

# Stanford

---



## Calvin Kuo

Maureen Lyles D'Ambrogio Professor  
Medicine - Hematology

### Bio

---

#### ACADEMIC APPOINTMENTS

- Professor, Medicine - Hematology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Faculty Fellow, Stanford ChEM-H
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Co-lead, Cancer Biology Program, Stanford Cancer Center, (2012- present)
- Vice Chair, Department of Medicine, (2015- present)

#### HONORS AND AWARDS

- Maureen Lyles D'Ambrogio Professor of Medicine, Stanford University School of Medicine (2015)
- Fellow, AAAS (2015)
- Member, American Academy of Physicians (2016)
- Consulting Editor, JCI (2012)
- American Heart Association Innovative Science Award, AHA (2012)
- Research Chair, NIH Intestinal Stem Cell Consortium, NIH (2009)
- Transformative R01 Award, NIH (2009)
- Member, American Society for Clinical Investigation, American Society for Clinical Investigation (2007)
- Samantha Janower Research Chair, Brain Tumor Society (2005)
- Merck Faculty Development Award, Merck (2003)
- Kimmel Foundation Scholar in Translational Science, Kimmel Foundation (2002)
- Burroughs Wellcome Foundation New Investigator in Pharmacological Sciences, Burroughs Wellcome Foundation (2001)
- HHMI Physician-Scientist Fellowship, HHMI (1998)
- Summa cum laude, Harvard College (1987)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Scientific Advisory Board, AP Giannini Foundation (2008 - present)
- Advisory Board, American Heart Association Silicon Valley Chapter (2013 - present)

## **PROFESSIONAL EDUCATION**

- A.B., Harvard College , Biochemical Sciences (1987)
- M.D./Ph.D., Stanford University , Cancer Biology (1994)
- Internship/ Residency, Brigham and Women's Hospital , Internal Medicine (1997)
- Fellowship, Dana-Farber/Partners , Adult Oncology (2000)

## **COMMUNITY AND INTERNATIONAL WORK**

- American Heart Association Silicon Valley Chapter

## **LINKS**

- Kuo Lab website: <http://kuolab.stanford.edu>

## **Research & Scholarship**

---

### **CURRENT RESEARCH AND SCHOLARLY INTERESTS**

Organoid modeling of cancer cells and the tumor immune microenvironment.

We have successfully established primary 3D organoid cultures of diverse tissues and used them to achieve the first in vitro conversion of primary intestine, stomach and pancreas tissue to adenocarcinoma (Ootani et al, Nat Med 2009; Li et al, Nat Med 2014) amongst others. These organoid systems comprise an robust in vitro system which we are exploiting for the functional validation of putative oncogenic loci which are identified in whole-genome cancer surveys such as TCGA. In a new direction, we have developed organoid methods to preserve tumor cells along with a diversity of endogenous infiltrating immune cells (T, B, NK, macrophages) and demonstrated that such organoids are responsive to checkpoint inhibitor therapy (Neal et al, Cell 2018). Further, we have established large biobanks of organoids from clinical cancer biopsies with relevance to tumor modeling and predication of patient responses to therapeutics.

Organoids for regenerative medicine.

We are also interested in using organoids as a method to grow mini-organs that can be transplanted into recipients for regenerative medicine purposes. We are establishing proof-of-principle for human or mouse organoid transplantation, ultimately to effect phenotypic correction of diseases.

Intestinal stem/progenitor biology.

The complete regeneration of the epithelial lining of the intestine every 5-7 days renders the intestine a model system for studying stem cell behaviors. We are investigating the regulation of the intestinal stem cell (ISC) compartment by extracellular signals such as Wnts, using adenoviral and conditional knockout approaches. We have defined R-spondins as dominant regulators of the ISC niche with Wnts playing a more permissive role using lineage tracing, bioengineered Wnts and single cell RNA-seq approaches (Yan et al., Nature, 2017a; Janda et al, Nature 2017b). We have found that Bmi1+ ISC are strongly injury-inducible versus the homeostatic function of Lgr5+ ISC (c.f. Yan et al, PNAS 2012, Barry et al, Nature 2013) and have enteroendocrine characteristics (Yan et al., Stem Cell, 2017). Further, we have derived robust organoid methods for prolonged culture of and ex vivo expansion of primary intestine and other GI organs, with preservation of ISCs and recapitulation of the Wnt- and Notch-dependent ISC niche, even allowing peristalsis (Ootani et al, Nat Med 2009; Li et al Nat Med 2014).

Angiogenesis and the blood-brain barrier.

