Stanford

James Ferrell

Professor of Chemical and Systems Biology and of Biochemistry

Bio

ACADEMIC APPOINTMENTS

- Professor, Chemical and Systems Biology
- Professor, Biochemistry
- Member, Bio-X
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Stanford University School of Medicine - Chemical & Systems Biology, (2006-2011)
- Associate Chair, Stanford University School of Medicine - Chemical & Systems Biology, (2011-2012)

PROFESSIONAL EDUCATION

- B.A., Williams College , Physics, Chemistry, Mathematics (1976)
- Ph.D., Stanford University , Chemistry (1984)
- M.D., Stanford University (1986)

COMMUNITY AND INTERNATIONAL WORK

- PRD-1-Day Band Performance, Opening Ceremony, Guangzhou Triennial, Guangzhou, China

PATENTS

- James Ferrell, Jason Myers. "United States Patent 7,556,944 Methods and compositions for use in preparing siRNAs", Leland Stanford Junior University, Jul 7, 2009

LINKS

- Ferrell Lab Home Page: https://web.stanford.edu/group/ferrelllab/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My lab has two main goals: to understand the regulation of mitosis and to understand the systems-level logic of simple signaling circuits. We often make use of Xenopus laevis oocytes, eggs, and cell-free extracts for both sorts of study. We also carry out single-cell fluorescence imaging studies on mammalian cell lines. Our experimental work is complemented by computational and theoretical studies aimed at understanding the design principles and recurring themes of regulatory circuits.

Teaching

COURSES

2023-24

- Modeling Cell Signaling: BIOS 204 (Aut)
- Research Seminar: CSB 270 (Aut, Win, Spr)

2022-23

- Research Seminar: CSB 270 (Aut, Win, Spr)

2021-22

- Practical Tutorial on the Modeling of Signal Transduction Motifs: BIOS 204 (Aut)
- Research Seminar: CSB 270 (Aut, Win)

2020-21

- Advanced Cell Biology: BIO 214, BIOC 224, MCP 221 (Win)
- Practical Tutorial on the Modeling of Signal Transduction Motifs: BIOS 204 (Aut)
- Research Seminar: CSB 270 (Aut, Win, Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Yuhang Fan, Katie Ferrick, Christina Jensen, Jacob Kim, Ramon Lorenzo Labitigan, Larissa Sambel, Ron Shanderson, Joydeb Sinha, Gabriel Tauber, Jordan Valgardson, Alex Van Elgort, Zijian Zhang

Postdoctoral Faculty Sponsor

Yuping Chen, William Huang, Zhengda Li, Shixuan Liu

Doctoral Dissertation Advisor (AC)

Katie Ferrick, Jo-Hsi Huang

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (Phd Program)
- Biomedical Informatics (Phd Program)
- Biophysics (Phd Program)
- Cancer Biology (Phd Program)
- Chemical and Systems Biology (Phd Program)

Publications

PUBLICATIONS

- **Cytoplasmic organization promotes protein diffusion in Xenopus extracts.** *Nature communications*
  Huang, W. Y., Cheng, X., Ferrell, J. E.
  2022; 13 (1): 5599
- **Stepwise Oxidations Play Key Roles in the Structural and Functional Regulations of DJ-1.** *The Biochemical journal*
  Song, I., Kim, M., Ferrell, J. E., Shin, D., Lee, K.
  2021

