

# Stanford

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## Ying Chih Chang

Adjunct Professor  
Chemical Engineering

### Bio

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#### BIO

Dr. Ying Chang is an Adjunct Professor of the Department of Chemical Engineering, an affiliate member of Precision Health and Integrated Diagnostic Center of the School of Medicine, and a Co-Director of the Taiwan-Stanford Partnership program, LEAP, at Stanford University. She is also a Research Fellow at the Genomics Research Center, Academia Sinica, and an Adjunct Professor at the Center of Liquid Biopsy at Kaohsiung Medical University, Taiwan. Formerly, she was an Assistant Professor in the Department of Chemical Engineering and Materials Science, and the Department of Biomedical Engineering at the University of California-Irvine, Irvine, CA. Prior to her academic appointments, Dr. Chang had worked in various industrial R&D laboratories including as a Senior Engineer for the hard drive media at Maxmedia California, San Jose, CA (now Seagate), a Postdoctoral Scientist for the materials design of GeneChip at Affymetrix Corp, Santa Clara, CA (now Thermal Fisher Scientific). Her recent invention in circulating tumor cells platform has led to a startup company, Cellmax Life in 2013. Highlights of her research include integrated nanomaterials, microfluidics, and bioreactors to control stem cell fates for tissue engineering and liquid biopsy for cancer diagnostics and precision medicine. Dr. Chang received her BS from National Taiwan University and PhD from Stanford University in Chemical Engineering.

#### ACADEMIC APPOINTMENTS

- Adjunct Professor, Chemical Engineering

#### ADMINISTRATIVE APPOINTMENTS

- Co-Director, Taiwan LEAP@Stanford Program, (2017- present)

#### PROFESSIONAL EDUCATION

- BS, National Taiwan University
- PhD, Stanford University , Chemical Engineering

