Yueh-hsiu Chien
Professor of Microbiology & Immunology

Bio

ACADEMIC APPOINTMENTS
- Professor, Microbiology & Immunology
- Member, Bio-X
- Member, Stanford Cancer Institute

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS
One of our main research focuses is to define T cell function so that we can better understand host immune defense. T cells, together with B cells and T cells, are the only cells that use somatic V, D, J gene rearrangement to generate diverse antigen receptors. All three types of cells are present together in all but the most primitive vertebrates, suggesting that each population contributes to host immune competence uniquely and that all three are necessary for maintaining immune competence. Functional analysis indicates that in infections, T cells respond earlier than T cells do; and also emerge late after pathogen numbers start to decline. Thus, these cells may be involved in both establishing and resolving the inflammatory response. Our past studies indicate that T cells and T cells are clearly distinct in their antigen recognition and activation requirements and also in antigen-specific repertoire and effector-function development. These aspects allow T cells to occupy unique temporal and functional niches in host immune defense. We are following up on these studies to determine how T cell function affect the development and the termination of the inflammatory response and to study T cells function in infections and autoimmune diseases. These include a mouse model of Toxoplasma gondii infection (in collaboration with Dr. John Boothryod) and celiac patients in response to gluten challenge (in collaboration with Dr. Mark Davis). We will expand the analysis to TB patients.

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS
- Cancer Biology (Phd Program)
- Immunology (Phd Program)
- Microbiology and Immunology (Phd Program)

Publications

PUBLICATIONS
- KIR+CD8+ T cells suppress pathogenic T cells and are active in autoimmune diseases and COVID-19. Science (New York, N.Y.)
Nanoparticle-enabled innate immune stimulation activates endogenous tumor-infiltrating T cells with broad antigen specificities. *Proceedings of the National Academy of Sciences of the United States of America*

Select sequencing of clonally expanded CD8+ T cells reveals limits to clonal expansion. *Proceedings of the National Academy of Sciences of the United States of America*

Casting a wider net: Immunosurveillance by nonclassical MHC molecules. *PLoS pathogens*

Opposing T cell responses in experimental autoimmune encephalomyelitis. *Nature*

Author Correction: A multi-cohort study of the immune factors associated with *M. tuberculosis* infection outcomes. *Nature*

A multi-cohort study of the immune factors associated with *M. tuberculosis* infection outcomes *NATURE*

A multi-cohort study of the immune factors associated with *M. tuberculosis* infection outcomes. *Nature*

Novel M-CSF-producing gamma delta T cells protect against recurrent malaria

Does selecting ligand shape gamma delta-TCR repertoire? *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Chien, Y. 2018; 115 (16): E3606

From T Cell Receptor to Antigen, Systems Approach to Discovering T Cell Antigen(s) in Multiple Sclerosis and Experimental Autoimmune Encephalomyelitis

A Macrophage Colony-Stimulating-Factor-Producing ## T Cell Subset Prevents Malarial Parasitemic Recurrence. *Immunity*

Concerted T cell response in experimental autoimmune encephalomyelitis and multiple sclerosis

Microbiota-activated CD103(+) DCs stemming from microbiota adaptation specifically drive gamma delta T17 proliferation and activation *MICROBIOME*
Fleming, C., Cai, Y., Sun, X., Jala, V. R., Xue, F., Morrissey, S., Wei, Y., Chien, Y., Zhang, H., Haribabu, B., Huang, J., Yan, J.
DCs stemming from microbiota adaptation specifically drive γdT17 proliferation and activation. *Microbiome*

Fleming, C., Cai, Y., Sun, X., Jala, V. R., Xue, F., Morrissey, S., Wei, Y., Chien, Y., Zhang, H., Haribabu, B., Huang, J., Yan, J.
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Defective Signaling in the JAK-STAT Pathway Tracks with Chronic Inflammation and Cardiovascular Risk in Aging Humans. *Cell systems*

2016; 3 (4): 374-384 e4

Changes in Brain Activation Associated with Spontaneous Improvisation and Figural Creativity After Design-Thinking-Based Training: A Longitudinal fMRI Study. *Cerebral cortex*

Saggar, M., Quintin, E., Bott, N. T., Kienitz, E., Chien, Y., Hong, D. W., Liu, N., Royalty, A., Hawthorne, G., Reiss, A. L.
2016

Detection, phenotyping, and quantification of antigen-specific T cells using a peptide-MHC dodecamer *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

2016; 113 (13): E1890-E1897

Thermoelectric Power in Bilayer Graphene Device with Ionic Liquid Gating *SCIENTIFIC REPORTS*

Chien, Y., Yuan, H., Wang, C., Lee, W.
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A highly focused antigen receptor repertoire characterizes gamma delta T cells that are poised to make IL-17 rapidly in naive animals *FRONTIERS IN IMMUNOLOGY*

Wei, Y., Han, A., Glanville, J., Fang, F., Zunige, L. A., Lee, J. S., Cue, D. J., Chien, Y.
2015; 6: 1-6

Pictionary-based fMRI paradigm to study the neural correlates of spontaneous improvisation and figural creativity. *Scientific reports*

Saggar, M., Quintin, E., Kienitz, E., Bott, N. T., Sun, Z., Hong, W., Chien, Y., Liu, N., Dougherty, R. F., Royalty, A., Hawthorne, G., Reiss, A. L.
2015; 5: 10894-7

The Split Virus Influenza Vaccine rapidly activates immune cells through Fc gamma receptors *VACCINE*

2014; 32 (45): 5989-5997

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Gamma delta T cells recognize haptons and mount a hapten-specific response *eLife*

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2014

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Gamma delta T Cells: First Line of Defense and Beyond *ANNUAL REVIEW OF IMMUNOLOGY, VOL 32*

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A Single Peptide-Major Histocompatibility Complex Ligand Triggers Digital Cytokine Secretion in CD4(+) T Cells. *Immunity*

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• Dietary gluten triggers concomitant activation of CD4(+) and CD8(+) alpha beta T cells and gamma delta T cells in celiac disease. *Proceedings of the National Academy of Sciences of the United States of America*
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