



## Danny Hung-Chieh Chou

Assistant Professor of Pediatrics (Endocrinology)

Pediatrics - Endocrinology and Diabetes

### CONTACT INFORMATION

- **Administrative Associate**

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### Bio

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#### BIO

Danny Chou is an Assistant Professor of Pediatrics (Endocrinology and Diabetes) at Stanford University. He received his PhD from Harvard University, working in the lab of Prof. Stuart Schreiber. His Ph.D. research involved the identification of suppressors of cytokine-induced apoptosis in pancreatic beta cells. He then moved to MIT, where he was a JDRF Postdoctoral Fellow in Department of Chemical Engineering. He worked under the guidance of Profs. Robert Langer and Daniel Anderson, focusing on the development of glucose-responsive insulin derivatives. Danny started his independent career in Department of Biochemistry at University of Utah in August, 2014. At Utah, Danny's research focused on protein and peptide therapeutics for the treatment in Type 1 Diabetes and other human diseases. In 2020, Danny moved his research lab to Stanford University to continue their efforts in developing novel insulin therapeutics. His laboratory has received funding support from NIH, DoD, JDRF and American Diabetes Association. Danny has received recognitions including a JDRF Career Development Award, Vertex Scholar, JDRF Postdoctoral Fellow and ADA Junior Faculty Award.

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Pediatrics - Endocrinology and Diabetes
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)

#### ADMINISTRATIVE APPOINTMENTS

- Member, Stanford Diabetes Research Center, (2020- present)

#### HONORS AND AWARDS

- Career Development Award, JDRF (2018)
- Junior Faculty Development Award, American Diabetes Association (2016)
- Postdoctoral Fellowship, JDRF (2013)
- Vertex Scholar Fellowship, Harvard University (2010)

#### PROFESSIONAL EDUCATION

- Postdoc, Massachusetts Institute of Technology , Chemical Engineering (2014)

- PhD, Harvard University , Chemistry and Chemical Biology (2011)
- BS, National Taiwan University , Chemistry (2006)

## LINKS

- Chou Lab website: <https://www.dannychoulab.com>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research program integrates concepts of chemical biology, protein engineering and structure biology to design new therapeutic leads and generate probes to study biological processes. A key focus of our lab is insulin, an essential hormone in our body to reduce blood glucose levels. We generate synthetic libraries of insulin analogs to select for chemical probes, and investigate natural insulin molecules (e.g. from the venom of fish-hunting cone snails!) to develop novel therapeutic candidates. We are especially interested in using chemical and enzymatic synthesis to create novel chemical entities with enhanced properties, and leverage the strong expertise of our collaborators to apply our skill sets in the fields of cancer biology, immunology and pain research. Our ultimate goal is to translate our discovery into therapeutic interventions in human diseases.

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

. Landa Purushottam, Xiaochun Xiong

## Publications

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### PUBLICATIONS

- **Development of Conformationally Constrained alpha-RgIA Analogues as Stable Peptide Antagonists of Human alpha9alpha10 Nicotinic Acetylcholine Receptors.** *Journal of medicinal chemistry*  
Zheng, N., Christensen, S. B., Blakely, A., Dowell, C., Purushottam, L., McIntosh, J. M., Chou, D. H.  
2020
- **A structurally minimized yet fully active insulin based on cone-snail venom insulin principles.** *Nature structural & molecular biology*  
Xiong, X., Menting, J. G., Disotuar, M. M., Smith, N. A., Delaine, C. A., Ghabash, G., Agrawal, R., Wang, X., He, X., Fisher, S. J., MacRaid, C. A., Norton, R. S., Gajewiak, et al  
2020
- **Glucose-Responsive Insulin Through Bioconjugation Approaches.** *Journal of diabetes science and technology*  
Disotuar, M. M., Chen, D., Lin, N., Chou, D. H.  
2020; 14 (2): 198–203
- **Novel four-disulfide insulin analog with high aggregation stability and potency** *CHEMICAL SCIENCE*  
Xiong, X., Blakely, A., Karra, P., VandenBerg, M., Ghabash, G., Whitby, F. G., Zhang, Y., Webber, M., Holland, W. L., Hill, C. P., Chou, D.  
2020; 11 (1): 195–200
- **Synthesis and Characterization of an A6-A11 Methylene Thioacetal Human Insulin Analogue with Enhanced Stability** *JOURNAL OF MEDICINAL CHEMISTRY*  
Zheng, N., Karra, P., VandenBerg, M. A., Kim, J., Webber, M. J., Holland, W. L., Chou, D.  
2019; 62 (24): 11437–43
- **Long-Lasting Designer Insulin with Glucose-Dependent Solubility Markedly Reduces Risk of Hypoglycemia** *ADVANCED THERAPEUTICS*  
Qiu, Y., Agrawal, R., Chen, D., Zheng, N., Durupt, G., Kim, J., Fisher, S. J., Chou, D.  
2019; 2 (11)

