Academic Staff Resume

Name: Kang Zhang
Title: Chair Professor
Dept. SKLplanet

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Academic Qualification:

Ph.D. in Harvard University, Cambridge, MA, Genetics

MD in Harvard University Medical School - M.I.T., Health Sciences and Technology, Cambridge, MA, Medicine

Bachelor in Sichuan University, Sichuan, China, Biochemistry

Teaching Area

08/2019-present, Chair Professor of the Faculty of Medicine, Macau University of Science and Technology

07/2008-07/2019, full professor with tenure, University of California San Diego

03/2002-6/2006, Tenure Track-Assistant Professor; 07/2006, Promotion, Associate Professor with tenure, University of Utah, Depart. of Ophthalmology/Visual Sciences

07/1999-09/2000, Instructor, Johns Hopkins University, Wilmer Eye Institute

Research Area

Ophthalmology
Genetics
Stem cells
Biomaterials
Artificial intelligence
Precision medicine

Working Experience

2019 – pres Chair Professor, Director of Biomedicine and Innovation Center, The Faculty of Medicine, Macau University of Science and Technology

2019 – pres Ophthalmologist, University Hospital

07/2008-08/2019 Staff Physician, Veteran Affairs San Diego Health System

2014 – 2019 Co-Director, Biomaterials and Tissue Engineering Center, Institute of Engineering in Medicine, University of California San Diego, La Jolla, CA

2009 – 2013 Founding Director, Institute for Genomic Medicine, University of California San Diego, La Jolla, CA

2006 – 2008 Associate Professor with tenure, University of Utah, Department of Ophthalmology and Visual Science, John Moran Eye Center, Salt Lake City, UT

2002 – 2006 Attending Staff Physician, Veteran's Administration Medical Center, Salt Lake City, UT

2002 -2006 Assistant Professor, University of Utah, Department of Ophthalmology and Visual Science, John Moran Eye Center, Salt Lake City, UT

2002 - 2003 FELLOW, University of Utah School of Medicine, Salt Lake City, UT, Vitreoretinal Diseases and Surgery
10/2000-02/2002, Assistant Staff, Cleveland Clinic Foundation, Cole Eye Institute
1999 -2000 Instructor, Johns Hopkins University, School of Medicine, Wilmer Eye Institute, Baltimore, MD
1996 - 1999 RESIDENT, Johns Hopkins University, Wilmer Eye Institute, Baltimore, MD, Ophthalmology
1995 - 1996 INTERN, Presbyterian/St. Lukes Hospital, Denver, CO, Medicine

Research Projects

FDCT: 0035/2020/A: Key techniques for diagnosing new coronavirus 2019-ncov infection based on artificial intelligence
FDCT-NSFC: 0007/2020/AFJ: Induction of conjunctival stem cells into limbal-like stem cells and corneal reconstruction
FDCT:20200530132841618/A2: New Artificial Intelligence Algorithm and Its Application in Electronic Medical Record System

Professional Certification and Awards

Highly Cited Researcher 2020 (Cross-Field)
Highly Cited Researcher 2019 (Cross-Field)
The Ophthalmologist World 100 Power List (2016, 2018)
America's Top Ophthalmologists, Consumer's research Council of America (2011)
NIH Director's Transformative R01 Program (with a perfect review score 10, 2010)
Senior Investigator Award, Research to Prevent Blindness (2010)
Outstanding Achievement Award, Chinese Ophthalmological Society, 2009
Burroughs Wellcome Fund Clinical Scientist Award in Translational Research, 2008
Lew R. Wasserman Merit Award, Research to Prevent Blindness, 2006
Macular Vision Research Award, 2002
Ruth Steinbach Fund for Macular Degeneration, 2001
Charles Schepens Award for Excellence in Retina Research. 2001
Johns Hopkins Medical Institutions Clinician Scientist Award. 1999
Stark Research Award in Ophthalmology, Wilmer Eye Institute, Johns Hopkins University. 1998
Fellow's Research Forum, runner-up. 1997
Knights Templar Eye Foundation Research Award. 1996
Magna Cum Laude, Harvard Medical School. 1995
First Bower Award for Research on Macular Degeneration Wills Eye Hospital, Philadelphia. 1993
Reed Scholar, M.I.T.. 1993 -1994
Johnson & Johnson Scholar, M.I.T.. 1991 -1992
Chinese National Scholarship for Graduate Studies Abroad. 1984
Highest Scholarships and High Distinction in Biochemistry, Sichuan Univ. 1980 -1984

