

Stanford



Yuan-Hung Lo

Postdoctoral Research Fellow, Hematology

Bio

BIO

I am currently working on several projects to understand the control of gastrointestinal and cancer stem cell biology, especially how critical intrinsic genetic mutations and extrinsic extracellular components within the microenvironment influence cell behaviors. Stem cells of the gastrointestinal tract give rise to the surface lining of the epithelium, and must continuously produce new cells to replace those shed into the lumen throughout the lifespan. When mutations accumulate in these stem cells, they can grow uncontrollably into benign polyps or malignant tumors. In Dr. Calvin Kuo's laboratory, I have used transgenic mice and primary human organoids as the models. Human organoids provide a robust primary culture system to recapitulate 3D structure and multilineage differentiation, which represents an underutilized method for the study of stem cell and cancer biology (Lo et al, Nature Cancer 2020). I have focused my efforts on establishing next generation CRISPR/Cas9 genome editing tools in primary human organoids, and applying this powerful system to gain insight into how different signaling pathways can contribute to gastrointestinal stem cell activity and tumorigenesis (Lo et al, Cancer Discovery 2021).

HONORS AND AWARDS

- The NIH Pathway to Independence Award (K99/R00), National Institutes of Health (NIH) / National Cancer Institute (NCI) (2021-2026)
- SCI Fellowship Award, Stanford Cancer Institute (SCI) (2021-2022)
- AACR-AbbVie Scholar-in-Training Award, American Association for Cancer Research (2021)
- The NCI Predoctoral to Postdoctoral Fellow Transition Award (K00), National Institutes of Health (NIH) / National Cancer Institute (NCI) (2017-2021)
- The Claude W. Smith Fellowship Award, Baylor College of Medicine (2017)
- The NCI Predoctoral to Postdoctoral Fellow Transition Award (F99), National Institutes of Health (NIH) / National Cancer Institute (NCI) (2016-2017)
- The Dean's Award of Excellence, Baylor College of Medicine (2016)
- Professor John J. Trentin Scholarship Award, Baylor College of Medicine (2015)
- The Claude W. Smith Fellowship Award, Baylor College of Medicine (2015)
- American Gastroenterological Association Student Abstract Prize, American Gastroenterological Association (2014)
- Robert and Emma Lou Cardell Foundation Fellowship, University of Cincinnati (2013)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Baylor College of Medicine , Cancer and Stem Cell Biology (2017)
- Master of Science, National Tsing Hua University, Taiwan , Molecular and Cellular Biology (2008)
- Bachelor of Science, China Medical University, Taiwan , Biological Science and Technology (2006)

Publications

PUBLICATIONS

- **A CRISPR/Cas9-engineered ARID1A-deficient human gastric cancer organoid model reveals essential and non-essential modes of oncogenic transformation.** *Cancer discovery*
Lo, Y. H., Kolahi, K. S., Du, Y. n., Chang, C. Y., Krokhotin, A. n., Nair, A. n., Sobba, W. D., Karlsson, K. n., Jones, S. J., Longacre, T. A., Mah, A. T., Tercan, B. n., Sockell, et al
2021
- **Applications of organoids for cancer biology and precision medicine.** *Nature Cancer*
Lo, Y., Karlsson, K., Kuo, C. J.
2020; 1: 761–773
- **CRISPR screens in cancer spheroids identify 3D growth-specific vulnerabilities.** *Nature*
Han, K. n., Pierce, S. E., Li, A. n., Spees, K. n., Anderson, G. R., Seoane, J. A., Lo, Y. H., Dubreuil, M. n., Olivias, M. n., Kamber, R. A., Wainberg, M. n., Kostyrko, K. n., Kelly, et al
2020; 580 (7801): 136–41
- **SPDEF Induces Quiescence of Colorectal Cancer Cells by Changing the Transcriptional Targets of β -catenin.** *Gastroenterology*
Lo, Y., Noah, T. K., Chen, M., Zou, W., Borrás, E., Vilar, E., Shroyer, N. F.
2017
- **Transcriptional Regulation by ATOH1 and its Target SPDEF in the Intestine.** *Cellular and molecular gastroenterology and hepatology*
Lo, Y., Chung, E., Li, Z., Wan, Y., Mahe, M. M., Chen, M., Noah, T. K., Bell, K. N., Yalamanchili, H. K., Klisch, T. J., Liu, Z., Park, J., Shroyer, et al
2017; 3 (1): 51-71
- **Interleukin-22 promotes intestinal-stem-cell-mediated epithelial regeneration** *NATURE*
Lindemans, C. A., Calafiore, M., Mertelmann, A. M., O'Connor, M. H., Dudakov, J. A., Jenq, R. R., Velardi, E., Young, L. F., Smith, O. M., Lawrence, G., Ivanov, J. A., Fu, Y., Takashima, et al
2015; 528 (7583): 560-?
- **SPDEF Functions as a Colorectal Tumor Suppressor by Inhibiting beta-Catenin Activity** *GASTROENTEROLOGY*
Noah, T. K., Lo, Y., Price, A., Chen, G., King, E., Washington, M., Aronow, B. J., Shroyer, N. F.
2013; 144 (5): 1012-?
- **T cell-derived interferon- γ programs stem cell death in immune-mediated intestinal damage.** *Science immunology*
Takashima, S. n., Martin, M. L., Jansen, S. A., Fu, Y. n., Bos, J. n., Chandra, D. n., O'Connor, M. H., Mertelmann, A. M., Vinci, P. n., Kuttiyara, J. n., Devlin, S. M., Middendorp, S. n., Calafiore, et al
2019; 4 (42)
- **Growth Factor Independent 1 is a tumor suppressor gene in colorectal cancer.** *Molecular cancer research : MCR*
Chen, M. S., Lo, Y. H., Chen, X. n., Williams, C. n., Donnelly, J. n., Criss, Z. n., Patel, S. n., Butkus, J. n., Dubrulle, J. n., Finegold, M. n., Shroyer, N. n.
2019
- **The Intestinal Stem Cell Niche: Homeostasis and Adaptations.** *Trends in cell biology*
Santos, A. J., Lo, Y., Mah, A. T., Kuo, C. J.
2018
- **Epithelial WNT Ligands Are Essential Drivers of Intestinal Stem Cell Activation.** *Cell reports*
Zou, W. Y., Blutt, S. E., Zeng, X. L., Chen, M. S., Lo, Y. H., Castillo-Azofeifa, D. n., Klein, O. D., Shroyer, N. F., Donowitz, M. n., Estes, M. K.
2018; 22 (4): 1003–15
- **SOX4 Promotes ATOH1-independent Intestinal Secretory Differentiation Toward Tuft and Enteroendocrine Fates.** *Gastroenterology*
Gracz, A. D., Samsa, L. A., Fordham, M. J., Trotier, D. C., Zwarycz, B. n., Lo, Y. H., Bao, K. n., Starmer, J. n., Raab, J. R., Shroyer, N. F., Reinhardt, R. L., Magness, S. T.
2018
- **The ErbB3 receptor tyrosine kinase negatively regulates Paneth cells by PI3K-dependent suppression of Atoh1** *CELL DEATH AND DIFFERENTIATION*
Almohazey, D., Lo, Y., Vossler, C. V., Simmons, A. J., Hsieh, J. J., Bucar, E. B., Schumacher, M. A., Hamilton, K. E., Lau, K. S., Shroyer, N. F., Frey, M. R.