- **Synthesis of hydrophobic insulin-based peptides using a helping hand strategy** *ORGANIC & BIOMOLECULAR CHEMISTRY*  
Disotuar, M. M., Petersen, M. E., Nogueira, J. M., Kay, M. S., Chou, D.  
2019; 17 (7): 1703–8
- **Fish-hunting cone snail venoms are a rich source of minimized ligands of the vertebrate insulin receptor** *ELIFE*  
Ahorukomeye, P., Disotuar, M. M., Gajewiak, J., Karanth, S., Watkins, M., Robinson, S. D., Salcedo, P., Smith, N. A., Smith, B. J., Schlegel, A., Forbes, B. E., Olivera, B., Chou, et al  
2019; 8
- **Display of Single-Chain Insulin-like Peptides on a Yeast Surface** *BIOCHEMISTRY*  
Jeong, M., Rutter, J., Chou, D.  
2019; 58 (3): 182–88
- **The immunoproteasome is induced by cytokines and regulates apoptosis in human islets** *JOURNAL OF ENDOCRINOLOGY*  
Lundh, M., Bugliani, M., Dahlby, T., Chou, D., Wagner, B., Ghiasi, S., De Tata, V., Chen, Z., Lund, M., Davies, M. J., Marchetti, P., Mandrup-Poulsen, T.  
2017; 233 (3): 369–79
- **Application of Thiol-yne/Thiol-ene Reactions for Peptide and Protein Macrocyclizations** *CHEMISTRY-A EUROPEAN JOURNAL*  
Wang, Y., Bruno, B. J., Cornillie, S., Nogueira, J. M., Chen, D., Cheatham, T. E., Lim, C. S., Chou, D.  
2017; 23 (29): 7087–92
- **Selective N-terminal functionalization of native peptides and proteins** *CHEMICAL SCIENCE*  
Chen, D., Disotuar, M. M., Xiong, X., Wang, Y., Chou, D.  
2017; 8 (4): 2717–22
- **A minimized human insulin-receptor-binding motif revealed in a Conus geographus venom insulin** *NATURE STRUCTURAL & MOLECULAR BIOLOGY*  
Menting, J. G., Gajewiak, J., MacRaild, C. A., Chou, D., Disotuar, M. M., Smith, N. A., Miller, C., Erchegeyi, J., Rivier, J. E., Olivera, B. M., Forbes, B. E., Smith, B. J., Norton, et al  
2016; 23 (10): 916–20
- **A Thiol-Ene Coupling Approach to Native Peptide Stapling and Macrocyclization** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*  
Wang, Y., Chou, D.  
2015; 54 (37): 10931–34
- **Kinase-Independent Small-Molecule Inhibition of JAK-STAT Signaling** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Chou, D., Vetere, A., Choudhary, A., Scully, S. S., Schenone, M., Tang, A., Gomez, R., Burns, S. M., Lundh, M., Vital, T., Comer, E., Faloon, P. W., Dancik, et al  
2015; 137 (24): 7929–34
- **Glucose-responsive insulin activity by covalent modification with aliphatic phenylboronic acid conjugates** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Chou, D., Webber, M. J., Tang, B. C., Lin, A. B., Thapa, L. S., Deng, D., Truong, J. V., Cortinas, A. B., Langer, R., Anderson, D. G.  
2015; 112 (8): 2401–6
- **Inhibition of Histone Deacetylase 3 Protects Beta Cells from Cytokine-Induced Apoptosis** *CHEMISTRY & BIOLOGY*  
Chou, D., Holson, E. B., Wagner, F. F., Tang, A. J., Maglathlin, R. L., Lewis, T. A., Schreiber, S. L., Wagner, B. K.  
2012; 19 (6): 669–73
- **Synthesis of a Novel Suppressor of beta-Cell Apoptosis via Diversity-Oriented Synthesis** *ACS MEDICINAL CHEMISTRY LETTERS*  
Chou, D., Duvall, J. R., Gerard, B., Liu, H., Pandya, B. A., Suh, B., Forbeck, E. M., Faloon, P., Wagner, B. K., Marcaurette, L. A.  
2011; 2 (9): 698–702
- **Small-Molecule Suppressors of Cytokine-Induced beta-Cell Apoptosis** *ACS CHEMICAL BIOLOGY*  
Chou, D., Bodycombe, N. E., Carrinski, H. A., Lewis, T. A., Clemons, P. A., Schreiber, S. L., Wagner, B. K.  
2010; 5 (8): 729–34
- **Highly efficient UV organic light-emitting devices based on bi(9,9-diarylfuorene)s** *ADVANCED MATERIALS*  
Chao, T. C., Lin, Y. T., Yang, C. Y., Hung, T. S., Chou, H. C., Wu, C. C., Wong, K. T.  
2005; 17 (8): 992–+