Stanford

Ellen Yeh

Associate Professor of Pathology and of Microbiology and Immunology

CLINICAL OFFICE (PRIMARY)

- **Surgical Pathology**

  300 Pasteur Dr Rm H2110

  MC 5243

  Palo Alto, CA 94304

  Tel (877) 717-3733 **Fax** (650) 725-7409

Bio

ACADEMIC APPOINTMENTS

- Associate Professor, Pathology
- Associate Professor, Microbiology and Immunology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Medical Scientist Training Program (MSTP), NIH (2001-2008)
- Career Award for Medical Scientists, Burroughs-Wellcome Fund (2012-2017)
- Early Career Independence Award (DP5), NIH (2012-2017)

PROFESSIONAL EDUCATION

- Board Certification: Medical Microbiology, American Society for Microbiology (2019)
- Residency: Stanford University Pathology Residency (2011) CA
- Medical Education: Harvard Medical School (2008) MA
- MD, Harvard Medical School , Medicine (2008)
- PhD, Harvard Medical School , Biophysics (2006)
- BA, Harvard University , Biochemical Sciences (2001)

LINKS

- YEH LAB website: http://yehlab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Lab website: http://yehlab.stanford.edu/

Cellular symbioses

Environmental microbiology

Microbial ecology

Synthetic biology/ bioengineering

Diatoms, algae, non-model organism biology

Our research program focuses on understudied microbial ecology as solutions for planet health. Evolution was a prolific experimenter… too bad it kept such a gawd-awful lab notebook! (You know the kind with missing pages, post-it note patch jobs…) But the results of these experiments are everywhere around us. Shouldn't we learn from millions of years of experiments (that's a lot of PhD/postdoc stints)? If only we would look beyond metazoan, human-centric biology, we would discover a world of innovation. Not only is this functional diversity beautiful and awe-inspiring on its own, they could serve as blueprints for solutions to our environmental challenges and the basis for a new era of synthetic biology.
There's a ton of functional diversity out there to explore, so let's get going! We are currently working on nitrogen-fixing cyanobacteria and algae, genetic screens in diatoms, and algal biofuels.

Teaching

COURSES

2025-26

- Physician Scientist Hour: INDE 217 (Aut, Win)

2024-25

- Physician Scientist Hour: INDE 217 (Aut, Win, Spr)

2023-24

- Physician Scientist Hour: INDE 217 (Aut, Win, Spr)

2022-23

- Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites: MI 210 (Spr)
- Physician Scientist Hour: INDE 217 (Aut, Win, Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Tejas Dharmaraj, Taylor Pursell

Postdoctoral Faculty Sponsor

Trisha Chong, Cynthia Gee, Michal Karlicki, Stefano Lometto, Solene Moulin, Alexandre Six, Melissa Steele-Ogus, Lev Tsypin

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (Phd Program)

- Infectious Diseases (Fellowship Program)
- Microbiology and Immunology (Phd Program)

Publications

PUBLICATIONS

- **Diatom ultrastructural diversity across controlled and natural environments.** *Current biology : CB*
  Flori, S., Mikus, F., Flaum, E., Moog, K., Guessoum, S., Beavis, T., Zwahlen, S. M., Romero-Brey, I., Oorshot, V., Olivetta, M., Steele-Ogus, M., Yeh, E., Mobile Labs Team, et al
  2025

- **Genomes of nitrogen-fixing eukaryotes reveal an alternate path for organellogenesis.** *Proceedings of the National Academy of Sciences of the United States of America*
  Frail, S., Steele-Ogus, M., Doenier, J., Moulin, S. L., Braukmann, T., Xu, S., Yeh, E.
  2025; 122 (33): e2507237122

- **Direct long-read visualization reveals hidden variation in GCH1 gene copy number and precise expansion steps.** *BMC genomics*
  Liu, S., Zulawinska, J., Ebel, E. R., Luniewski, A., Danis, C., Simpson, M. L., Kim, J., Ene, N., Braukmann, T. W., Congdon, M., Santos, W., Yeh, E., Guler, et al
  2025; 26 (1): 671

