Stanford

Emily Woods

Postdoctoral Scholar, Pathology

Bio

BIO

I am a physician scientist, currently training as a postdoctoral researcher in the Bogyo lab. Broadly, my research interest is focused on the urgent problem of antimicrobial resistance. Diagnostics are an important tool for addressing antimicrobial resistance, because rapid identification of the causative pathogen can help decrease the use of overly broad-spectrum antibiotics. My current work is on the development of probes for diagnosis of Staphylococcus aureus infections and for identification of bacterial ear infections (otitis media). My prior work (completed during my PhD in the McBride lab at Emory University) focused on genetic mechanisms of resistance to antimicrobial peptides in Clostridioides difficile. I also received my MD from Emory University and completed residency in Internal Medicine at Stanford. My clinical interests include hospital medicine, social determinants of health, and health advocacy.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Emory University (2017)
- Bachelor of Science, Rhodes College (2012)
- Doctor of Medicine, Emory University (2020)
- Residency, Stanford University , Internal Medicine (2023)
- MD, Emory University (2020)
- PhD, Emory University , Microbiology and Molecular Genetics (2017)
- BS, Rhodes College (2012)

STANFORD ADVISORS

- Matthew Bogyo, Postdoctoral Faculty Sponsor

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Broadly, my research interest is focused on the urgent problem of antimicrobial resistance. Diagnostics are an important tool for addressing antimicrobial resistance, because rapid identification of the causative pathogen can help decrease the use of overly broad-spectrum antibiotics. One component of my current work focuses on development of novel probes for identifying S. aureus infections. In particular, I am developing targeted microbubbles that can be used to detect S. aureus endocarditis (infection of the heart valves) by ultrasound. Another component of my current work focuses on identifying probes that could be used to identify bacterial causes of ear infections (otitis media).

LAB AFFILIATIONS

- Matthew Bogyo, Bogyo Lab (7/24/2023)

Publications

PUBLICATIONS

- **Imaging of Staphylococcus aureus Infections and Biofilms Using a Selective Covalent Probe for the Unique Serine Hydrolase FphE.** *Angewandte Chemie (International ed. in English)*
  Woods, E. C., Upadhyay, T., Park, K. W., Su, S. P., Xiao, Z., Rao, J., Valdez, T. A., Jo, J., Bogyo, M.
  2026: e9575966

- **Imaging of Staphylococcus aureus infections and biofilms using a selective covalent probe for the unique serine hydrolase FphE.** *bioRxiv : the preprint server for biology*
  Woods, E. C., Upadhyay, T., Park, K. W., Su, S. P., Xiao, Z., Rao, J., Valdez, T. A., Jo, J., Bogyo, M.
  2026

- **Identification of covalent inhibitors of Staphylococcus aureus serine hydrolases important for virulence and biofilm formation.** *Nature communications*
  Upadhyay, T., Woods, E. C., Dela Ahator, S., Julin, K., Faucher, F. F., Uddin, M. J., Hollander, M. J., Pedowitz, N. J., Abegg, D., Hammond, I., Eke, I. E., Wang, S., Chen, et al
  2025; 16 (1): 5046

- **Chemical strategies for targeting lipid pathways in bacterial pathogens.** *Current opinion in chemical biology*
  Carter, A. M., Woods, E. C., Bogyo, M.
  2025; 86: 102596

- **An mRNA Display Approach for Covalent Targeting of a Staphylococcus aureus Virulence Factor.** *Journal of the American Chemical Society*
  Wang, S., Woods, E. C., Jo, J., Zhu, J., Hansel-Harris, A., Holcomb, M., Llanos, M., Pedowitz, N. J., Upadhyay, T., Bennett, J., Fellner, M., Park, K. W., Zhang, et al
  2025

- **Covalent-fragment screening identifies selective inhibitors of multiple Staphylococcus aureus serine hydrolases important for growth and biofilm formation.** *Research square*
  Bogyo, M., Upadhyay, T., Woods, E., Ahator, S., Julin, K., Faucher, F., Hollander, M., Pedowitz, N., Abegg, D., Hammond, I., Eke, I., Wang, S., Chen, et al
  2024

- **An mRNA Display Approach for Covalent Targeting of a Staphylococcus aureus Virulence Factor.** *bioRxiv : the preprint server for biology*
  Wang, S., Woods, E. C., Jo, J., Zhu, J., Hansel-Harris, A., Holcomb, M., Pedowitz, N. J., Upadhyay, T., Bennett, J., Fellner, M., Park, K. W., Zhang, A., Valdez, et al
  2024

