

CURRICULUM VITAE

Laijun Lai, M.D.

Education:

- 1984 B.S., Medicine, Shanghai Medical University, China
1991 M.D. Pathology, Fujian Medical University, China

Professional Experience:

- 1984-1988 Research Assistant, Department of Cancer Research
 Fujian Institute of Medical Research
1988-1991 Graduate Student, Department of Pathology
 Fujian Medical College, China
1991-1995 Research Fellow, Department of Cancer Research
 Fujian Institute of Medical Research, China
1995-2001 Postdoctoral Fellow, Department of Pathology
 University of Connecticut Health Center, Farmington, CT
2001-2002 Scientist and Manager in Research Antigen
 Protein Science Corporation, Meriden, CT
2002-2011 Assistant Professor, Department of Immunology and University of Connecticut
 Stem Cell Institute
 University of Connecticut Health Center, Farmington, CT
8/1/2011- Associate Research Professor, Department of Allied Health Sciences and
 University of Connecticut Stem Cell Institute
 University of Connecticut, Storrs, CT

Patents:

1. Goldschneider I and **Lai L.** "Hybrid Cytokine of IL-7 and β -chain of Hepatocyte Growth Factor" US patent No. 6,749,847.
2. Goldschneider I. and **Lai, L.** "Nucleic acids encoding a chimeric polypeptide comprising IL-7 and HGF-beta chain and methods of use" US patent No. 7,578,998B2.

Patent pending:

Lai, L. Reagents and Methods for Treating Cancer and Autoimmune Disease

Research Support:

Active

1. Transplantation of ESC-derived thymic epithelial progenitors expressing autoantigen(s) ameliorating experimental autoimmune encephalomyelitis
2/15/2016-1/31/2021
Role: Principal Investigator
NIH R01, 1R01AI123131
Total Award: \$1,951,981

2. Modeling and correcting immunodeficiency in DiGeorge syndrome by ESC- and iPSC-derived thymic epithelial cells
6/15/2017-6/14/2021
Role: Principal Investigator
Established Investigator Grant from the CT Stem Cell Program, CT Innovations
Total Award: \$675,500

Completed

1. Inducing immune tolerance to hESCs and their derivatives by the hESC-derived thymic epithelial cells
11/01/12-10/31/16
Role: Principal Investigator
Established Investigator Grant from the CT Stem Cell Program, CT Innovations
Total Award: \$750,000
2. Generation of hematopoietic stem cells and T cell progenitors from human ESCs
10/01/10-9/30/14
Role: Principal Investigator
Established Investigator Grant from CT Stem Cell Program, CT Innovations
Total Award: \$1,000,000
3. Immunotherapy of melanoma and colon cancer by a recombinant IL-7/HGF β protein
10/1/10-8/31/13
Role: Principal Investigator
Connecticut Biomedical Research Program, #2011-0145
Total Award: \$439,243
4. Anti-tumor activity induced by a novel hybrid cytokine
07/01/08-02/28/11
Role: Principal Investigator
Connecticut Biomedical Research Program, #2009-0098
Total Award: \$309,688
5. Cytokine induced production of transplantable hematopoietic stem cells from human ES cells
09/1/08-02/28/11
Role: Principal Investigator
A Seed Grant from CT Stem Cell Program, Connecticut Innovation
Total Award: \$200,000
6. Antitumor activity induced by a hybrid cytokine IL-7/HGF β
7/2007-6/2009
Role: Principal Investigator
American Cancer Society

Selected Publications:

1. **Lai L**, Chen F, McKenna SD, and Goldschneider I. Identification of an IL-7-associated pre-pro-B cell growth-stimulating factor (PPBSF). II. PPBSF is a covalently-linked heterodimer of IL-7 and an Mr 30,000 cofactor. *Journal of Immunology*, 160:2280-2286, 1998.