- **Xenopus laevis Egg Extract Preparation and Live Imaging Methods for Visualizing Dynamic Cytoplasmic Organization.** *Journal of visualized experiments : JoVE*
  Cheng, X., Ferrell, J. E.
  2021
- **C. elegans colony formation as a condensation phenomenon.** *Nature communications*
  Chen, Y., Ferrell, J. E.
  2021; 12 (1): 4947
- **Real-Time Monitoring of APC /C-Mediated Substrate Degradation Using Xenopus laevis Egg Extracts.** *Methods in molecular biology (Clifton, N.J.)*
  Kamenz, J., Qiao, R., Yang, Q., Ferrell, J. E.
  2021; 2329: 29-38
- **Bistable, Biphasic Regulation of PP2A-B55 Accounts for the Dynamics of Mitotic Substrate Phosphorylation.** *Current biology : CB*
  Kamenz, J., Gelens, L., Ferrell, J. E.
  2020
- **The nucleus serves as the pacemaker for the cell cycle.** *eLife*
  Afanzar, O., Buss, G. K., Stearns, T., Ferrell, J. E.
  2020; 9
- **The Apparent Requirement for Protein Synthesis during G2 Phase Is due to Checkpoint Activation.** *Cell reports*
  Lockhead, S. n., Moskaleva, A. n., Kamenz, J. n., Chen, Y. n., Kang, M. n., Reddy, A. R., Santos, S. D., Ferrell, J. E.
  2020; 32 (2): 107901
- **SYNTHETIC BIOLOGY A compact synthetic pathway rewires cancer signaling to therapeutic effector release** *SCIENCE*
  Chung, H. K., Zou, X., Bajar, B. T., Brand, V. R., Huo, Y., Alcudia, J. F., Ferrell, J. E., Lin, M. Z.
  2019; 364 (6439): 451-+
- **Efficient Front-Rear Coupling in Neutrophil Chemotaxis by Dynamic Myosin II Localization** *DEVELOPMENTAL CELL*
  Tsai, T., Collins, S. R., Chan, C. K., Hadjitheodorou, A., Lam, P., Lou, S. S., Yang, H., Jorgensen, J., Ellett, F., Irimia, D., Davidson, M. W., Fischer, R. S., Huttenlocher, et al
  2019; 49 (2): 189-+
- **Disruption of Telomerase RNA Maturation Kinetics Precipitates Disease.** *Molecular cell*
  Roake, C. M., Chen, L., Chakravarthy, A. L., Ferrell, J. E., Raffa, G. D., Artandi, S. E.
  2019
- **A compact synthetic pathway rewires cancer signaling to therapeutic effector release.** *Science (New York, N.Y.)*
  Chung, H. K., Zou, X. n., Bajar, B. T., Brand, V. R., Huo, Y. n., Alcudia, J. F., Ferrell, J. E., Lin, M. Z.
  2019; 364 (6439)
- **Spontaneous emergence of cell-like organization in Xenopus egg extracts.** *Science (New York, N.Y.)*
  Cheng, X. n., Ferrell, J. E.
  2019; 366 (6465): 631–37
- **Efficient Front-Rear Coupling in Neutrophil Chemotaxis by Dynamic Myosin II Localization.** *Developmental cell*
  Tsai, T. Y., Collins, S. R., Chan, C. K., Hadjitheodorou, A. n., Lam, P. Y., Lou, S. S., Yang, H. W., Jorgensen, J. n., Ellett, F. n., Irimia, D. n., Davidson, M. W., Fischer, R. S., Huttenlocher, et al
  2019; 49 (2): 189–205.e6
- **Robustly Cycling Xenopus laevis Cell-Free Extracts in Teflon Chambers.** *Cold Spring Harbor protocols*
  Chang, J. B., Ferrell, J. E.
  2018
- **Apoptosis propagates through the cytoplasm as trigger waves.** *Science (New York, N.Y.)*
  Cheng, X. n., Ferrell, J. E.
  2018; 361 (6402): 607–12
- **The Temporal Ordering of Cell-Cycle Phosphorylation.** *Molecular cell*

Kamenz, J., Ferrell, J. E.
2017; 65 (3): 371-373

- **Desynchronizing Embryonic Cell Division Waves Reveals the Robustness of Xenopus laevis Development.** *Cell reports*
Anderson, G. A., Gelens, L. n., Baker, J. C., Ferrell, J. E.
2017; 21 (1): 37–46

- **Calcium Ion Induced Structural Changes Promote Dimerization of Secretagogin, Which Is Required for Its Insulin Secretory Function.** *Scientific reports*
Lee, J. J., Yang, S. Y., Park, J. n., Ferrell, J. E., Shin, D. H., Lee, K. J.
2017; 7 (1): 6976

- **Thresholds and ultrasensitivity from negative cooperativity** *SCIENCE*
Ha, S. H., Ferrell, J. E.
2016; 352 (6288): 990-993

- **Perfect and Near-Perfect Adaptation in Cell Signaling.** *Cell systems*
Ferrell, J. E.
2016; 2 (2): 62-67

- **The Prozone Effect Accounts for the Paradoxical Function of the Cdk-Binding Protein Suc1/Cks** *CELL REPORTS*
Ha, S. H., Kim, S. Y., Ferrell, J. E.
2016; 14 (6): 1408-1421

- **How Does the Xenopus laevis Embryonic Cell Cycle Avoid Spatial Chaos?** *CELL REPORTS*
Gelens, L., Huang, K. C., Ferrell, J. E.
2015; 12 (5): 892-900

- **Ultrasensitivity part III: cascades, bistable switches, and oscillators** *TRENDS IN BIOCHEMICAL SCIENCES*
Ferrell, J. E., Ha, S. H.
2014; 39 (12): 612-618

- **Spatial trigger waves: positive feedback gets you a long way.** *Molecular biology of the cell*
Gelens, L., Anderson, G. A., Ferrell, J. E.
2014; 25 (22): 3486-3493

- **Ultrasensitivity part II: multisite phosphorylation, stoichiometric inhibitors, and positive feedback** *TRENDS IN BIOCHEMICAL SCIENCES*
Ferrell, J. E., Ha, S. H.
2014; 39 (11): 556-569

- **Ultrasensitivity part I: Michaelian responses and zero-order ultrasensitivity** *TRENDS IN BIOCHEMICAL SCIENCES*
Ferrell, J. E., Ha, S. H.
2014; 39 (10): 496-503

- **Changes in oscillatory dynamics in the cell cycle of early Xenopus laevis embryos.** *PLoS biology*
Tsai, T. Y., Theriot, J. A., Ferrell, J. E.
2014; 12 (2)

