

Stanford



Lay Teng Ang

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CONTACT INFORMATION

- **Laboratory Coordinator**

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Bio

BIO

As a stem cell biologist, my overall goal is to understand the mechanisms through which stem cells differentiate into progressively-specialized cell-types and to harness this knowledge to artificially generate pure populations of desired cell-types from stem cells. My work over the past 10 years has centered on pluripotent stem cells (PSCs, which include embryonic and pluripotent stem cells), which have the remarkable ability to generate any of the hundreds of diverse cell-types in the body. However, it has been notoriously difficult to guide PSCs to differentiate into a pure population of a given cell-type. Current differentiation strategies typically generate heterogeneous cell populations unsuitable for basic research or clinical applications. To address this challenge, I mapped the cascade of branching lineage choices through which PSCs differentiate into a variety of endodermal and mesodermal cell-types. I then developed effective methods to differentiate PSCs into specific lineages by providing the extracellular signal(s) that specify a given lineage while inhibiting the signals that induce the alternate fate(s), enabling the generation of highly-pure human heart, bone (Loh & Chen et al., 2016; Cell) and liver (Loh & Ang et al., 2014; Cell Stem Cell) from PSCs. In particular, I have focused on generating pure populations of liver progenitors from PSCs; these PSC-derived human liver progenitors regenerated human liver tissue, and improved the survival of mouse models of liver failure (Ang et al., 2018; Cell Reports). My goal is to complete the preclinical development of PSC-derived liver progenitors as a potential cellular replacement therapy for liver failure. This project will be facilitated by my experience with PSC differentiation, assays of liver cell identity and function, and mouse models of liver failure.

I earned my Ph.D. jointly from the University of Cambridge and A*STAR and was subsequently appointed as a Research Fellow, and later, a Senior Research Fellow, at the Genome Institute of Singapore. At Singapore, I was an independent group leader and received extramural funding support as PI or co-PI on three government grants. In April 2018, I moved my laboratory to Stanford University as a Siebel Investigator and Instructor at the Stanford Institute for Stem Cell Biology & Regenerative Medicine. My laboratory is supported by the Siebel Investigatorship and two grants from the California Institute for Regenerative Medicine.

ACADEMIC APPOINTMENTS

- Instructor, Institute for Stem Cell Biology and Regenerative Medicine

Publications

PUBLICATIONS

- **A Roadmap for Human Liver Differentiation from Pluripotent Stem Cells** *CELL REPORTS*

Ang, L., Tan, A., Autio, M. I., Goh, S., Choo, S., Lee, K., Tan, J., Pan, B., Lee, J., Lum, J., Lim, C., Yeo, I., Wong, et al
2018; 22 (8): 2190–2205

● **Isolation and 3D expansion of multipotent Sox9(+) mouse lung progenitors** *NATURE METHODS*

Nichane, M., Javed, A., Sivakamasundari, V., Ganesan, M., Ang, L., Kraus, P., Lufkin, T., Loh, K. M., Lim, B.
2017; 14 (12): 1205–+

● **Evaluating the regenerative potential and functionality of human liver cells in mice** *DIFFERENTIATION*

Tan, A., Loh, K. M., Ang, L.
2017; 98: 25–34

● **Efficient endoderm induction from human pluripotent stem cells by logically directing signals controlling lineage bifurcations.** *Cell stem cell*

Loh, K. M., Ang, L. T., Zhang, J., Kumar, V., Ang, J., Auyeong, J. Q., Lee, K. L., Choo, S. H., Lim, C. Y., Nichane, M., Tan, J., Noghabi, M. S., Azzola, et al
2014; 14 (2): 237-252