

MAIRA GOYTIA, Ph. D.
Assistant Professor

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Spelman College
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EDUCATION

- 2015 **Science Teaching Fellow:** American Society for Microbiology
- 2007 **Ph. D. in Biochemistry:** “Amino acid racemases and epimerases – *TcPRAC* as a therapeutic drug target against *Trypanosoma cruzi* infection”
Adviser: Dr. Minoprio. Institut Pasteur & Paris VI University, Paris, FRANCE
- 2006 Biology of Parasitism: Modern approaches (8-week immersion course)
Marine Biological Laboratory, Woods Hole, MA, USA
- 2003 **MSc. D. in Biology, Genetics and Immunology of Parasitic Infections**
Paris VII University, Paris, FRANCE
- 2002 **B. Sc. in Biochemistry – Specialty Cellular and Molecular Biology**
Paris VII University, Paris, FRANCE

PROFESSIONAL EXPERIENCE

- 2017- Assistant Professor – Biology Department, Spelman College
- 2016-2017 Lecturer – Biology Department, Spelman College
- 2012-2015 Senior Research Associate – Emory University, School of Medicine
- 2013-2014 Visiting Scientist – University of Arizona, Bio5 Institute
- 2007-2012 Postdoctoral Fellow – Emory University, School of Medicine
- 2003-2007 Graduate Research Assistant – Institut Pasteur, Paris, France
- 2002-2003 Master of Science Fellow – Institut Pasteur, Paris, France
- 2001-2002 Erasmus Program Scholar – Hospital Clinic, Barcelona, Spain

CURRENT FIELDS OF INTEREST

Microbiology, Cell and Molecular Biology, Infectious Diseases and Antimicrobial Resistance, Microbiome, Evolution, Bioscience education & Research (Teaching and Mentoring, SoTL).

TEACHING EXPERIENCE

COURSES TAUGHT AT SPELMAN COLLEGE (2016 – PRESENT):

- Microbiology (BIO233)
- Molecular biology and genomics (BIO125)
- Animal behavior (BIO365)
- Biology seminar (BIO285/485)
- Independent Research (BIO487)

COURSES TAUGHT AT EMORY UNIVERSITY – SCHOOL OF MEDICINE (2010):

- Graduate course: Bacterial pathogenesis: mechanisms of resistance to human host defenses

LECTURER AT EMORY UNIVERSITY – COLLEGE OF SCIENCES (2015-2016):

- Organismal Form and Function (BIOL240) (Guest lecturer)
- Introduction to Microbiology (BIOL370) (Guest lecturer)
- Foundations in Modern Biology II - Lab for Majors (BIOL142L) (Instructor)

MENTORING EXPERIENCE

- 2017-2018 Sydney Miller, Senior, Biology Major, Spelman College, Atlanta, GA
- Project: Characterization of antimicrobial resistance in commensal *Neisseria cinerea*.
Unique Hayes, Senior, Biology Major, Spelman College, Atlanta, GA
 - Project: Characterization of biofilm formation by *Neisseria cinerea*
Simone Stinnette, Senior, Biology Major, Spelman College, Atlanta, GA
 - Project: Characterization of biofilm formation by *Neisseria mucosa*
Symone Thompson, Junior, Biology Major, Spelman College, Atlanta, GA
 - Project: Determination of antibiotic resistance in several commensal *Neisseria species*
- Spring 2017 Lady Nwadike, Senior, Biology Major, Spelman College, Atlanta, GA
- Project: Analysis of medical and clinical trial literature on exclusion of certain demographics from these studies and the impact on the population.
Unique Hayes, Senior, Biology Major, Spelman College, Atlanta, GA
 - Project: Correlation between STIs and risky behaviors in an Atlanta community
Amirah Anderson & Ty’Tiaunna Thomas
 - Project: Impact on cells cycle of *Saccharomyces cerevisiae* of Single Nucleotide Polymorphisms on MSH2, a mismatch repair mechanism protein
- Summer 2011 Lauren Bowden, junior student (pre-med), Pomona College, CA
- Project: Analyze the effect of polyamines on biofilm formation by *Neisseria gonorrhoeae*
- Spring 2011 Erica Bizzell, PhD candidate, Microbiol. & Molec. Genet., Emory U
- Project: Optimize biofilm protocols
- Spring 2009 Caitlin Bohannon, PhD candidate, Immunol. & Molec. Pathog., Emory U
- Project: Complement mutated bacterial strain using molecular biology techniques

PEER-REVIEWED PUBLICATIONS (MANUSCRIPTS AND BOOK CHAPTERS)