- **Feedback loops and reciprocal regulation: recurring motifs in the systems biology of the cell cycle** *CURRENT OPINION IN CELL BIOLOGY*
Ferrell, J. E.
2013; 25 (6): 676-686

- **Mitotic trigger waves and the spatial coordination of the Xenopus cell cycle.** *Nature*
Chang, J. B., Ferrell, J. E.
2013; 500 (7464): 603-607

- **The Cdk1-APC/C cell cycle oscillator circuit functions as a time-delayed, ultrasensitive switch.** *Nature cell biology*
Yang, Q., Ferrell, J. E.
2013; 15 (5): 519-525

- **Spatial Positive Feedback at the Onset of Mitosis** *CELL*
Santos, S. D., Wollman, R., Meyer, T., Ferrell, J. E.

2012; 149 (7): 1500-1513

- **Bistability, Bifurcations, and Waddington's Epigenetic Landscape** *CURRENT BIOLOGY*
  Ferrell, J. E.
  2012; 22 (11): R458-R466

- **Dora B. Goldstein 1922-2011 OBITUARY** *ADDICTION*
  Ferrell, J. E.
  2012; 107 (5): 1013-1014

- **Bistability in one equation or fewer.** *Methods in molecular biology (Clifton, N.J.)*
  Anderson, G. A., Liu, X., Ferrell, J. E.
  2012; 880: 53-67

- **A Mechanism for the Evolution of Phosphorylation Sites** *CELL*
  Pearlman, S. M., Serber, Z., Ferrell, J. E.
  2011; 147 (4): 934-946

- **Simple Rules for Complex Processes: New Lessons from the Budding Yeast Cell Cycle** *MOLECULAR CELL*
  Ferrell, J. E.
  2011; 43 (4): 497-500

- **Modeling the Cell Cycle: Why Do Certain Circuits Oscillate?** *CELL*
  Ferrell, J. E., Tsai, T. Y., Yang, Q.
  2011; 144 (6): 874-885

- **Ultrasensitivity in the Regulation of Cdc25C by Cdk1** *MOLECULAR CELL*
  Trunnell, N. B., Poon, A. C., Kim, S. Y., Ferrell, J. E.
  2011; 41 (3): 263-274

- **The Roles of Cyclin A2, B1, and B2 in Early and Late Mitotic Events** *MOLECULAR BIOLOGY OF THE CELL*
  Gong, D., Ferrell, J. E.
  2010; 21 (18): 3149-3161

- **Systems biologists seek fuller integration of systems biology approaches in new cancer research programs.** *Cancer research*
  Wolkenhauer, O., Auffray, C., Baltrusch, S., Blüthgen, N., Byrne, H., Cascante, M., Ciliberto, A., Dale, T., Drasdo, D., Fell, D., Ferrell, J. E., Gallahan, D., Gatenby, et al
  2010; 70 (1): 12-13

- **Simple, realistic models of complex biological processes: Positive feedback and bistability in a cell fate switch and a cell cycle oscillator** *146th Nobel Symposium on Systems Biology*
  Ferrell, J. E., Pomerening, J. R., Kim, S. Y., Trunnell, N. B., Xiong, W., Huang, C. F., Machleder, E. M.
  ELSEVIER SCIENCE BV.2009: 3999–4005

- **Signaling Motifs and Weber's Law** *MOLECULAR CELL*
  Ferrell, J. E.
  2009; 36 (5): 724-727

- **Concordant Regulation of Translation and mRNA Abundance for Hundreds of Targets of a Human microRNA** *PLOS BIOLOGY*
  Hendrickson, D. G., Hogan, D. J., McCullough, H. L., Myers, J. W., Herschlag, D., Ferrell, J. E., Brown, P. O.
  2009; 7 (11)

- **Tuning the Activation Threshold of a Kinase Network by Nested Feedback Loops** *SCIENCE*
  Justman, Q. A., Serber, Z., Ferrell, J. E., El-Samad, H., Shokat, K. M.
  2009; 324 (5926): 509-512

- **Report on EU-USA Workshop: How Systems Biology Can Advance Cancer Research (27 October 2008)** *MOLECULAR ONCOLOGY*
  Aebersold, R., Auffray, C., Baney, E., Barillot, E., Brazma, A., Brett, C., Brunak, S., Butte, A., Califano, A., Celis, J., Cufer, T., Ferrell, J., Galas, et al
  2009; 3 (1): 9-17

- **Q&A: systems biology.** *Journal of biology*

Ferrell, J. E.
2009; 8 (1): 2-?

