



Gregory A. Caputo

Professor & Department Head
Chemistry & Biochemistry/Molecular & Cellular Biosciences

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Education:

BS (Chemical Biology), Stevens Institute of Technology
PhD (Molecular & Cell Biology), Stony Brook University
Postdoctoral (Molecular Medicine), Texas A&M Health Science Center
Postdoctoral (Biochemistry & Biophysics), University of Pennsylvania School of Medicine

Research Expertise:

Biophysical Chemistry | Antimicrobials | Peptide-lipid interactions

My research interests are in two major areas: designing/characterizing peptides with specific functions and antimicrobial surfaces.

The majority of the research focuses on the development and characterization of antimicrobial peptides. These are short, cationic sequences that are highly effective, broad spectrum antimicrobials with low toxicity profiles. I study the chemical and amino-acid composition of these peptides and the role different amino acids play in the functional properties of these peptides. My lab also has a project focused on the design of peptides to interact with optically active porphyrins toward the development of novel materials for application in photovoltaic devices.

I also am interested in antimicrobial thin film coatings. In collaboration with the Departments of Physics & Astronomy and Electrical & Computer Engineering, my team has developed a series of coatings (patent pending) with a variety of antimicrobial and physical properties. The group focuses on the efficacy and mechanism of the antimicrobial coatings.

Member of:

American Chemical Society (www.acs.org)
Biophysical Society (www.biophysics.org)

Recent Publications:

Goderecci SS, Kaiser E, Yanakas M, Norris Z, Scaturro J, Oszust R, Medina CD, Waechter F, Heon M, Krchnavek RR, Yu L, Lofland SE, Demarest RM, Caputo GA, Hettlinger JD (2017) Silver Oxide Coatings with High Silver-Ion Elution Rates and Characterization of Bactericidal Activity. *Molecules*. 22: pii: E1487

Hanna SL, Huang JL, Swinton AJ, Caputo GA, Vaden TD (2017) Synergistic effects of polymyxin and ionic liquids on lipid vesicle membrane stability and aggregation. *Biophys Chem*. 227:1-7.

Takahashi H, Caputo GA, Vemparala S, Kuroda K (2017) Synthetic Random Copolymers as a Molecular Platform To Mimic Host-Defense Antimicrobial Peptides. *Bioconjug Chem*. 28:1340-1350.Review

Ridgway Z, Picciano AL, Gosavi PM, Moroz YS, Angevine CE, Chavis AE, Reiner JE, Korendovych IV, Caputo GA (2015) Functional characterization of a melittin analog containing a non-natural tryptophan analog. *Biopolymers*. 104:384-94.