

Marion Gabriele Götz, Ph.D.
Associate Professor of Chemistry
Paul Garrett Fellow

Whitman College
Department of Chemistry
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Education

- Jan 2004* Georgia Institute of Technology, Atlanta, GA
Ph. D. Organic Chemistry, Minor Biochemistry
Thesis: Design, synthesis and evaluation of irreversible inhibitors for clan CA and clan CD cysteine proteases
- Dec 1998* Armstrong Atlantic State University, Savannah, GA
BS Chemistry, magna cum laude and with honors
Research: Relative reactivity studies of various dipolarophiles in nitrile oxide cycloadditions

Postdoctoral Training

- Mar 2004 – Aug 2005* Max-Planck-Institute for Biochemistry, Munich, Germany
Advisor: Prof. Luis Moroder
Projects: - Design, synthesis and kinetic evaluation of biaryl-ether inhibitors for the 20S proteasome
- Synthesis of a labile solid phase linker for guanidinylation

Employment

- 2013-present* Associate Professor for Organic Chemistry at Whitman College
- 2007-2013* Assistant Professor for Organic Chemistry at Whitman College
- 2005-2007* Visiting Assistant Professor of Organic Chemistry and Biochemistry at Elmhurst College
- 1999 - 2003* Teaching assistant for undergraduate organic laboratory at Georgia Tech
- 1999* Kemira Pigments, Savannah, GA - Instrumental Specialist for x-ray fluorescence and diffraction and carbon analysis

Undergraduate Classes Instructed

Whitman College, Aug 2007 - present

- CHEM 245 and 246 - Organic Chemistry I and II (Biology, Pre-Professional, and Chemistry Majors, Sophomore/Junior Level) (35-50 students per section)
- CHEM 125 and 126 - General Chemistry I and II (First-Year students) (30-35 students per section)
- CHEM 251 and 252 - Organic Laboratory Techniques (Biology, Pre-Professional, and Chemistry Majors, Sophomore/Junior Level) (20-24 students)
- Senior Organic Thesis Supervision (15 students)
- CHEM 361 - Integrated Advanced Lab (11 students)
- CHEM 411 – Organic Chemistry of Drug Design (15-23 students)
- CHEM 370 – Advanced Synthesis Lab (7 students)

Elmhurst College, Elmhurst, IL, Aug 2005 – Aug 2007

- Organic Chemistry I and II (Biology, Pre-Professional, and Chemistry Majors, Sophomore/Junior Level) lecture and lab (60 students per section)
- Principles of Biochemistry and Intermediate Biochemistry (Biology and Chemistry Majors, Junior/Senior Level) lecture and lab (21 students)
- FT-IR and NMR Spectroscopy Module (Chemistry Majors, Senior Level) lecture and lab (4 students)
- Medicinal Chemistry for senior students (7 students)

Grants Funded

- Pittsburgh Conference Memorial National College Grant (2006) - \$9000
“Integrating Fluorescence Spectroscopy into the Curriculum at Elmhurst College”
- Elmhurst College Faculty Student Collaborative Research Grant (2006) - \$500
“Design and Synthesis of Novel Macrocyclic Compounds as Medicinal Agents with Highly Therapeutic Value”
- Elmhurst College Faculty Development Grant (2006) - \$3500
“Biological Probes for the 20S Proteasome”
- Whitman College Louis B. Perry Research Award (2008) - \$8000
“Design and Synthesis of Allyl Sulfones as Therapeutic Agents for Parasitic Infections
- A Potential Treatment for Chagas Disease and Sleeping Sickness”
- Whitman College Sally Ann Abshire Award (2009) - \$800
“Optimizing Inhibitors of Parasite Metabolism”
- Whitman College Sally Ann Abshire Award (2009) - \$800
“Investigation of Chelating Effects on the Stereochemistry of Vinyl Sulfone to Allyl Sulfone Isomerization”
- Whitman College HHMI Student-Faculty Research Grant (2009-2010) - \$26,000
“Synthesis and Evaluation of Peptidyl Allyl Sulfones as Inhibitors for Parasitic Proteases
- A Potential Treatment for Chagas Disease and Sleeping Sickness”
- National Science Foundation – Major Research Instrumentation (2009-2011) - \$388,940
Principal Investigator: “Acquisition of a 400 MHz NMR spectrometer for undergraduate research and research training”
- Research Corporation (2010) - \$35,000
Principal Investigator: “Structure-based design and synthesis of bimodal proteasome inhibitors as therapeutic agents”
- Whitman College Louis B. Perry Research Award (2012) - \$8000
“Bimodal Inhibitors for the 20S Proteasome as Potential Therapeutic Agents”
- Whitman College HHMI Student-Faculty Research Grant (2012) - \$5,000
“Optimization of Novel Bimodal Proteasome Inhibitors”
- Whitman College Louis B. Perry Research Award (2013) - \$8000
“Structural and Kinetic Analysis of Novel Proteasome Inhibitors”
- National Institute of Health – AREA Grant (R15) (2015-2018) - \$260,647
Principal Investigator: “TMC-95 derived peptide macrocycles as inhibitors of the proteasome”

Community Outreach

Summer 2006: Organized and instructed the chemistry sessions of the “Associated Colleges of Illinois Summer Academy in Mathematics and Science” for underprivileged minority high school students over a period of two weeks. Developed a new lab experiment to interface the chemistry and biology sessions.

