



Che-Hong Chen

Senior Research Scientist - Basic Life, Chemical and Systems Biology Operations

Bio

BIO

Dr. Che-Hong Chen is a molecular biologist and geneticist at the Department of Chemical and Systems Biology, Stanford University, School of Medicine. Dr. Chen's research focuses on aldehyde toxicity and the function of the ALDH multi-gene family in humans. His research is highlighted by the discovery of a class of novel enzyme modulators of aldehyde dehydrogenase. Some of these small molecule modulators are potent enzyme activators for the variant East Asian-specific dysfunctional ALDH2 which causes the alcohol flushing syndrome and affects approximately 560 million people, or 8% of the world population. Using an ALDH2-deficient mouse model in combination with clinical research, Dr. Chen is currently studying the molecular mechanisms underlying the pathology of diseases associated with aldehyde toxicity and genetic susceptibility of ALDH variation in human populations. Together with Prof. Daria Mochly-Rosen, Che-Hong established the Stanford-Taiwan ALDH2 Deficiency Research (STAR) consortium (now International ALDH2 STAR Research Consortium) in 2015. In 2017, Dr. Chen founded a non-profit organization of Taiwan Alcohol Intolerance Education Society (TAIES) in Taiwan. Dr. Chen is now actively promoting public health education, cancer prevention and the awareness of health risks associated with harmful alcohol use and alcohol flushing caused by ALDH2 deficiency in Taiwan and East Asia.

CURRENT ROLE AT STANFORD

Senior Research Scientist

CEO, International ALDH2 STAR Research Consortium

Director of China, Singapore, and Taiwan Outreach, Center for Asian Health Research and Education Center

EDUCATION AND CERTIFICATIONS

- Postdoctoral Fellow, Cornell University , Plant Biology (1990)
- Ph.D., University of California, Berkeley , Genetics (1986)
- B.S., National Taiwan University (1979)

Publications

PUBLICATIONS

- **Novel and prevalent non-East Asian ALDH2 variants; Implications for global susceptibility to aldehydes' toxicity.** *EBioMedicine*
Chen, C., Ferreira, J. C., Joshi, A. U., Stevens, M. C., Li, S., Hsu, J. H., Maclean, R., Ferreira, N. D., Cervantes, P. R., Martinez, D. D., Barrientos, F. L., Quintanares, G. H., Mochly-Rosen, et al
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- **ALDH2 and Cardiovascular Disease.** *Advances in experimental medicine and biology*
Chen, C., Ferreira, J. C., Mochly-Rosen, D.
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- **Aldehyde dehydrogenase 2 activity and aldehydic load contribute to neuroinflammation and Alzheimer's disease related pathology.** *Acta neuropathologica communications*
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- **Targeting mitochondrial dysfunction and oxidative stress in heart failure: Challenges and opportunities** *FREE RADICAL BIOLOGY AND MEDICINE*
Kiyuna, L., Prestes e Albuquerque, R., Chen, C., Mochly-Rosen, D., Batista Ferreira, J.
2018; 129: 155–68
- **Correcting glucose-6-phosphate dehydrogenase deficiency with a small-molecule activator.** *Nature communications*
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- **ALDH1 Bio-activates Nifuroxazide to Eradicate ALDHHigh Melanoma-Initiating Cells.** *Cell chemical biology*
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2018
- **Cardioprotection induced by a brief exposure to acetaldehyde: role of aldehyde dehydrogenase 2** *CARDIOVASCULAR RESEARCH*
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2018; 114 (7): 1006–15
- **Aldehyde dehydrogenase 3A1 activation prevents radiation-induced xerostomia by protecting salivary stem cells from toxic aldehydes.** *Proceedings of the National Academy of Sciences of the United States of America*
Saiki, J. P., Cao, H., Van Wassenhove, L. D., Viswanathan, V., Bloomstein, J., Nambiar, D. K., Mattingly, A. J., Jiang, D., Chen, C., Stevens, M. C., Simmons, A. L., Park, H. S., von Eyben, et al
2018
- **Transcriptome analysis and prognosis of ALDH isoforms in human cancer** *SCIENTIFIC REPORTS*
Chang, P., Chen, C., Yeh, C., Lu, H., Liu, T., Chen, M., Liu, C., Wu, A. H., Yang, M., Tai, S., Mochly-Rosen, D., Huang, C. F.
2018; 8: 2713
- **Genetic Polymorphisms of Alcohol Metabolizing Enzymes and Alcohol Consumption are Associated With Asymptomatic Cardiac Remodeling and Subclinical Systolic Dysfunction in Large Community-Dwelling Asians** *ALCOHOL AND ALCOHOLISM*
Hung, C., Chang, S., Chang, S., Chi, P., Lai, Y., Wang, S., Wu, Y., Yeh, H., Lin, S., Chen, C., Mochly-Rosen, D., Wang, L., MAGNET Study Investigator
2017; 52 (6): 638–46
- **Thiophene bridged aldehydes (TBAs) image ALDH activity in cells via modulation of intramolecular charge transfer** *CHEMICAL SCIENCE*
Maity, S., Sadlowski, C. M., Lin, J., Chen, C., Peng, L., Lee, E., Vegesna, G. K., Lee, C., Kim, S., Mochly-Rosen, D., Kumar, S., Murthy, N.
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Kim, J., Shin, J. H., Chen, C. H., Cruz, L., Farnebo, L., Yang, J., Borges, P., Kang, G., Mochly-Rosen, D., Sunwoo, J. B.
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- **Aldehyde dehydrogenase 2*2 knock-in mice show increased reactive oxygen species production in response to cisplatin treatment.** *Journal of biomedical science*
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2017; 24 (1): 33-?
- **Aldehyde dehydrogenase 2 activation and coevolution of its epsilon PKC-mediated phosphorylation sites** *JOURNAL OF BIOMEDICAL SCIENCE*
Nene, A., Chen, C., Disatnik, M., Cruz, L., Mochly-Rosen, D.
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- **Human Chitotriosidase Does Not Catabolize Hyaluronan.** *International journal of biological macromolecules*
Danielson, B. n., Chen, C. H., Kaber, G. n., Mochly-Rosen, D. n., Grimes, K. n., Stern, R. n., Bollyky, P. L.

