

BIOGRAPHICAL SKETCH

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NAME: Cheng-Hui Lin

eRA COMMONS USER NAME (credential, e.g., agency login): LIN.CHENG-HUI

POSITION TITLE: Postdoctoral Researcher

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Taipei Medical University, Taipei, Taiwan	B.S.	09/2003	07/2007	Pharmacy
Taipei Medical University, Taipei, Taiwan	M.S.	09/2007	07/2008	Pharmacology
Taipei Medical University, Taipei, Taiwan	Ph.D.	09/2008	07/2013	Pharmacology & Toxicology

A. Positions and Honors

2008-2013 PhD student, Department of Pharmacy, Taipei Medical University, Taipei, Taiwan.
2013-2016 Services in Military, Taipei, Taiwan.
2017-present Postdoctoral Fellow, Department of Ophthalmology, Stanford University School of Medicine, Stanford, CA, USA.

B. Short Biography

I obtained my PhD degree in the College of Pharmacy at Taipei Medical University. As a PhD student, I have developed an effective animal model of wet-form age-related macula degeneration (AMD) for screening potential chemical candidates with therapeutic potentials. This long-term wet-form AMD animal model was induced via VEGF polypeptide and chronic whole body hypoxia. As indicated by diffusion of fluorescein from the retinal vessels, this model displayed retinal oedema and microvascular angiogenesis, which mimicked the wet-form AMD in human patients and searched for chemicals that could block the retinal angiogenesis in AMD. Light-induced phototoxicity affects people who overuse smartphones and computers. The light emitted by smartphones or computers includes short-wavelength blue visible light (from 450 to 495 nm), which causes retinal injury and is a risk factor for retinal diseases. The direct link between blue LED light induced phototoxicity and geographic atrophy or dry-form AMD is documented. Yet the underlying mechanism remains unknown. My research revealed that blue light could induce toxic effects in A2E (N-retinylidene-N-retinylethanolamine)-laden RPE cells. A2E and other bisretinoids are the major components of lipofuscin, which accumulate in the retinal pigment epithelial (RPE) cells and can lead to AMD.

C. Contributions to Science

- 1.
2. Candace S Y Chan, Nicolas Lonfat, Rong Zhao, Alexander E Davis, Liang Li, Man-Ru Wu, **Cheng-Hui Lin**, Zhe Ji, Constance L Cepko, Sui Wang. Cell type- and stage-specific expression of Otx2 is regulated by multiple transcription factors and cis-regulatory modules in the retina. *Development*. 2020 Jul 26;147(14):dev187922. doi: 10.1242/dev.187922. PubMed PMID: 32631829