- **Q&A: Cooperativity.** *Journal of biology*
  Ferrell, J. E.
  2009; 8 (6): 53-?
- **Rapid cycling and precocious termination of G1 phase in cells expressing CDK1AF** *MOLECULAR BIOLOGY OF THE CELL*
  Pomerening, J. R., Ubersax, J. A., Ferrell, J. E.
  2008; 19 (8): 3426-3441
- **Systems biology - On the cell cycle and its switches** *NATURE*
  Santos, S. D., Ferrell, J. E.
  2008; 454 (7202): 288-289
- **Robust, tunable biological oscillations from interlinked positive and negative feedback loops** *SCIENCE*
  Tsai, T. Y., Choi, Y. S., Ma, W., Pomerening, J. R., Tang, C., Ferrell, J. E.
  2008; 321 (5885): 126-129
- **Systematic Identification of mRNAs Recruited to Argonaute 2 by Specific microRNAs and Corresponding Changes in Transcript Abundance** *PLOS ONE*
  Hendrickson, D. G., Hogan, D. J., Herschlag, D., Ferrell, J. E., Brown, P. O.
  2008; 3 (5)
- **Feedback regulation of opposing enzymes generates robust, all-or-more bistable responses** *CURRENT BIOLOGY*
  Ferrell, J. E.
  2008; 18 (6): R244-R245
- **A role for GPRx, a novel GPR3/6/12-related G-protein coupled receptor, in the maintenance of meiotic arrest in Xenopus laevis oocytes** *Dev Biol*
  Rios-Cardona D, Ricardo-Gonzalez RR, Chawla A, Ferrell JE Jr.
  2008; 317: 380-388
- **Systems biology. A clock with a flip switch.** *Science*
  Poon, A. C., Ferrell, J. E.
  2007; 318 (5851): 757-758
- **Mechanisms of specificity in protein phosphorylation** *NATURE REVIEWS MOLECULAR CELL BIOLOGY*
  Ubersax, J. A., Ferrell, J. E.
  2007; 8 (7): 530-541
- **Substrate competition as a source of ultrasensitivity in the inactivation of Wee1** *CELL*
  Kim, S. Y., Ferrell, J. E.
  2007; 128 (6): 1133-1145
- **Emi2 at the crossroads - Where CSF meets MPF** *CELL CYCLE*
  Hansen, D. V., Pomerening, J. R., Summers, M. K., Miller, J. J., Ferrell, J. E., Jackson, P. K.
  2007; 6 (6): 732-738
- **Tuning bulk electrostatics to regulate protein function** *CELL*
  Serber, Z., Ferrell, J. E.
  2007; 128 (3): 441-444
- **Cyclin A2 regulates nuclear-envelope breakdown and the nuclear accumulation of cyclin B1** *CURRENT BIOLOGY*
  Gong, D., Pomerening, J. R., Myers, J. W., Gustavsson, C., Jones, J. T., Hahn, A. T., Meyer, T., Ferrell, J. E.
  2007; 17 (1): 85-91
- **A clear view of the cell cycle [book review]** *Curr Biol*
  Ferrell JE Jr.
  2007; 17: R231-R232
- **Journal club: a systems biologist encourages modelling by the millions** *Nature*
  Ferrell, j. E.

2007; 450: 5

- **Mechanistic studies of the mitotic activation of Mos** *MOLECULAR AND CELLULAR BIOLOGY*
  Yue, J., Ferrell, J. E.
  2006; 26 (14): 5300-5309
- **B-Raf and C-Raf are required for Ras-stimulated p42 MAP kinase activation in Xenopus egg extracts** *ONCOGENE*
  Yue, J., Xiong, W., Ferrell, J. E.
  2006; 25 (23): 3307-3315
- **A noisy 'Start' to the cell cycle** *MOLECULAR SYSTEMS BIOLOGY*
  Ubersax, J. A., Ferrell, J. E.
  2006; 2
- **Minimizing off-target effects by using diced siRNAs for RNA interference.** *Journal of RNAi and gene silencing : an international journal of RNA and gene targeting research*
  Myers, J. W., Chi, J., Gong, D., Schaner, M. E., Brown, P. O., Ferrell, J. E.
  2006; 2 (2): 181-194
- **Investigating macromolecules inside cultured and injected cells by in-cell NMR spectroscopy** *NATURE PROTOCOLS*
  Serber, Z., Selenko, P., Haensel, R., Reckel, S., Loehr, F., Ferrell, J. E., Wagner, G., Doetsch, V.
  2006; 1 (6): 2701-2709
- **Multisite M-phase phosphorylation of Xenopus Wee1A** *MOLECULAR AND CELLULAR BIOLOGY*
  Kim, S. Y., Song, E. J., Lee, K. J., Ferrell, A. E.
  2005; 25 (23): 10580-10590
- **Interlinked fast and slow positive feedback loops drive reliable cell decisions** *SCIENCE*
  Brandman, O., Ferrett, J. E., Li, R., Meyer, T.
  2005; 310 (5747): 496-498
- **Systems-level dissection of the cell-cycle oscillator: Bypassing positive feedback produces damped oscillations** *CELL*
  Pomerening, J. R., Kim, S. Y., Ferrell, J. E.
  2005; 122 (4): 565-578
- **STIM is a Ca2+ sensor essential for Ca2+-store-depletion-triggered Ca2+ influx** *CURRENT BIOLOGY*
  Liou, J., Kim, M. L., Heo, W. D., Jones, J. T., MYERS, J. W., Ferrell, J. E., Meyer, T.
  2005; 15 (13): 1235-1241
- **Allelic variants of the canine heavy neurofilament (NFH) subunit and extensive phosphorylation in dogs with motor neuron disease** *JOURNAL OF COMPARATIVE PATHOLOGY*
  GREEN, S. L., Westendorf, J. M., Jaffe, H., Pant, H. C., CORK, L. C., Ostrander, E. A., Vignaux, F., Ferrell, J. E.
  2005; 132 (1): 33-50
- **Dicer in RNAi: its roles in vivo and utility in vitro** *In: RNA Interference. From Basic Science to Drug Development. Edited by Appasani K, Cambridge University Press, Cambridge UK*
  Myers JW, Ferrell JE Jr.
  2005: 29-54
- **Identification and comparative analysis of multiple mammalian Speedy/Ringo proteins** *CELL CYCLE*
  Cheng, A., Xiong, W., Ferrell, J. E., Solomon, M. J.
  2005; 4 (1): 155-165
- **Silencing gene expression with Dicer-generated siRNA pools.** *Methods in molecular biology (Clifton, N.J.)*
  Myers, J. W., Ferrell, J. E.
  2005; 309: 93-196
- **Mos mediates the mitotic activation of p42 MAPK in Xenopus egg extracts** *CURRENT BIOLOGY*
  Yue, J. B., Ferrell, J. E.
  2004; 14 (17): 1581-1586

