Stanford

James K. Chen

Jauch Professor and Professor of Chemical and Systems Biology, of Developmental Biology and of Chemistry

NIH Biosketch available Online Curriculum Vitae available Online

CONTACT INFORMATION

- **Exec Admin: Theresa Lee / Lab Admin: Lisa Foo**

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Bio

BIO

James Chen received his A.B. and Ph.D. degrees in Chemistry and Chemical Biology from Harvard, and he completed his postdoctoral studies at the Department of Molecular Biology and Genetics at Johns Hopkins. He joined the Stanford faculty in 2003, and his research interests span organic chemistry, chemical biology, developmental biology, and cancer biology.

The Chen lab investigates the molecular mechanisms that underlie tissue formation and tumorigenesis, guided by chemical principles and enabled by chemical technologies. For example, the Chen group has developed small-molecule inhibitors of Hedgehog signaling, a biochemical pathway that is required for multiple aspects of embryonic development and contributes to human cancer. They discovered the first specific inhibitors of cytoplasmic dyneins, microtubule motors that regulate a signaling organelle called the primary cilium, and first-in-classes inhibitors of aldehyde dehydrogenase 1B1, a mitochondrial that promotes colorectal and pancreatic cancer. In addition, members of the lab have synthesized photoactivatable antisense oligonucleotides that allow gene expression to be suppressed with spatiotemporal precision. By applying these tools in zebrafish embryos, they have elucidated the transcriptional programs that regulate formation of the notochord, somites, and other mesodermal tissues. The Chen group also collaborated with the Harbury lab to devise new methods for time-resolved lanthanide microscopy. This approach takes advantage of the long-lived photoluminescence of lanthanide chelates, and it enables ultrasensitive, autofluorescence-free imaging of whole organisms.

Current research interests in the lab include small-molecule modulators of cancer stem cell metabolism, optogenetic tools for controlling cell signaling, the biochemical and cellular processes that drive spermiogenesis, and the development of non-hormonal male contraceptives.

ACADEMIC APPOINTMENTS

- Professor, Chemical and Systems Biology
- Professor, Developmental Biology
- Professor, Chemistry
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Faculty Fellow, Sarafan ChEM-H

- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Faculty Director, ChEM-H/CSB High-Throughput Screening Knowledge Center, (2022- present)
- Co-Director, Molecular Pharmacology Training Program (NIGMS T32), (2021- present)
- Faculty Lead, High-Throughput Screening, Innovative Medicines Accelerator, (2021- present)
- Chair of the Basic Science Chairs, Stanford University School of Medicine, (2020-2021)
- Chair, Department of Chemical and Systems Biology, Stanford University School of Medicine, (2016- present)
- Director, Advisory Committee for the Scholarly Concentrations Program in the Molecular Basis of Medicine, (2012- present)
- Executive Committee Member, ChEM-H Institute, (2012- present)
- Executive Committee Member, Stanford University School of Medicine Faculty Senate, (2012-2016)
- Alternate Member, Stanford University Administrative Panel on Laboratory Animal Care, (2012-2014)
- Departmental Representative, Stanford Biosciences Committee on Graduate Admissions and Policy, (2012-2014)
- Member, Medical Scientist Training Program Admissions Committee, (2004- present)
- Faculty Director, Stanford High-Throughput Bioscience Center, (2003-2022)

HONORS AND AWARDS

- Herbert and Marguerite Jauch Professorship, Stanford University (2019)
- Rocek Lectureship in Chemical Biology, University of Illinois at Chicago (2019)
- NSF INSPIRE Award, NSF (2013-2017)
- Innovation Award, Alex's Lemonade Stand Foundation (2013-2015)
- Nature SciCafe Award for Outstanding Research Achievement, Nature Biotechnology and Nature Medicine (2009)
- NIH Director's Pioneer Award, NIH (2008-2013)
- American Cancer Society Research Scholar Award, American Cancer Society (2008-2011)
- Brain Tumor Society Award, Brain Tumor Society/Rachel Molly Markoff Foundation (2006-2008)
- Astellas USA Foundation Award, Astella USA Foundation (2005-2006)
- Terman Fellow, Stanford University (2005-2008)
- Basil O'Connor Starter Scholar Research Award, March of Dimes (2005-2007)
- Kimmel Scholar Award, Sidney Kimmel Foundation for Cancer Research (2004-2006)
- W. Barry Wood, Jr. Research Award, Johns Hopkins School of Medicine (2003)
- American Cancer Society Postdoctoral Fellowship, American Cancer Society (2002-2003)
- Damon Runyon-Walter Winchell Postdoctoral Fellowship, Damon Runyon Cancer Research Foundation (1999-2002)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Editorial Board, Zebrafish (2008 - present)
- Editorial Board, Cell Chemical Biology (2009 - present)
- Scientific Advisory Board, Vibliome Therapeutics (2019 - 2021)