We are interested in determining functions of novel molecules regulating angiogenesis including receptors such as GPCRs, microRNAs and secreted molecules. We found that GPR124 is essential for developmental brain angiogenesis (Kuhnert et al, Science 2010) that GPR124 is critical for maintaining blood-brain barrier integrity during stroke and brain tumor growth (Chang et al, Nat Med 2017) and that the GPR124-associated protein RECK is a Wnt7 receptor (Vallon et al, Cell Reports, 2018). We have several active projects in stroke and blood-brain barrier (BBB) basic biology and therapeutic development. We have previously exploring the functions of the endothelial miRNA miR-126 in adults using conditional ko mice (Kuhnert et al, Development 2008) and have extensive interests in pharmacologic inhibition of novel targets for anti-angiogenic therapy of cancer and ocular disorders.

## Teaching

---

### COURSES

#### 2018-19

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)

#### 2017-18

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)

### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Ning Cheng, Yuan-Hung Lo, Michitaka Nakano, Antonio Santos, Amber Smith, Kanako Yuki

#### Postdoctoral Research Mentor

Ning Cheng, Kasper Karlsson, Yuan-Hung Lo, Michitaka Nakano, Ken Sutha

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Cardiovascular Medicine (Fellowship Program)
- Chemical and Systems Biology (Phd Program)
- Immunology (Phd Program)
- Medicine (Masters Program)

## Publications

---

### PUBLICATIONS

- **Organoid Modeling of the Tumor Immune Microenvironment.** *Cell*  
Neal, J. T., Li, X., Zhu, J., Giangarra, V., Grzeskowiak, C. L., Ju, J., Liu, I. H., Chiou, S., Salahudeen, A. A., Smith, A. R., Deutsch, B. C., Liao, L., Zemek, et al  
2018; 175 (7): 1972
- **Organoids reveal cancer dynamics** *NATURE*  
Kuo, C. J., Curtis, C.  
2018; 556 (7702): 441–42
- **Non-equivalence of Wnt and R-spondin ligands during Lgr5(+) intestinal stem-cell self-renewal** *NATURE*  
Yan, K. S., Janda, C. Y., Chang, J., Zheng, G. X., Larkin, K. A., Luca, V. C., Chia, L. A., Mah, A. T., Han, A., Terry, J. M., Ootani, A., Roelf, K., Lee, et al  
2017; 545 (7653): 238-?
- **Surrogate Wnt agonists that phenocopy canonical Wnt and beta-catenin signalling** *NATURE*  
Janda, C. Y., Dang, L. T., You, C., Chang, J., de Lau, W., Zhong, Z. A., Yan, K. S., Marecic, O., Siepe, D., Li, X., Moody, J. D., Williams, B. O., Clevers, et al  
2017; 545 (7653): 234-?
- **Gpr124 is essential for blood-brain barrier integrity in central nervous system disease** *NATURE MEDICINE*

