

Stanford



Jeffrey J. Wine

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Psychology

CONTACT INFORMATION

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Bio

BIO

I began my career as a neuroscientist studying how neural circuits produce behavior, but changed interests in mid-career to study cystic fibrosis (CF), with the goal of ameliorating the symptoms in people who have CF. I direct the Cystic Fibrosis Research Laboratory at Stanford. We discovered that a specific kind of sweating is rate-limited by CFTR--the anion channel product of the CF gene. We demonstrated that airway glands, which produce antibiotic-rich mucus that helps protect the airways, display a profound secretory defect in cystic fibrosis. Current research uses sweat secretion as a sensitive assay of CFTR function that can be used to assess the efficacy of drugs that improve CFTR function. We also study airway mucociliary clearance, and promote a preventative approach to lung infections in people with CF.

ACADEMIC APPOINTMENTS

- Professor, Psychology
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Program in Human Biology, Stanford, (2003-2006)

PROFESSIONAL EDUCATION

- Ph.D., UCLA , Physiological Psychology (1971)

LINKS

- Cystic Fibrosis Research Laboratory: <http://www.stanford.edu/group/CFRL/>
- Personal website: <http://web.stanford.edu/~wine/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The goal is to understand how a defective ion channel leads to the human genetic disease cystic fibrosis. Studies of ion channels and ion transport involved in gland fluid transport. Methods include SSCP mutation detection and DNA sequencing, protein analysis, patch-clamp recording, ion-selective microelectrodes, electrophysiological analyses of transmembrane ion flows, isotopic metho

CLINICAL TRIALS

- (Study: Vertex IIS) Does Ivacaftor Alter Wild Type CFTR-Open Probability In The Sweat Gland Secretory Coil?, Not Recruiting

Teaching

COURSES

2018-19

- Advanced Research: PSYCH 197 (Aut)
- Cellular Neuroscience: Cell Signaling and Behavior: BIO 153, PSYCH 120 (Aut)
- Ion Transport and Intracellular Messengers: PSYCH 121, PSYCH 228 (Spr)
- Senior Honors Research: PSYCH 198 (Win, Spr)

2017-18

- Advanced Research: PSYCH 197 (Aut)
- Cellular Neuroscience: Cell Signaling and Behavior: BIO 153, PSYCH 120 (Aut)
- Ion Transport and Intracellular Messengers: PSYCH 121, PSYCH 228 (Spr)
- Senior Honors Research: PSYCH 198 (Win, Spr)

2016-17

- Advanced Research: PSYCH 197 (Aut)
- Cellular Neuroscience: Cell Signaling and Behavior: BIO 153, PSYCH 120 (Aut)
- Ion Transport and Intracellular Messengers: PSYCH 121, PSYCH 228 (Spr)
- Senior Honors Research: PSYCH 198 (Win, Spr)

2015-16

- Advanced Research: PSYCH 197 (Aut)
- Ion Transport and Intracellular Messengers: PSYCH 121, PSYCH 228 (Spr)
- Senior Honors Research: PSYCH 198 (Aut, Win, Spr)

