Stanford

Michael S. Kapiloff, MD, PhD

Reinhard Family Professor, Professor (Research) of Ophthalmology and, by courtesy, of Medicine (Cardiovascular Medicine)

Bio

BIO

Dr. Kapiloff earned his Ph.D. in Biomedical Sciences in 1991 at the University of California, San Diego, in the laboratory of Dr. M. Geoffrey Rosenfeld, a HHMI investigator and member of the National Academy of Sciences. He graduated from UCSD with a Doctorate of Medicine in 1992 and completed a residency in General Pediatrics at the University of Utah in 1995. In 1997, Dr. Kapiloff became a Research Assistant Professor, performing research in the laboratory of HHMI Investigator Dr. John Scott at the Vollum Institute in Portland, OR. From 1999 to 2007, Dr. Kapiloff was an Assistant Professor of Pediatrics at the Oregon Health and Science University in Portland. From 2007 to 2017, he was Director of the Cardiac Signal Transduction and Cellular Biology Laboratory at the University of Miami Miller School of Medicine in Miami, Florida, where he was, as of 2013, a tenured Professor of Pediatrics and Medicine in the Division of Cardiology. Since 2011, Dr. Kapiloff has also been studying signal transduction pathways in the eye. Dr. Kapiloff was recruited to Stanford in July, 2017 in a joint effort by the Department of Ophthalmology and the Stanford Cardiovascular Institute in recognition of his work in both fields.

ACADEMIC APPOINTMENTS

- Professor (Research), Ophthalmology
- Professor (Research) (By courtesy), Medicine - Cardiovascular Medicine
- Member, Cardiovascular Institute

HONORS AND AWARDS

- Beneficial-Hodson Scholar, The Johns Hopkins University (1981-1984)
- Member, Phi Beta Kappa Society (1983)
- Medical Scientist Training Program, University of California, San Diego (1984-1992)
- Fellow, American Heart Association (2008)
- Member, American Society for Clinical Investigation (2011)
- Micah Batchelor Award For Excellence In Children's Health Research, University of Miami (2013)
- Fellow, American Physiological Society, Cardiovascular Section (2014)
- Reinhard Family Professorship, Stanford University (2021)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Guest Editor, "AKAPs - regulators of signaling in space and time”, Journal of Cardiovascular Pharmacology (2011 - 2011)
- Editorial Board, American Journal of Physiology – Heart and Circulatory Physiology (2011 - 2020)
- Member, Marcus Young Investigator Award in Cardiovascular Sciences Committee, American Heart Association (2012 - 2014)
- Co-Chair, North American Section Meeting, International Society for Heart Research (2014 - 2014)

- Chair, Molecular Signaling 1 Study Section, American Heart Association (2014 - 2015)
- Faculty Member, Cardiovascular Pharmacology Section, Faculty of 1000 F1000 Prime (2014 - 2018)
- Editorial Board, Journal of Molecular and Cellular Cardiology (2014 - 2019)
- Member, Early Career Committee for Council on Basic Cardiovascular Sciences, American Heart Association (2015 - 2017)
- Leadership Committee for Council on Basic Cardiovascular Sciences, American Heart Association (2016 - 2020)
- Co-Chair, Specialty Conference of the Council on Basic Cardiovascular Sciences, American Heart Association (2017 - 2018)
- Member, Cardiac Contractility, Hypertrophy, and Failure (CCHF) Study Section, National Institutes of Health (2017 - 2020)

PROFESSIONAL EDUCATION

- BA, The Johns Hopkins University , Humanistic Studies (1984)
- PhD, University of California, San Diego , Biomedical Sciences (1991)
- MD, University of California, San Diego , Medicine (1992)
- Residency, University of Utah and Primary Children's Medical Centers , General Pediatrics (1995)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Michael S. Kapiloff is a faculty member in the Departments of Ophthalmology and Medicine (Cardiovascular Medicine) and a member of the Stanford Cardiovascular Institute. Although Dr. Kapiloff was at one time a Board-Certified General Pediatrician, he is currently involved in full-time basic science and translational research. His laboratory studies the basic molecular mechanisms underlying the response of the retinal ganglion cell and cardiac myocyte to disease. The longstanding interest of his laboratory is the role in intracellular signal transduction of multimolecular complexes organized by scaffold proteins. Recently, his lab has also been involved in the translation of these concepts into new therapies, including the development of new AAV gene therapy biologics for the prevention and treatment of heart failure and for neuroprotection in the eye.