1. **Goytia M**, Hawel III L, Dhulipala V, Joseph SJ, Read T, Shafer WM. “Characterization of a spermine/spermidine transport system reveals a novel DNA sequence duplication in *Neisseria gonorrhoeae*”. *FEMS Microbiol Lett* (2015).
2. Djoko K, **Goytia M**, Donnelly P, Schembri M, Shafer WM, McEwan A. “Copper(II)-bis(thiosemicarbazonato) complexes as antibacterial agents: insights into their mode of action and potential as therapeutics”. *Antimicrob Agents Chemother.* (2015).
3. Ohneck EA, **Goytia M**, Rouquette-Loughlin CE, Joseph SJ, Read TD, Jerse AE, Shafer WM. Overproduction of the MtrCDE efflux pump in *Neisseria gonorrhoeae* produces unexpected changes in cellular transcription patterns”. *Antimicrob Agents Chemother.* (2015).
4. **Goytia M**, Dhulipala VL, Shafer WM. “Spermine impairs biofilm formation by *Neisseria gonorrhoeae*”. *FEMS Microbiol Lett* (2013).
5. **Goytia M***, Kandler JL* and Shafer WM. “Mechanisms and Significance of Bacterial Resistance to Human Antimicrobial Peptides”. In *Antimicrobial Peptides and Innate Immunity*. Progress in Inflammation Research (PS Hiemstra & SAJ Zaat [eds.]) pp. 219-254, Springer Basel (2013). *The authors contributed equally.
6. Zalucki YM, Mercante AD, Cloward JM, Ohneck EA, Kandler JL, **Goytia M**, Johnson PJT and Shafer WM. “Function and regulation of *Neisseria gonorrhoeae* efflux pumps”. In *Microbial Efflux Pumps: Current Research* (EW Yu [ed.]) Ch 10 – Caister Ac Press, (2013).
7. **Goytia M** & Shafer WM. “Polyamines can increase resistance of *Neisseria gonorrhoeae* to mediators of innate human host defense”. *Infect Immun* (2010).
8. **Goytia M**, Chamond N, Cosson A, Coatnoan N, Hermant D, Berneman A, Minoprio PM. “Molecular and structural discrimination of proline racemase and hydroxyproline-2-epimerase from nosocomial and bacterial pathogens”. *PLoS ONE* (2007).

9. Buschiazzo A*, **Goytia M***, Schaeffer F, Degrave W, Shepard W, Gregoire C, Chamond N, Cosson A, Berneman A, Coatnoan N, Alzari PM, Minoprio PM. "Crystal structure, catalytic mechanism, and mitogenic properties of *Trypanosoma cruzi* proline racemase". *Proc Natl Acad Sci U S A* (2006). *The authors contributed equally.
10. Chamond N, **Goytia M**, Coatnoan N, Barale JC, Cosson A, Degrave WM, Minoprio PM. "Trypanosoma cruzi proline racemases are involved in parasite differentiation and infectivity". *Mol Microbiol* (2005).

PATENTS

1. Co-inventor (So, Jerse, **Goytia et al.**) of patent on "Compositions and Methods for Treating Gonorrhea" - Serial No: 62/044,776 (09/02/2014)
2. Contributor (Minoprio, Chamond, *et al.*) to patent "Identification and characterization of novel proline racemases and hydroxyproline-2-epimerases, uses thereof, and methods of identifying proline racemases and hydroxyproline-2-epimerases" (USPTO No: 11/896,596)

SELECTED ORAL PRESENTATIONS

1. **Goytia M** (2016) "How *Neisseria gonorrhoeae* survives and uses host-derived factors" – Dep. of Microbiology and Immunology, Emory University.
2. **Goytia M** & So M (2014) "Information that kills: on the (possible) toxicity of commensal *Neisseria* DNA to *N. gonorrhoeae*" – Dep. of Immunology and Microbiology, U of Arizona.
3. **Goytia M** & Shafer WM. (2010) "Polyamines can increase resistance of *Neisseria gonorrhoeae* to mediators of innate human host defense" – 12th Naples Workshop on Bioactive Peptides - 2nd Italy-Korea Symposium on Antimicrobial Peptides, Napoli, ITALY.
4. **Goytia M** & Shafer WM. (2009) "Polyamines increase antimicrobial peptide resistance in *Neisseria gonorrhoeae*" – Oral presentation. First prize presentation of Young Scientists. Second International Symposium on Antimicrobial Peptides, St. Malo, FRANCE.

GRANTS & FELLOWSHIPS

2013	Co-investigator R21 granted (NIH): "Biofilm formation by <i>Neisseria gonorrhoeae</i> "
2007-2009	ASM/CCID postdoctoral fellowship. <i>Declined to accept position at Emory University</i>
2007	Graduate fellowship from Fondation pour la Recherche Médicale (€ 11,300 – 8 mo)
2006	MBL Fellowship "Biology of Parasitism" course, MA, USA (€ 2,800 - 2 mo)
2003-2006	Graduate Fellowship from Ministry of Research, FRANCE (€ 46,800 - 3 ys)
2002	European Community Fellowship for ERASMUS students (€ 4,500 - 9 mo)

HONORS & AWARDS

2009	Young Scientist Presentation Award: 1 st Prize, 2 nd International Symposium on Antimicrobial Peptides, St. Malo, FRANCE
2008	Faculty of 1000, Clinical Immunology, Associate faculty
2007	Ph. D. with Honors, Paris VI University, FRANCE
2006	Graduate Research Assistant Fellowship by the Fondation pour la Recherche Médicale
2003	Valedictorian, M.Sc., Paris VII University, FRANCE

PROFESSIONAL ACTIVITIES

- National Science Foundation panelist: Systems in Synthetic Biology (BIO directorate).
- Reviewer: BMC Infect Dis, J Pept Sci, Int J Microbiol, Antimicrob Agents Chemother, Chem Biol, J Biomed Biotechnol, J Bacteria Research (Editorial Board)
- Organizer of Microbiology Research in Progress (MicroRiP), Emory University (SOM), 2010.
- Affiliations: American Society for Microbiology, Faculty of 1000, National Postdoctoral Association, American Association for the Advancement of Science (AAAS).
- Spelman College committees: Library committee, Writing intensive course subcommittee