- **Genomes of nitrogen-fixing eukaryotes reveal a non-canonical model of organellogenesis.** *bioRxiv : the preprint server for biology*
  Frail, S., Steele-Ogus, M., Doenier, J., Moulin, S. L., Braukmann, T., Xu, S., Yeh, E.
  2024

- **A fast-acting inhibitor of blood-stageP. falciparumwith mechanism distinct from artemisinin and chloroquine.** *bioRxiv : the preprint server for biology*
  Kabeche, S., Meister, T., Yeh, E.
  2024

- **Mixed alkyl/aryl phosphonates identify metabolic serine hydrolases as antimalarial targets.** *Cell chemical biology*
  Bennett, J. M., Narwal, S. K., Kabeche, S., Abegg, D., Thathy, V., Hackett, F., Yeo, T., Li, V. L., Muir, R., Faucher, F., Lovell, S., Blackman, M. J., Adibekian, et al
  2024

- **A picomolar inhibitor of thePlasmodium falciparumIPP pathway.** *Antimicrobial agents and chemotherapy*
  Kabeche, S., Braukmann, T., Doenier, J., Meister, T., Yeh, E.
  2024: e0123823

- **Mixed Alkyl/Aryl Phosphonates Identify Metabolic Serine Hydrolases as Antimalarial Targets.** *bioRxiv : the preprint server for biology*
  Bennett, J. M., Narwal, S. K., Kabeche, S., Abegg, D., Hackett, F., Yeo, T., Li, V. L., Muir, R. K., Faucher, F. F., Lovell, S., Blackman, M. J., Adibekian, A., Yeh, et al
  2024

- **The endosymbiont ofEpithemia clementinais specialized for nitrogen fixation within a photosynthetic eukaryote.** *ISME communications*
  Moulin, S. L., Frail, S., Braukmann, T., Doenier, J., Steele-Ogus, M., Marks, J. C., Mills, M. M., Yeh, E.
  2024; 4 (1): ycae055

- **Covalent Macrocyclic Proteasome Inhibitors Mitigate Resistance in Plasmodium falciparum.** *ACS infectious diseases*
  Bennett, J. M., Ward, K. E., Muir, R. K., Kabeche, S., Yoo, E., Yeo, T., Lam, G., Zhang, H., Almaliti, J., Berger, G., Faucher, F. F., Lin, G., Gerwick, et al
  2023

- **Expansion of GTP cyclohydrolase I copy number in malaria parasites resistant to a pyrimidine biosynthesis inhibitor.** *bioRxiv : the preprint server for biology*
  Liu, S., Ebel, E. R., Kim, J., Ene, N., Braukmann, T. W., Yeh, E., Egan, E. S., Guler, J. L.
  2023

- **Structure-Function Relationship for a Divergent Atg8 Protein Required for a Nonautophagic Function in Apicomplexan Parasites.** *mBio*

Walczak, M., Meister, T. R., Nguyen, H. M., Zhu, Y., Besteiro, S., Yeh, E.
2023: e0364221

- **Nonbisphosphonate inhibitors of Plasmodium falciparum FPPS/GGPPS.** *Bioorganic & medicinal chemistry letters*
  Kabeche, S., Aida, J., Akther, T., Ichikawa, T., Ochida, A., Pulkoski-Gross, M. J., Smith, M., Humphries, P. S., Yeh, E.
  2021: 127978

- **CaaX-Like Protease of Cyanobacterial Origin Is Required for Complex Plastid Biogenesis in Malaria Parasites.** *mBio*
  Meister, T. R., Tang, Y., Pulkoski-Gross, M. J., Yeh, E.
  2020; 11 (5)