March 2012: Presentation to St. Mary Medical Hospital Physicians for continuing education on “Protease Inhibitors as Potential Therapeutic Agents”

April 2012: Science-fair judge for Whitman Science Fair for middle school students

April 2014: Keynote Speaker for High School STEM Scholar Recognition Night for the Walla Walla branch of AAUW

Awards

Undergraduate Awards

General Chemistry Award
John G. Brewer Award
Joel Hildebrandt Honors Society
Outstanding Undergraduate Senior Award
Dean's List
First Prize Winner of the Student Scholarship Exhibition

Graduate Awards

GAAN Fellowship
Dean's Scholarship

Professional Award

A.E. Lange Award for Distinguished Science Teaching 2010
Paul Garrett Fellowship in Research and Teaching 2014 - present

Committee Service

Admissions and Financial Aid Committee (2009-2012)
Fulbright Scholarship Committee (2008-2011)
HHMI Steering Committee (2008-2011)
Assessment Committee (2010-2011)
Murdock Charitable Trust Faculty liaison (2010)
Council on Student Affairs (2012 – present)
5 Departmental Tenure Track Search Committees
Presidential Search Committee (2014)
Board of Review (2015-2017)
Chair of the Department of Chemistry (2015-2017)

Review

Prentice Hall Textbook in Medicinal Chemistry
Elsevier Bioorganic and Medicinal Chemistry – Several articles
European Journal of Medicinal Chemistry
NSF Major Research Instrumentation panelist
NSF – Research at Undergraduate Institutions proposal reviewer
Petroleum Research Foundation proposal reviewer
Professional Activity for promotion review (Pacific University)

Peer-Reviewed Publications

(**Student Co-author)

Wilson, D.L., **Meininger, I., **Strater, Z., **Steiner, S., **Tomlin, F., **Wu, J., **Jamali, H., Krappmann, D., Götz, M.G. Synthesis and Evaluation of Macrocyclic Peptide Aldehydes as Potent and Selective Inhibitors of the 20S Proteasome, *ACS Medicinal Chemistry Letters*, **2016, 7 (3), 250-255.

Götz, M.G., Takeuchi, H., **Goldfogel, M., **Warren, J., **Fennell, B., Heyes, C. Visible-Light Photocatalyzed Crosslinking of Diacetylene Ligands by Quantum Dots to Improve Their Aqueous Colloidal Stability, *Journal of Physical Chemistry B*, **2014**, 118, 14103–14109.

Fennell, B., **Warren, J., **Chung, K., **Main, H., **Arend, A.B., Tochowicz, A., Götz, M.G. Optimization of peptidyl allyl sulfones as clan CA cysteine protease inhibitors, *Journal of Enzyme Inhibitors and Medicinal Chemistry*, **2013, 28(3), 468–478.

Götz, M.G., Musiol, H.J., Moroder, L. Multiple-Strand Cystine Peptides. In *Oxidative Folding of Peptides and Proteins*; Buchner, J and Moroder, L. Eds.; Royal Society of Chemistry, **2009**; 367-380.

Götz, M.G., James, K. E., Hansell, E., Dvořák, J., Ibrahim, A., Sojka, D., Kopáček, P., McKerrow, J.H., Caffrey, C.R., Powers, J.C., Aza-Peptidyl Michael Acceptors – A New Class of Potent and Selective Inhibitors of Asparaginyl Endopeptidases (Legumains) from Evolutionarily Diverse Pathogens, *Journal of Medicinal Chemistry*, **2008**, *51*, 2816-2832.

Boulègue, C.B., Musiol, H.-J., Götz, M.G., Renner, C., Moroder, L., Natural and Artificial Knots for Assembly of Homo- and Heterotrimeric Collagen Models, *Antioxidants & Redox Signalling*, **2008**, *10*, 113-126.

Barazza, A., Götz, M.G., Cadamuro, S. A., Goettig, P., Willem, M., Steuber, H., Kohler, T., Jestel, A., Reinemer, P., Renner, C., Bode, W., Moroder, L., Macrocyclic Statine-Based Inhibitors of BACE-1, *ChemBioChem*, **2007**, *8*, 2078-2091.