- **Picking a winner: new mechanistic insights into the design of effective siRNAs** *TRENDS IN BIOTECHNOLOGY*
  Gong, D. Q., Ferrell, J. E.
  2004; 22 (9): 451-454
- **Probing the precision of the mitotic clock with a live-cell fluorescent biosensor** *NATURE BIOTECHNOLOGY*
  Jones, J. T., MYERS, J. W., Ferrell, J. E., Meyer, T.
  2004; 22 (3): 306-312
- **Detection of multistability, bifurcations, and hysteresis in a large class of biological positive-feed back systems** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Angeli, D., Ferrell, J. E., Sontag, E. D.
  2004; 101 (7): 1822-1827
- **A positive-feedback-based bistable 'memory module' that governs a cell fate decision** *NATURE*
  Xiong, W., Ferrell, J. E.
  2003; 426 (6965): 460-465
- **Selective regulation of neurite extension and synapse formation by the beta but not the of isoform of CaMKII** *NEURON*
  Fink, C. C., Bayer, K. U., MYERS, J. W., Ferrell, J. E., Schulman, H., Meyer, T.
  2003; 39 (2): 283-297
- **Building a cell cycle oscillator: hysteresis and bistability in the activation of Cdc2** *NATURE CELL BIOLOGY*
  Pomerening, J. R., Sontag, E. D., Ferrell, J. E.
  2003; 5 (4): 346-351
- **Recombinant Dicer efficiently converts large dsRNAs into siRNAs suitable for gene silencing** *NATURE BIOTECHNOLOGY*
  MYERS, J. W., Jones, J. T., Meyer, T., Ferrell, J. E.
  2003; 21 (3): 324-328
- **The JNK cascade as a biochemical switch in mammalian cells: Ultrasensitive and all-or-none responses** *CURRENT BIOLOGY*
  Bagowski, C. P., Besser, J., Frey, C. R., Ferrell, J. E.
  2003; 13 (4): 315-320
- **Enforced proximity in the function of a famous scaffold** *MOLECULAR CELL*
  Ferrell, J. E., Cimprich, K. A.
  2003; 11 (2): 289-291
- **Self-perpetuating states in signal transduction: positive feedback, double-negative feedback and bistability** *CURRENT OPINION IN CELL BIOLOGY*
  Ferrell, J. E.
  2002; 14 (2): 140-148
- **Activation of p42 mitogen-activated protein kinase (MAPK), but not c-Jun NH2-terminal kinase, induces phosphorylation and stabilization of MAPK phosphatase XCL100 in Xenopus oocytes** *MOLECULAR BIOLOGY OF THE CELL*
  Sohaskey, M. L., Ferrell, J. E.
  2002; 13 (2): 454-468
- **Overview of the Alliance for Cellular Signaling** *Nature*
  Gilman AG, 79 other authors including JEF
  2002; 242: 703-706
- **Multisite phosphorylation and the countdown to S phase** *CELL*
  Deshaies, R. J., Ferrell, J. E.
  2001; 107 (7): 819-822
- **Cell cycle - Six steps to destruction** *NATURE*
  Ferrell, J. E.
  2001; 414 (6863): 498-499
- **The classical progesterone receptor associates with p42 MAPK and is involved in phosphatidylinositol 3-kinase signaling in Xenopus oocytes** *JOURNAL OF BIOLOGICAL CHEMISTRY*

