

Yolande A. Chan, PhD

Education

Fellow	University of Nebraska Medical Center, Omaha, NE	July 2022
PhD	Microbiology, University of Wisconsin, Madison	2002-2009
	60 quarter hours earned in doctoral program in microbiology, Ohio State University, Columbus, Ohio	2001-2002
BA	Barnard College, Columbia University, New York New York	May 2000

Research Training

CITI Program

Biomedical Responsible Conduct of Research

February 2021

Group 1: Biomedical Research

March 2021

Group 2: Good Clinical Practice (GCP)

March 2021

Publications

Schaub, R. E., **Chan Y. A.**, Lee M., Heseck D., Mobashery S., & Dillard J. P. (2016). Lytic transglycosylases LtgA and LtgD perform distinct roles in remodeling, recycling and releasing peptidoglycan in *Neisseria gonorrhoeae*. *Molecular Microbiology*, 102(5), 865-881.

Kohler P. L., **Chan Y. A.**, Hackett K. T., Turner N., Hamilton H. L., Cloud-Hansen K. A., & Dillard J. P. (2013). Mating pair formation homologue TraG is a variable membrane protein essential for contact-independent type IV secretion of chromosomal DNA by *Neisseria gonorrhoeae*. *Journal of Bacteriology*, 195(8), 1666-1679.

Chan Y. A., Hackett K. T., & Dillard J. P. (2012). The lytic transglycosylases of *Neisseria gonorrhoeae*. *Microbial Drug Resistance*, 18(3), 271-279.

Chan Y. A., *Stohl E. A., Hackett K. T., Kohler P. L., Dillard J. P., & Seifert H. S. (2012). *Neisseria gonorrhoeae*

virulence factor NG1686 is a bifunctional M23B family metallopeptidase that influences resistance to hydrogen peroxide and colony morphology. *Journal of Biological Chemistry*, 287(14), 11222-11233. (*co-first author)

Chan Y. A. & Thomas M. G. (2010). Recognition of (2S)-aminomalonyl-acyl carrier protein (ACP) and (2R)-hydroxymalonyl-ACP by acyltransferases in zwittermicin A biosynthesis. *Biochemistry*, 49(17), 3667-3677.

Chan Y. A., Podevels A. M., Kevany B. M., & Thomas M. G. (2009). Biosynthesis of polyketide synthase extender units. *Natural Product Reports*, 26(1), 90-114.

Chan Y. A. & Thomas M. G. (2009). Formation and characterization of acyl carrier protein-linked polyketide synthase extender units. *Methods in Enzymology*, 459, 143-163.

Felnagle E. A., Jackson E. E., **Chan Y. A.**, Podevels A. M., Berti A. D., McMahon M. D., & Thomas M. G. (2008). Nonribosomal peptide synthetases involved in the production of medically relevant natural products. *Molecular Pharmaceutics*, 5(2), 191-211.

Chan Y. A., Boyne M. T. 2nd, Podevels A. M., Klimowicz A. K., Handelsman J., Kelleher N. L., & Thomas M. G. (2006). Hydroxymalonyl-acyl carrier protein (ACP) and aminomalonyl-ACP are two additional type I polyketide synthase extender units. *Proceedings of the National Academy of Sciences USA*, 103(39), 14349-14354.

Thomas M. G., **Chan Y. A.**, & Ozanick S. G. (2003). Deciphering tuberactinomycin biosynthesis: isolation, sequencing, and annotation of the viomycin biosynthetic gene cluster. *Antimicrobial Agents and Chemotherapy*, 47(9), 2823-2830.

Bandyopadhyay P., Byrne B., **Chan Y.**, Swanson M. S., & Steinman H. M. (2003). *Legionella pneumophila* catalase-peroxidases are required for proper trafficking and growth in primary macrophages. *Infection and Immunity*, 71(8), 4526-4535.

Teaching Experience

Adjunct Instructor, Edgewood College (Jun 2012 – Aug 2012)

Taught an accelerated Human Cell Biology & Genetics course (lecture and lab) for undergraduates

Research Experience

Postdoctoral Researcher, University of Wisconsin–Madison (Sep 2009 – Jan 2012)

Peptidoglycan metabolism in *Neisseria gonorrhoeae*

- Analyzed enzymes involved in the formation and release of toxic peptidoglycan fragments
- Purified and characterized peptidoglycan fragments from culture supernatants and enzymatic reactions using solid-phase extraction and/or HPLC and MS
- Characterized the virulence factor NG1686 as a bifunctional metalloprotein with endopeptidase and D,D-carboxypeptidase activities
- Collaborated to develop a fallopian tube organ culture model of infection for *N. gonorrhoeae*
- Skills acquired include tissue/organ culture, peptidoglycan analysis, *N. gonorrhoeae* genetics

Graduate Research Assistant, University of Wisconsin–Madison (Jan 2003 – May 2009)

Formation and incorporation of unusual precursors in antibiotic biosynthetic pathways

- Reconstituted two entire enzyme pathways *in vitro* using heterologously purified enzymes (involving 6 or more enzymes each) in an HPLC/MALDI-TOF MS-based assay
- Discovered 2 new polyketide synthase extender units in the biosynthesis of the antibiotic zwittermicin A: hydroxymalonyl-acyl carrier protein (HM-ACP) and aminomalonyl-acyl carrier protein (AM-ACP)
- Characterized the enzymes involved in incorporating HM-ACP and AM-ACP into zwittermicin A
- Annotated the biosynthetic gene cluster for the anti-tuberculosis drug viomycin
- Skills acquired include cloning and vector construction in multiple hosts; production and purification of small metabolites from multiple hosts; enzyme purification; enzyme assay design; and mastery of HPLC, FPLC, TLC, and MALDI-TOF MS
- Awards received: William H. Peterson Predoctoral Fellowship; Chemistry-Biology Interface Training

Grant; Vilas Travel Award; First Place, Wisconsin Biotechnology & Medical Device Association Poster Contest; Phillip and Vera Gerhardt Graduate Travel Award; & Honorable Mention, National Science Foundation Graduate Research Fellowship

Graduate Research Assistant, Ohio State University (Jun 2001 – Mar 2002)

Nodulation competitiveness of *Rhizobium etli*

- Analyzed wild type and mutant strains of *R. etli* for their ability to nodulate *Phaseolus vulgaris*
- Examined exopolysaccharide and lipopolysaccharide profiles for *R. etli* strains
- Performed *in vivo* crosslinking and Western blot experiments to determine the oligomeric state of a global regulator involved in nodulation
- Skills acquired include cloning and vector construction, Western blotting, and nodulation assays
- Awards received: Molecular Life Sciences Initiative Fellowship & Distinguished University Fellowship

Patents

M. G. Thomas, J. Handelsman, **Y. A. Chan**, & A. M. Podevels. (2014). *Type I polyketide synthase extender units* (U.S. Patent No. 8,759,031). U.S. Patent and Trademark Office.

M. G. Thomas, **Y. A. Chan**, & S. G. Ozanick. (2008). *The viomycin biosynthetic gene cluster of Streptomyces ATCC11861 and its use in the development of novel antibiotics for the treatment of tuberculosis* (U.S. Patent No. 7,326,782). U.S. Patent and Trademark Office.

Achievements

Women Investing in Nebraska (WIN) Grant finalist in 2020 and 2021 for Nebraska HeartBeats, an interactive musical program for individuals with dementia and their caregivers

University Committee on Research and Creative Activity (UCRCA) Grant, supporting research and travel for the lecture-recital “Timeless Music and a Timeless Disease: Classical Composers and Consumption” (University of Nebraska at Omaha, 2016)