PROFESSIONAL EDUCATION

- A.B., Harvard College , Chemistry (1991)
- Ph.D., Harvard University , Chemistry and Chemical Biology (1998)

- Postdoctoral Fellow, Johns Hopkins School of Medicine , Molecular Biology and Genetics (2003)

PATENTS

- J. K. Chen, Z. Feng, M. E. Hom, T. Kline, C. R. Marshall, and A. E. Ondrus. "United States Patent 12,570,661 Isoform-specific aldehyde dehydrogenase inhibitors", Leland Stanford Junior University,, Mar 10, 2026
- J. K. Chen, T. S. Kato, and A. E. Ondrus. "United States Patent 9,611,276 Imidazo bicyclic iminium compounds as antitumor agents", Leland Stanford Junior University, Apr 4, 2017
- J.K. Chen, T.M. Kapoor, A.J. Firestone, and J. Weinger. "United States Patent 9,145,376 Quinazolinone inhibitors of dynein", The Rockefeller University, Sep 29, 2015
- J. K. Chen, S. Sinha, I. Shestopalov, and X. Ouyang. "United States Patent 7,923,562 Photocleavable linker methods and compositions", Leland Stanford Junior University, Apr 11, 2011
- P. A. Beachy, J. K. Chen, and A. J. N. Taipale. "United States Patent 7,655,674 Modulators of the Hedgehog signaling pathway, compositions and uses related thereto.", Johns Hopkins University, Feb 2, 2010
- P. A. Beachy, J. K. Chen, and A. J. N. Taipale. "United States Patent 7,476,661 Regulators of the Hedgehog pathway, compositions and uses related thereto.", Johns Hopkins University, Jan 13, 2009
- P. A. Beachy, J. K. Chen, and A. J. N. Taipale. "United States Patent 7,098,196 Regulators of the Hedgehog pathway, compositions and uses related thereto.", Johns Hopkins University, Aug 29, 2006

LINKS

- Chen Laboratory Website: http://chen.stanford.edu

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Chen laboratory uses chemical tools and systems-level approaches to elucidate the molecular mechanisms that underlie developmental biology. We have discovered and characterized several small-molecule modulators of the Hedgehog pathway, including Smoothened antagonists, cytoplasmic dynein inhibitors, and compounds that block Gli transcription factor function. Most recently, we developed the first specific inhibitors of aldehyde dehydrogenase 1B1 (ALDH1B1), a mitochondrial enzyme that is expressed in adult intestinal and pancreatic stem/progenitor cells and plays important roles in colorectal and pancreatic cancer. We have also conducted genetic screens to discover non-canonical regulators of Gli activity, such as the atypical Rho GTPase-activating protein ARHGAP36 and primary cilium components. We subsequently used a deep sequencing-based mutagenesis screen and mass spectrometry-based proteomics to map the structure-activity landscape of ARHGAP36 and identify ARHGAP36-interacting proteins.

In parallel with our interest in cell signaling, our research group has investigated the roles of developmental pathways in vertebrate organisms. For example, we invented caged morpholino oligonucleotides that enable light- or enzyme-triggered gene silencing, and we have applied these tools in zebrafish models to study how T-box transcription factors control notochord, medial floor plate, and somite development. We have developed lanthanide-based methods for ultrasensitive in vivo imaging and optogenetic tools for targeted cell ablation. Our laboratory also established homeodomain-interacting protein kinase 4 (HIPK4) as an essential regulator of mammalian spermiogenesis and male fertility.

Our current research focuses on: (1) the roles of aldehyde dehydrogenases in stem/progenitor cell maintenance and cancer; (2) the mechanisms by which HIPK4 promotes spermiogenesis; and (3) optogenetic regulators of developmental pathways. We are also developing chemical inhibitors of specific aldehyde dehydrogenase family members and HIPK4, which respectively could lead to new anti-cancer therapies and male contraceptives, respectively.

Teaching

COURSES

2025-26

- Chemical and Systems Biology Pizza Talks: CSB 224 (Aut, Win, Spr, Sum)
- Concepts and Applications in Chemical Biology: CSB 260 (Spr)
- Research Seminar: CSB 270 (Aut, Win, Spr)

2024-25

- Chemical and Systems Biology Pizza Talks: CSB 224 (Aut, Win, Spr, Sum)
- Research Seminar: CSB 270 (Aut, Win, Spr)

2023-24

- Chemical and Systems Biology Pizza Talks: CSB 224 (Aut, Win, Spr, Sum)
- Concepts and Applications in Chemical Biology: CHEM 289, CSB 260 (Spr)
- Research Seminar: CSB 270 (Aut, Win, Spr)