- Chang, J., Mancuso, M. R., Maier, C., Liang, X., Yuki, K., Yang, L., Kwong, J. W., Wang, J., Rao, V., Vallon, M., Kosinski, C., Zhang, J. J., Mah, et al  
2017; 23 (4): 450-?
- **Expression of specific inflammasome gene modules stratifies older individuals into two extreme clinical and immunological states** *NATURE MEDICINE*  
Furman, D., Chang, J., Lartigue, L., Bolen, C. R., Haddad, F., Gaudilliere, B., Ganio, E. A., Fragiadakis, G. K., Spitzer, M. H., Douchet, I., Daburon, S., Moreau, J., Nolan, et al  
2017; 23 (2): 174-184
  - **Toward recreating colon cancer in human organoids.** *Nature medicine*  
Salahudeen, A. A., Kuo, C. J.  
2015; 21 (3): 215-216
  - **Ascl2 reinforces intestinal stem cell identity.** *Cell stem cell*  
Yan, K. S., Kuo, C. J.  
2015; 16 (2): 105-106
  - **Identification and specification of the mouse skeletal stem cell.** *Cell*  
Chan, C. K., Seo, E. Y., Chen, J. Y., Lo, D., McArdle, A., Sinha, R., Tevlin, R., Seita, J., Vincent-Tompkins, J., Wearda, T., Lu, W., Senarath-Yapa, K., Chung, et al  
2015; 160 (1-2): 285-298
  - **Through-skull fluorescence imaging of the brain in a new near-infrared window** *NATURE PHOTONICS*  
Hong, G., Diao, S., Chang, J., Antaris, A. L., Chen, C., Zhang, B., Zhao, S., Atochin, D. N., Huang, P. L., Andreasson, K. I., Kuo, C. J., Dai, H.  
2014; 8 (9): 723-730
  - **Oncogenic transformation of diverse gastrointestinal tissues in primary organoid culture** *NATURE MEDICINE*  
Li, X., Nadauld, L., Ootani, A., Corney, D. C., Pai, R. K., Gevaert, O., Cantrell, M. A., Rack, P. G., Neal, J. T., Chan, C. W., Yeung, T., Gong, X., Yuan, et al  
2014; 20 (7): 769-777
  - **Metastatic tumor evolution and organoid modeling implicate TGFBR2 as a cancer driver in diffuse gastric cancer.** *Genome biology*  
Nadauld, L. D., Garcia, S., Natsoulis, G., Bell, J. M., Miotke, L., Hopmans, E. S., Xu, H., Pai, R. K., Palm, C., Regan, J. F., Chen, H., Flaherty, P., Ootani, et al  
2014; 15 (8): 428-?
  - **Interfollicular Epidermal Stem Cells Self-Renew via Autocrine Wnt Signaling** *SCIENCE*  
Lim, X., Tan, S. H., Koh, W. L., Chau, R. M., Yan, K. S., Kuo, C. J., van Amerongen, R., Klein, A. M., Nusse, R.  
2013; 342 (6163): 1226-1230
  - **A liver Hif-2a-Irs2 pathway sensitizes hepatic insulin signaling and is modulated by Vegf inhibition.** *Nature medicine*  
Wei, K., Pieciewicz, S. M., McGinnis, L. M., Taniguchi, C. M., Wiegand, S. J., Anderson, K., Chan, C. W., Mulligan, K. X., Kuo, D., Yuan, J., Vallon, M., Morton, L. C., Lefai, et al  
2013; 19 (10): 1331-1337
  - **A liver Hif-2 alpha-Irs2 pathway sensitizes hepatic insulin signaling and is modulated by Vegf inhibition** *NATURE MEDICINE*  
Wei, K., Pieciewicz, S. M., McGinnis, L. M., Taniguchi, C. M., Wiegand, S. J., Anderson, K., Chan, C. W., Mulligan, K. X., Kuo, D., Yuan, J., Vallon, M., Morton, L. C., Lefai, et al  
2013; 19 (10): 1331-?
  - **Cross-talk between hypoxia and insulin signaling through Phd3 regulates hepatic glucose and lipid metabolism and ameliorates diabetes.** *Nature medicine*  
Taniguchi, C. M., Finger, E. C., Krieg, A. J., Wu, C., Diep, A. N., Lagory, E. L., Wei, K., McGinnis, L. M., Yuan, J., Kuo, C. J., Giaccia, A. J.  
2013; 19 (10): 1325-1330
  - **Restriction of intestinal stem cell expansion and the regenerative response by YAP** *NATURE*  
Barry, E. R., Morikawa, T., Butler, B. L., Shrestha, K., de la Rosa, R., Yan, K. S., Fuchs, C. S., Magness, S. T., Smits, R., Ogino, S., Kuo, C. J., Camargo, F. D.  
2013; 493 (7430): 106-?
  - **beta-Catenin-Driven Cancers Require a YAP1 Transcriptional Complex for Survival and Tumorigenesis** *CELL*  
Rosenbluh, J., Nijhawan, D., Cox, A. G., Li, X., Neal, J. T., Schafer, E. J., Zack, T. I., Wang, X., Tsherniak, A., Schinzel, A. C., Shao, D. D., Schumacher, S. E., Weir, et al  
2012; 151 (7): 1457-1473