2. McKenna SD, Chen F, **Lai L**, and Goldschneider I. Identification of an IL-7-associated pre-pro-B cell growth-stimulating factor (PPBSF). I. Production of a non-IL-7 component of PPBSF by bone marrow stromal cells from IL-7 gene-deleted mice. *Journal of Immunology*. 160:2272-2279, 1998.
3. **Lai L** and Goldschneider I. Identification of a hybrid cytokine of IL-7 and the β chain of hepatocyte growth factor/scatter factor/scatter factor. *Journal of Immunology*, 167: 3550-3554, 2001.
4. Wei C, **Lai L** and Goldschneider I. Pre-pro-B cell growth-stimulating factor (PPBSF) upregulates IL-7R α chain expression and enables pro-B cells to respond to monomeric IL-7. *Journal of Interferon and Cytokine Research* 22:823-832, 2002.
5. **Lai L**, Zeff RA, and Goldschneider I. A recombinant single-chain IL-7/HGF β hybrid cytokine induces juxtacrine interactions of the IL-7 and HGF (c-met) receptors and stimulates the proliferation of CFU-S12, common lymphoid progenitors (CLP) and pre-pro-B cells. *Blood*. 107:1776-1784, 2006.
6. **Lai L**. and Jin J. Generation of thymic epithelial progenitors from mouse embryonic stem cells. *Stem cells*. 27:3012-3020, 2009.
7. **Lai L**, Jin J and Goldschneider I. In vivo antitumor activity of a recombinant IL-7/HGF β hybrid cytokine in mice. *Cancer Research*. 71:61-67, 2011.
8. **Lai L**, Cui C, Jin J, Hao Z, Zhen Q, Ying M, Boyd R and Zhao Y. Mouse embryonic stem cell-derived thymic epithelial cell progenitors enhance T cell reconstitution after allogeneic bone marrow transplantation. *Blood*, 118:3410-3418, 2011.
9. **Lai L**, Jin J and Goldschneider I. A human recombinant IL-7/HGF alpha chain hybrid cytokine enhances T cell regeneration after bone marrow transplantation. *Transplantation*, 92:516-522, 2011.
10. Jin J, Goldschneider I and **Lai L**. *In vivo* administration of the rIL-7/HGF β hybrid cytokine efficiently restores the thymopoiesis and naïve T cell generation in lethally-irradiated mice after syngeneic bone marrow transplantation. *Journal of Immunology*, 186: 1915-1922, 2011.
11. **Lai L**, Zhang M and Goldschneider I. The recombinant IL-7/HGF β efficiently induces transplantable murine hematopoietic stem cells. *Journal of Clinical Investigation*. 122(10):3552-3562. 2012.
12. Zhang M, Shi J, Huang Y, **Lai L**. Expression of canonical WNT/beta-CATENIN signaling components in the developing human lung. *BMC Dev Biol*. 12(1):21-25. 2012.
13. **Lai L** Zhang M, Song Y, and Rood D. Recombinant IL-7/HGF β hybrid cytokine enhances T cell recovery following allogeneic hematopoietic stem cell transplantation. *Plos ONE* 8(12): e82998, 2013.
14. Yan Y, Su M, Song Y, Tang Y, Tian XC, Rood D and **Lai L**. Tbx1 Modulates Endodermal and Mesodermal Differentiation from Mouse Induced Pluripotent Stem cells. *Stem cells and Development*. Jul 1, 23(13):1491-500, 2014
15. Song Y, Su M, Panchatsharam P, Rood D, and **Lai L**. c-Met signaling is required for efficient postnatal thymic regeneration and repair in mice. *Immunology*. 144(2):245-253, 2015
16. Tran TH, Nguyen CT, Gonzalez-Fajardo L, Hargrove D, Song D, Deshmukh P, Mahajan L, Ndaya D, **Lai L**, Kasi RM, Lu X. Long circulating self-assembled nanoparticles from cholesterol-containing brush-like block copolymers for improved drug delivery to tumors. *Biomacromolecules*. 15(11):4363-75, 2014.