Professional Society Membership

The Royal Society of Medicine
American Academy of Ophthalmology
American Institute for Medical and Biological Engineering
American Association for the Advancement of Science
American Society for Clinical Investigation
Association for Research in Vision and Ophthalmology
Association of American Physicians
International Society for Stem Cell Research

Macula Society

Academic Publication

Journal Articles:

Yang JY, Wang W, Chen ZM, Lu SY, Yang FL, Bi ZF, Bao LL, Mo F, Li X, Huang Y, Hong WQ, Yang Y, Zhao Y, Ye F, Lin S, Deng W, Chen H, Lei H, Zhang ZQ, Luo M, Gao H, Zheng Y, Gong YQ, Jiang XH, Xu YF, Lv Q, Li D, Wang MN, Li FD, Wang SY, Wang GP, Yu P, Qu YJ, Yang L, Deng HX, Tong AP, Li J, Wang ZL, Yang JL, Shen GB, Zhao ZW, Li YH, Luo JW, Liu HQ, Yu WH, Yang ML, Xu JW, Wang JB, Li HY, Wang HX, Kuang DX, Lin PP, Hu ZT, Guo W, Cheng W, He YL, Song XR, Chen C, Xue ZH, Yao SH, Chen L, Ma XL, Chen SY, Gou ML, Huang WJ, Wang YC, Fan CF, Tian ZX, Shi M, Wang FS, Dai LZ, Wu M, Li G, Wang GY, Peng Y, Qian ZY, Huang CH, Lau J YN, Yang ZL, Wei YQ, Cen XB, Peng XZ, Qin C, **Zhang K**, Lu GW & Wei XW. (2020). A vaccine targeting the RBD of the S protein of SARS-CoV-2 induces protective immunity. ***Nature*** , 586, 572-577. DOI: 10.1038/s41586-020-2599-8. Corresponding author

Xu X, Sun J, Nie S, Li HY, Kong YZ, Liang M, Hou JL, Huang XZ, Li DF, Ma T, Peng JQ, Gao SK, Shao Y, Zhu H, Lau J YN, Wang GY, Xie CB, Jiang L, Huang AL, Yang ZL, **Zhang K** & Hou FF. (2020). Seroprevalence of Immunoglobulin M and G Antibodies Against SARS-CoV-2 in China. ***Nature Medicine*** , 26, 1193–1195. DOI: 10.1038/s41591-020-0949-6. Corresponding author.

Zhang K, Liu XH, Shen J, Li ZH, Sang Y, Wu XW, Zha YF, Liang WH, Wang CD, Wang K, Ye LS, Gao M, Zhou ZG, Li L, Wang J, Yang ZH, Cai HM, Xu J, Yang L, Cai WJ, Xu WQ, Wu SX, Zhang W, Jiang SP, Zheng LH, Zhang X, Wang L, Lu L, Li JM, Yin HP, Wang W, Li O, Zhang C, Liang L, Wu T, Deng RY, Kang W, Zhou Y, Chen T, Lau J YN, Fok M, He JX, Lin TX, Li WM & Wang GY. (2020). Clinically Applicable AI System for Accurate Diagnosis, Quantitative Measurements and Prognosis of COVID-19 Pneumonia Using Computed Tomography. ***Cell*** . 181, 1423-1433. DOI: 10.1016/j.cell.2020.04.045. Corresponding and lead author.

Jiang H, Ou ZY, He YY, Yu MX, Wu SQ, Li G, Zhu J, Zhang R, Wang JY, Zheng LH, Zhang XH, Hao W,G He LY, Gu XQ, Quan QL, Zhang E, Luo HY, Wei W, Li ZH, Zang GX, Zhang C, Poon T, Zhang D, Ziyar I, Zhang RZ, Li OL, Cheng LH, Shimizu T, Cui XP, Zhu JK, Sun X & **Zhang K**. (2020). DNA methylation markers in the diagnosis and prognosis of common leukemias. ***Signal Transduction and targeted Therapy*** , 5, 1-10. DOI: 10.1038/s41392-019-0090-5. Corresponding author

Xu Y, Li XF, Zhu B, Liang HY, Fang CX, Gong Y, Guo QZ, Sun X, Zhao DY, Shen J, Zhang HY, Liu HS, Xia HM, Tang JL, **Zhang K** & Gong ST. (2020). Characteristics of pediatric SARS-

He JX, Baxter SL, Xu J., Xu JM, Zhou XT & **Zhang K**. (2019). The Practical Implementation of Artificial Intelligence Technologies in Medicine. ***Nature Medicine,*** 25, 30-36. DOI: 10.1038/s41591-018-0307-0. Corresponding author.