URL to NCBI listing of all published works:
http://www.ncbi.nlm.nih.gov/sites/myncbi/michael.kapiloff.1/bibliography/40252285/public/?sort=date&direction=descending

For more information see Dr. Kapiloff's lab website: http://med.stanford.edu/kapilofflab.html

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Anne Sophie Colombe, Xueyi Li

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biophysics (Phd Program)

Publications

PUBLICATIONS

- **A molecular switch for neuroprotective astrocyte reactivity.** *Nature*
  Cameron, E. G., Nahmou, M., Toth, A. B., Heo, L., Tanasa, B., Dalal, R., Yan, W., Nallagatla, P., Xia, X., Hay, S., Knasel, C., Stiles, T. L., Douglas, et al
  2023

- **Differential expression of PIEZO1 and PIEZO2 mechanosensitive channels in ocular tissues implicates diverse functional roles.** *Experimental eye research*
  Zhu, Y., Garcia-Sanchez, J., Dalal, R., Sun, Y., Kapiloff, M. S., Goldberg, J. L., Liu, W. W.
  2023: 109675

- **Dock10 Regulates Cardiac Function under Neurohormonal Stress** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*
  Segal, L., Etzion, S., Elyagon, S., Shahar, M., Klapper-Goldstein, H., Levitas, A., Kapiloff, M. S., Parvari, R., Etzion, Y.
  2022; 23 (17)

- **A perinuclear calcium compartment regulates cardiac myocyte hypertrophy.** *Journal of molecular and cellular cardiology*
  Turcotte, M. G., Thakur, H., Kapiloff, M. S., Dodge-Kafka, K. L.
  2022; 172: 26-40

- **Distribution of cardiomyocyte-selective adeno-associated virus serotype 9 vectors in swine following intracoronary and intravenous infusion.** *Physiological genomics*
  Li, J., Kelly, S. C., Ivey, J. R., Thorne, P. K., Yamada, K. P., Aikawa, T., Mazurek, R., Turk, J. R., Silva, K. A., Amin, A. R., Tharp, D. L., Mueller, C. M., Thakur, et al
  2022

- **FGF21-FGFR4 signaling in cardiac myocytes promotes concentric cardiac hypertrophy in mouse models of diabetes.** *Scientific reports*
  Yanucil, C., Kentrup, D., Li, X., Grabner, A., Schramm, K., Martinez, E. C., Li, J., Campos, I., Czaya, B., Heitman, K., Westbrook, D., Wende, A. R., Sloan, et al
  2022; 12 (1): 7326

- **Soluble alpha-klotho and heparin modulate the pathologic cardiac actions of fibroblast growth factor 23 in chronic kidney disease.** *Kidney international*
  Yanucil, C., Kentrup, D., Campos, I., Czaya, B., Heitman, K., Westbrook, D., Osis, G., Grabner, A., Wende, A. R., Vallejo, J., Wacker, M. J., Navarro-Garcia, J. A., Ruiz-Hurtado, et al
  2022

- **Targeting mAKAPbeta expression as a therapeutic approach for ischemic cardiomyopathy.** *Gene therapy*
  Martinez, E. C., Li, J., Ataam, J. A., Tokarski, K., Thakur, H., Karakikes, I., Dodge-Kafka, K., Kapiloff, M. S.
  1800

- **Mechanism-Driven Modeling to Aid Non-invasive Monitoring of Cardiac Function via Ballistocardiography.** *Frontiers in medical technology*
  Zaid, M., Sala, L., Ivey, J. R., Tharp, D. L., Mueller, C. M., Thorne, P. K., Kelly, S. C., Silva, K. A., Amin, A. R., Ruiz-Lozano, P., Kapiloff, M. S., Despins, L., Popescu, et al
  2022; 4: 788264

- **cAMP At Perinuclear mAKAPalpha Signalosomes Is Regulated By Local Ca2+ Signaling In Primary Hippocampal Neurons.** *eNeuro*
  Boczek, T., Yu, Q., Zhu, Y., Dodge-Kafka, K. L., Goldberg, J. L., Kapiloff, M. S.
  2021