- **The intestinal stem cell markers *Bmi1* and *Lgr5* identify two functionally distinct populations** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Yan, K. S., Chia, L. A., Li, X., Ootani, A., Su, J., Lee, J. Y., Su, N., Luo, Y., Heilshorn, S. C., Amieva, M. R., Sangiorgi, E., Capecchi, M. R., Kuo, et al  
2012; 109 (2): 466-471
- **Essential Regulation of CNS Angiogenesis by the Orphan G Protein-Coupled Receptor GPR124** *SCIENCE*  
Kuhnert, F., Mancuso, M. R., Shamloo, A., Wang, H., Choksi, V., Florek, M., Su, H., Fruttiger, M., Young, W. L., Heilshorn, S. C., Kuo, C. J.  
2010; 330 (6006): 985-989
- **Sustained in vitro intestinal epithelial culture within a Wnt-dependent stem cell niche.** *Nature medicine*  
Ootani, A., Li, X., Sangiorgi, E., Ho, Q. T., Ueno, H., Toda, S., Sugihara, H., Fujimoto, K., Weissman, I. L., Capecchi, M. R., Kuo, C. J.  
2009; 15 (6): 701-706
- **Receptor subtype discrimination using extensive shape complementary designed interfaces.** *Nature structural & molecular biology*  
Dang, L. T., Miao, Y., Ha, A., Yuki, K., Park, K., Janda, C. Y., Jude, K. M., Mohan, K., Ha, N., Vallon, M., Yuan, J., Vilches-Moure, J. G., Kuo, et al  
2019
- **Controlling Epithelial Polarity: A Human Enteroid Model for Host-Pathogen Interactions.** *Cell reports*  
Co, J. Y., Margalef-Catala, M., Li, X., Mah, A. T., Kuo, C. J., Monack, D. M., Amieva, M. R.  
2019; 26 (9): 2509
- **Introduction to Themed Series on Intestinal Stem Cells and the NIDDK Intestinal Stem Cell Consortium.** *American journal of physiology. Gastrointestinal and liver physiology*  
Wang, T. C., Martin, M. G., Kuo, C. J., Klein, O. D., Niland, J. C.  
2018
- **Reserve Stem Cells in Intestinal Homeostasis and Injury** *GASTROENTEROLOGY*  
Bankaitis, E. D., Ha, A., Kuo, C. J., Magness, S. T.  
2018; 155 (5): 1348-61
- **A RECK-WNT7 Receptor-Ligand Interaction Enables Isoform-Specific Regulation of Wnt Bioavailability.** *Cell reports*  
Vallon, M., Yuki, K., Nguyen, T. D., Chang, J., Yuan, J., Siepe, D., Miao, Y., Essler, M., Noda, M., Garcia, K. C., Kuo, C. J.  
2018; 25 (2): 339
- **The Intestinal Stem Cell Niche: Homeostasis and Adaptations.** *Trends in cell biology*  
Santos, A. J., Lo, Y., Mah, A. T., Kuo, C. J.  
2018
- **STAG2 deficiency induces interferon responses via cGAS-STING pathway and restricts virus infection.** *Nature communications*  
Ding, S., Diep, J., Feng, N., Ren, L., Li, B., Ooi, Y. S., Wang, X., Brulois, K. F., Yasukawa, L. L., Li, X., Kuo, C. J., Solomon, D. A., Carette, et al  
2018; 9 (1): 1485
- **Bone marrow niche trafficking of miR-126 controls the self-renewal of leukemia stem cells in chronic myelogenous leukemia** *NATURE MEDICINE*  
Zhang, B., Le Xuan Truong Nguyen, Li, L., Zhao, D., Kumar, B., Wu, H., Lin, A., Pellicano, F., Hopcroft, L., Su, Y., Copland, M., Holyoake, T. L., Kuo, C. J., et al  
2018; 24 (4): 450-+
- **Organoids lead the cancer attack** *NATURE MEDICINE*  
Smith, A. R., Kuo, C. J.  
2017; 23 (12): 1399-1400
- **Expanding tumor chemical-genetic interaction map using next-generation cancer models**  
Tseng, Y., Hong, A., Gill, S., Keskula, P., Raghavan, S., Cheah, J., Tsherniak, A., Vazquez, F., Alkhairy, S., Peng, A., Sayeed, A., Deasy, R., Ronning, et al  
AMER ASSOC CANCER RESEARCH.2017
- **Rapid characterization of candidate loss of function genes in primary organoid culture.**  
Hart, D., Salahudeen, A., de la O, S., Han, K., Morgens, D., Bassik, M., Kuo, C.  
AMER SOC CLINICAL ONCOLOGY.2017
- **Linked read sequencing resolves complex genomic rearrangements in gastric cancer metastases.** *Genome medicine*

Greer, S. U., Nadauld, L. D., Lau, B. T., Chen, J., Wood-Bouwens, C., Ford, J. M., Kuo, C. J., Ji, H. P.