Bagowski, C. P., MYERS, J. W., Ferrell, J. E.
2001; 276 (40): 37708-37714

- **Bistabillity in the JNK cascade** *CURRENT BIOLOGY*
  Bagowski, C. P., Ferrell, J. E.
  2001; 11 (15): 1176-1182
- **Bistability in cell signaling: How to make continuous processes discontinuous, and reversible processes irreversible.** *Chaos (Woodbury, N.Y.)*
  Ferrell, J. E., Xiong, W.
  2001; 11 (1): 227-236
- **Bistability in cell signaling: How to make continuous processes discontinuous, and reversible processes irreversible** *CHAOS*
  Ferrell, J. E., Xiong, W.
  2001; 11 (1): 227-236
- **c-jun N-terminal kinase activation in Xenopus laevis eggs and embryos - A possible non-genomic role for the JNK signaling pathway** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Bagowski, C. P., Xiong, W., Ferrell, J. E.
  2001; 276 (2): 1459-1465
- **Cell cycle** *In: McGraw-Hill Encyclopedia of Science and Technology, ninth edition*
  Ferrell JE Jr.
  2001
- **Regulatory cascades: function and properties** *Encyclopedia of Life Sciences, Macmillan Publishing Ltd.*
  Ferrell JE Jr.
  2001
- **Disease attributed to Mycobacterium chelonae in South African clawed frogs (Xenopus laevis)** *COMPARATIVE MEDICINE*
  GREEN, S. L., Lifland, B. D., Bouley, D. M., Brown, B. A., Wallace, R. J., Ferrell, J. E.
  2000; 50 (6): 675-679
- **Cloning and characterization of Xenopus Rsk2, the predominant p90 Rsk isozyme in oocytes and eggs** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Bhatt, R. R., Ferrell, J. E.
  2000; 275 (42): 32983-32990
- **What do scaffold proteins really do?** *Science's STKE : signal transduction knowledge environment*
  Ferrell, J. E.
  2000; 2000 (52): pe1-?
- **Activation of Wee1 by p42 MAPK in vitro and in cycling Xenopus egg extracts** *MOLECULAR BIOLOGY OF THE CELL*
  Walter, S. A., Guadagno, S. N., Ferrell, J. E.
  2000; 11 (3): 887-896
- **Inhibition of progesterone-induced Xenopus oocyte maturation by Nm23** *Cell Growth Diff*
  Kim SY, Ferrell JE Jr., Chae SK, Lee KJ
  2000; 11: 485-490
- **The protein kinase p90 Rsk as an essential mediator of cytostatic factor activity** *SCIENCE*
  Bhatt, R. R., Ferrell, J. E.
  1999; 286 (5443): 1362-1365
- **Distinct, constitutively active MAPK phosphatases function in Xenopus oocytes: Implications for p42 MAPK regulation in vivo** *MOLECULAR BIOLOGY OF THE CELL*
  Sohaskey, M. L., Ferrell, J. E.
  1999; 10 (11): 3729-3743
- **Building a cellular switch: more lessons from a good egg** *BIOESSAYS*
  Ferrell, J. E.
  1999; 21 (10): 866-870

- **Xenopus oocyte maturation: new lessons from a good egg** *BIOESSAYS*
  Ferrell, J. E.
  1999; 21 (10): 833-842

- **Identification and management of an outbreak of Flavobacterium meningosepticum infection in a colony of South African clawed frogs (Xenopus laevis)** *1997 American-Association-of-Laboratory-Animal-Science Meeting*
  GREEN, S. L., Bouley, D. M., Tolwani, R. J., Waggie, K. S., Lifland, B. D., Otto, G. M., Ferrell, J. E.
  AMER VETERINARY MEDICAL ASSOC.1999: 1833-?

- **M phase phosphorylation of cytoplasmic dynein intermediate chain and p150(Glued)** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Huang, C. Y., Chang, C. P., Huang, C. L., Ferrell, J. E.
  1999; 274 (20): 14262-14269

- **How regulated protein translocation can produce switch-like responses** *TRENDS IN BIOCHEMICAL SCIENCES*
  Ferrell, J. E.
  1998; 23 (12): 461-465

- **Requirement for MAPK activation for normal mitotic progression in Xenopus egg extracts** *SCIENCE*
  Guadagno, T. M., Ferrell, J. E.
  1998; 282 (5392): 1312-1315

- **The biochemical basis of an all-or-none cell fate switch in Xenopus oocytes** *SCIENCE*
  Ferrell, J. E., Machleder, E. M.
  1998; 280 (5365): 895-898

- **Assessing activities of blotted protein kinases** *In: Protein Phosphorylation, Ed. by Hunter T, Sefton BM, Academic Press, San Diego. [This is a re-publication of Ferrell and Martin, Methods Enzymol., 200:430-435.]*
  Ferrell JE Jr, Martin GS
  1998: 177-82