- **Identification of anisomycin, prodigiosin and obatoclax as compounds with broad-spectrum anti-parasitic activity** *PLOS NEGLECTED TROPICAL DISEASES*
  Ehrenkaufer, G., Li, P., Stebbins, E. E., Kangussu-Marcolino, M. M., Debnath, A., White, C., Moser, M. S., DeRisi, J., Gisselberg, J., Yeh, E., Wang, S. C., Company, A., Monti, et al
  2020; 14 (3)

- **Identification of anisomycin, prodigiosin and obatoclax as compounds with broad-spectrum anti-parasitic activity.** *PLoS neglected tropical diseases*
  Ehrenkaufer, G. n., Li, P. n., Stebbins, E. E., Kangussu-Marcolino, M. M., Debnath, A. n., White, C. V., Moser, M. S., DeRisi, J. n., Gisselberg, J. n., Yeh, E. n., Wang, S. C., Company, A. H., Monti, et al
  2020; 14 (3): e0008150

- **A mutagenesis screen for essential plastid biogenesis genes in human malaria parasites.** *PLoS biology*
  Tang, Y., Meister, T. R., Walczak, M., Pulkoski-Gross, M. J., Hari, S. B., Sauer, R. T., Amberg-Johnson, K., Yeh, E.
  2019; 17 (2): e3000136

- **Host Cell Metabolism Contributes to Delayed-Death Kinetics of Apicoplast Inhibitors in Toxoplasma gondii** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*
  Amberg-Johnson, K., Yeh, E.
  2019; 63 (2)

- **A mutagenesis screen for essential plastid biogenesis genes in human malaria parasites** *PLOS BIOLOGY*
  Tang, Y., Meister, T. R., Walczak, M., Pulkoski-Gross, M. J., Hari, S. B., Sauer, R. T., Amberg-Johnson, K., Yeh, E.
  2019; 17 (2)

- **Disruption of Apicoplast Biogenesis by Chemical Stabilization of an Imported Protein Evades the Delayed-Death Phenotype in Malaria Parasites.** *mSphere*
  Boucher, M. J., Yeh, E.
  2019; 4 (1)

- **Plastid-endomembrane connections in apicomplexan parasites.** *PLoS pathogens*
  Boucher, M. J., Yeh, E. n.
  2019; 15 (6): e1007661

- **Disruption of Apicoplast Biogenesis by Chemical Stabilization of an Imported Protein Evades the Delayed-Death Phenotype in Malaria Parasites** *MSPHERE*
  Etoucher, M. J., Yeh, E.
  2019; 4 (1)

- **Host cell metabolism contributes to delayed-death kinetics of apicoplast inhibitors in Toxoplasma gondii.** *Antimicrobial agents and chemotherapy*
  Amberg-Johnson, K., Yeh, E.
  2018

- **Erratum for Foe et al., "The Toxoplasma gondii Active Serine Hydrolase 4 Regulates Parasite Division and Intravacuolar Parasite Architecture".** *mSphere*
  Foe, I. T., Onguka, O., Amberg-Johnson, K., Garner, R. M., Amara, N., Beatty, W., Yeh, E., Bogyo, M.
  2018; 3 (5)

- **The Toxoplasma gondii Active Serine Hydrolase 4 Regulates Parasite Division and Intravacuolar Parasite Architecture.** *mSphere*

Foe, I. T., Onguka, O., Amberg-Johnson, K., Garner, R. M., Amara, N., Beatty, W., Yeh, E., Bogyo, M.
2018; 3 (5)

