MAUREEN A. CAREY

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POSITIONS

Postdoctoral Research Associate (beginning Oct. 2018)
Division of Infectious Diseases and International Health, Department of Medicine, University of Virginia School of Medicine, Charlottesville, VA
Advisor: William Petri Jr., MD, PhD

EDUCATION

University of Virginia School of Medicine, Charlottesville, VA (2014 – 2018)
Doctorate of Philosophy, Microbiology, Immunology, and Cancer Biology
Advisors: Drs. Jason Papin and Jennifer Guler
Thesis Committee: Drs. Alison Criss, Norbert Leitinger, Herve Agaisse, and Young Hahn

Lafayette College, Easton, PA (2010 – 2014)
Bachelors of Science, Biology (with Minors in Mathematics and Philosophy)
Cum Laude, with Honors

HONORS

- Nominated for the Microbiology, Immunology, and Cancer Biology Most Outstanding Student Award (Univ. of Virginia, 2018)
- Cell & Molecular Biology Training Grant recipient (5T32GM008136-32, Univ. of Virginia, 2015 – 2017)
- 2nd Place in Global Health Case Competition (Univ. of Virginia, 2017)
- Marquis Scholar (Lafayette College, 2010 – 2014)
- Willis Roberts Hunt Biology Award (Lafayette College, 2014)
- Howard Hughes Medical Institute Exceptional Research Opportunities Scholar (2013 – 2014)
- Dean's List (Lafayette College, 2010 – 2014)
- National Intercollegiate Women's Fencing Association All-Academic Team (2013 – 2014)
- Silver and Gold Student-Athlete Academic Honor Roll (Lafayette College, 2013 – 2014)
- Tuition Exchange Scholar (Lafayette College, 2010 – 2011)

PEER REVIEWED PUBLICATIONS

1. Medlock GL, **Carey MA**, McDuffie DG, Giallourou N, Swann JR, Kolling GL, Papin JA (2018). *Metabolic interactions within the altered Schaedler flora, a defined gut microbiota.* **BiorXiv** preprint. doi: 10.1101/250860. Accepted at Cell Systems.
2. **Carey MA***, Covelli V*, Brown A, Medlock GL, Harren M, Cooper JG, Papin JA, Guler JL (2018). *Influential parameters for the analysis of intracellular parasite metabolomics*. mSphere. doi: 10.1128/mSphere.00097-18. *co-first authors
3. **Carey MA**, Papin JA (2018). *Ten Simple Rules for biologists learning to program*. PLOS Computational Biology. doi: 10.1371/journal.pcbi.1005871. **Over 41,000 views** since January 4th, 2018, with 28% of views leading to a download.
4. **Carey MA**, Papin JA, Guler JL (2017). *Novel Plasmodium falciparum metabolic network reconstruction identifies shifts associated with clinical antimalarial resistance*. BMC Genomics. doi: 10.1186/s12864-017-3905-1

5. **Carey MA**, Ho ES (2017). *A Transcriptome Study Of Borrelia burgdorferi Infection In Murine Heart And Brain Tissues*. Journal of Young Investigators. doi: 10.22186/jyi.33.1.28-41
6. Higgins MJ, Serrano A, Boateng KY, Parsons VA, Phuong T, Seifert A, Ricca JM, Tucker KC, Eidelman AS, **Carey MA**, Kurt RA (2016). *A multifaceted role for Myd88-dependent signaling in progression of murine mammary carcinoma*. Breast Cancer: Basic and Clinical Research. doi: 10.4137/BCBCR.S40075
7. Burgess SL, Buonomo E, **Carey M**, Cowardin C, Naylor C, Noor Z, Wills-Karp M, Petri WA, Jr. (2014). *Bone Marrow Dendritic Cells from Mice with an Altered Microbiota Provide Interleukin 17A-Dependent Protection against Entamoeba histolytica Colitis*. mBio. doi: 10.1128/mBio.01817-14

IN PREP MANUSCRIPTS

1. Huckaby A, **Carey MA**, Szlachta K, Al-Barghouthi B, Wang Y, Guler JL. *Complex DNA structures trigger copy number variation across the Plasmodium falciparum genome.* Revisions for Nucleic Acids Research.
2. **Carey MA**, Medlock G, Stolarczyk M, Untariou A, Guler JL, Papin JA. *Comparative genomics of parasitic pathogens using genome-scale metabolic modeling.* Anticipated submission to PLOS Pathogens, Summer 2018.
3. **Carey MA***, Untariou A*%, Guler JL, Papin JA. *Computational predictions of metabolic drug targets in Chloroquine resistant Plasmodium falciparum for combination therapies.* Anticipated submission to BMC Systems Biology, Summer 2018. *co-first authors, % undergraduate mentee (see teaching experience)
4. **Carey MA***, Untariou A*%, Papin JA. *Comparative analysis of network modeling with proteomics and transcriptomics data.* Anticipated submission to Bioinformatics, Summer 2018. *co-first authors, % undergraduate mentee (see teaching experience)
5. Stolarczyk M %, **Carey MA**, Papin JA. *Decoupling learning to program and learning to model: an RShiny app for genome-scale metabolic modeling.* Anticipated submission in Fall 2018.% masters student mentee (see teaching experience)

ORAL PRESENTATIONS

1. *Debugging the malaria parasite's genetic code: Comparative genomics of P. falciparum and P. berghei using metabolic modeling*. Molecular Parasitology Meeting, Woods Hole, MA. (Sep. 2017).
2. *Computational analysis for antimalarial target identification*. Johns Hopkins University Future of Malaria Research Symposium, Rockville, MD. (Nov. 2016)
3. *A metabolic approach for the characterization of antimalarial resistance and the identification of combination therapy targets*. Molecular Parasitology Meeting, Woods Hole, MA. (Sep. 2016).

