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EDUCATION:

- 09/2000 – 09/2005 **Ph.D.** in Genetics / **University of California, Davis**, Davis, CA, USA
- 09/1994 – 06/1996 **M.S.** in Genetics / **National Yang-Ming University**, Taipei, Taiwan
- 09/1990 – 06/1994 **B.S.** in Biology / **National Cheng-Kung University**, Tainan, Taiwan

PROFESSIONAL EXPERIENCE:

- 10/2011 – present **Assistant Project Scientist**, University of California, Davis, Davis, CA, USA
Department of Internal Medicine (Mentor: Dr. Reen Wu)

Research: Characterizing the host-pathogen interaction on airway epithelium against bacterial pore-forming toxins via molecular biology/systems biology approaches and discovering novel therapies against cellular pore-formation related infections.

Supervisory: Supervising one post graduate technician.
Ching-Yun Chang: 10/2011 – present

- 05/2010 – 09/2011 **Postdoctoral Researcher**, University of California, Davis, Davis, CA, USA
Department of Internal Medicine (Mentor: Dr. Reen Wu)

Research: Characterizing the host-pathogen interaction on airway epithelium against bacterial pore-forming toxins via molecular biology/systems biology approaches and discovering novel therapies against cellular pore-formation related infections.

Supervisory: Supervised two undergraduate students.
Ching-Yun Chang: 08/2010 – 09/2011
Karen Chu: 01/2011 – 06/2011

- 09/2005 – 04/2010 **Postdoctoral Researcher**, University of California, San Diego, La Jolla, CA, USA
Section of Cell and Developmental Biology (Mentor: Dr. Raffi V. Aroian)

Research: Applied systems biology approaches combining genome-wide RNAi screen, microarray and interactome analyses to dissect *Caenorhabditis elegans* innate immunity mechanisms such as JNK MAPK–AP-1 against bacterial pore-forming toxins.

Supervisory: Supervised four undergraduate students.
Kevin Day: 06/2006 – 06/2007
Whitney Bagge: 04/2007 – 03/2008
Youn Sagong: 10/2008 – 03/2009
Christine Ha: 10/2008 – 05/2009

- 09/2000 – 09/2005 **Ph.D. Graduate Student**, University of California, Davis, Davis, CA, USA
Genetics Graduate Group (Mentor: Dr. Reen Wu)

Research: Initiated projects to develop a computational strategy to identify novel beta-defensin gene family members, that have common structural features but low sequence homology and to study the molecular basis of the gene regulation of beta-defensin and CCL20 by IL-17A in human airway epithelial cells.

Supervisory: Supervised two undergraduate students.
Lucinda Tam: 01/2003 – 06/2003, 03/2004 – 08/2004
Christy Kim: 07/2003 – 11/2003, 08/2004 – 09/2005 (post graduate technician)
- 07/1998.– 06/2000 **Research Assistant**, Academia Sinica, Taipei, Taiwan
Institute of Biomedical Sciences (Mentor: Dr. Te-Chang Lee)

Research: Investigated the genetic effects of Arsenic exposure and Cadmium resistant mechanisms in human cells.
- 09/1994.– 06/1996 **M.S. Graduate Student**, National Yang-Ming University, Taipei, Taiwan
Institute of Genetics (Mentor: Dr. Chih-Heng Li)

Research: Studied genetic toxicity of Amphetamine in mammalian cells.

FIRST-AUTHOR PEER-REVIEWED PUBLICATIONS:

- Global functional analyses of cellular responses to pore-forming toxins.
Cheng-Yuan Kao, Ferdinand C. O. Los, Danielle Huffman, Shinichiro Wachi, Nicole Kloft, Matthias Husmann, Valbona Karabrahimi, Jean-Louis Schwartz, Audrey Bellier, Christine Ha, Youn Sagong, Hui Fan, Partho Ghosh, Mindy Hsieh, Chih-Shen Hsu, Li Chen, and Raffi V. Aroian.
PLoS Pathogens 2011 Mar 3; 7(3): e1001314.
- Requirements for two proximal NF-kappaB binding sites and IkappaB-zeta in IL-17A-induced human beta-defensin 2 expression by conducting airway epithelium.
Cheng-Yuan Kao, Christy Kim, Fei Huang, and Reen Wu.
The Journal of Biological Chemistry 2008 May 30; 283(22): 15309-15318.
- Up-regulation of CC Chemokine ligand 20 expression in human airway epithelium by IL-17 through a JAK-independent but MEK/NF-kappaB-dependent signaling pathway.
Cheng-Yuan Kao, Fei Huang, Yin Chen, Philip Thai, Shinichiro Wachi, Christy Kim, Lucinda Tam, and Reen Wu.
The Journal of Immunology 2005 Nov 15; 175(10): 6676-6685.
- Interleukin-17 markedly up-regulates beta-defensin 2 expression in human airway epithelium via JAK and NF-kappaB signaling pathways.
Cheng-Yuan Kao, Yin Chen, Philip Thai, Shinichiro Wachi, Fei Huang, Christy Kim, Richard W. Harper and Reen Wu.
The Journal of Immunology 2004 Sep 1; 173(5): 3482-3491.
- ORFeome-based search of airway epithelial cell-specific novel human beta-defensin genes.
Cheng Yuan Kao, Yin Chen, Yu Hua Zhao and Reen Wu.
American Journal of Respiratory Cell and Molecular Biology 2003 Jul; 29(1):71-80.