- **Induction of a G(2)-phase arrest in Xenopus egg extracts by activation of p42 mitogen-activated protein kinase** *MOLECULAR BIOLOGY OF THE CELL*
  Walter, S. A., Guadagno, T. M., Ferrell, J. E.
  1997; 8 (11): 2157-2169

- **Mechanistic studies of the dual phosphorylation of mitogen-activated protein kinase** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Ferrell, J. E., Bhatt, R. R.
  1997; 272 (30): 19008-19016

- **A role for mitogen-activated protein kinase in the spindle assembly checkpoint in XTC cells** *JOURNAL OF CELL BIOLOGY*
  Wang, X. M., Zhai, Y., Ferrell, J. E.
  1997; 137 (2): 433-443

- **Cell cycle** *McGraw-Hill Encyclopedia of Science and Technology, 8th edition*
  Ferrell JE Jr.
  1997; 3: 378-380

- **How responses can get more switch-like as you move down a protein kinase cascade** *Trends Biochem Soc*
  Ferrell, J. E.
  1997; 22: 288-289

- **Tripping the switch fantastic: How a protein kinase cascade can convert graded inputs into switch-like outputs** *TRENDS IN BIOCHEMICAL SCIENCES*
  Ferrell, J. E.
  1996; 21 (12): 460-466

- **Ultrasensitivity in the mitogen-activated protein kinase cascade** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Huang, C. Y., Ferrell, J. E.
  1996; 93 (19): 10078-10083

- **Dependence of Mos-induced Cdc2 activation on MAP kinase function in a cell-free system** *EMBO JOURNAL*

Huang, C. Y., Ferrell, J. E.
1996; 15 (9): 2169-2173

- **MAP kinases in mitogenesis and development** *CURRENT TOPICS IN DEVELOPMENTAL BIOLOGY, VOL 33*
  Ferrell, J. E.
  1996; 33: 1-60

- **EVIDENCE THAT INACTIVE P42 MITOGEN-ACTIVATED PROTEIN-KINASE AND INACTIVE RSK EXIST AS A HETERODIMER IN-VIVO** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Hsiao, K. M., Chou, S. Y., Shih, S. J., Ferrell, J. E.
  1994; 91 (12): 5480-5484

- **INHIBITION OF C-JUN DNA-BINDING BY MITOGEN-ACTIVATED PROTEIN-KINASE** *MOLECULAR BIOLOGY OF THE CELL*
  Chou, S. Y., Baichwal, V., Ferrell, J. E.
  1992; 3 (10): 1117-1130

- **CELL-CYCLE TYROSINE PHOSPHORYLATION OF P34CDC2 AND A MICROTUBULE-ASSOCIATED PROTEIN-KINASE HOMOLOG IN XENOPUS OOCYTES AND EGGS** *MOLECULAR AND CELLULAR BIOLOGY*
  Ferrell, J. E., Wu, M., Gerhart, J. C., Martin, G. S.
  1991; 11 (4): 1965-1971

- **ASSESSING ACTIVITIES OF BLOTTED PROTEIN-KINASES** *METHODS IN ENZYMOLOGY*
  Ferrell, J. E., Martin, G. S.
  1991; 200: 430-435

- **INTRACELLULAR-LOCALIZATION OF PP60C-SRC IN HUMAN PLATELETS** *ONCOGENE*
  Ferrell, J. E., Noble, J. A., Martin, G. S., JACQUES, Y. V., Bainton, D. F.
  1990; 5 (7): 1033-1036

- **IDENTIFICATION OF A 42-KILODALTON PHOSPHOTYROSYL PROTEIN AS A SERINE(THREONINE) PROTEIN-KINASE BY RENATURATION** *MOLECULAR AND CELLULAR BIOLOGY*
  Ferrell, J. E., Martin, G. S.
  1990; 10 (6): 3020-3026

- **THROMBIN STIMULATES THE ACTIVITIES OF MULTIPLE PREVIOUSLY UNIDENTIFIED PROTEIN-KINASES IN PLATELETS** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Ferrell, J. E., Martin, G. S.
  1989; 264 (34): 20723-20729

- **TYROSINE-SPECIFIC PROTEIN-PHOSPHORYLATION IS REGULATED BY GLYCOPROTEIN-IIB-IIIA IN PLATELETS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ferrell, J. E., Martin, G. S.
  1989; 86 (7): 2234-2238

- **PLATELET TYROSINE-SPECIFIC PROTEIN-PHOSPHORYLATION IS REGULATED BY THROMBIN** *MOLECULAR AND CELLULAR BIOLOGY*
  Ferrell, J. E., Martin, G. S.
  1988; 8 (9): 3603-3610

- **MEMBRANE BILAYER BALANCE AND PLATELET SHAPE - MORPHOLOGICAL AND BIOCHEMICAL RESPONSES TO AMPHIPATHIC COMPOUNDS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Ferrell, J. E., Mitchell, K. T., Huestis, W. H.
  1988; 939 (2): 223-237