2022-23

- Chemical and Systems Biology Pizza Talks: CSB 224 (Aut, Win, Spr, Sum)
- Research Seminar: CSB 270 (Aut, Win, Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Martin Acosta Parra, Amy Cho, Nina Fatuzzo, Basel Karim, Travis Lantz, Hugo Mendez, Pradnya Narkhede, Meredith Nix, Isaac Paddy, Michelle Tang, Georgia Tully, Jianing Zhong, Xijun Zhu

Postdoctoral Faculty Sponsor

Tamara Boltersdorf, Stefania Demuro, Mashiat Rabbani, Thi Tran, Zaile Zhuang

Doctoral Dissertation Advisor (AC)

Adrianne Kinsey, Kaan Tarhan, Riley Togashi

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Chemical and Systems Biology (Phd Program)
- Developmental Biology (Phd Program)

Publications

PUBLICATIONS

- **Macrocyclization of Broad-Spectrum Kinase Inhibitor Bosutinib leads to Potent and Selective Quinoline-based HIPK4 Inhibitor AZ137.** *bioRxiv : the preprint server for biology*
  Zerva, A., Raig, N. D., Zhuang, Z., Krämer, A., Dopfer, J., Togashi, R., Schwalm, M. P., Elson, L., Frischkorn, J. M., Berger, B. T., Müller, S., Chen, J. K., Knapp, et al
  2026

- **Small-molecule modulators of HIPK4 activity and proteostasis** *bioRxiv*
  Zhuang, Z., Togashi, R. K., Kearney, P., Pass, I., Swick, S. M., Zeng, F., Bobkov, A. A., Fujimoto, L. M., Dutta, S., Zerva, A., Rain, N. D., Saha, D., Emami, et al
  2026

- **Evaluation of Benzo[cd]indol-2(1H)-ones as Downstream Hedgehog Pathway Inhibitors.** *ChemistryOpen*
  Tsakoumagkos, I. A., Pasquer, Q. T., Guillod, C., Rossion, C., Bagka, M., Torche, S., Sakata-Kato, T., Chen, J. K., Hoogendoorn, S.
  2025: e202500119

- **Constrained Design of a Binary Instrument in a Partially Linear Model** *Observational Studies*
  Morrison, T., Nguyen, M., Chen, J. H., Baiocchi, M., Owen, A. B.
  2025; 11 (3)
- **Development of next-generation ALDH1B1 inhibitors with enhanced pharmacological and functional properties** *ChemRxiv*
  Tarhan, A. K., Feng, Z., Bearrood, T. E., Hinman, A., White, N. R., Chen, J. K.
  2025
- **Catalytic asymmetric synthesis of meta benzene isosteres.** *Nature*
  Zhang, M., Chapman, M., Sarode, B. R., Xiong, B., Liang, H., Chen, J. K., Weerapana, E., Morken, J. P.
  2024
- **Antisense Oligonucleotide Activation via Enzymatic Antibiotic Resistance Mechanism.** *ACS chemical biology*
  Darrah, K. E., Albright, S., Kumbhare, R., Tsang, M., Chen, J. K., Deiters, A.
  2023
- **Chemical developmental biology** *Advanced Chemical Biology*
  Chen, J. K.
  edited by Hong, H. C., Pratt, M. R., Prescher, J. A.
  Wiley-VCH.2023: 647-668
- **Bicyclic caged morpholino oligonucleotides for optical gene silencing** *ChemBioChem*
  Pattanayak, S., Sarode, B. R., Deiters, A., Chen, J. K.
  2022
- **Targeting colorectal cancer with small-molecule inhibitors of ALDH1B1** *Nature Chemical Biology*
  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., Chen, C., Mochly-Rosen, D., Kuo, et al
  2022
- **Small Molecule Control of Morpholino Antisense Oligonucleotide Function through Staudinger Reduction.** *Journal of the American Chemical Society*
  Darrah, K., Wesalo, J., Lukasak, B., Tsang, M., Chen, J. K., Deiters, A.
  2021
- **Organic wastewater treatment by single-atom catalyst and electrolytically produced H2O2** *Nat. Sustain.*
  Xu, J., Zheng, X., Feng, Z., Lu, Z., Zheng, Z., Huang, W., Li, Y., Vuckovic, D., Li, Y., Dai, S., Chen, G., Wang, K., Wang, et al
  2021; 4: 233-241
- **Structure-activity mapping of ARHGAP36 reveals regulatory roles for its GAP homology and C-terminal domains.** *PloS one*
  Nano, P. R., Johnson, T. K., Kudo, T., Mooney, N. A., Ni, J., Demeter, J., Jackson, P. K., Chen, J. K.
  2021; 16 (5): e0251684
- **Central auditory processing in adults with chronic stroke without hearing loss: a magnetoencephalography study** *Clinical Neurophysiology*
  Fujioka, T., Freigang, C., Honjo, K., Chen, J. J., Chen, J. L., Black, S. E., Stuss, D. T., Dawson, D. R., Ross, B.
  2020
- **Packing State Management to Realize Dense and Semiconducting Lead Sulfide Nanocrystals Film via a Single-Step Deposition** *Packing State Management to Realize Dense and Semiconducting Lead Sulfide Nanocrystals Film via a Single-Step Deposition*
  Lu, K., Meng, X., Liu, Z., Chen, J., Wang, Y., Zhang, Y., Zhang, X., Sarnello, E., Shi, G., Patil, R. P., Deng, W., Zhou, S., Gu, et al
  2020
- **Lanthanide-Based Optical Probes of Biological Systems.** *Cell chemical biology*
  Cho, U. n., Chen, J. K.
  2020
- **Bicyclic imidazolium inhibitors of Gli transcription factor activity** *ChemMedChem*
  Hom, M. E., Ondrus, A. E., Sakata-Kato, T., Rack, P. G., Chen, J. K.
  2020; 15 (12): 1044-1049