- **Polymer-Tethered Quenched Fluorescent Probes for Enhanced Imaging of Tumor-Associated Proteases.** *ACS sensors*
  Hadzima, M., Faucher, F. F., Blažková, K., Yim, J. J., Guerra, M., Chen, S., Woods, E. C., Park, K. W., Šácha, P., Šubr, V., Kostka, L., Etrych, T., Majer, et al
  2024

- **Likelihood of COVID-19 Outbreaks in US Immigration and Customs Enforcement (ICE) Detention Centers, 2020–2021.** *American journal of public health*
  Woods, E. C., Andrews, J. R., Goldhaber-Fiebert, J. D.
  2024: e1-e4

- **Development of Oxadiazolone Activity-Based Probes Targeting FphE for Specific Detection of Staphylococcus aureus Infections.** *Journal of the American Chemical Society*
  Jo, J., Upadhyay, T., Woods, E. C., Park, K. W., Pedowitz, N. J., Jaworek-Korjakowska, J., Wang, S., Valdez, T. A., Fellner, M., Bogyo, M.
  2024

- **Clinical reasoning for performance of transesophageal echocardiography in veterans with Staphylococcus aureus bacteremia.** *Antimicrobial stewardship & healthcare epidemiology : ASHE*

Woods, E. C., Nakasone, T. S., Renault, C. A.
2023; 3 (1): e221

- **Comparison of Antibody Class-Specific SARS-CoV-2 Serologies for the Diagnosis of Acute COVID-19.** *Journal of clinical microbiology*
  Verkerke, H., Horwath, M., Saeedi, B., Boyer, D., Allen, J. W., Owens, J., Arthur, C. M., Nakahara, H., Rha, J., Patel, K., Wu, S. C., Paul, A., Yasin, et al
  2021; 59 (4)

- **Cationic Homopolymers Inhibit Spore and Vegetative Cell Growth of Clostridioides difficile.** *ACS infectious diseases*
  Jones, J. B., Liu, L., Rank, L. A., Wetzel, D., Woods, E. C., Biok, N., Anderson, S. E., Lee, M., Liu, R., Huth, S., Sandhu, B. K., Gellman, S. H., McBride, et al
  2021

- **Regulation and Anaerobic Function of the Clostridioides difficile beta-Lactamase** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*
  Sandhu, B. K., Edwards, A. N., Anderson, S. E., Woods, E. C., McBride, S. M.
  2020; 64 (1)

- **Examination of the Clostridioides (Clostridium) difficile VanZ ortholog, CD1240**
  Woods, E. C., Wetzel, D., Mukerjee, M., McBride, S. M.
  ELSEVIER SCI LTD.2018: 108–15

- **The C. difficile clnRAB operon initiates adaptations to the host environment in response to LL-37** *PLOS PATHOGENS*
  Woods, E. C., Edwards, A. N., Childress, K. O., Jones, J. B., McBride, S. M.
  2018; 14 (8): e1007153

- **Ethanolamine is a valuable nutrient source that impacts Clostridium difficile pathogenesis** *ENVIRONMENTAL MICROBIOLOGY*
  Nawrocki, K. L., Wetzel, D., Jones, J. B., Woods, E. C., McBride, S. M.
  2018; 20 (4): 1419–35

- **Regulation of antimicrobial resistance by extracytoplasmic function (ECF) sigma factors.** *Microbes and infection*
  Woods, E. C., McBride, S. M.
  2017; 19 (4-5): 238-248

- **The Phosphotransfer Protein CD1492 Represses Sporulation Initiation in Clostridium difficile** *INFECTION AND IMMUNITY*
  Childress, K. O., Edwards, A. N., Nawrocki, K. L., Anderson, S. E., Woods, E. C., McBride, S. M.
  2016; 84 (12): 3434–44

- **The Clostridium difficile Dlt Pathway Is Controlled by the Extracytoplasmic Function Sigma Factor σV in Response to Lysozyme.** *Infection and immunity*
  Woods, E. C., Nawrocki, K. L., Suárez, J. M., McBride, S. M.
  2016; 84 (6): 1902-1916

- **An alkaline phosphatase reporter for use in Clostridium difficile** *ANAEROBE*
  Edwards, A. N., Pascual, R. A., Childress, K. O., Nawrocki, K. L., Woods, E. C., McBride, S. M.
  2015; 32: 98–104