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2016; 25(4): 111-123
- **Genetic variations of aldehyde dehydrogenase 2 and alcohol dehydrogenase 1B are associated with the etiology of atrial fibrillation in Japanese** *JOURNAL OF BIOMEDICAL SCIENCE*
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- **PKC-ALDH2 Pathway Plays a Novel Role in Adipocyte Differentiation** *PLOS ONE*
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- **Mitochondrial reactive oxygen species at the heart of the matter: new therapeutic approaches for cardiovascular diseases.** *Circulation research*
Kornfeld, O. S., Hwang, S., Disatnik, M., Chen, C., Qvit, N., Mochly-Rosen, D.
2015; 116 (11): 1783-1799
- **Pharmacological recruitment of aldehyde dehydrogenase 3A1 (ALDH3A1) to assist ALDH2 in acetaldehyde and ethanol metabolism in vivo** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Chen, C., Cruz, L. A., Mochly-Rosen, D.
2015; 112 (10): 3074-3079
- **A personalized medicine approach for asian americans with the aldehyde dehydrogenase 2*2 variant.** *Annual review of pharmacology and toxicology*
Gross, E. R., Zambelli, V. O., Small, B. A., Ferreira, J. C., Chen, C., Mochly-Rosen, D.
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Chiu, C., Yeh, T., Lai, S., Wu-Chou, Y., Chen, C., Mochly-Rosen, D., Huang, Y., Chen, Y., Chen, C., Chang, Y., Wang, H., Lu, C.
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- **Common ALDH2 genetic variants predict development of hypertension in the SAPHIRE prospective cohort: Gene-environmental interaction with alcohol consumption** *BMC CARDIOVASCULAR DISORDERS*
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2008; 321 (5895): 1493-1495
- **Molecular transporters for peptides: delivery of a cardioprotective epsilon PKC agonist peptide into cells and intact ischemic heart using a transport system, R-7** *CHEMISTRY & BIOLOGY*
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- **Opposing effects of delta and epsilon PKC in ethanol-induced cardioprotection** *JOURNAL OF MOLECULAR AND CELLULAR CARDIOLOGY*
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