- **trLRET microscopy: Ultrasensitive imaging of lanthanide luminophores.** *Methods in enzymology*
  Ciepla, P. n., Cho, U. n., Chen, J. K.
  2020; 640: 225–48

- **Targeted cell ablation in zebrafish using optogenetic transcriptional control.** *Development (Cambridge, England)*
  Mruk, K. n., Ciepla, P. n., Piza, P. A., Alnaqib, M. A., Chen, J. K.
  2020

- **HIPK4 is essential for murine spermiogenesis.** *eLife*
  Crapster, J. A., Rack, P. G., Hellmann, Z. J., Le, A. D., Adams, C. M., Leib, R. D., Elias, J. E., Perrino, J. n., Behr, B. n., Li, Y. n., Lin, J. n., Zeng, H. n., Chen, et al
  2020; 9

- **FLUXNET-CH4 synthesis activity: objectives, observations, and future directions** *Bulletin of the American Meteorological Society*
  Knox, S. H., Jackson, R. B., Poulter, B., Gavin McNicol, G., Fluet-Chouinard, E., et al
  2019; in press

- **Combinatorial control of gene function with wavelength-selective caged morpholinos.** *Methods in enzymology*
  Pattanayak, S. n., Vázquez-Maldonado, L. A., Deiters, A. n., Chen, J. K.
  2019; 624: 69–88

- **Basal constriction during midbrain-hindbrain boundary morphogenesis is mediated by Wnt5b and focal adhesion kinase.** *Biology open*
  Gutzman, J. H., Graeden, E., Brachmann, I., Yamazoe, S., Chen, J. K., Sive, H.
  2018

- **Correcting glucose-6-phosphate dehydrogenase deficiency with a small-molecule activator.** *Nature communications*
  Hwang, S., Mruk, K., Rahighi, S., Raub, A. G., Chen, C., Dorn, L. E., Horikoshi, N., Wakatsuki, S., Chen, J. K., Mochly-Rosen, D.
  2018; 9 (1): 4045

- **A CRISPR-based screen for Hedgehog signaling provides insights into ciliary function and ciliopathies.** *Nature genetics*
  Breslow, D. K., Hoogendoorn, S., Kopp, A. R., Morgens, D. W., Vu, B. K., Kennedy, M. C., Han, K., Li, A., Hess, G. T., Bassik, M. C., Chen, J. K., Nachury, M. V.
  2018; 50 (3): 460-471

- **Ultrasensitive optical imaging with lanthanide lumiphores.** *Nature chemical biology*
  Cho, U., Riordan, D. P., Ciepla, P., Kocherlakota, K. S., Chen, J. K., Harbury, P. B.
  2018; 14 (1): 15-21

- **Illuminating developmental biology through photochemistry** *NATURE CHEMICAL BIOLOGY*
  Kowalik, L., Chen, J. K.
  2017; 13 (6): 587-598

- **Inhibition of EBV-mediated membrane fusion by anti-gHgL antibodies** *Proceedings of the National Academy of Sciences*
  Sathiyamoorthy, K., Jiang, J., Möhl, B. S., Chen, J., Zhou, Z. H., Longnecker, R., Jardetzky, T. S.
  2017

- **Discovery of novel determinants of endothelial lineage using chimeric heterokaryons** *Elife*
  Wong, W. T., Matrone, G., Tomolaga, S. A., Au, K. F., Meng, S., Yamazoe, S., Sieveking, D., Chen, K., Burns, D. M., Chen, J. K., Blau, H. M., Cooke, J. P.
  2017; 6: e23588

- **A novel missense variant in the GLI3 zinc finger domain in a family with digital anomalies** *Am. J. Med. Genet. A*
  Crapster, J. A., Hudgins, L., Chen, J. K., Gomez-Ospina, N.
  2017; 173: 3221-3225