Groll, M., Götz, M.G., Kaiser, M., Weyher, E., Moroder, L. TMC-95-Based Inhibitor Design Provides Evidence for the Catalytic Versatility of the Proteasome *Chemistry & Biology*, **2006**, *13*, 1-8.

Moroder, L, Musiol, H.-J., Götz, M.G., Renner, C. Synthesis of Single - and Multiple-Stranded Cystine-Rich Peptides. *Peptide Science*, **2005**, *80(2-3)*, 85-97.

Ekici, Ö, Götz, M.G., James, K. E., Li, Z., Rukamp, B., Asgian, J.L., Caffrey, C.R., Hansell, E., Dvořák, J., McKerrow, J.H., Potempa, J., Travis, J., Mikolajczyk, J., Salvesen, G.S., and Powers, J.C. Aza-Peptide Michael Acceptors: A New Class of Inhibitors Specific for Caspases and Other Clan CD Cysteine Proteases. *Journal of Medicinal Chemistry*, **2004**, *47*, 1889-1892.

Götz, M.G., Caffrey, C.R., Hansell, E., McKerrow, J.H., and Powers, J.C. Peptidyl Allyl Sulfones: A New Class of Inhibitors for Clan CA Cysteine Proteases. *Bioorganic and Medicinal Chemistry*, **2004**, *12*, 5203-5211.

Kam, C.M., Götz, M.G., Koot, G., McGuire, M., Thiele, D., Hudig, D., and Powers, J.C. Design and Synthesis of Inhibitors for Dipeptidyl Peptidase. *Archives of Biochemistry and Biophysics*, **2004**, *427*, 123-134.

James, K.E., Götz, M.G., Caffrey, C.R., Hansell, E., Carter, W., Barrett, A.J., McKerrow, J.H., and Powers, J.C. Aza-Peptide Epoxides: Potent and Selective Inhibitors for Schistosome and Pig Kidney Legumain. *Biological Chemistry*, **2003**, *384(12)*, 1613-1618.

Patents

Götz, MG, Powers, JC, Preparation of Peptidyl Allyl Sulfones as Cysteine Protease Inhibitors. *US Patent*, US 2006241057. **2006**.

James C. Powers, Marion Götz, Ozlem Ekici, Juliana Asgian, Karen Ellis, Zhao Zhao Li, Brian Rukamp. Propenoyl Hydrazides. *US Patent* 11/062,017, 18 Feb **2005**.

Posters and Presentations

Götz, M.G., Wilson, D.L., Meininger, I., Krappmann, D. Synthesis and evaluation of macrocyclic peptide aldehydes as potent and selective inhibitors of the 20S proteasome. Keystone Symposium on Ubiquitin Signaling, March 2016, Whistler, Canada.

Götz, M.G., Wilson, D.L., Meininger, I., Krappmann, D. Proteasome inhibitors based on the natural product TMC-95. Pacifichem, December 2015, Honolulu, HI.

Götz, M.G. Macrocyclic peptide aldehyde inhibitors of the 20S proteasome. Gordon Research Conference on Proteolytic Enzymes and Their Inhibitors, June 2014, Italy.

Götz, M.G. Structure-based design and synthesis of bimodal proteasome inhibitors as therapeutic agents. American Chemical Society National Meeting, San Diego, CA, March 2012.

Götz, M.G., Groll, M., Kaiser, M., Weyher, E. and Moroder, L. Macrocyclic peptidyl biaryl ether inhibitors provide evidence for the catalytic versatility of the 20S proteasome. American Chemical Society National Meeting, New Orleans, LA, April 2008.

Götz, M.G., Groll, M., Kaiser, M. and Moroder, L. Design, synthesis and kinetic evaluation of reversible macrocyclic peptidyl biaryl-ether inhibitors for the 20S proteasome. Protease Society 22nd Winter Meeting on Proteinases and their Inhibitors. Tiers, Italy, March 2005.

Götz, M.G. and Powers, J.C. Peptidyl allyl sulfones: A new class of inhibitors for clan CA cysteine proteases. Southeastern Regional Meeting of the American Chemical Society, Atlanta, GA, November 2003.

Götz, M.G., James, K.E., Caffrey, C.R., McKerrow, J.H., and Powers, J.C. Design and synthesis of tripeptidyl aza-peptide epoxide inhibitors targeting *Schistosoma mansoni* legumain. American Chemical Society National Meeting, New York, NY, September 2003.

Götz, M.G., Kam, C.M., and Powers, J.C. Design and synthesis of dipeptidyl vinyl sulfone inhibitors for DPPI. American Chemical Society National Meeting, Boston, MA, August 2002.