



Priscilla Li-ning Yang

Professor of Microbiology and Immunology

Microbiology & Immunology

Bio

BIO

Priscilla earned her PhD in Bio-organic Chemistry at the University of California, Berkeley. Following postdoctoral training in viral immunology at Scripps Research, she started her independent career at Harvard Medical School, where her laboratory combined chemical and pharmacological approaches to address fundamental and translational problems in virology. She is currently Professor in the Department of Microbiology and Immunology and the Stanford University School of Medicine where she focuses on leading and mentoring a multidisciplinary group of scientists focused on discovery and validation of new antiviral targets; identifying new strategies to achieve broad-spectrum activity and to avoid antiviral resistance; and investigating the function of lipid membranes in RNA virus replication. She is a strong advocate for diversity, equity, and inclusion in science.

ACADEMIC APPOINTMENTS

- Professor, Microbiology & Immunology
- Member, Bio-X
- Faculty Fellow, Sarafan ChEM-H

HONORS AND AWARDS

- Giovanni Armenise-Harvard Foundation Award, Giovanni Armenise-Harvard Foundation (2007)
- Hellman Fellow Award, Hellman Fellows Fund (2007)
- John and Virginia Kaneb Fellowship, Harvard Medical School (2011)
- William Prusoff Memorial Award, INTERNATIONAL SOCIETY FOR ANTIVIRAL RESEARCH (2022)
- Inaugural Women in Science Award, International Society for Antiviral Research (2017)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Standing Member, NIH Drug Discovery and Mechanisms of Antimicrobial Resistance (DDR) Study Section (2011 - 2017)
- Standing Member, NIH Viral Dynamics and Transmission (VDT) Study Section (2024 - present)
- Editorial Advisory Board Member, Antiviral Research (2018 - present)
- Associate Editor, ACS Infectious Diseases (2019 - present)

PROFESSIONAL EDUCATION

- PhD, University of California, Berkeley, Bio-organic Chemistry (1999)
- BS/MS, Yale University, Molecular Biophysics and Biochemistry (1993)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research group focuses on understanding the mechanisms responsible for viral replication and development of new strategies to combat viral pathogens. We combine chemical biology, medicinal chemistry, and molecular virology approaches to tackle challenges in both basic and translational research.

Over the past decade, our efforts have centered on two significant problems: first, addressing the challenges that limit our current arsenal of antivirals and second, understanding the specificity and function of host lipids in RNA virus replication. We are keenly interested in discovery of new antiviral targets and strategies and leveraging these discoveries to develop first-in-class small molecule antivirals. We also have a strong interest in developing or adapting tools from chemistry, chemical engineering, and biophysics to probe new areas of virology.

Teaching

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Elysse Grossi-Soyster, Daniel Navarrete, Lauren Varanese

Postdoctoral Faculty Sponsor

Antara Chakravarty, Nanqin Mei, Theresia Reindl, Luning Wang, Jaime Yockteng Melgar, Yupeng Zhang

Publications

PUBLICATIONS

- **Broad-spectrum activity against mosquito-borne flaviviruses achieved by a targeted protein degradation mechanism.** *Nature communications*
Liu, H. Y., Li, Z., Reindl, T., He, Z., Qiu, X., Golden, R. P., Donovan, K. A., Bailey, A., Fischer, E. S., Zhang, T., Gray, N. S., Yang, P. L.
2024; 15 (1): 5179
- **Discovery of Potent Degradors of the Dengue Virus Envelope Protein.** *bioRxiv : the preprint server for biology*
Li, Z., Liu, H. Y., He, Z., Chakravarty, A., Golden, R. P., Jiang, Z., You, I., Yue, H., Donovan, K. A., Du, G., Che, J., Tse, J., Che, et al
2024
- **Targeted protein degradation as an antiviral approach.** *Antiviral research*
Chakravarty, A., Yang, P. L.
2022: 105480
- **Anti-SARS-CoV-2 Activity of Targeted Kinase Inhibitors: Repurposing Clinically Available Drugs for COVID-19 Therapy.** *Journal of medical virology*
Boytz, R., Slabicki, M., Ramaswamy, S., Patten, J. J., Zou, C., Meng, C., Hurst, B. L., Wang, J., Nowak, R. P., Yang, P. L., Sattler, M., Stone, R. M., Griffin, et al
2022
- **Small-Molecule Inhibition of Viral Fusion Glycoproteins.** *Annual review of virology*
Liu, H., Yang, P. L.
2021
- **Antiviral Therapeutics.** *ACS infectious diseases*
Yang, P. L.
2021; 7 (6): 1297
- **Hepatitis C virus NS3-4A protease regulates the lipid environment for RNA replication by cleaving host enzyme 24-dehydrocholesterol reductase** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Tallorin, L., Villareal, V. A., Hsia, C., Rodgers, M. A., Burri, D. J., Pfeil, M., Llopis, P., Lindenbach, B. D., Yang, P. L.
2020; 295 (35): 12426-12436