- **Hyaluronic acid synthesis is required for zebrafish tail fin regeneration** *PLoS One*
  Ouyang, X., Panetta, N. J., Talbott, M. D., Payumo, A. Y., Halluin, C., Longaker, M. T., Chen, J. K.
  2017; 12: e0171898

- **Chemical structure-guided design of dynapyrazoles, cell-permeable dynein inhibitors with a unique mode of action** *Elife*

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, et al
2017; 6: e25174

- **An inducible long noncoding RNA amplifies DNA damage signaling.** *Nature genetics*
  Schmitt, A. M., Garcia, J. T., Hung, T., Flynn, R. A., Shen, Y., Qu, K., Payumo, A. Y., Peres-da-Silva, A., Broz, D. K., Baum, R., Guo, S., Chen, J. K., Attardi, et al
  2016; 48 (11): 1370-1376

- **Tbx16 regulates hox gene activation in mesodermal progenitor cells.** *Nature chemical biology*
  Payumo, A. Y., McQuade, L. E., Walker, W. J., Yamazoe, S., Chen, J. K.
  2016; 12 (9): 694-701

- **Cytoplasmic Dynein Antagonists with Improved Potency and Isoform Selectivity** *ACS CHEMICAL BIOLOGY*
  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., Chen, et al
  2016; 11 (1): 53-60

- **Control of inflammation by stromal Hedgehog pathway activation restrains colitis** *Proc. Natl. Acad. Sci. U. S. A.*
  Lee, J. J., Rothenberg, M. E., Seeley, E. S., Zimdahl, B., Kawano, S., Lu, W., Shin, K., Sakata-Kato, T., Chen, J. K., Diehn, M., Clarke, M. F., Beachy, P. A.
  2016; 113: E7545-E7553

- **I only have eye for ewe: the discovery of cyclopamine and development of Hedgehog pathway-targeting drugs** *NATURAL PRODUCT REPORTS*
  Chen, J. K.
  2016; 33 (5): 595-601

- **Optochemical Dissection of T-box Gene-Dependent Medial Floor Plate Development.** *ACS chemical biology*
  Payumo, A. Y., Walker, W. J., McQuade, L. E., Yamazoe, S., Chen, J. K.
  2015; 10 (6): 1466-1475

- **Thinking big with small molecules** *JOURNAL OF CELL BIOLOGY*
  Mruk, K., Chen, J. K.
  2015; 209 (1): 7-9

- **Nitroreductase-activatable morpholino oligonucleotides for in vivo gene silencing.** *ACS chemical biology*
  Yamazoe, S., McQuade, L. E., Chen, J. K.
  2014; 9 (9): 1985-90

- **Sequential gene silencing using wavelength-selective caged morpholino oligonucleotides.** *Angewandte Chemie (International ed. in English)*
  Yamazoe, S., Liu, Q., McQuade, L. E., Deiters, A., Chen, J. K.
  2014; 53 (38): 10114-10118

- **Stromal response to Hedgehog signaling restrains pancreatic cancer progression.** *Proceedings of the National Academy of Sciences of the United States of America*
  Lee, J. J., Perera, R. M., Wang, H., Wu, D., Liu, X. S., Han, S., Fitamant, J., Jones, P. D., Ghanta, K. S., Kawano, S., Nagle, J. M., Deshpande, V., Boucher, et al
  2014; 111 (30): E3091-100

- **Arhgap36-dependent activation of Gli transcription factors.** *Proceedings of the National Academy of Sciences of the United States of America*
  Rack, P. G., Ni, J., Payumo, A. Y., Nguyen, V., Crapster, J. A., Hovestadt, V., Kool, M., Jones, D. T., Mich, J. K., Firestone, A. J., Pfister, S. M., Cho, Y., Chen, et al
  2014; 111 (30): 11061-11066

- **Direct kinetochore-spindle pole connections are not required for chromosome segregation** *JOURNAL OF CELL BIOLOGY*
  Sikirzhytski, V., Magidson, V., Steinman, J. B., He, J., Le Berre, M., Tikhonenko, I., Ault, J. G., McEwen, B. F., Chen, J. K., Sui, H., Pie, M., Kapoor, T. M., Khodjakov, et al
  2014; 206 (2): 231-243

- **General method for regulating protein stability with light.** *ACS chemical biology*

Bonger, K. M., Rakhit, R., Payumo, A. Y., Chen, J. K., Wandless, T. J.
2014; 9 (1): 111-115

- **In vivo imaging of Hedgehog pathway activation with a nuclear fluorescent reporter** *PLoS One*
Mich, J. K., Payumo, A. Y., Rack, P. G., Chen, J. K.
2014; 9: e103661

- **Post-transcriptional mechanisms contribute to Etv2 repression during vascular development** *DEVELOPMENTAL BIOLOGY*
Moore, J. C., Sheppard-Tindell, S., Shestopalov, I. A., Yamazoe, S., Chen, J. K., Lawson, N. D.
2013; 384 (1): 128-140