PUBLISHED ABSTRACTS

1. Covelli V, Cooper JG, **Carey M**, Guler JL, (2016). *Metabolomics for the In Vitro Study of Artemisinin-Resistant Malaria Parasites*. Open Forum for Infectious Disease; 3: 590.
2. Kurt R, **Carey MA**, Eidelman A, Liberti M, Ricca J, Tucker K, (2013). *Myd88 may contribute in several ways to progression of murine mammary carcinoma (P2077).* Journal of Immunology;190:53.39
3. Kurt R, Serrano A, Boateng K, Parsons V, Phuong T, Ricca J, Tucker K, Eidelman A, **Carey MA** (2014). *Constitutive signaling through Myd88 contributes to tumor-derived CCL2 expression and nuclear translocation of NFkB p65, p52, Fos and ATF2 (TUM7P.923)*. Journal of Immunology;192: 203.5.

POSTER PRESENTATIONS

1. *Comparative modeling of human parasites and closely related species.* ASM Microbe, Atlanta, GA (June 2018)
2. *Comparative genomics and modeling of Malaria parasites.* University of Virginia Infectious Disease Day, Charlottesville, VA (Mar. 2018)

3. *Debugging the malaria parasite's genetic code: Comparative genomics of P. falciparum and P. berghei using metabolic modeling*. Molecular Parasitology Meeting, Woods Hole, MA (Sep. 2017)
4. *A metabolic approach for the characterization of antimalarial resistance and the identification of combination therapy targets*. Data-driven Biotechnology: Bench, Bioreactor, and Bedside, Denmark (May 2017)
5. *A metabolic approach for the characterization of antimalarial resistance and the identification of combination therapy targets*. Microbiology Immunology, and Cancer Biology Annual Retreat Poster Session, Charlottesville, VA. (May 2017) and University of Virginia Infectious Disease Day, Charlottesville, VA (Mar. 2017)
6. *A metabolic approach for the characterization of antimalarial resistance and the identification of combination therapy targets*. Molecular Parasitology Meeting, Woods Hole, MA (Sep. 2016)
7. *Metabolic characterization of artemisinin resistant malaria parasites*. Microbiology Immunology, and Cancer Biology Annual Retreat Poster Session (May 2016) and Cell and Molecular Biology Training Grant Annual Symposium, Charlottesville, VA (May 2016)
8. *Explaining resistance with metabolic shifts induced by antimalarials*. Future of Malaria Research Conference, Baltimore, MD (Oct. 2015)
9. *Sequencing Bcl6 in Priest Lake Stickleback*. Howard Hughes Medical Institute (HHMI) EXROP Symposium. HHMI, Chevy Chase, MD (May 2014)
10. *A Transcriptome Analysis of Borrelia burgdorferi Infected Murine Heart and Brain Tissue*. Penn. Academy of Science Annual Meeting, Susquehanna University, Selinsgrove, PA (Mar. 2014)
11. *Antibiotic Resistance: A Growing Threat.* Biology Capstone Course Poster Session, Lafayette College. (Nov. 2013)
12. *Sequencing Bcl6 in Priest Lake Stickleback*. Summer Research Symposium, University of Texas at Austin (Aug. 2013)
13. *Enhancing HIV-1 Viral Replication Kinetics by Co-Packaging Ribonucleotide Reductase and Thymidine Kinase.* University of Rochester Summer Scholars Poster Session, Rochester, NY. (Aug. 2011) and Summer Research Poster Session, Lafayette College (Sep. 2011)

TEACHING EXPERIENCES

1. Graduate mentorship, University of Virginia
    a. Michał Stolarczyk (2017 – 2018), visiting Masters Student
       Current affiliation: Univ. of Virginia, Center for Public Health Genomics
2. Undergraduate mentorship, University of Virginia
    a. Ana Untariou '18 (2015 – 2018), Beckman Scholar, (2016 – 2017)
       Presentations: *Transcriptional and Metabolic Characterization of Chloroquine Resistant Malaria Parasites*. Biomedical Engineering Society Annual Meeting, Minneapolis, MN. (Oct. 2016) and *Transcriptional Analysis of Effects of Chloroquine Treatment on Resistant Malaria Parasites*. Biomedical Engineering Society Annual Meeting, Phoenix, AZ. (Oct. 2017)
       Current affiliation: Univ. of Virginia, Department of Radiology
    b. William Pavlis '17 (2017)
    c. Andrew Kubiak '16 (2015 – 2016)
    d. Julius Ha '15 (2015)
3. EuPathDB lecture and tutorial, University of Virginia (July 2017)
4. Undergraduate journal club leader, University of Virginia (Jan. – Aug. 2017)
5. Introduction to computational modeling lecture, Synthetic Biology BIOL4770, Univ. of Virginia (Mar. 2017)
6. Tutor, Calculus (I, II, & III), Lafayette College (Aug. 2013 – May 2014)
7. Tutor, General Biology, Lafayette College (Aug. 2013 – Dec. 2013)
8. Teaching Assistant: Modeling Applied to Biology, Bio 106 (Jan. 2013 – May 2013)