- **A Sensitive Yellow Fever Virus Entry Reporter Identifies Valosin-Containing Protein (VCP/p97) as an Essential Host Factor for Flavivirus Uncoating** *MBIO*
Ramanathan, H. N., Zhang, S., Douam, F., Mar, K. B., Chang, J., Yang, P. L., Schoggins, J. W., Ploss, A., Lindenbach, B. D.
2020; 11 (2)
- **A broad-spectrum antiviral molecule, QL47, selectively inhibits eukaryotic translation.** *The Journal of biological chemistry*
de Wispelaere, M., Carocci, M., Burri, D. J., Neidermyer, W. J., Olson, C. M., Roggenbach, I., Liang, Y., Wang, J., Whelan, S. P., Gray, N. S., Yang, P. L.
2020; 295 (6): 1694-1703
- **Discovery of Immunologically Inspired Small Molecules That Target the Viral Envelope Protein (vol 4, pg 1395, 2018)** *ACS INFECTIOUS DISEASES*
Lian, W., Jang, J., Potisopon, S., Li, P., Rahmeh, A., Wang, J., Kwiatkowski, N. P., Gray, N. S., Yang, P. L.
2019; 5 (12): 2176
- **Small molecule degraders of the hepatitis C virus protease reduce susceptibility to resistance mutations** *NATURE COMMUNICATIONS*
de Wispelaere, M., Du, G., Donovan, K. A., Zhang, T., Eleuteri, N. A., Yuan, J. C., Kalabathula, J., Nowak, R. P., Fischer, E. S., Gray, N. S., Yang, P. L.
2019; 10: 3468
- **Identification of small molecule inhibitors targeting the Zika virus envelope protein** *ANTIVIRAL RESEARCH*
Pitts, J., Hsia, C., Lian, W., Wang, J., Pfeil, M., Kwiatkowski, N., Li, Z., Jang, J., Gray, N. S., Yang, P. L.
2019; 164: 147-153
- **Small Molecules Targeting the Flavivirus E Protein with Broad-Spectrum Activity and Antiviral Efficacy in Vivo** *ACS INFECTIOUS DISEASES*
Li, P., Jang, J., Hsia, C., Groomes, P. V., Lian, W., de Wispelaere, M., Pitts, J. D., Wang, J., Kwiatkowski, N., Gray, N. S., Yang, P. L.
2019; 5 (3): 460-472
- **A call to arms: Unifying the fight against resistance** *SCIENCE SIGNALING*
Kaushansky, A., Hedstrom, L., Goldman, A., Singh, J., Yang, P. L., Rathod, P. K., Cynamon, M., Wodarz, D., Mahadevan, D., Tomaras, A., Navia, M. A., Schiffer, C. A.
2018; 11 (553)
- **Discovery of Immunologically Inspired Small Molecules That Target the Viral Envelope Protein** *ACS INFECTIOUS DISEASES*
Lian, W., Jang, J., Potisopon, S., Li, P., Rahrneh, A., Wang, J., Kwiatkowski, N. P., Gray, N. S., Yang, P. L.
2018; 4 (9): 1395-1406
- **Inhibition of Flaviviruses by Targeting a Conserved Pocket on the Viral Envelope Protein** *CELL CHEMICAL BIOLOGY*
de Wispelaere, M., Lian, W., Potisopon, S., Li, P., Jang, J., Ficarro, S. B., Clark, M. J., Zhu, X., Kaplan, J. B., Pitts, J. D., Wales, T. E., Wang, J., Engen, et al
2018; 25 (8): 1006+
- **How small-molecule inhibitors of dengue-virus infection interfere with viral membrane fusion** *ELIFE*
Chao, L. H., Jang, J., Johnson, A., Nguyen, A., Gray, N. S., Yang, P. L., Harrison, S. C.
2018; 7
- **Antiviral activity of N-(4-hydroxyphenyl) retinamide (4-HPR) against Zika virus** *ANTIVIRAL RESEARCH*
Pitts, J. D., Li, P., de Wispelaere, M., Yang, P. L.
2017; 147: 124-130
- **Structure-Activity Relationship Study of QL47: A Broad-Spectrum Antiviral Agent** *ACS MEDICINAL CHEMISTRY LETTERS*
Liang, Y., de Wispelaere, M., Carocci, M., Liu, Q., Wang, J., Yang, P. L., Gray, N. S.
2017; 8 (3): 344-349
- **Discovery of host-targeted covalent inhibitors of dengue virus** *ANTIVIRAL RESEARCH*
de Wispelaere, M., Carocci, M., Liang, Y., Liu, Q., Sun, E., Vetter, M. L., Wang, J., Gray, N. S., Yang, P. L.
2017; 139: 171-179
- **Desmosterol Increases Lipid Bilayer Fluidity during Hepatitis C Virus Infection** *ACS INFECTIOUS DISEASES*
Costello, D. A., Villareal, V. A., Yang, P. L.
2016; 2 (11): 852-862
- **Hepatitis C Virus Selectively Alters the Intracellular Localization of Desmosterol** *ACS CHEMICAL BIOLOGY*
Villareal, V. A., Fu, D., Costello, D. A., Xie, X. S., Yang, P. L.