- **The stanford institute for chemical biology.** *ACS chemical biology*
Chen, J. K., Du Bois, J., Glenn, J., Herschlag, D., Khosla, C.
2013; 8 (9): 1860-1861

- **Centrosome repositioning in T cells is biphasic and driven by microtubule end-on capture-shrinkage** *JOURNAL OF CELL BIOLOGY*
Yi, J., Wu, X., Chung, A. H., Chen, J. K., Kapoor, T. M., Hammer, J. A.
2013; 202 (5): 779-792

- **Diacylglycerol promotes centrosome polarization in T cells via reciprocal localization of dynein and myosin II** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Liu, X., Kapoor, T. M., Chen, J. K., Huse, M.
2013; 110 (29): 11976-11981

- **Functional inhibition of UQCRB suppresses angiogenesis in zebrafish.** *Biochemical and biophysical research communications*
Cho, Y. S., Jung, H. J., Seok, S. H., Payumo, A. Y., Chen, J. K., Kwon, H. J.
2013; 433 (4): 396-400

- **Emerging technologies in molecular imaging: new windows into biology.** *Current opinion in chemical biology*
Chen, J. K., Kikuchi, K. n.
2013

- **Small-molecule inhibitors of the AAA plus ATPase motor cytoplasmic dynein** *NATURE*
Firestone, A. J., Weinger, J. S., Maldonado, M., Barlan, K., Langston, L. D., O'Donnell, M., Gelfand, V. I., Kapoor, T. M., Chen, J. K.
2012; 484 (7392): 125-129

- **The BAH domain of ORC1 links H4K20me2 to DNA replication licensing and Meier-Gorlin syndrome** *NATURE*
Kuo, A. J., Song, J., Cheung, P., Ishibe-Murakami, S., Yamazoe, S., Chen, J. K., Patel, D. J., Gozani, O.
2012; 484 (7392): 115-?

- **Spatiotemporal resolution of the Ntla transcriptome in axial mesoderm development** *NATURE CHEMICAL BIOLOGY*
Shestopalov, I. A., Pitt, C. L., Chen, J. K.
2012; 8 (3): 270-276

- **Cyclic Caged Morpholinos: Conformationally Gated Probes of Embryonic Gene Function** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*
Yamazoe, S., Shestopalov, I. A., Provost, E., Leach, S. D., Chen, J. K.
2012; 51 (28): 6908-6911

- **Roles of Hedgehog pathway components and retinoic acid signalling in specifying zebrafish ventral spinal cord neurons** *DEVELOPMENT*
England, S., Batista, M. F., Mich, J. K., Chen, J. K., Lewis, K. E.
2011; 138 (23): 5121-5134

- **Hedgehog and retinoic acid signaling cooperate to promote motoneurogenesis in zebrafish** *DEVELOPMENT*
Mich, J. K., Chen, J. K.
2011; 138 (23): 5113-5119

- **Neuropilins are positive regulators of Hedgehog signal transduction** *GENES & DEVELOPMENT*
Hillman, R. T., Feng, B. Y., Ni, J., Woo, W., Milenkovic, L., Gephart, M. G., Teruel, M. N., Oro, A. E., Chen, J. K., Scott, M. P.
2011; 25 (22): 2333-2346

- **A crucial requirement for Hedgehog signaling in small cell lung cancer** *NATURE MEDICINE*
  Park, K., Martelotto, L. G., Peifer, M., Sos, M. L., Karnezis, A. N., Mahjoub, M. R., Bernard, K., Conklin, J. F., Szczepny, A., Yuan, J., Guo, R., Ospina, B., Falzon, et al
  2011; 17 (11): 1504-U1506

- **A Small-Molecule Smoothened Agonist Prevents Glucocorticoid-Induced Neonatal Cerebellar Injury** *SCIENCE TRANSLATIONAL MEDICINE*
  Heine, V. M., Griveau, A., Chapin, C., Ballard, P. L., Chen, J. K., Rowitch, D. H.
  2011; 3 (105)

- **Chemical 'Jekyll and Hyde's: small-molecule inhibitors of developmental signaling pathways** *CHEMICAL SOCIETY REVIEWS*
  Sakata, T., Chen, J. K.
  2011; 40 (8): 4318-4331

- **Small-molecule inhibitors of the Hedgehog pathway** *Hedgehog signaling activation in human cancer and its clinical applications*
  Firestone, A. J., Chen, J. K.
  edited by Xie, J.
  Springer.2011: 163-186

- **Spatiotemporal Control of Embryonic Gene Expression Using Caged Morpholinos** *ZEBRAFISH: GENETICS, GENOMICS AND INFORMATICS, 3RD EDITION*
  Shestopalov, I. A., Chen, J. K.
  2011; 104: 151-172