- **Calcineurin Abeta-Specific Anchoring Confers Isoform-Specific Compartmentation and Function in Pathological Cardiac Myocyte Hypertrophy.** *Circulation*
  Li, X., Li, J., Martinez, E. C., Froese, A., Passariello, C. L., Henshaw, K., Rusconi, F., Li, Y., Yu, Q., Thakur, H., Nikolaev, V. O., Kapiloff, M. S.
  2020

- **Calcineurin-AKAP interactions: therapeutic targeting of a pleiotropic enzyme with a little help from its friends** *JOURNAL OF PHYSIOLOGY-LONDON*
  Gildart, M., Kapiloff, M. S., Dodge-Kafka, K. L.
  2020; 598 (14): 3029–42

- **Optic Nerve Crush in Mice to Study Retinal Ganglion Cell Survival and Regeneration.** *Bio-protocol*
  Cameron, E. G., Xia, X., Galvao, J., Ashouri, M., Kapiloff, M. S., Goldberg, J. L.
  2020; 10 (6)

- **Compartmentalization of local cAMP signaling in neuronal growth and survival** *NEURAL REGENERATION RESEARCH*
  Boczek, T., Kapiloff, M.
  2020; 15 (3): 453–54

- **MEF2 transcription factors differentially contribute to retinal ganglion cell loss after optic nerve injury.** *PloS one*
  Xia, X. n., Yu, C. Y., Bian, M. n., Sun, C. B., Tanasa, B. n., Chang, K. C., Bruffett, D. M., Thakur, H. n., Shah, S. H., Knasel, C. n., Cameron, E. G., Kapiloff, M. S., Goldberg, et al

2020; 15 (12): e0242884

- **Signalosome-Regulated SRF Phosphorylation Determining Myocyte Growth in Width versus Length as a Therapeutic Target for Heart Failure.** *Circulation*
  Li, J. n., Tan, Y. n., Passariello, C. L., Martinez, E. C., Kritzer, M. D., Li, X. n., Li, X. n., Li, Y. n., Yu, Q. n., Ohgi, K. n., Thakur, H. n., MacArthur, J. W., Ivey, et al
  2020
- **A Novel Recessive Mutation in SPEG Causes Early Onset Dilated Cardiomyopathy.** *PLoS genetics*
  Levitas, A. n., Muhammad, E. n., Zhang, Y. n., Perea Gil, I. n., Serrano, R. n., Diaz, N. n., Arafat, M. n., Gavidia, A. A., Kapiloff, M. S., Mercola, M. n., Etzion, Y. n., Parvari, R. n., Karakikes, et al
  2020; 16 (9): e1009000
- **AKAP6 orchestrates the nuclear envelope microtubule-organizing center by linking golgi and nucleus via AKAP9.** *eLife*
  Vergarajauregui, S., Becker, R., Steffen, U., Sharkova, M., Esser, T., Petzold, J., Billing, F., Kapiloff, M. S., Schett, G., Thievessen, I., Engel, F. B.
  2020; 9
- **mAKAP beta signalosomes - A nodal regulator of gene transcription associated with pathological cardiac remodeling** *CELLULAR SIGNALLING*
  Dodge-Kafka, K., Gildart, M., Tokarski, K., Kapiloff, M. S.
  2019; 63: 109357
- **Regulation of Neuronal Survival and Axon Growth by a Perinuclear cAMP Compartment** *JOURNAL OF NEUROSCIENCE*
  Boczek, T., Cameron, E. G., Yu, W., Xia, X., Shah, S. H., Chabeco, B., Galvao, J., Nahmou, M., Li, J., Thakur, H., Goldberg, J. L., Kapiloff, M. S.
  2019; 39 (28): 5466–80
- **Muscle A-kinase-anchoring protein-beta-bound calcineurin toggles active and repressive transcriptional complexes of myocyte enhancer factor 2D** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Li, J., Paris, S., Thakur, H., Kapiloff, M. S., Dodge-Kafka, K. L.
  2019; 294 (7): 2543–54
- **Bidirectional regulation of HDAC5 by mAKAP beta signalosomes in cardiac myocytes** *JOURNAL OF MOLECULAR AND CELLULAR CARDIOLOGY*
  Dodge-Kafka, K. L., Gildart, M., Li, J., Thakur, H., Kapiloff, M. S.
  2018; 118: 13–25
- **Intracellular compartmentation of cAMP promotes neuroprotection and regeneration of CNS neurons.** *Neural regeneration research*
  Cameron, E. G., Kapiloff, M. S.
  2017; 12 (2): 201-202