2016; 11 (7): 1827-1833

- **Identification and Characterization of a Novel Broad-Spectrum Virus Entry Inhibitor** *JOURNAL OF VIROLOGY*
Chou, Y., Cuevas, C., Carocci, M., Stubbs, S. H., Ma, M., Cureton, D. K., Chao, L., Evesson, F., He, K., Yang, P. L., Whelan, S. P., Ross, S. R., Kirchhausen, et al
2016; 90 (9): 4494-4510
- **GNF-2 Inhibits Dengue Virus by Targeting Abl Kinases and the Viral E Protein** *CELL CHEMICAL BIOLOGY*
Clark, M. J., Miduturu, C., Schmidt, A. G., Zhu, X., Pitts, J. D., Wang, J., Potisopon, S., Zhang, J., Wojciechowski, A., Chu, J., Gray, N. S., Yang, P. L.
2016; 23 (4): 443-452
- **Lactimidomycin is a broad-spectrum inhibitor of dengue and other RNA viruses** *ANTIVIRAL RESEARCH*
Carocci, M., Yang, P. L.
2016; 128: 57-62
- **Targeting host lipid synthesis and metabolism to inhibit dengue and hepatitis C viruses** *ANTIVIRAL RESEARCH*
Villareal, V. A., Rodgers, M. A., Costello, D. A., Yang, P. L.
2015; 124: 110-121
- **Multitarget, quantitative nanoplasmonic electrical field-enhanced resonating device (NE2RD) for diagnostics.** *Proceedings of the National Academy of Sciences of the United States of America*
Inci, F., Filippini, C., Baday, M., Ozen, M. O., Calamak, S., Durmus, N. G., Wang, S., Hanhauser, E., Hobbs, K. S., Juillard, F., Kuang, P. P., Vetter, M. L., Carocci, et al
2015; 112 (32): E4354-63
- **Multitarget, quantitative nanoplasmonic electrical field-enhanced resonating device ((NERD)-R-2) for diagnostics** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Inci, F., Filippini, C., Baday, M., Ozen, M. O., Calamak, S., Durmus, N. G., Wang, S., Hanhauser, E., Hobbs, K. S., Juillard, F., Kuang, P. P., Vetter, M. L., Carocci, et al
2015; 112 (32): E4354-E4363
- **The Bioactive Lipid 4-Hydroxyphenyl Retinamide Inhibits Flavivirus Replication** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*
Carocci, M., Hinshaw, S. M., Rodgers, M. A., Villareal, V. A., Burri, D. J., Pilankatta, R., Maharaj, N. P., Gack, M. U., Stavale, E. J., Warfield, K. L., Yang, P. L.
2015; 59 (1): 85-95
- **Fluorescent Visualization of Src by Using Dasatinib-BODIPY** *CHEMBIOCHEM*
Vetter, M. L., Zhang, Z., Liu, S., Wang, J., Cho, H., Zhang, J., Zhang, W., Gray, N. S., Yang, P. L.
2014; 15 (9): 1317-1324
