/NCI
"Hedgehog pathway blockade by Gli antagonists"
Role: PI

R01 GM087292 7/2010 – 6/2015
NIH/NIGMS
"Deciphering T-box gene-dependent mesoderm development with synthetic probes"
Role: PI

R03 MH094195 4/2011 – 3/2013
NIH/NIMH
"A high-throughput screen for small-molecule antagonists of Gli function"
Role: PI

Spectrum Pilot Grant 1/2013 – 12/2013
Stanford SPARK
"Small-molecule antagonists of cytoplasmic dynein"
Role: PI

Innovation Award 7/2013 – 6/2015
Alex's Lemonade Stand Foundation
"Next-generation therapies for Hedgehog pathway-dependent tumors"
Role: PI

Discovery Innovation Fund Award 8/2013 – 7/2014
Stanford University
"Optogenetic probe discovery through molecular evolution"
Role: PI

CHE-1344038 (NSF INSPIRE Award) 10/2013 – 09/2017
NSF
"Lanthanide-based probes for visualizing RNAs and proteins in live organisms"
Role: PI

Translational Research Award 4/2014 – 3/2016
Stanford Cancer Institute
"Gli antagonists for Hedgehog-dependent cancers"
Role: co-I (PI: Oro, A. E.)

Translational Research Program Pilot Grant 6/2014 – 5/2015
Stanford SPARK
"Small-molecule antagonists of cytoplasmic dynein"
Role: PI

R21 HD078385 9/2014 – 8/2017
NIH/NICHD
"Chemical genetic dissection of Hipk4-dependent Hedgehog pathway activation"
Role: PI

Stanford Innovation Project Award 11/2014 – 2/2015
"Gli1-selective antagonists"
Role: PI

R01 GM113100 7/2015 – 3/2018
NIH/NIGMS
"Gli1-selective inhibitors of the Hedgehog signaling pathway"
Role: PI

P50 GM107615 9/2013 – 6/2018
NIH/NIGMS
"Systems biology of collective cell decisions"
Role: co-I (PI: Ferrell, J. E.)

R01 GM108952 8/2014 – 7/2018
NIH/NIGMS
"Development of lariat-shaped caged morpholinos for optochemical gene regulation"
Role: PI

R01 GM112728 9/2015– 7/2018
NIH/NIGMS
"Chemically triggered morpholino antisense oligonucleotides"
Role: co-I (PI: Deiters, A.)

N/A 5/2017 – 4/2018
The Rachel Molly Markoff Foundation
"Small-molecule modulators of ARHGAP36, a novel driver of pediatric neural cancers"
Role: PI

N/A
Weston Havens Foundation 7/2018 – 6/2019
"Small-molecule inhibitors of colorectal cancer metabolism"
Role: PI

Discovery Innovation Fund Award 9/2018 – 8/2019
Stanford University
"A transposon-based strategy for optogenetic engineering"
Role: PI

Translational Research Program Pilot Grant 7/2019 – 6/2020
Stanford SPARK
"Small-molecule inhibitors of colorectal cancer metabolism"
Role: PI

N/A 8/2019 – 8/2021
Stanford Cancer Institute-Goldman Sachs Foundation
"Targeting cancer stem cell metabolism with aldehyde dehydrogenase antagonists"
Role: PI

R61 HD099720 9/2019 – 8/2021
NIH/NICHD
"Development of allosteric HIPK4 inhibitors as non-hormonal male contraceptives"
Role: co-PI (co-PI: Chung, T.)

N/A 11/2017 – 10/2021
Male Contraception Initiative
“Development of selective HIPK4 kinase inhibitors as viable non-hormonal male contraceptives”
Role: co-I (PI: Flynn, G.)

R21 HD100933 2/2020 – 1/2022
NIH/NICHD
“A transposon-based strategy for optogenetic engineering”
Role: PI

Cancer Innovation Award 3/2021 – 8/2022
Stanford Cancer Institute
“Targeting pancreatic cancer with ALDH1B1 antagonists”
Role: PI