2017; 9 (1): 57

- **Intestinal Enteroendocrine Lineage Cells Possess Homeostatic and Injury-Inducible Stem Cell Activity** *Cell Stem Cell*  
Yan, K., Gevaert, O., Zheng, G., Anchang, B., Probert, C., et al  
2017; 21 (1): 78 - 90.e6
- **Intestinal Enteroendocrine Lineage Cells Possess Homeostatic and Injury-Inducible Stem Cell Activity.** *Cell stem cell*  
Yan, K. S., Gevaert, O., Zheng, G. X., Anchang, B., Probert, C. S., Larkin, K. A., Davies, P. S., Cheng, Z. F., Kaddis, J. S., Han, A., Roelf, K., Calderon, R. I., Cynn, et al  
2017; 21 (1): 78–90.e6
- **Wnt pathway regulation of intestinal stem cells.** *journal of physiology*  
Mah, A. T., Yan, K. S., Kuo, C. J.  
2016; 594 (17): 4837-4847
- **Transforming Big Data into Cancer-Relevant Insight: An Initial, Multi-Tier Approach to Assess Reproducibility and Relevance The Cancer Target Discovery and Development Network** *MOLECULAR CANCER RESEARCH*  
Clemons, P. A., Shamji, A., Hon, C., Wagner, B. K., Schreiber, S. L., Krasnitz, A., Sordella, R., Sander, C., Lowe, S. W., Powers, S., Smith, K., Aburi, M., Lavarone, et al  
2016; 14 (8): 675-682
- **Kruppel-like Factor 4 Modulates Development of BMI1(+) Intestinal Stem Cell-Derived Lineage Following gamma-Radiation-Induced Gut Injury in Mice** *STEM CELL REPORTS*  
Kuruvilla, J. G., Kim, C., Ghaleb, A. M., Bialkowska, A. B., Kuo, C. J., Yang, V. W.  
2016; 6 (6): 815-824
- **Relief of hypoxia by angiogenesis promotes neural stem cell differentiation by targeting glycolysis** *EMBO JOURNAL*  
Lange, C., Garcia, M. T., Decimo, I., Bifari, F., Eelen, G., Quaegebeur, A., Boon, R., Zhao, H., Boeckx, B., Chang, J., Wu, C., le Noble, F., Lambrechts, et al  
2016; 35 (9): 924-941
- **The Wnt7's Tale: A story of an orphan who finds her tie to a famous family** *CANCER SCIENCE*  
Noda, M., Vallon, M., Kuo, C. J.  
2016; 107 (5): 576-582
- **Home Sweet Home: a FoxI1(+) Mesenchymal Niche for Intestinal Stem Cells** *CELLULAR AND MOLECULAR GASTROENTEROLOGY AND HEPATOLOGY*  
Mah, A. T., Kuo, C. J.  
2016; 2 (2): 116–17
- **Patient-Derived Organoids as an In Vitro Model of Neuroendocrine Tumors**  
Liu, I. H., Neal, J. T., Zemek, A. J., Kunz, P. L., Kuo, C. J.  
LIPPINCOTT WILLIAMS & WILKINS.2016: 467
- **An Air-Liquid Interface Culture System for 3D Organoid Culture of Diverse Primary Gastrointestinal Tissues.** *Methods in molecular biology (Clifton, N.J.)*  
Li, X., Ootani, A., Kuo, C.  
2016; 1422: 33-40
- **Oligodendrocyte precursors migrate along vasculature in the developing nervous system.** *Science (New York, N.Y.)*  
Tsai, H. H., Niu, J., Munji, R., Davalos, D., Chang, J., Zhang, H., Tien, A. C., Kuo, C. J., Chan, J. R., Daneman, R., Fancy, S. P.  
2016; 351 (6271): 379–84
- **Organoids as Models for Neoplastic Transformation** *ANNUAL REVIEW OF PATHOLOGY: MECHANISMS OF DISEASE, VOL 11*  
Neal, J. T., Kuo, C. J.  
2016; 11: 199-220
- **Novel TIA biomarkers identified by mass spectrometry-based proteomics** *INTERNATIONAL JOURNAL OF STROKE*  
George, P. M., Mlynash, M., Adams, C. M., Kuo, C. J., Albers, G. W., Olivot, J.  
2015; 10 (8): 1204-1211
- **Fluorescence Imaging In Vivo at Wavelengths beyond 1500 nm** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*  
Diao, S., Blackburn, J. L., Hong, G., Antaris, A. L., Chang, J., Wu, J. Z., Zhang, B., Cheng, K., Kuo, C. J., Dai, H.