- **Lineage labeling of zebrafish cells with laser uncagable fluorescein dextran.** *Journal of visualized experiments : JoVE*
  Clanton, J. A., Shestopalov, I., Chen, J. K., Gamse, J. T.
  2011

- **Synthetic Strategies for Studying Embryonic Development** *CHEMISTRY & BIOLOGY*
  Ouyang, X., Chen, J. K.
  2010; 17 (6): 590-606

- **Oligonucleotide-Based Tools for Studying Zebrafish Development** *ZEBRAFISH*
  Shestopalov, I. A., Chen, J. K.
  2010; 7 (1): 31-40

- **Controlling Destiny through Chemistry: Small-Molecule Regulators of Cell Fate** *ACS CHEMICAL BIOLOGY*
  Firestone, A. J., Chen, J. K.
  2010; 5 (1): 15-34

- **Versatile Synthesis and Rational Design of Caged Morpholinos** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Ouyang, X., Shestopalov, I. A., Sinha, S., Zheng, G., Pitt, C. L., Li, W., Olson, A. J., Chen, J. K.
  2009; 131 (37): 13255-13269

- **Small-molecule inhibitors reveal multiple strategies for Hedgehog pathway blockade** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  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, et al
  2009; 106 (33): 14132-14137

- **Converse Conformational Control of Smoothened Activity by Structurally Related Small Molecules** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Yang, H., Xiang, J., Wang, N., Zhao, Y., Hyman, J., Li, S., Jiang, J., Chen, J. K., Yang, Z., Lin, S.
  2009; 284 (31): 20876-20884

- **Germ cell migration in zebrafish is cyclopamine-sensitive but Smoothened-independent** *DEVELOPMENTAL BIOLOGY*
  Mich, J. K., Blaser, H., Thomas, N. A., Firestone, A. J., Yelon, D., Raz, E., Chen, J. K.
  2009; 328 (2): 342-354

- **A small molecule that binds Hedgehog and blocks its signaling in human cells** *NATURE CHEMICAL BIOLOGY*
  Stanton, B. Z., Peng, L. F., Maloof, N., Nakai, K., Wang, X., Duffner, J. L., Taveras, K. M., Hyman, J. M., Lee, S. W., Koehler, A. N., Chen, J. K., Fox, J. L., Mandinova, et al

2009; 5 (3): 154-156

- **The Imidazopyridine Derivative JK184 Reveals Dual Roles for Microtubules in Hedgehog Signaling** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*
  Cupido, T., Rack, P. G., Firestone, A. J., Hyman, J. M., Han, K., Sinha, S., Ocasio, C. A., Chen, J. K.
  2009; 48 (13): 2321-2324
- **Targeted and Conditional Gene Expression Workshop, 8th International Conference on Zebrafish Development and Genetics.** *Zebrafish*
  Chen, J. K., Hurlstone, A. F.
  2008; 5 (3): 193-195
- **The decoupling of Smoothened from G alpha(i) proteins has little effect on Gli3 protein processing and Hedgehog-regulated chick neural tube patterning** *DEVELOPMENTAL BIOLOGY*
  Low, W., Wang, C., Pan, Y., Huang, X., Chen, J. K., Wang, B.
  2008; 321 (1): 188-196
- **Fish 'n clicks** *NATURE CHEMICAL BIOLOGY*
  Chen, J. K.
  2008; 4 (7): 391-392
- **Gene regulation technologies in zebrafish** *MOLECULAR BIOSYSTEMS*
  Esengil, H., Chen, J. K.
  2008; 4 (4): 300-308
- **Chemical technologies for probing embryonic development** *CHEMICAL SOCIETY REVIEWS*
  Shestopalov, I. A., Chen, J. K.
  2008; 37 (7): 1294-1307
- **Light-controlled gene silencing in zebrafish embryos** *NATURE CHEMICAL BIOLOGY*
  Shestopalov, I. A., Sinha, S., Chen, J. K.
  2007; 3 (10): 650-651
- **Small-molecule regulation of zebrafish gene expression** *NATURE CHEMICAL BIOLOGY*
  Esengil, H., Chang, V., Mich, J. K., Chen, J. K.
  2007; 3 (3): 154-155
- **Smoothened signal transduction is promoted by G protein-coupled receptor kinase 2** *MOLECULAR AND CELLULAR BIOLOGY*
  Meloni, A. R., Fralish, G. B., Kelly, P., Salahpour, A., Chen, J. K., Wechsler-Reya, R. J., Lefkowitz, R. J., Caron, M. G.
  2006; 26 (20): 7550-7560
- **Purmorphamine activates the Hedgehog pathway by targeting Smoothened** *NATURE CHEMICAL BIOLOGY*
  Sinha, S., Chen, J. K.
  2006; 2 (1): 29-30
- **Activity-dependent internalization of smoothened mediated by beta-arrestin 2 and GRK2** *SCIENCE*
  Chen, W., Ren, X. R., Nelson, C. D., Barak, L. S., Chen, J. K., Beachy, P. A., de Sauvage, F., Lefkowitz, R. J.
  2004; 306 (5705): 2257-2260
- **Inhibition of Hedgehog signaling by direct binding of cyclopamine to Smoothened** *GENES & DEVELOPMENT*
  Chen, J. K., Taipale, J., Cooper, M. K., Beachy, P. A.
  2002; 16 (21): 2743-2748
- **Small molecule modulation of Smoothened activity** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chen, J. K., Taipale, J., Young, K. E., Maiti, T., Beachy, P. A.
  2002; 99 (22): 14071-14076
- **Medulloblastoma growth inhibition by Hedgehog pathway blockade** *SCIENCE*
  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., Beachy, P. A.
  2002; 297 (5586): 1559-1561