3. **Cheng-Hui Lin**[†], Man-Ru Wu[†], Wei-Jan Huang, Diana Shu-Lian Chow, George Hsiao, and Yu-Wen Cheng. Low-Luminance Blue Light-Enhanced Phototoxicity in A2E-Laden RPE Cell Cultures and Rats. *Int J Mol Sci.* 2019 Apr; 20(7): 1799. doi: 10.3390/ijms20071799. PubMed PMID: 30979028
4. Wu MR, **Lin CH**, Ho JD, Hsiao G, Cheng YW. Novel Protective Effects of Cistanche Tubulosa Extract Against Low-Luminance Blue Light-Induced Degenerative Retinopathy. *Cell Physiol Biochem.* 2018;51(1):63-79. doi: 10.1159/000495162. Epub 2018 Nov 15. PubMed PMID: 30439705.
5. **Lin CH**, Wu MR, Li CH, Cheng HW, Huang SH, Tsai CH, Lin FL, Ho JD, Kang JJ, Hsiao G, Cheng YW. Editor's Highlight: Periodic Exposure to Smartphone-Mimic Low-Luminance Blue Light Induces Retina Damage Through Bcl-2/BAX-Dependent Apoptosis. *Toxicol Sci.* 2017 May 1;157(1):196-210. doi: 10.1093/toxsci/kfx030. PubMed PMID: 28184904.
6. Liao PL, **Lin CH**, Li CH, Tsai CH, Ho JD, Chiou GC, Kang JJ, Cheng YW. Anti-inflammatory properties of shikonin contribute to improved early-stage diabetic retinopathy. *Sci Rep.* 2017 Mar 21;7:44985. doi: 10.1038/srep44985. PubMed PMID: 28322323; PubMed Central PMCID: PMC5359562.
7. Tsai CH, Li CH, Cheng YW, Lee CC, Liao PL, **Lin CH**, Huang SH, Kang JJ. The inhibition of lung cancer cell migration by AhR-regulated autophagy. *Sci Rep.* 2017 Feb 14;7:41927. doi: 10.1038/srep41927. PubMed PMID: 28195146; PubMed Central PMCID: PMC5307309.
8. Lin FL, **Lin CH**, Ho JD, Yen JL, Chang HM, Chiou GC, Cheng YW, Hsiao G. The natural retinoprotectant chrysophanol attenuated photoreceptor cell apoptosis in an N-methyl-N-nitrosourea-induced mouse model of retinal degeneration. *Sci Rep.* 2017 Jan 23;7:41086. doi: 10.1038/srep41086. PubMed PMID: 28112220; PubMed Central PMCID: PMC5253624.
9. Tsai CH, Li CH, Liao PL, Cheng YW, **Lin CH**, Huang SH, Kang JJ. NcoA2-Dependent Inhibition of HIF-1 α Activation Is Regulated via AhR. *Toxicol Sci.* 2015 Dec;148(2):517-30. doi: 10.1093/toxsci/kfv199. Epub 2015 Sep 8. PubMed PMID: 26350169.
10. **Lin CH**, Liao PL, Hsiao G, Li CH, Huang SH, Tsai CH, Wu MR, Lin FL, Ho JD, Cheng HW, Cheng YW. Long-term Fluorometholone Topical Use Induces Ganglion Cell Damage in Rats Analyzed With Optical Coherence Tomography. *Toxicol Sci.* 2015 Oct;147(2):317-25. doi: 10.1093/toxsci/kfv132. Epub 2015 Jul 2. PubMed PMID: 26141393.
11. Li CH, Liao PL, Yang YT, Huang SH, **Lin CH**, Cheng YW, Kang JJ. Minocycline accelerates hypoxia-inducible factor-1 alpha degradation and inhibits hypoxia-induced neovasclogenesis through prolyl hydroxylase, von Hippel-Lindau-dependent pathway. *Arch Toxicol.* 2014 Mar;88(3):659-71. doi: 10.1007/s00204-013-1175-5. Epub 2013 Dec 1. PubMed PMID: 24292262.
12. Li CH, Liao JW, Liao PL, Huang WK, Tse LS, **Lin CH**, Kang JJ, Cheng YW. Evaluation of Acute 13-Week Subchronic Toxicity and Genotoxicity of the Powdered Root of Tongkat Ali (*Eurycoma longifolia* Jack). *Evid Based Complement Alternat Med.* 2013;2013:102987. doi: 10.1155/2013/102987. Epub 2013 Aug 25. PubMed PMID: 24062779; PubMed Central PMCID: PMC3767077.
13. **Lin CH**, Li CH, Liao PL, Tse LS, Huang WK, Cheng HW, Cheng YW. Silibinin inhibits VEGF secretion and age-related macular degeneration in a hypoxia-dependent manner through the PI-3 kinase/Akt/mTOR pathway. *Br J Pharmacol.* 2013 Feb;168(4):920-31. doi: 10.1111/j.1476-5381.2012.02227.x. PubMed PMID: 23004355; PubMed Central PMCID: PMC3631380.
14. Liao PL, Li CH, Chang CY, Lu SR, **Lin CH**, Tse LS, Cheng YW. Anti-ageing effects of alpha-naphthoflavone on normal and UVB-irradiated human skin fibroblasts. *Exp Dermatol.* 2012 Jul;21(7):546-8. doi: 10.1111/j.1600-0625.2012.01517.x. PubMed PMID: 22716253.

D. Additional Information: Research Support and/or Scholastic Performance

Scholastic Performance

YEAR	COURSE TITLE
2015	International Biotechnology, Chemical Engineering and Life Science Conference, poster.
2017	Joint Annual Conference of Biomedical Science, oral presentation.
2019	Stanford Vision Research Seminar, oral presentation.
2020	The Association for Research in Vision and Ophthalmology, poster accepted.
2021	Stanford Byers Young Investigators Research Conference (BYIRC), oral presentation.
2021	The Association for Research in Vision and Ophthalmology, poster/oral presentation.
2021	Stanford Vision Research Seminar, oral presentation.