### Publications

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#### PUBLICATIONS

- **Early Detection and Dynamic Changes of Circulating Tumor Cells in Transgenic NeuN Transgenic (NTTg) Mice with Spontaneous Breast Tumor Development.** *Cancers*  
Tsai, W., Hung, T., Chen, J., Huang, S., Chang, Y.  
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- **Anticlogging Hemofiltration Device for Mass Collection of Circulating Tumor Cells by Ligand-Free Size Selection.** *Langmuir : the ACS journal of surfaces and colloids*  
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- **Scalable Multilayer Cell Collector to Capture Circulating Tumor Cells with an Unlimited Volume Capacity.** *ACS biomaterials science & engineering*  
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- **Scalable Multilayer Cell Collector to Capture Circulating Tumor Cells with an Unlimited Volume Capacity** *ACS BIOMATERIALS SCIENCE & ENGINEERING*  
Tsai, Y., Yeh, P., Huang, C., Guo, C., Chang, Y.  
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- **Construction of Cell-Extracellular Matrix Microenvironments by Conjugating ECM Proteins on Supported Lipid Bilayers** *FRONTIERS IN MATERIALS*  
Huang, C., Chang, Y.  
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- **Random and aligned electrospun PLGA nanofibers embedded in microfluidic chips for cancer cell isolation and integration with air foam technology for cell release** *JOURNAL OF NANOBIO TECHNOLOGY*  
Yu, C., Chen, Y., Yeh, P., Hsiao, Y., Lin, W., Kuo, C., Chueh, D., You, Y., Shyue, J., Chang, Y., Chen, P.  
2019; 17: 31
- **Snail-induced claudin-11 prompts collective migration for tumour progression** *NATURE CELL BIOLOGY*  
Li, C., Chen, J., Ho, Y., Hsu, W., Wu, L., Lan, H., Hsu, D., Tai, S., Chang, Y., Yang, M.  
2019; 21 (2): 251–+
- **A two-dimensional immunomagnetic nano-net for the efficient isolation of circulating tumor cells in whole blood.** *Nanoscale*  
Lai, C. H., Tsai, W. S., Yang, M. H., Chou, T. Y., Chang, Y. C.  
2019
- **Promoting Multivalent Antibody-Antigen Interactions by Tethering Antibody Molecules on a PEGylated Dendrimer-Supported Lipid Bilayer** *BIOMACROMOLECULES*  
Yeh, P., Chen, Y., Wang, C., Chang, Y.  
2018; 19 (2): 426–37
- **Site-specific antibody modification and immobilization on a microfluidic chip to promote the capture of circulating tumor cells and microemboli** *CHEMICAL COMMUNICATIONS*  
Lai, C., Lim, S. C., Wu, L., Wang, C., Tsai, W., Wu, H., Chang, Y.  
2017; 53 (29): 4152-4155
- **Microfluidic Capture and Multiplex Immunofluorescence of Circulating Tumor Cells to Identify Cancer of Origin** *CIRCULATING TUMOR CELLS: METHODS AND PROTOCOLS*  
Lai, C., Chang, Y., Magbanua, M. J., Park, J. W.  
2017; 1634: 1–19
- **Strategies for Isolation and Molecular Profiling of Circulating Tumor Cells.** *Advances in experimental medicine and biology*  
Chen, J., Chang, Y.  
2017; 994: 43–66
- **Circulating Tumor Cell Count Correlates with Colorectal Neoplasm Progression and Is a Prognostic Marker for Distant Metastasis in Non-Metastatic Patients** *SCIENTIFIC REPORTS*  
Tsai, W., Chen, J., Shao, H., Wu, J., Lai, J., Lu, S., Hung, T., Chiu, Y., You, J., Hsieh, P., Yeh, C., Hung, H., Chiang, et al  
2016; 6: 24517
- **A High Circulating Tumor Cell Count in Portal Vein Predicts Liver Metastasis From Periampullary or Pancreatic Cancer A High Portal Venous CTC Count Predicts Liver Metastases** *MEDICINE*  
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- **Sensitive and Specific Biomimetic Lipid Coated Microfluidics to Isolate Viable Circulating Tumor Cells and Microemboli for Cancer Detection** *PLOS ONE*  
Chen, J., Tsai, W., Shao, H., Wu, J., Lai, J., Lu, S., Hung, T., Yang, C., Wu, L., Chen, J., Lee, W., Chang, Y.  
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- **Clinical Significance of Circulating Tumor Microemboli as a Prognostic Marker in Patients with Pancreatic Ductal Adenocarcinoma** *CLINICAL CHEMISTRY*  
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- **Identifying cancer origin using circulating tumor cells** *CANCER BIOLOGY & THERAPY*  
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2016; 17 (4): 430–38
- **Chemoresponsive surface-tethered polypeptide brushes based on switchable secondary conformations** *RSC ADVANCES*  
Yang, C., Wang, Y., Frank, C. W., Chang, Y.  
2015; 5 (105): 86113-86119
- **Efficient elusion of viable adhesive cells from a microfluidic system by air foam**  
Lai, J., Shao, H., Wu, J., Lu, S., Chang, Y.  
AMER INST PHYSICS.2014: 052001
- **DIFFERENTIATION OF NEURAL STEM/PROGENITOR CELLS USING LOW-INTENSITY ULTRASOUND** *ULTRASOUND IN MEDICINE AND BIOLOGY*  
Lee, I., Lo, T., Young, T., Li, Y., Chen, N. G., Chen, C., Chang, Y.  
2014; 40 (9): 2195–2206
- **Natural zwitterionic organosulfurs as surface ligands for antifouling and responsive properties** *BIOINTERPHASES*  
Huang, C., Wang, L., Liu, C., Chiang, A. T., Chang, Y.  
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- **In Situ Surface Tailoring with Zwitterionic Carboxybetaine Moieties on Self-Assembled Thin Film for Antifouling Biointerfaces** *MATERIALS*  
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- **Antibody conjugated supported lipid bilayer for capturing and purification of viable tumor cells in blood for subsequent cell culture** *BIOMATERIALS*  
Wu, J., Tseng, P., Tsai, W., Liao, M., Lu, S., Frank, C. W., Chen, J., Wu, H., Chang, Y.  
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- **Use of Surface Properties to Control the Growth and Differentiation of Mouse Fetal Liver Stem/Progenitor Cell Colonies** *BIOMACROMOLECULES*  
Tsai, H., Shen, C., Chang, Y.  
2012; 13 (11): 3483–93
- **Tethered Fibronectin Liposomes on Supported Lipid Bilayers as a Prepackaged Controlled-Release Platform for Cell-Based Assays** *BIOMACROMOLECULES*  
Tseng, P., Chang, Y.  
2012; 13 (8): 2254–62
- **The influence of collagen film nanostructure on pulmonary stem cells and collagen-stromal cell interactions** *BIOMATERIALS*  
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- **Effects of extracellular matrix protein functionalized fluid membrane on cell adhesion and matrix remodeling** *BIOMATERIALS*  
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- **Type I Collagen-Functionalized Supported Lipid Bilayer as a Cell Culture Platform** *BIOMACROMOLECULES*  
Huang, C., Cho, N., Hsu, C., Tseng, P., Frank, C. W., Chang, Y.  
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Yang, C., Wang, Y., Chang, Y.  
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Tsai, H., Wu, R., Lee, I., Chang, H., Shen, C., Chang, Y.  
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● **Controlled Molecular Organization of Surface Macromolecular Assemblies Based on Stimuli-Responsive Polypeptide Brushes** *BIOMACROMOLECULES*

Yang, C., Wang, Y., Yu, S., Chang, Y.  
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● **Biomimetic synthesis of silica films directed by polypeptide brushes** *CHEMISTRY OF MATERIALS*

Wu, J., Wang, Y., Chen, C., Chang, Y.  
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● **Preparation of end-grafted polymer brushes by nitroxide-mediated free radical polymerization of vaporized vinyl monomers** *LANGMUIR*

Li, J., Chen, X. R., Chang, Y. C.  
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● **Preparation of unidirectional end-grafted alpha-helical polypeptides by solvent quenching** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*

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