- **Integrative proteomics and bioinformatic prediction enable a high-confidence apicoplast proteome in malaria parasites.** *PLoS biology*
  Boucher, M. J., Ghosh, S., Zhang, L., Lal, A., Jang, S. W., Ju, A., Zhang, S., Wang, X., Ralph, S. A., Zou, J., Elias, J. E., Yeh, E.
  2018; 16 (9): e2005895
- **The Toxoplasma gondii Active Serine Hydrolase 4 Regulates Parasite Division and Intravacuolar Parasite Architecture (vol 3, e00393-18, 2018)** *MSPHERE*
  Foe, I. T., Onguka, O., Amberg-Johnson, K., Garner, R. M., Amara, N., Beatty, W., Yeh, E., Bogyo, M.
  2018; 3 (5)
- **The Toxoplasma gondii Active Serine Hydrolase 4 Regulates Parasite Division and Intravacuolar Parasite Architecture** *MSPHERE*
  Foe, I. T., Onguka, O., Amberg-Johnson, K., Garner, R. M., Amara, N., Beatty, W., Yeh, E., Bogyo, M.
  2018; 3 (5)
- **The Toxoplasma gondii Active Serine Hydrolase 4 Regulates Parasite Division and Intravacuolar Parasite Architecture (vol 3, e00393-18, 2018)** *MSPHERE*
  Foe, I. T., Onguka, O., Amberg-Johnson, K., Garner, R. M., Amara, N., Beatty, W., Yeh, E., Bogyo, M.
  2018; 3 (5)
- **Specific Inhibition of the Bifunctional Farnesyl/Geranylgeranyl Diphosphate Synthase in Malaria Parasites via a New Small-Molecule Binding Site** *CELL CHEMICAL BIOLOGY*
  Gisselberg, J. E., Herrera, Z., Orchard, L. M., Llinas, M., Yeh, E.
  2018; 25 (2): 185-+
- **ATG8 Is Essential Specifically for an Autophagy-Independent Function in Apicoplast Biogenesis in Blood-Stage Malaria Parasites.** *mBio*
  Walczak, M., Ganesan, S. M., Niles, J. C., Yeh, E.
  2018; 9 (1)
- **Small molecule inhibition of apicomplexan FtsH1 disrupts plastid biogenesis in human pathogens** *ELIFE*
  Amberg-Johnson, K., Hari, S. B., Ganesan, S. M., Lorenzi, H. A., Sauer, R. T., Niles, J. C., Yeh, E.
  2017; 6
- **The Prenylated Proteome of Plasmodium falciparum Reveals Pathogen-specific Prenylation Activity and Drug Mechanism-of-action** *MOLECULAR & CELLULAR PROTEOMICS*
  Gisselberg, J. E., Zhang, L., Elias, J. E., Yeh, E.
  2017; 16 (4): S54-S64
- **The apicoplast: now you see it, now you don't** *INTERNATIONAL JOURNAL FOR PARASITOLOGY*
  McFadden, G. I., Yeh, E.
  2017; 47 (2-3): 137-144
- **A Chemical Rescue Screen Identifies a Plasmodium falciparum Apicoplast Inhibitor Targeting MEP Isoprenoid Precursor Biosynthesis.** *Antimicrobial agents and chemotherapy*
  Wu, W., Herrera, Z., Ebert, D., Baska, K., Cho, S. H., DeRisi, J. L., Yeh, E.
  2015; 59 (1): 356-364
- **Chemical Rescue of Malaria Parasites Lacking an Apicoplast Defines Organelle Function in Blood-Stage Plasmodium falciparum** *PLOS BIOLOGY*
  Yeh, E., DeRisi, J. L.
  2011; 9 (8)
- **Immediate Incubation Reduces Indeterminate Results for QuantiFERON-TB Gold In-Tube Assay** *JOURNAL OF CLINICAL MICROBIOLOGY*
  Herrera, V., Yeh, E., Murphy, K., Parsonnet, J., Banaei, N.
  2010; 48 (8): 2672-2676
- **Real-Time PCR Testing for mecA Reduces Vancomycin Usage and Length of Hospitalization for Patients Infected with Methicillin-Sensitive Staphylococci** *JOURNAL OF CLINICAL MICROBIOLOGY*
  Nguyen, D. T., Yeh, E., Perry, S., Luo, R. F., Pinsky, B. A., Lee, B. P., Sisodiya, D., Baron, E. J., Banaei, N.
  2010; 48 (3): 785-790