CO-AUTHOR PEER-REVIEWED PUBLICATIONS:

- RAB-5- and RAB-11-dependent vesicle-trafficking pathways are required for plasma membrane repair after attack by bacterial pore-forming toxin.
Ferdinand C.O. Los, **Cheng-Yuan Kao**, Jane Smitham, Kent L. McDonald, Christine Ha, Christina A. Peixoto, and Raffi V. Aroian.
Cell Host & Microbe 2011 Feb 17; 9(2):147-57.
- WWP-1 is a novel signal modulator of the DAF-2 insulin-like signaling network involved in pore-forming toxin cellular defenses in *Caenorhabditis elegans*.
Chang-Shi Chen, Audrey Bellier, **Cheng-Yuan Kao**, Ya-Luen Yang, Huan-Da Chen, Ferdinand C. O. Los, and Raffi V. Aroian.
PLoS One 2010 Mar 2; 5(3): e9494.
- Hypoxia and the hypoxic response pathway protect against pore-forming toxins in *C. elegans*.
Audrey Bellier, Chang-Shi Chen, **Cheng-Yuan Kao**, Hediye N. Cinar, and Raffi V. Aroian.
PLoS Pathogens 2009 Dec 11; 5(12): e1000689.
- Activation of the unfolded protein response is required for defenses against bacterial pore-forming toxin *in vivo*.
Larry J. Bischof, **Cheng-Yuan Kao**, Ferdinand C. O. Los, Manuel R. Gonzalez, Zhouxin Shen, Steven P. Briggs, F. Gisou van der Goot, and Raffi V. Aroian.
PLoS Pathogens 2008 Oct 10; 4(10): e1000176.
- Requirement for both JAK-mediated PI3K signaling and ACT1/TRAF6/TAK1 dependent NF-kappaB activation by IL-17A in enhancing cytokine expression in human airway epithelial cells.
Fei Huang, **Cheng-Yuan Kao**, Shinichiro Wachi, Philip Thai, Jisu Ryu, and Reen Wu.
The Journal of Immunology 2007, Nov 15; 179(10): 6504-6513.
- Differential regulation of dual NADPH oxidases/peroxidases, Duox1 and Duox2, by Th1 and Th2 cytokines in respiratory tract epithelium.
Richart W. Harper, Changhong Xu, Jason P. Eiserich, Yin Chen, **Cheng-Yuan Kao**, Philip Thai, Henny Setiadi and Reen Wu.
FEBS Letters 2005 Aug 29; 79(21): 4911-4917.
- Tin-protoporphyrin potentiates arsenite-induced DNA strand breaks, chromatid breaks and kinetochore-negative micronuclei in human fibroblasts.
I-Ching Ho, Ling-Huei Yih, **Cheng-Yuan Kao** and Te-Chang Lee.
Mutation Research 2000 Jul 20; 452(1): 41-50.

REVIEW AND COMMENTARY:

- Nervous about immunity: neuronal signals control innate immune system.
Cheng-Yuan Kao, Ferdinand C. O. Los, and Raffi V. Aroian
Nature Immunology 2008 Dec; 9(12): 1329-1330. (News and Views)
- Regulation of mucosal immunity by airway epithelium: The IL-17A paradigm.
Fei Huang, **Cheng-Yuan Kao**, Philip Thai, Shinichiro Wachi, Christy Kim, Yong Lee, Li-Yin Hung, Richart Harper, Mary Mann-Jong Chang, and Reen Wu.
Journal of Organ Dysfunction 2008 Jun; 4(2): 93-98.
- New insights into airway mucous cell differentiation.
Reen Wu, Richart W. Harper, **Cheng-Yuan Kao**, Philip Thai, Daphne Wu, Yin Chen, and Mary M. J. Chang.

MANUSCRIPTS IN REVISION OR PREPARATION:

- 15-methylpalmitic acid is involved in *Caenorhabditis elegans* host defense against the bacterial pore-forming toxin.
Cheng-Yuan Kao, Ferdinand C. O. Los, Audrey Bellier, Marina Kniazeva, Min Han, Whitney Bagge, and Raffi V. Aroian. (*In Preparation*)
- Activation of autophagy is required for intrinsic for intrinsic cellular defense against bacterial pore-forming toxin *in vivo*.
Shin-Huei Huang, Huan-Da Chen, Bang-Yu Liu, Ching-Ming Wu, Lien-I Hor, Reen Wu, **Cheng-Yuan Kao***, and Chang-Shi Chen*. (* Co-Corresponding Authors, *In Preparation*)

THESIS AND DISSERTATION:

- Molecular Characterization of Human Airway Epithelium Innate Immunity by IL-17 Regulation (PhD dissertation, University of California, Davis, USA, 2005)
- Studies on the Genetic Toxicity of Amphetamines (Master thesis, National Yang-Ming University, Taiwan, 1996)

HONORS AND AWARDS:

- 07/2010–06/2011: Ruth L. Kirschstein National Research Service Award (T32-HL-07013)
- 05/2005: Graduate Student Travel Award, University of California, Davis
- 07/2001–09/2001: Summer Research Assistantship / Engineering or Computer-related Applications and Methods, University of California, Davis
- 09/2000–06/2001: Non-resident Tuition Waiver, University of California, Davis