2017; 24 (5): 855-865

- **Activated STAT5 confers resistance to intestinal injury by increasing intestinal stem cell proliferation and regeneration.** *Stem cell reports*
Gilbert, S., Nivarthi, H., Mayhew, C. N., Lo, Y., Noah, T. K., Vallance, J., Rüllicke, T., Müller, M., Jegga, A. G., Tang, W., Zhang, D., Helmrath, M., Shroyer, et al
2015; 4 (2): 209-225
- **Biology of intestinal epithelial stem cells** *Intestinal Tumorigenesis*
Bell, K., Lo, Y., Shroyer, N.
Springer.2015: 55–99
- **The Ron receptor tyrosine kinase activates c-Abl to promote cell proliferation through tyrosine phosphorylation of PCNA in breast cancer** *ONCOGENE*
Zhao, H., Chen, M., Lo, Y., Waltz, S. E., Wang, J., Ho, P., VASILIAUSKAS, J., Plattner, R., Wang, Y., Wang, S.
2014; 33 (11): 1429-1437
- **Phosphorylation at tyrosine 114 of Proliferating Cell Nuclear Antigen (PCNA) is required for adipogenesis in response to high fat diet** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
Lo, Y., Ho, P., Chen, M., Hugo, E., Ben-Jonathan, N., Wang, S.
2013; 430 (1): 43-48
- **Epidermal Growth Factor Receptor Protects Proliferating Cell Nuclear Antigen from Cullin 4A Protein-mediated Proteolysis** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Lo, Y., Ho, P., Wang, S.
2012; 287 (32): 27148-27157
- **Interaction of Proliferation Cell Nuclear Antigen (PCNA) with c-Abl in Cell Proliferation and Response to DNA Damages in Breast Cancer** *PLOS ONE*
Zhao, H., Ho, P., Lo, Y., Espejo, A., Bedford, M. T., Hung, M., Wang, S.
2012; 7 (1)
- **Overcoming Resistance to Fulvestrant (ICI182,780) by Downregulating the c-ABL Proto-Oncogene in Breast Cancer** *MOLECULAR CARCINOGENESIS*
Zhao, H., Lo, Y., Yu, L., Wang, S.
2011; 50 (5): 383-389
- **Inhibition of c-ABL Sensitizes Breast Cancer Cells to the Dual ErbB Receptor Tyrosine Kinase Inhibitor Lapatinib (GW572016)** *ANTICANCER RESEARCH*
Lo, Y., Ho, P., Zhao, H., Wang, S.
2011; 31 (3): 789-795
- **Targeting Tyrosine Phosphorylation of PCNA Inhibits Prostate Cancer Growth** *MOLECULAR CANCER THERAPEUTICS*
Zhao, H., Lo, Y., Ma, L., Waltz, S. E., Gray, J. K., Hung, M., Wang, S.
2011; 10 (1): 29-36