- **Preferential Lower Respiratory Tract Infection in Swine-Origin 2009 A(H1N1) Influenza** *CLINICAL INFECTIOUS DISEASES*
  Yeh, E., Luo, R. F., Dyner, L., Hong, D. K., Banaei, N., Baron, E. J., Pinsky, B. A.
  2010; 50 (3): 391-394
- **Hair Sheep Blood, Citrated or Defibrinated, Fulfills All Requirements of Blood Agar for Diagnostic Microbiology Laboratory Tests** *PLOS ONE*
  Yeh, E., Pinsky, B. A., Banaei, N., Baron, E. J.
  2009; 4 (7)
- **Chlorination by a long-lived intermediate in the mechanism of flavin-dependent halogenases** *BIOCHEMISTRY*
  Yeh, E., Blasiak, L. C., Koglin, A., Drennan, C. L., Walsh, C. T.
  2007; 46 (5): 1284-1292
- **Characterization of the aminocarboxycyclopropane-forming enzyme CmaC** *BIOCHEMISTRY*
  Kelly, W. L., Boyne, M. T., Yeh, E., Vosburg, D. A., Galonic, D. P., Kelleher, N. L., Walsh, C. T.
  2007; 46 (2): 359-368
- **Enzymatic generation of the antimetabolite gamma,gamma-dichloroaminobutyrate by NRPS and mononuclear iron halogenase action in a streptomycete** *CHEMISTRY & BIOLOGY*
  Ueki, M., Galonic, D. P., Vaillancourt, F. H., Garneau-Tsodikova, S., Yeh, E., Vosburg, D. A., Schroeder, F. C., Osada, H., Walsh, C. T.
  2006; 13 (11): 1183-1191
- **Nature's inventory of halogenation catalysts: Oxidative strategies predominate** *CHEMICAL REVIEWS*
  Vaillancourt, F. H., Yeh, E., Vosburg, D. A., Garneau-Tsodikova, S., Walsh, C. T.
  2006; 106 (8): 3364-3378
- **Flavin redox chemistry precedes substrate chlorination during the reaction of the flavin-dependent halogenase RebH** *BIOCHEMISTRY*
  Yeh, E., Cole, L. J., Barr, E. W., Bollinger, J. M., Ballou, D. P., Walsh, C. T.
  2006; 45 (25): 7904-7912
- **Dichlorination of a pyrrolyl-S-carrier protein by FADH(2)-dependent halogenase PltA during pyoluteorin biosynthesis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Dorrestein, P. C., Yeh, E., Garneau-Tsodikova, S., Kelleher, N. L., Walsh, C. T.
  2005; 102 (39): 13843-13848
- **Cryptic chlorination by a non-haem iron enzyme during cyclopropyl amino acid biosynthesis** *NATURE*
  Vaillancourt, F. H., Yeh, E., Vosburg, D. A., O'Connor, S. E., Walsh, C. T.
  2005; 436 (7054): 1191-1194
- **Robust in vitro activity of RebF and RebH, a two-component reductase/halogenase, generating 7-chlorotryptophan during rebeccamycin biosynthesis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Yeh, E., Garneau, S., Walsh, C. T.
  2005; 102 (11): 3960-3965
- **Enhanced macrocyclizing activity of the thioesterase from tyrocidine synthetase in presence of nonionic detergent** *CHEMISTRY & BIOLOGY*
  Yeh, E., Lin, H. N., Clugston, S. L., Kohli, R. M., Walsh, C. T.
  2004; 11 (11): 1573-1582
- **Type II thioesterase restores activity of a NRPS module stalled with an aminoacyl-S-enzyme that cannot be elongated** *CHEMBIOCHEM*
  Yeh, E., Kohli, R. M., Bruner, S. D., Walsh, C. T.
  2004; 5 (9): 1290-1293