Huiying Liang, , Kang Zhang and Huimin Xia.(2019). Evaluation and accurate diagnoses of pediatric diseases using artificial intelligence.Liang H, Tsui BY, Ni H, Valentim CCS, Baxter SL, Liu G, Cai W, Kermany DS, Sun X, Chen J, He L, Zhu J, Tian P, Shao H, Zheng L, Hou R, Hewett S, Li G, Liang P, Zang X, Zhang Z, Pan L, Cai H, Ling R, Li S, Cui Y, Tang S, Ye H, Huang X, He W, Liang W, Zhang Q, Jiang J, Yu W, Gao J, Ou W, Deng Y, Hou Q, Wang B, Yao C, Liang Y, Zhang S, Duan Y, Zhang R, Gibson S, Zhang CL, Li O, Zhang ED, Karin G, Nguyen N, Wu X, Wen C, Xu J, Xu W, Wang B, Wang W, Li J, Pizzato B, Bao C, Xiang D, He W, He S, Zhou Y, Haw W, Goldbaum M, Tremoulet A, Hsu CN, Carter H, Zhu L, **Zhang K*,** Xia H. * (2019). Evaluation and accurate diagnoses of pediatric diseases using artificial intelligence. Nature Medicine. 25(3):433-438. *co-corresponding authors.

Kermany D, Goldbaum M, Cai W, Valentim CCS, Liang H, Baxter SL, McKeown A, Yang G, Wu X, Yan F, Dong J, Prasadha MK, Pei J, Ting M, Zhu J, Li C, Hewett S, Dong J, Ziyar I, Shi A, Zhu J, Ming C, Fu X, Duan Y, Hoang D, Rutgard J, Zhang R, Wang W, Hou R, Zhang D, Zhang E, Zhang C, Hao X, Xiong W, **Zhang, K.** (2017). Gene and mutation independent therapy via CRISPR-Cas9 mediated cellular reprogramming in rod photoreceptors. Cell Research. 27(6):830-833.

Xu RH, Wei W, Krawczyk M, Wang W, Luo H, Flagg K, Yi S, Shi W, Quan Q, Li K, Zheng L, Zhang H, Caughey BA, Zhao Q, Hou J, Zhang R, Xu Y, Cai H, Li G, Hou R, Zhong Z, Lin D, Fu X, Zhu J, Duan Y, Yu M, Ying B, Zhang W, Wang J, Zhang E, Zhang C, Li O, Guo R, Carter H, Zhu JK, Hao X, **Zhang K.** (2017). Circulating tumour DNA methylation markers for diagnosis and prognosis of hepatocellular carcinoma. Nat Materials. 16(11):1155-1161.

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Wang WQ, Wang FH, Qin WX, Liu HY, Lu B, Chung C, Zhu J, Gu Q, Shi W, Wen C, Wu F, **Zhang K**, Sun XD. (2016). Joint Antiangiogenic Effect of ATN-161 and Anti-VEGF Antibody in a Rat Model of Early Wet Age-Related Macular Degeneration. Molecular pharmaceutics. 13(9):2881-90.

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Bhisitkul RB, Desai SJ, Boyer DS, Sadda SR, **Zhang K.** Fellow Eye Comparisons for 7-Year Outcomes in Ranibizumab-Treated AMD Subjects from ANCHOR, MARINA, and HORIZON (SEVEN-UP Study). (2016). Ophthalmology. 123(6):1269-77

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Ghazi NG, Abboud EB, Nowilaty SR, Alkuraya H, Alhommadi A, Cai H, Hou R, Deng WT, Boye SL, Almaghamsi A, Al Saikhan F, Al-Dhibi H, Birch D, Chung C, Colak D, LaVail MM, Vollrath Fritsche, LG, Igl, W, Bailey, JNC, Grassmann, F, Sengupta, S, Bragg-Gresham, JL, Burdon, KP, Hebbring, SJ, Wen, C, Gorski, M, Kim, IK, Cho, D, Zack, D, Souied, E, Scholl, HPN, Bala, E, Lee, KE, Hunter, DJ, Sardell, RJ, Mitchell, P, Merriam, JE, Cipriani, V, Hoffman, JD, Schick, T, Gross, AM, Jaeger, PA, Kreisberg, JF, Licon, K, Jepsen, KL, Khosroheidari, M, Morsey, BM, Swindells, S, Shen, H, Ng, CT, Flagg, K, Chen, D, **Zhang, K**, Fox, HS, Ideker, T. (2016). Methylome-wide Analysis of Chronic HIV Infection Reveals Five-Year Increase in Biological Age