- **SEPARATION OF PHOSPHOINOSITIDES AND OTHER PHOSPHOLIPIDS BY TWO-DIMENSIONAL THIN-LAYER CHROMATOGRAPHY** *ANALYTICAL BIOCHEMISTRY*
  Mitchell, K. T., Ferrell, J. E., Huestis, W. H.
  1986; 158 (2): 447-453

- **SULFHYDRYL REDUCING AGENTS AND SHAPE REGULATION IN HUMAN-ERYTHROCYTES** *BLOOD*
  TRUONG, H. T., Ferrell, J. E., Huestis, W. H.
  1986; 67 (1): 214-221

- **MEMBRANE BILAYER BALANCE AND ERYTHROCYTE SHAPE - A QUANTITATIVE ASSESSMENT** *BIOCHEMISTRY*
  Ferrell, J. E., Lee, K. J., Huestis, W. H.
  1985; 24 (12): 2849-2857

- **COMPUTER-ASSISTED MECHANISTIC STRUCTURE ACTIVITY STUDIES - APPLICATION TO DIVERSE CLASSES OF CHEMICAL CARCINOGENS** *ENVIRONMENTAL HEALTH PERSPECTIVES*
  Loew, G. H., Poulsen, M., KIRKJIAN, E., Ferrell, J., SUDHINDRA, B. S., Rebagliati, M.
  1985; 61 (SEP): 69-96

- **Lipid transfer between phosphatidylcholine vesicles and human erythrocytes: exponential decrease in rate with increasing acyl chain length** *Biochemistry*
  Ferrell JE Jr., Lee KJ, Huestis WH
  1985; 24: 2857-2864

- **PHOSPHOINOSITIDE METABOLISM AND THE MORPHOLOGY OF HUMAN-ERYTHROCYTES** *JOURNAL OF CELL BIOLOGY*
  Ferrell, J. E., Huestis, W. H.
  1984; 98 (6): 1992-1998

- **Mechanistic structure-activity studies using quantum chemical methods: application to polycyclic aromatic hydrocarbons** *Structure-Activity Correlation as a Predictive Tool in Toxicology. Edited by L. Goldberg. Hemisphere, Washington.*
  Loew GH, Ferrell JE Jr., Poulsen M
  1983: 111-138

- **TRANSFER OF BAND-3, THE ERYTHROCYTE ANION TRANSPORTER, BETWEEN PHOSPHOLIPID-VESICLES AND CELLS - APPENDIX - ANALYSIS OF CHLORIDE INFLUX** *BIOCHEMISTRY*
  Newton, A. C., Cook, S. L., Huestis, W. H., Ferrell, J. E.
  1983; 22 (26): 6110-6117

- **CALCIUM DOES NOT MEDIATE THE SHAPE CHANGE THAT FOLLOWS ATP DEPLETION IN HUMAN-ERYTHROCYTES** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Ferrell, J. E., Huestis, W. H.
  1982; 687 (2): 321-328

- **Calmodulin-dependent spectrin kinase activity in human erythrocytes.** *Progress in clinical and biological research*
  Huestis, W. H., Nelson, M. J., Ferrell, J. E.
  1981; 56: 137-155

- **Quantum chemical studies of methylbenz[a]anthracenes: metabolism and correlations with carcinogenicity** *Chem-Biol Interactions*
  Loew GH, Poulsen M, Ferrell JE Jr., Chaet D
  1980; 31: 319-340

- **MECHANISTIC STUDIES OF ADDITION OF NUCLEOPHILES TO ARENE OXIDES AND DIOL EPOXIDES - CANDIDATE ULTIMATE CARCINOGENS** *INTERNATIONAL JOURNAL OF QUANTUM CHEMISTRY*
  Loew, G. H., Pudzianowski, A. T., Czerwinski, A., Ferrell, J. E.
  1980; 18: 223-244

- **ADRENERGIC-STIMULATION OF MEMBRANE-PROTEIN PHOSPHORYLATION IN HUMAN-ERYTHROCYTES** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Nelson, M. J., Ferrell, J. E., Huestis, W. H.
  1979; 558 (1): 136-140

- **Quantum chemical studies of polycyclic aromatic hydrocarbons and their metabolites: correlations to carcinogenicity** *Chem-Biol Interactions*
  Loew GH, Sudhindra BS, Ferrell JE Jr.
  1979; 26: 75-89

- **STRUCTURE-ACTIVITY STUDIES OF FLAVONOIDS AS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE AND RELATIONSHIP TO QUANTUM CHEMICAL INDEXES** *MOLECULAR PHARMACOLOGY*
  Ferrell, J. E., SING, P. D., Loew, G., King, R., Mansour, J. M., Mansour, T. E.
  1979; 16 (2): 556-568

- **MECHANISTIC STUDIES OF ARENE OXIDE AND DIOL EPOXIDE REARRANGEMENT AND HYDROLYSIS REACTIONS** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

Ferrell, J. E., Loew, G. H.
1979; 101 (6): 1385-1388