2015; 54 (49): 14758-14762

- **Personalizing pancreatic cancer organoids with hPSCs** *NATURE MEDICINE*  
Zhang, H., Kuo, C. J.  
2015; 21 (11): 1249-51
- **Chemodetection and Destruction of Host Urea Allows Helicobacter pylori to Locate the Epithelium** *CELL HOST & MICROBE*  
Huang, J. Y., Sweeney, E. G., Sigal, M., Zhang, H. C., Remington, S. J., Cantrell, M. A., Kuo, C. J., Guillemin, K., Amieva, M. R.  
2015; 18 (2): 147-156
- **Engineering Gastrointestinal Cancer in Organoid Cultures**  
Kuo, C.  
SPRINGER.2015: S1
- **Oligodendrocyte precursors migrate along vasculature in the developing nervous system** *SCIENCE*  
Tsai, H., Niu, J., Munji, R., Davalos, D., Chang, J., Zhang, H., Tien, A., Kuo, C. J., Chan, J. R., Daneman, R., Fancy, S. P.  
2015; 351 (6271): 379-384
- **Organoid modeling for cancer precision medicine.** *Genome medicine*  
Cantrell, M. A., Kuo, C. J.  
2015; 7 (1): 32-?
- **Protein-engineered scaffolds for in vitro 3D culture of primary adult intestinal organoids** *BIOMATERIALS SCIENCE*  
Dimarco, R. L., Dewi, R. E., Bernal, G., Kuoc, C., Heilshorn, S. C.  
2015; 3 (10): 1376-1385
- **3-Dimensional air-liquid interface organoid culture of primary human tumor biopsies**  
Neal, J. T., Cantrell, M., Rack, P., Kuo, C. J.  
AMER ASSOC CANCER RESEARCH.2014
- **Developmental and pathological angiogenesis in the central nervous system.** *Cellular and molecular life sciences*  
Vallon, M., Chang, J., Zhang, H., Kuo, C. J.  
2014; 71 (18): 3489-3506
- **Engineering of three-dimensional microenvironments to promote contractile behavior in primary intestinal organoids.** *Integrative biology*  
Dimarco, R. L., Su, J., Yan, K. S., Dewi, R., Kuo, C. J., Heilshorn, S. C.  
2014; 6 (2): 127-142
- **Partial Proteasome Inhibitors Induce Hair Follicle Growth by Stabilizing  $\beta$ -Catenin.** *Stem cells*  
Yucel, G., Van Arnam, J., Means, P. C., Huntzicker, E., Altindag, B., Lara, M. F., Yuan, J., Kuo, C., Oro, A. E.  
2014; 32 (1): 85-92
- **Oncogenic transformation of diverse gastrointestinal tissues in primary organoid culture.** *Nature medicine*  
Li, X., Nadauld, L., Ootani, A., Corney, D. C., Pai, R. K., Gevaert, O., Cantrell, M. A., Rack, P. G., Neal, J. T., Chan, C. W., Yeung, T., Gong, X., Yuan, et al  
2014
- **Metastatic tumor evolution and organoid modeling implicate TGFBR2 as a cancer driver in diffuse gastric cancer** *GENOME BIOLOGY*  
Nadauld, L. D., Garcia, S., Natsoulis, G., Bell, J. M., Miotke, L., Hopmans, E. S., Xu, H., Pai, R. K., Palm, C., Regan, J. F., Chen, H., Flaherty, P., Ootani, et al  
2014; 15 (8)
- **A multicenter study to standardize reporting and analyses of fluorescence-activated cell-sorted murine intestinal epithelial cells** *AMERICAN JOURNAL OF PHYSIOLOGY-GASTROINTESTINAL AND LIVER PHYSIOLOGY*  
Magness, S. T., Puthoff, B. J., Crissey, M. A., Dunn, J., Henning, S. J., Houchen, C., Kaddis, J. S., Kuo, C. J., Li, L., Lynch, J., Martin, M. G., May, R., Niland, et al  
2013; 305 (8): G542-G551
- **A multicenter study to standardize reporting and analyses of fluorescence-activated cell-sorted murine intestinal epithelial cells** *AMERICAN JOURNAL OF PHYSIOLOGY-GASTROINTESTINAL AND LIVER PHYSIOLOGY*  
Magness, S. T., Puthoff, B. J., Crissey, M. A., Dunn, J., Henning, S. J., Houchen, C., Kaddis, J. S., Kuo, C. J., Li, L., Lynch, J., Martin, M. G., May, R., Niland, et al  
2013; 305 (8): G542-G551
- **Colorectal cancer stem cells and intestinal stem cells: The two faces of janus** *Annual Meeting of the Society-of-Academic-and-Research-Surgery*