- **The Small Molecules AZD0530 and Dasatinib Inhibit Dengue Virus RNA Replication via Fyn Kinase** *JOURNAL OF VIROLOGY*
de Wispelaere, M., LaCroix, A. J., Yang, P. L.
2013; 87 (13): 7367-7381
- **Chemoproteomic Profiling Identifies Changes in DNA-PK as Markers of Early Dengue Virus Infection** *ACS CHEMICAL BIOLOGY*
Vetter, M. L., Rodgers, M. A., Patricelli, M. P., Yang, P. L.
2012; 7 (12): 2019-2026
- **Mutagenesis of the DI/DIII Linker in Dengue Virus Envelope Protein Impairs Viral Particle Assembly** *JOURNAL OF VIROLOGY*
de Wispelaere, M., Yang, P. L.
2012; 86 (13): 7072-7083
- **Lipid Metabolite Profiling Identifies Desmosterol Metabolism as a New Antiviral Target for Hepatitis C Virus** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Rodgers, M. A., Villareal, V. A., Schaefer, E. A., Peng, L. F., Corey, K. E., Chung, R. T., Yang, P. L.
2012; 134 (16): 6896-6899
- **Small-Molecule Inhibitors of Dengue-Virus Entry** *PLOS PATHOGENS*
Schmidt, A. G., Lee, K., Yang, P. L., Harrison, S. C.
2012; 8 (4)
- **Anti-HCV drugs in the pipeline** *CURRENT OPINION IN VIROLOGY*
Yang, P. L., Gao, M., Lin, K., Liu, Q., Villareal, V. A.

2011; 1 (6): 607-616

- **Peptide Inhibitors of Flavivirus Entry Derived from the E Protein Stem** *JOURNAL OF VIROLOGY*
Schmidt, A. G., Yang, P. L., Harrison, S. C.
2010; 84 (24): 12549-12554
- **Peptide Inhibitors of Dengue-Virus Entry Target a Late-Stage Fusion Intermediate** *PLOS PATHOGENS*
Schmidt, A. G., Yang, P. L., Harrison, S. C.
2010; 6 (4): e1000851
- **Identification of an Overabundant Cholesterol Precursor in Hepatitis B Virus Replicating Cells by Untargeted Lipid Metabolite Profiling** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Rodgers, M. A., Saghatelian, A., Yang, P. L.
2009; 131 (14): 5030+
- **Targeting cancer with small molecule kinase inhibitors** *NATURE REVIEWS CANCER*
Zhang, J., Yang, P. L., Gray, N. S.
2009; 9 (1): 28-39
- **c-Src protein kinase inhibitors block assembly and maturation of dengue virus** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Chu, J. H., Yang, P. L.
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- **The immunological evolution of catalysis** *SCIENCE*
Patten, P. A., Gray, N. S., Yang, P. L., Marks, C. B., Wedemayer, G. J., Boniface, J. J., Stevens, R. C., Schultz, P. G.
1996; 271 (5252): 1086-91