

Jeremy Philip D'Silva

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Education

- Undergraduate Student, University of Michigan LSA, Honors Program (2016-present). 3.932/4.0 GPA (as of May 2019; 126 credits). Major: Honors Mathematics. Expected graduation date: April 2020.

Research Affiliations

- (2014-present) Student researcher, Eisenberg Epimath Lab (PI: Professor Marisa Eisenberg), University of Michigan School of Public Health.
 - *Research Interests:* Identifiability of general classes of models. Applications of differential algebra in identifiability. Deterministic models for disease transmission in spatially structured populations. Models for cancer invasion.
- (2016-present) Student researcher, Michigan Center for Translational Pathology (PI: Professor Arul Chinnaiyan), Michigan Medicine, University of Michigan.
 - *Research Interests:* Gene expression heterogeneity and implications in cancer biology. Image-based studies of gene expression heterogeneity. Mathematical models of RNA processing (transcriptional dynamics).

Publications

- **D'Silva, Jeremy P.**, and Eisenberg, Marisa C. "Modeling Spatial Invasion of Ebola in West Africa." *Journal of Theoretical Biology* 2017, Sep 7;428:65-75.

Unrefereed manuscripts

- *REU Report:* **D'Silva, Jeremy P.**, and Eisenberg, Marisa C. "Identifiability of linear compartmental models of infectious disease transmission." UM Math REU (2018).
- *REU Report:* **D'Silva, Jeremy P.**, and Eisenberg, Marisa C. "Constructing a Simple Hybrid Model of Perineural Invasion." UM Math REU (2017).
- *arXiv Pre-print:* Eisenberg, Marisa C., Joseph NS Eisenberg, **Jeremy P. D'Silva**, Eden V. Wells, Sarah Cherng, Yu-Han Kao, and Rafael Meza. "Modeling surveillance and interventions in the 2014 Ebola epidemic." *arXiv: 1501.05555* (2015).

Oral Presentations

- "Modelling perineural invasion: understanding the active role of nerves in the nerve-tumor interaction." Invited Presentation: Special Session on Cell Motility, American Mathematical Society Sectional Meeting. Ann Arbor, Michigan, October 20, 2018. Co-Author: Marisa Eisenberg.
- "Mathematical Models At Multiple Scales For Perineural Invasion in HNSCC." International Association for Dental Research. London, England. July 25, 2018. Co-author: Marisa Eisenberg.
- "Developing a Hybrid Model for Chemotactically Driven Neuritogenesis." Minisymposium; invited by organizer. Society for Industrial and Applied Mathematics

Conference on Dynamical Systems. Snowbird, Utah. May 2017. Co-author: Marisa Eisenberg.

- “Modeling Spatial Transmission of Ebola in West Africa.” European Society for Mathematical and Theoretical Biology/ Society for Mathematical Biology. Nottingham, England. July 15, 2016. Co-author: Marisa Eisenberg.

Awards and Honors

- 2016-2020: Mathematics Scholarship, U of M Dept of Mathematics.
- 2019: University of Michigan nominee for the Goldwater Scholarship.
- 2018: University of Michigan Mathematics REU.
- 2018: Honors College Grant (supporting travel to IADR conference for oral presentation).
- 2016-2018: University Honors; James B. Angell Scholar (for 4.0 GPA)
- 2017: University of Michigan Mathematics REU.
- 2017: Recipient of the William J. Branstrom Freshman Prize (for first-year University of Michigan students in the top 5% of the class)
- 2017: Honors College Grant (supporting travel to SIAM DS conference for oral presentation).
- 2017: Nominee for Kelley/Granader Prize for Excellence in First-Year Writing
- 2016: University of Michigan Regents' Scholarship.
- 2016: National Merit Scholarship.
- 2016: United States Presidential Scholars Program, Semifinalist (689 Semifinalists from ~4000 candidates out of ~3.3 million high school seniors).
- 2016: Society for Mathematical Biology Travel Award (Supporting travel to SMB/ECMTB conference for oral presentation).
- 2015-2016: Intel Science Talent Search (Intel-STIS), Semifinalist (300 nationwide out of ~1700 applicants).
- 2015: The name "Jeremyphilip" has been given to minor planet 31798, as part of the 2nd prize in the Biomedical/Health Sciences category at 2015 Intel International Science and Engineering Fair

Classes Taken

- Mathematics: Math 295-296: introductory analysis and linear algebra (A in both). Math 395-396: Honors Analysis 1 and 2 (A+ in both). Math 493: Honors Algebra 1 (A+). Math 498: Math, Music, and the Brain (A). Math 596: graduate complex analysis (B-).
- Sciences: Physics 1 and 2: Mechanics, E&M (A+, A). Honors Organic Chem 1 and 2 (A+, A). Biochemistry (A+). Intro Computer Science (A). Controversies in Scientific Discovery (scientific writing) (A).
- Laboratory courses: Physics 1 and 2: Mechanics, E&M (A+, A+). Organic Chem 1 and 2 (A, A). Biochemistry (A). Intro Bio (A).
- Other: Great Books 191 (A). Philosophy 356: Bioethics (A+).

Math/Science References

- Professor Arul Chinnaiyan (arul@umich.edu). Cancer biology and computational biology research.
- Professor Stephen DeBacker (smdbackr@umich.edu). Math 295-296, outreach activities, undergraduate program director.
- Professor Marisa Eisenberg (marisae@umich.edu). Mathematical biology and applied math research, REUs in 2017 and 2018, reading courses, joint publication.
- Professor Daniel Forger (forger@umich.edu). Topics course on Math, Music, and the Brain.
- Professor Hugh Montgomery (hlm@umich.edu). Math 493: Honors Algebra 1.