- **Effects of oncogenic mutations in Smoothened and Patched can be reversed by cyclopamine** *NATURE*
  Taipale, J., Chen, J. K., Cooper, M. K., Wang, B. L., Mann, R. K., Milenkovic, L., Scott, M. P., Beachy, P. A.
  2000; 406 (6799): 1005-1009

- **The identification of myriocin-binding proteins (vol 6, pg 221, 1999)** *CHEMISTRY & BIOLOGY*
  Chen, J. K., Lane, W. S., Schreiber, S. L.
  1999; 6 (6): R186-R186

- **Crystal structure of PI3K SH3 domain at 2.0 angstrom resolution** *JOURNAL OF MOLECULAR BIOLOGY*
  Liang, J., Chen, J. K., Schreiber, S. L., CLARDY, J.
  1996; 257 (3): 632-643

- **Protein Structure-Based Combinatorial Chemistry: Discovery of Non-Peptide Binding Elements to Src SH3 Domain** *J. Am. Chem. Soc.*
  Combs, A. P., Kapoor, T. M., Feng, S., Chen, J. K., Daude-Snow, L. F., Schreiber, S. L.
  1996; 118 (1): 287-288

- **COMBINATORIAL SYNTHESIS AND MULTIDIMENSIONAL NMR-SPECTROSCOPY - AN APPROACH TO UNDERSTANDING PROTEIN-LIGAND INTERACTIONS** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION IN ENGLISH*
  Chen, J. K., Schreiber, S. L.
  1995; 34 (9): 953-969

- **2 BINDING ORIENTATIONS FOR PEPTIDES TO THE SRC SH3 DOMAIN - DEVELOPMENT OF A GENERAL-MODEL FOR SH3-LIGAND INTERACTIONS** *SCIENCE*
  Feng, S. B., Chen, J. K., Yu, H. T., Simon, J. A., Schreiber, S. L.
  1994; 266 (5188): 1241-1247

- **SH3 DOMAIN-MEDIATED DIMERIZATION OF AN N-TERMINAL FRAGMENT OF THE PHOSPHATIDYLINOSITOL 3-KINASE P85 SUBUNIT** *BIOORGANIC & MEDICINAL CHEMISTRY LETTERS*
  Chen, J. K., Schreiber, S. L.
  1994; 4 (14): 1755-1760

- **STRUCTURAL BASIS FOR THE BINDING OF PROLINE-RICH PEPTIDES TO SH3 DOMAINS** *CELL*
  Yu, H. T., Chen, J. K., Feng, S. B., Dalgarno, D. C., Brauer, A. W., Schreiber, S. L.
  1994; 76 (5): 933-945

- **Affinity Capillary Electrophoresis: Insights into the Binding of SH3 Domains by Peptides Derived from an SH3-Binding Protein** *J. Org. Chem.*
  Gomez, F. A., Chen, J. K., Tanaka, A., Schreiber, S. L., Whitesidies, G. M.
  1994; 59 (10): 2885-2886

- **BIASED COMBINATORIAL LIBRARIES - NOVEL LIGANDS FOR THE SH3 DOMAIN OF PHOSPHATIDYLINOSITOL 3-KINASE** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Chen, J. K., Lane, W. S., Brauer, A. W., Tanaka, A., Schreiber, S. L.
  1993; 115 (26): 12591-12592

- **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** *ANALYTICAL CHEMISTRY*
  Chu, Y. H., Chen, J. K., Whitesides, G. M.
  1993; 65 (10): 1314-1322

- **Molecular recognition in gels, monolayers, and solids** *Macromolecular Assemblies in Polymeric Systems*
  Prime, K. L., Chu, Y. H., Seto, C. T., Chen, J. K., Spaltenstein, A., Zerkowski, J., Whitesides, G. M.
  American Chemical Society.1992: 228–239