- Yeung, T. M., Kuo, C. J., Bodmer, W. F.  
WILEY-BLACKWELL.2012: 1-1
- **The HIF Signaling Pathway in Osteoblasts Directly Modulates Erythropoiesis through the Production of EPO** *CELL*  
Rankin, E. B., Wu, C., Khatri, R., Wilson, T. L., Andersen, R., Araldi, E., Rankin, A. L., Yuan, J., Kuo, C. J., Schipani, E., Giaccia, A. J.  
2012; 149 (1): 63-74
  - **PDGF-B exploits stromal EPO** *NATURE MEDICINE*  
McGinnis, L. M., Kuo, C. J.  
2012; 18 (1): 22-24
  - **Reversible cell-cycle entry in adult kidney podocytes through regulated control of telomerase and Wnt signaling** *NATURE MEDICINE*  
Shkreli, M., Sarin, K. Y., Pech, M. F., Papeta, N., Chang, W., Brockman, S. A., Cheung, P., Lee, E., Kuhnert, F., Olson, J. L., Kuo, C. J., Gharavi, A. G., D'Agati, et al  
2012; 18 (1): 111-119
  - **Reversible cell-cycle entry in adult kidney podocytes through regulated control of telomerase and Wnt signaling.** *Nature medicine*  
Shkreli, M., Sarin, K. Y., Pech, M. F., Papeta, N., Chang, W., Brockman, S. A., Cheung, P., Lee, E., Kuhnert, F., Olson, J. L., Kuo, C. J., Gharavi, A. G., D'Agati, et al  
2012; 18 (1): 111-119
  - **A Novel Method of Local Gene Delivery and Noninvasive Imaging of Transgene Expression in the Mouse Endometrium** *44th Annual Meeting of the Society-for-the-Study-of-Reproduction (SSR)*  
Fan, X., Dhal, S., Wu, J. C., Kuo, C. J., Druzin, M. L., Nayak, N. R.  
SOC STUDY REPRODUCTION.2011
  - **Development and Characterization of a Novel Long-Term Human Endometrial Slice Culture System**  
Fan, X., Ootani, A., Dhal, S., Vo, K. C., Giudice, L. C., Druzin, M. L., Kuo, C. J., Nayak, N. R.  
SAGE PUBLICATIONS INC.2011: 225A-226A
  - **Targeting Endothelium-Pericyte Cross Talk by Inhibiting VEGF Receptor Signaling Attenuates Kidney Microvascular Rarefaction and Fibrosis** *AMERICAN JOURNAL OF PATHOLOGY*  
Lin, S., Chang, F., Schrimpf, C., Chen, Y., Wu, C., Wu, V., Chiang, W., Kuhnert, F., Kuo, C. J., Chen, Y., Wu, K., Tsai, T., Duffield, et al  
2011; 178 (2): 911-923
  - **Novel Receptor-Mediated Endothelial Cell Chemotaxis**  
Shamloo, A., Kuhnert, F., Choksi, V., Kuo, C., Heilshorn, S.  
CELL PRESS.2010: 497A
  - **Signaling in Normal and Pathological Angiogenesis** *SIGNAL TRANSDUCTION: PATHWAYS, MECHANISMS AND DISEASES*  
Mancuso, M. R., Kuo, C. J., Sitaramayya, A.  
2010: 159-80
  - **G Protein-Coupled Receptor 124 (GPR124) Gene Polymorphisms and Risk of Brain Arteriovenous Malformations** *American-Association-International-Stroke Conference 2009*  
Weinsheimer, S., Pawlikowska, L., Brettman, A., Mancuso, M. R., Kuhnert, F., Kuo, C., Sidney, S., Young, W. L., Kim, H.  
LIPPINCOTT WILLIAMS & WILKINS.2009: E135-E135
  - **Endochondral ossification is required for haematopoietic stem-cell niche formation** *NATURE*  
Chan, C. K., Chen, C., Luppen, C. A., Kim, J., DeBoer, A. T., Wei, K., Helms, J. A., Kuo, C. J., Kraft, D. L., Weissman, I. L.  
2009; 457 (7228): 490-U9
  - **Attribution of vascular phenotypes of the murine Eglf7 locus to the microRNA miR-126** *DEVELOPMENT*  
Kuhnert, F., Mancuso, M. R., Hampton, J., Stankunas, K., Asano, T., Chen, C., Kuo, C. J.  
2008; 135 (24): 3989-3993
  - **Use of R-spondin1, An Intestinotrophic Mitogen, in the Treatment of Murine Graft-Versus-Host Disease** *50th Annual Meeting of the American-Society-of-Hematology/ASH/ASCO Joint Symposium*  
Zambricki, E. A., Ootani, A., Mancuso, M. R., Zeiser, R., Kuo, C. J., Negrin, R. S.  
AMER SOC HEMATOLOGY.2008: 1206-



