Stanford



Ellen Yeh

Associate Professor of Pathology, of Microbiology and Immunology and, by courtesy, of Bioengineering

CLINICAL OFFICE (PRIMARY)

- **Surgical Pathology**

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

Bio

ACADEMIC APPOINTMENTS

- Associate Professor, Pathology
- Associate Professor, Microbiology and Immunology
- Associate Professor (By courtesy), Bioengineering
- 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

2026-27

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

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)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Trisha Chong, Cynthia Gee, Michal Karlicki, Stefano Lometto, 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

- **A genome-wide CRISPR screen reveals how diatoms thrive in dynamic light.** *Proceedings of the National Academy of Sciences of the United States of America*
  Doenier, J., Tolleter, D., Frail, S., Finazzi, G., Burlacot, A., Yeh, E.
  2026; 123 (25): e2532811123

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