Publications

PUBLICATIONS

- **How to live a long and healthy life with cystic fibrosis: Lessons from the CF ferret.** *Journal of cystic fibrosis : official journal of the European Cystic Fibrosis Society*
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2018
- **Ivacaftor restores CFTR-dependent sweat gland fluid secretion in cystic fibrosis subjects with S945L alleles** *JOURNAL OF CYSTIC FIBROSIS*
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- **Inhibition of airway surface fluid absorption by cholinergic stimulation.** *Scientific reports*
Joo, N. S., Krouse, M. E., Choi, J. Y., Cho, H., Wine, J. J.
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- **Airway Gland Structure and Function.** *Physiological reviews*
Widdicombe, J. H., Wine, J. J.
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- **A Little CFTR Goes a Long Way: CFTR-Dependent Sweat Secretion from G551D and R117H-5T Cystic Fibrosis Subjects Taking Ivacaftor** *PLOS ONE*
Char, J. E., Wolfe, M. H., Cho, H., Park, I., Jeong, J. H., Frisbee, E., Dunn, C., Davies, Z., Milla, C., Moss, R. B., Thomas, E. A., Wine, J. J.
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- **Substance P stimulates human airway submucosal gland secretion mainly via a CFTR-dependent process** *JOURNAL OF CLINICAL INVESTIGATION*
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- **Synergistic airway gland mucus secretion in response to vasoactive intestinal peptide and carbachol is lost in cystic fibrosis** *JOURNAL OF CLINICAL INVESTIGATION*
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- **DURATIONS OF UNITARY SYNAPTIC POTENTIALS HELP TIME A BEHAVIORAL SEQUENCE** *SCIENCE*
Wine, J. J., Hagiwara, G.
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Wine, J. J., Krasne, F. B.
1972; 56 (1): 1-?
- **Granule-stored MUC5B mucins are packed by the non-covalent formation of N-terminal head-to-head tetramers** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Trillo-Muyo, S., Nilsson, H. E., Recktenwald, C. V., Ermund, A., Ridley, C., Meiss, L. N., Baehr, A., Klymiuk, N., Wine, J. J., Koeck, P. B., Thornton, D. J., Hebert, H., Hansson, et al
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Wine, J. J., Hansson, G. C., Konig, P., Joo, N. S., Ermund, A., Pieper, M.
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- **Sweat rate analysis of ivacaftor potentiation of CFTR in non-CF adults.** *Scientific reports*
Kim, J., Farahmand, M., Dunn, C., Milla, C. E., Horii, R. I., Thomas, E. A., Moss, R. B., Wine, J. J.
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- **Glandular Proteome Identifies Antiprotease Cystatin C as a Critical Modulator of Airway Hydration and Clearance** *AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY*
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2016; 54 (4): 469-481

- **Evaporimeter and Bubble-Imaging Measures of Sweat Gland Secretion Rates.** *PloS one*
Kim, J., Farahmand, M., Dunn, C., Davies, Z., Frisbee, E., Milla, C., Wine, J. J.
2016; 11 (10)
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Jeong, J. H., Hwang, P. H., Cho, D., Joo, N. S., Wine, J. J.
2015; 29 (5): 334-338
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2015; 29 (5): 334-338
- **Proteomic Analysis of Pure Human Airway Gland Mucus Reveals a Large Component of Protective Proteins** *PLOS ONE*
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Jeong, J. H., Joo, N. S., Hwang, P. H., Wine, J. J.
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- **Hyposecretion of fluid from tracheal submucosal glands of CFTR-deficient pigs** *JOURNAL OF CLINICAL INVESTIGATION*
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2009; 296 (5): L811-L824
- **MUCUS SECRETION FROM INDIVIDUAL FERRET SUBMUCOSAL GLANDS**
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- **MUCUS HYPOSECRETION FROM SUBMUCOSAL GLANDS FROM NASAL TURBINATE OF CF PIGLETS**
Cho, H., Joo, N., Khansaheb, M., Karp, P. H., Stoltz, D. A., Meyerholz, D. K., Welsh, M. J., Wine, J. J.
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- **HYPOSECRETION OF MUCUS FROM AIRWAY SUBMUCOSAL GLANDS OF CF PIGLETS**
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- **Cholinergic stimulation: A novel pathway regulating airway surface ENaC activity**
Joo, N., Krouse, M. E., Choi, J., Wine, J. J.
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- **Capsaicin induces CFTR-dependent mucus secretion via local reflexes in airway submucosal gland**

- Choi, J., Joo, N., Krouse, M., Wine, J. J.
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- **Substance P stimulates CFTR-dependent fluid secretion by mouse tracheal submucosal glands**
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