17. Su M, Song Y, He Z, Hu R, Rood D, and **Lai L**. Administration of embryonic stem cell-derived thymic epithelial progenitors expressing myelin oligodendrocyte glycoprotein induces antigen-specific tolerance and ameliorates EAE. *J Autoimmun.* 58:36-47, 2015.
18. Su M, Hu R, Jin J, Yan Y, Song Y, Sullivan R, and **Lai L**. Efficient *in vitro* generation of functional thymic epithelial progenitors from human embryonic stem cells. *Scientific Reports*, 5: 9882, 2015.
19. Song Y, Su M, Zhu J, Di W, Liu Y, Hu R, Rood D, and **Lai L**. Recombinant FoxN1 protein enhances T cell regeneration after bone marrow transplantation. *European Journal of Immunology*, accepted, manuscript online: 29 APR 2016; DOI: 10.1002/eji.201546196. PMID: 27125859.
20. Hu R, Liu Y, Su M, Song Y, Rood D, and **Lai L**. Transplantation of donor-origin mouse embryonic stem cell-derived thymic epithelial progenitors prevents the development of chronic graft-versus-host disease in mice. *Stem Cells Transl Med.* 2017 Jan;6(1):121-130.
21. Song Y, Liu Y, Hu R, Su M, Rood D, and **Lai L**. A recombinant IL-7/IL-15 hybrid cytokine enhances antitumor immunity in mice. *Molecular Cancer Therapeutics*, 15(10):2413-2421, 2016. PMID: 27474151.
22. Hu R, Liu Y, Song Y, Su M, Liu X, Rood D, and **Lai L**. Recombinant IL-7/HGF β hybrid cytokine separates acute graft-versus-host-disease from graft-versus-tumor activity by altering donor T cell trafficking. *Br J Haematol.* 2016 Nov;175(3):505-516
23. Wang S, Chen W, Wang Z, Li X, Lin S, Gao C, Huang Y, Luo D, Li J, Zi Y, Yi Z, Lin Y, **Lai L** & Pan L. High expression of FAMLF is associated with clinical response in patients with de novo acute myeloid leukemia. *LEUKEMIA & LYMPHOMA*, 2016 VOL. 57, NO. 11, 2727–2730
24. Han F, Hu R, Su M, Yu Y, Yang H, and **Lai L**. A human recombinant IL-7/HGF β hybrid cytokine enhances antitumor immunity in Mice. *Am J Cancer Res.* 2017;7(8):1714-1723
25. Su M, Hu R, Song Y, Liu Y, and **Lai L**. Targeted deletion of c-Met in thymic epithelial cells leads to an autoimmune phenotype. *Immunol Cell Biol.* 2018, 96(2):229-235,
26. Su M, Lin Y, Cui C, Tian X, Lu X, He Z, **Lai L**. ESC-derived thymic epithelial cells expressing MOG prevents EAE by central and peripheral tolerance mechanisms. *Cell Immunol.* 2017, 322:84-91.
27. Cui C, Tian X, Lin Y, Su M, Chen Q, Wang SY, **Lai L**. In vivo administration of recombinant BTNL2-Fc fusion protein ameliorates graft-versus-host disease in mice. *Cell Immunol.* 2018. Epub 2018/11/06. doi: 10.1016/j.cellimm.2018.10.008. PubMed PMID: 30389093.
28. Cui C, Su M, Lin Y, **Lai L**. A CD300c-Fc Fusion Protein Inhibits T Cell Immunity. *Frontiers in Immunology.* 2018;9(2657). doi: 10.3389/fimmu.2018.02657.
29. Tian X, Cui C, Lin Y, Su M, **Lai L**. BTNL2-Ig protein attenuates type 1 diabetes in NOD mice. *Adv Healthc Mater.* 2019 May;8(9):e1800987.
30. Su M, Lin Y, He Z, **Lai L**. Transplantation of MHC-mismatched Mouse Embryonic Stem Cell-Derived Thymic Epithelial Progenitors Prevents Autoimmune Diabetes. *Stem Cell Res Ther.* 2019 Aug 6;10(1):239.
31. Lin Y, Cui C, Su M, Tian X, Huang Y, Zhao J, **Lai L**. Skint8, a Novel B7 Family-Related Molecule, Negatively Regulates T Cell Responses. *J Immunol.* 2019 Jul 15;203(2):400-407.

32. Su M, Lin Y, Cui C, Tian X, **Lai L**. ERMAP is a B7 family-related molecule which negatively regulates T cell and macrophage responses. Cellular & Molecular Immunology, 2020 Jul 3. doi: 10.1038/s41423-020-0494-8. Online ahead of print.
33. Zhao J, Su M, Lin Y, Liu H, He Z, **Lai L**. Administration of amyloid precursor protein gene deleted mouse ESC-derived thymic epithelial progenitors attenuates Alzheimer's pathology. Frontiers in Immunology, accepted

Book Chapter:

Lai L. Rejuvenation of the aged thymic microenvironment by ESC-derived thymic epithelial progenitors. pp. 301-310. In "Embryonic Stem Cells-Recent Advances in Pluripotent Stem Cell-Based Regeneration Medicine", edited by Craig S. Atwood. INTECH, 2011.

Professional Societies:

Member of American Society of Immunologists
Member of International Society for Stem Cell Research
Member of American Society of Blood and Marrow Transplantation
Member of American Society of Cancer Research
Member of European Society of Immunodeficiency