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Bhisitkul RB, Mendes TS, Rofagha S, Enanoria W, Boyer DS, Sadda SR, **Zhang K**. Macular Atrophy Progression and 7-Year Vision Outcomes in Subjects From the ANCHOR, MARINA, and HORIZON Studies: the SEVEN-UP Study. (2015). Am J Ophthalmol. 159:915-924.

Huu VA, Luo J, Zhu J, Zhu J, Patel S, Boone A, Mahmoud E, McFearin C, Olejniczak J, de Gracia Lux C, Lux J, Fomina N, Huynh M, **Zhang K**, Almutairi A. (2015). Light-responsive nanoparticle depot to control release of a small molecule angiogenesis inhibitor in the posterior segment of the eye. J Control Release. 200:71-7.

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Chi W, Li F, Chen H, Wang Y, Zhu Y, Yang X, Zhu J, Wu F, Ouyang H, Ge J, Weinreb RN, **Zhang K**, Zhuo Y. (2014). Caspase-8 promotes NLRP1/NLRP3 inflammasome activation and IL-1β production in acute glaucoma. Proc Natl Acad Sci U S A. 111:11181-6.

Ouyang, H, Xue, Y, Lin, Y, Zhang, X, Xi, L, Patel, S, Gen Li, Jing Luo, Wei Jiang, Yang Y, Li, H, Zhang, M, Cai, G, Yeh, E, Pei, M, Cao, G, Zhang, L, Yu, B, Chen, S, Fu, XD, Liu, Y, **Zhang K**. (2014). WNT7A and PAX6 define corneal epithelium homeostasis and pathogenesis. Nature 511:358-61.

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Gou, M, Qu, X, Zhu, W, Xiang, M, Yang, J, **Zhang, K**, Wei Y & Chen S (2014). Bio-inspired detoxification using 3D-printed hydrogel nanocomposites. Nature Communications, 5:3774.

Yehoshua Z, Alexandre de Amorim Garcia Filho C, Nunes RP, Gregori G, Penha FM, Moshfeghi AA, **Zhang K**, Sadda S, Feuer W, Rosenfeld PJ. (2014). Systemic Complement Inhibition with Eculizumab for Geographic Atrophy in Age-Related Macular Degeneration: The COMPLETE Study. Ophthalmology. 121(3):693-701.

Wang F, Wang H, Tuan HF, Nguyen DH, Sun V, Keser V, Bowne SJ, Sullivan LS, Luo H, Zhao L, Wang X, Zaneveld JE, Salvo JS, Siddiqui S, Mao L, Wheaton DK, Birch DG, Branham KE, Heckenlively JR, Wen C, Flagg K, Ferreyra H, Pei J, Khan A, Ren H, Wang K, Lopez I, Qamar R, Zenteno JC, Ayala-Ramirez R, Buentello-Volante B, Fu Q, Simpson DA, Li Y, Sui R, Silvestri G, Daiger SP, Koenekoop RK, **Zhang K***, Chen R*. (2014) Next generation sequencing-based molecular diagnosis of retinitis pigmentosa: identification of a novel genotype-phenotype correlation and clinical refinements. Hum Genet. 133(3):331-45. *co-corresponding authors.

Zhao JJ, Ouyang H, Luo J, Patel S, Xue Y, Quach J, Sfeir N, Zhang M, Fu X, Ding S, Chen S, **Zhang K**. (2014). Induction of retinal progenitors and neurons from mammalian Muller glia under defined conditions. J Biol Chem. 289(17):11945-51.

Yu FX, Luo J, Mo JS, Liu G, Kim YC, Meng Z, Zhao L, Peyman G, Ouyang H, Jiang W, Zhao J, Chen X, Zhang L, Wang CY, Bastian BC, **Zhang K***, Guan KL*. (2014). Mutant Gq/11 promote uveal melanoma tumorigenesis by activating YAP. Cancer Cell. 25:822-30.

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