ANTONI LUQUE

San Diego State University
Department of Mathematics and Statistics

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POSITIONS

Associate Professor 2021 – Present
Department of Mathematics and Statistics, San Diego State University, San Diego, California, USA
Secondary appointment at the Viral Information Institute and the Computational Science Research Center.

Assistant Professor 2015 – 2021
Department of Mathematics and Statistics, San Diego State University, San Diego, California, USA
Secondary appointment at the Viral Information Institute, the Computational Science Research Center, and Clairemont Graduate University

Postdoctoral Researcher 2012 – 2014
Department of Chemistry, New York University, New York, USA
Supervisor: Professor Tamar Schlick

EDUCATION

Ph.D. Physics Jun. 2011
Universitat de Barcelona, Barcelona, Spain
Supervisor: Professor David Reguera
Thesis: Structural, mechanical properties, and self-assembly of viral capsids.

M.Sc. Biophysics Sept. 2007
Universitat de Barcelona, Barcelona, Spain

B.S. Physics Sept. 2006
Universitat de Barcelona, Barcelona, Spain

PUBLICATIONS

*[U]undergraduate mentee, [G]graduate mentee, [P]postdoc mentee, *equal contribution*

Total of 25 peer-reviewed journal articles, 1 conference report, and 1 book chapter published with 1,452 citations, h-index 17, and i10-index 21 on October 26, 2022, according to Google Scholar.

In Review or In Revision

27. Silveira, C.B., **A. Luque**, A. Haas, T.N.F. Roach, E.E. George, B. Knowles, M. Little, C.J. Sullivan, L.W. Kelly, R. Brainard, F. Rohwer**,** and B. Bailey, "Pacific-scale relationships between viral predation of bacteria and coral reef health," **under review** at *BMC Biology*. Impact Factor: 7.43. Q1.
26. Anthenelli[U], M., E. Jasien[G], R. Edwards, B. Bailey, B. Felts, P. Katira, J. Nulton, P. Salamon, F. Rohwer, C.B. Silveira, **A. Luque**, "Phage and bacteria diversification through a prophage acquisition ratchet," **under revision** for *mBio*. Impact factor: 6.747. Q1. Preprint available at bioRxiv: https://doi.org/10.1101/2020.04.08.028340.

Published Peer-Reviewed Articles

25. Lee[G], D.Y., C. Bartels[U], K. McNair, R.A. Edwards, M.A. Swairjo, and **A. Luque**, "Predicting the capsid architecture of viruses from metagenomic data," *Computational and Structural Biotechnology Journal*, 20:721-732. (**2022**) Impact Factor: 7.271. Q1. https://doi.org/10.1016/j.csbj.2021.12.032. **Press***:* Author interview: "Math is magical" (link).
24. Cobarrubia[U], A., A. Crispin-Smith[U], J. Tall[U], and **A. Luque**, "Empirical and theoretical analysis of particle diffusion in mucus," *Frontier in Physics*, 9:594306 (**2021**). Impact Factor: 3.560. Q2. https://doi.org/10.3389/fphy.2021.594306. **Press:** Author interview: Capstone project (link).