LEADERSHIP AND SERVICE

1. Biosafety lab manager, Guler Lab at the University of Virginia (2015 – current)
2. Committee member, University of Virginia Department of Microbiology, Immunology, and Cancer Biology Student Seminar Committee (May 2017 – current)
3. Diversity Day demonstration leader, University of Virginia (Sep. 2017)
4. Application judge, University of Virginia Undergraduate Summer Research Internship (Mar. 2017)
5. Advisor and judge, University of Virginia High School Global Health Case Competition (Feb. 2017)
6. Mentorship (see teaching experience above)

SCIENTIFIC CONFERENCES AND WORKSHOPS

- American Society for Microbiology: Microbe, Atlanta, GA (2018)
- Molecular Parasitology Meeting, Woods Hole, MA (2016, 2017, 2018)
- EuPathDB Workshop, Athens, GA (2017)
- Data-driven Biotechnology: Bench, Bioreactor, and Bedside, Hillerød, Denmark (2017)
- Scientific Communication workshop (locally via the Alan Alda Center for Communicating Science), Charlottesville, VA (2016)
- Future of Malaria Research Conference, Baltimore, MD (2015 and 2016)
- Pennsylvania Academy of Science, Selinsgrove, PA (2014)
- American Public Health Association, Boston, MA (2013)
- Howard Hughes Medical Institute Exceptional Research Opportunities Program Annual Meeting,Chevy Chase, MD (2013, 2014)
- International AIDS Conference, Washington, DC (2012)

PREVIOUS RESEARCH EXPERIENCES

1. Honors Thesis, Lafayette College (Aug. 2013 – May 2014)
   Mentor: Eric Ho, Ph.D., Professor of Biology and Computer Science
   Committee: Robert Kurt, Ph.D. and Laurie Caslake, Ph.D.
   Conducted a transcriptome analysis of *B. burgdorferi*-infected murine heart and brain tissue; cultured *B. burgdorferi* and infected mice for analysis.
2. Howard Hughes Medical Institute (HHMI) Exceptional Research Opportunities Program, University of Texas at Austin (June – Aug. 2013)
   Mentor: Daniel Bolnick, Ph.D., Professor of Biology, HHMI Early Scientist
   Designed primers and sequenced Bcl6 gene in two species of stickleback fish; aligned and analyzed sequence results. (Invited for HHMI Capstone Experience)
3. NIH Summer Institute of Biostatistics, Boston University (June – July 2012)
   Instructor: Lisa Sullivan, Ph.D., Associate Dean of Education, Professor and Chair of Biostatistics
   Studied biostatistics and epidemiology, design and analysis of observational studies and clinical trials.
4. Research Assistant, Lafayette College (Jan. – May 2012)
   Mentor: Robert Kurt, Ph.D., Professor and Chair of Biology
   Aided with tumor cell suppression research; treated tumor cells with prepared RNA in various dosages and monitored resultant changes in MyD88 production, mitotic arrest, and cell death.
5. Summer Scholars Program, University of Rochester Medical Center (May – Aug. 2011)
   Mentor: Baek Kim, Ph.D., Professor of Microbiology and Immunology
   Created a viral vector to enhance HIV-1 transduction efficiency and replication kinetics in terminally differentiated cells by converting the cell's rNTP pool into dNTP.

Maureen A. Carey

WORK EXPERIENCES

1. Intern, International AIDS Society, Geneva, Switzerland (Oct. – Dec. 2012)
   Duties: Conducted literature review on community based research in the study of HIV/AIDS, wrote evaluation and briefing reports, aided in fellowship promotion. Supervisor: Ulrike Brizay, Ph.D.

REVIEWER EXPERIENCE

- With mentor supervision (2016 – current):
  - PLOS Computational Biology
  - Nature Biotechnology
  - Scientific Reports
  - BMC Systems Biology

SKILLS

- Programming (R, Python, Unix, MATLAB, and [limited] SAS)
- Computational analytics (data wrangling, statistical and bioinformatic analysis, metabolic network analysis, machine learning)
- Laboratory skills (e.g., *P. falciparum* [antibiotic-free] culture, BSL2 & ABSL2, genetic & biochemical assays)
- Technical writing for grant applications (Cell & Molecular Biology Training Grant recipient 5T32GM008136-32, assisted with 5R21AI119881)