- **Systemic VEGF Inhibition Induces Hepatic EPO Production and Erythrocytosis Via HIF-2a-Dependent and -Independent Mechanisms** *50th Annual Meeting of the American-Society-of-Hematology/ASH/ASCO Joint Symposium*  
Wei, K., Logan, A. C., Wakelee, H., Simon, M. C., Kuo, C. J.  
AMER SOC HEMATOLOGY.2008: 183-84
- **Soluble receptor-mediated selective inhibition of VEGFR and PDGFR beta signaling during physiologic and tumor angiogenesis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kuhnert, F., Tam, B. Y., Sennino, B., Gray, J. T., Yuan, J., Jocsnon, A., Nayak, N. R., Mulligan, R. C., McDonald, D. M., Kuo, C. J.  
2008; 105 (29): 10185-10190
- **Recombinant adenovirus as a methodology for exploration of physiologic functions of growth factor pathways** *JOURNAL OF MOLECULAR MEDICINE-JMM*  
Wei, K., Kuhnert, F., Kuo, C. J.  
2008; 86 (2): 161-169
- **Augmented Wnt signaling in a mammalian model of accelerated aging** *SCIENCE*  
Liu, H., Fergusson, M. M., Castilho, R. M., Liu, J., Cao, L., Chen, J., Malide, D., Rovira, I. I., Schimel, D., Kuo, C. J., Gutkind, J. S., Hwang, P. M., Finkel, et al  
2007; 317 (5839): 803-806
- **Increased Wnt signaling during aging alters muscle stem cell fate and increases fibrosis** *SCIENCE*  
Brack, A. S., Conboy, M. J., Roy, S., Lee, M., Kuo, C. J., Keller, C., Rando, T. A.  
2007; 317 (5839): 807-810
- **VEGF modulates erythropoiesis through regulation of adult hepatic erythropoietin synthesis** *NATURE MEDICINE*  
Tam, B. Y., Wei, K., Rudge, J. S., Hoffman, J., Holash, J., Park, S., Yuan, J., Hefner, C., Chartier, C., Lee, J., Jiang, S., Niyak, N. R., Kuypers, et al  
2006; 12 (7): 793-800
- **Apc tumor suppressor gene is the "zonation-keeper" of mouse liver** *DEVELOPMENTAL CELL*  
Benhamouche, S., Decaens, T., Godard, C., Chambrey, R., Rickman, D. S., Moinard, C., Vasseur-Cognet, M., Kuo, C. J., Kahn, A., Perret, C., Colnot, S.  
2006; 10 (6): 759-770
- **VEGF-dependent plasticity of fenestrated capillaries in the normal adult microvasculature** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Kamba, T., Tam, B. Y., Hashizume, H., Haskell, A., Sennino, B., Mancuso, M. R., Norberg, S. M., O'Brien, S. M., Davis, R. B., Gowen, L. C., Anderson, K. D., Thurston, G., Joho, et al  
2006; 290 (2): H560-H576
- **Cellular changes in normal blood capillaries undergoing regression after inhibition of VEGF signaling** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*  
Baffert, F., Le, T., Sennino, B., Thurston, G., Kuo, C. J., Hu-Lowe, D., McDonald, D. M.  
2006; 290 (2): H547-H559
- **Cotargeting tumor and tumor endothelium effectively inhibits the growth of human prostate cancer in adenovirus-mediated antiangiogenesis and oncolysis combination therapy** *CANCER GENE THERAPY*  
Jin, F. S., Xie, Z. H., Kuo, C. J., Chung, L. W., Hsieh, C. L.  
2005; 12 (3): 257-267
- **Angiopoietin-1 expression in the primate endometrium: Potential role in spiral artery growth.** *52nd Annual Meeting of the Society-for-Gynecologic-Investigation*  
Nayak, N. R., Brenner, R. M., Mah, K., Kuo, C. J., Giudice, L. C.  
ELSEVIER SCIENCE INC.2005: 325A-325A
- **The cardiovascular regulator apelin is an angiogenic factor in vivo**  
Kundu, R. K., Eichhorn, J., Chen, M., Ho, Y. D., Ashley, E., Varner, J., Kuo, C., Quertermous, T.  
LIPPINCOTT WILLIAMS & WILKINS.2004: 173
- **Adenoviral gene transfer with soluble VEGF receptors impairs angiogenesis and arteriogenesis in a murine model of hindlimb ischaemia** *ESC Congress 2004*  
Jacobi, J., Tam, B. Y., Cooke, J. P., Kuo, C. J.  
OXFORD UNIV PRESS.2004: 253-253

- **Essential requirement for Wnt signaling in proliferation of adult small intestine and colon revealed by adenoviral expression of Dickkopf-1** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kuhnert, F., DAVIS, C. R., Wang, H. T., Chu, P., Lee, M., Yuan, J., Nusse, R., Kuo, C. J.  
2004; 101 (1): 266-271
- **Comparative evaluation of the antitumor activity of antiangiogenic proteins delivered by gene transfer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kuo, C. J., Farnebo, F., Yu, E. Y., Christofferson, R., Swearingen, R. A., Carter, R., von Recum, H. A., Yuan, J., Kamihara, J., Flynn, E., D'Amato, R., Folkman, J., Mulligan, et al  
2001; 98 (8): 4605-4610
- **Antiangiogenic gene therapy using soluble VEGF receptors.**  
Kuo, C. J., Farnebo, F. A., Christofferson, R., Yu, E., Folkman, J., Mulligan, R.  
AMER SOC HEMATOLOGY.2000: 211A-211A
- **RAPAMYCIN SELECTIVELY INHIBITS INTERLEUKIN-2 ACTIVATION OF P70 S6 KINASE** *NATURE*  
Kuo, C. J., Chung, J. K., Fiorentino, D. F., Flanagan, W. M., Blenis, J., Crabtree, G. R.  
1992; 358 (6381): 70-73
- **A TRANSCRIPTIONAL HIERARCHY INVOLVED IN MAMMALIAN CELL-TYPE SPECIFICATION** *NATURE*  
Kuo, C. J., Conley, P. B., Chen, L., Sladek, F. M., Darnell, J. E., Crabtree, G. R.  
1992; 355 (6359): 457-461