23. George[G], E.E., J. Mullinix[G], F. Meng[U], B. Bailey, C. Edwards, B. Felts, A. Haas, A.C. Hartmann, B. Mueller, J. Nulton, T.N.F. Roach, P. Salamon, C.B. Silveira, M.J.A. Vermeij, F.L. Rohwer, and **A. Luque**, "Space-filling and benthic competition on coral reefs," *PeerJ*, 9:e11213 (**2021**). Impact Factor: 2.38. Q1. https://doi.org/10.7717/peerj.11213. **Press:** Video abstract and interviews (link).
22. Silveira, C.B., **A. Luque**, and F. Rohwer, "The landscape of lysogeny across microbial community density, diversity, and energetics." *Environmental Microbiology* (**2021**). Impact Factor: 4.933. Q1. https://doi.org/10.1111/1462-2920.15640.
21. **Luque, A.**, J. Mullinix[G], K. Williams, M. Anderson, and Janet Bowers, "Aligning calculus with life sciences disciplines: The argument for integrating statistical reasoning," *PRIMUS*, Feb 5 (**2021**). Q3. Impact factor*:* 0.25. https://doi.org/10.1080/10511970.2021.1881847.
20. **Luque, A.**, S. Benler, C. Brown[G], D.Y. Lee[G], and S. White, "The Missing Tailed Phages: Prediction of Small Capsid Candidates," *Microorganisms*, 8:1944 (**2020**). Impact Factor: 4.167. Q2. https://doi.org/10.3390/microorganisms8121944.
19. **Luque,* A.** and C.B. Silveira*, "Quantification of lysogeny caused by phage coinfections in microbial communities from biophysical principles," *mSystems*, 5:e00353-20 (**2020**). Impact factor*:* 6.280. Q1. https://doi.org/10.1128/mSystems.00353-20.
18. Bowers, J., K. Williams, **A. Luque**, D. Quick, M. Beisiegel, J. Sorensen, J. Kunz, D. Smith, and L. Kayes, "Paradigms for Creating Activities that Integrate Math and Science Topics," *Journal of Mathematics and Science: Collaborative Explorations*, 16, Article 6 (**2020**). https://doi.org/10.25891/14f6-by82.
17. Silveira, C.B., F.H. Coutinho., G. Cavalcanti, S. Benler, M. Doane, L. Dinsdale, R. Edwards, R.B. Francini-Filho, C.C. Thompson, **A. Luque,** F. Rohwer, F. Thompson, "Genomic and ecological attributes of marine bacteriophages encoding bacterial virulence genes," *BMC Genomics*, 21, 126 (**2020**). https://doi.org/10.1186/s12864-020-6523-2. Impact factor: 4.093. Q1. **Press***:* Microbiome Digest (link).
16. Twarock,* R. and **A. Luque***, "Structural puzzles in virology solved with an overarching icosahedral design principle," *Nature Communications*, 10, 4414 (**2019**). https://doi.org/10.1038/s41467-019-12367-3. Impact factor: 11.880. Q1. **Press***:* mentioned by 8 news outlets and 2 blogs, including the Daily Herald and Science Daily (links).
15. Joiner[G], K., A. Baljon, J. Barr, F. Rohwer, and **A. Luque**, "Impact of bacteria motility in the encounter rates with bacteriophage in mucus," *Scientific Reports*, 9, 16427 (**2019**). https://doi.org/10.1038/s41598-019-52794-2. Impact factor: 4.525. Q1.
14. Silveira, C.B., **A. Luque**, T.N.F. Roach, H. Villela, A. Barno, K. Green, B. Reyes, E. Rubio-Portillo, T. Le, S. Mead, M. Hatay, B. Bailey, M. Vermeij, Y. Takeshita, A. Haas, and F. Rohwer, "Biophysical and physiological processes causing oxygen loss from coral reefs," *eLife*, 8, e49114 (**2019**). https://doi.org/10.7554/eLife.49114. Impact Factor: 7.551. Q1. **Press***:* eLife Digest (link).
13. Nguyen, S., K. Baker, B.S. Padman, T.A. Weston, K. Schlosser, B. Bailey, M. Lazarou, **A. Luque**, F. Rohwer, R. Blumberg, J.J. Barr, "Bacteriophage transcytosis provides a mechanism to cross epithelial cell layers," *mBio*, 8, e01874–e01817 (**2017**). https://doi.org/10.1128/mBio.01874-17 Impact Factor*:* 6.875. Q1. **Press***:* mentioned by 6 news outlets and 4 blogs, including The Atlantic and Science (links).
12. Knowles, B., B. Bailey, L. Boling, M. Breitbart, A. Cobian-Guemes, J. del Campo, R. Edwards, B. Felts, J. Grasis, A.F. Haas, P. Katira, L. Wegley-Kelly, **A. Luque**, J. Nulton, L. Paul, G. Peters, N. Robinett, S. Sandin, A. Segall, C. Silveira, M. Youle, and F. Rohwer, "Variability and host density independence in inductions-based estimates of environmental lysogeny," *Nature Microbiology*, 2, 17064 (**2017**). https://doi.org/10.1038/nmicrobiol.2017.64. Impact factor: 26.819. Q1. **Press***:* mentioned by 3 news outlets and 1 blog, including Science Daily (links).
11. Knowles, B., C.B. Silveira, G.G.Z Silva, S.Q. Quistad, Y.W. Lim, S.E. Sanchez, F.H. Coutinho, K.T. Green, E.R. Hester, J.M. Haggerty, E.E. George, M. Little, C. Thompson, A.F. Haas, T. McDole- Somera, C. Young, N.G. Hisakawa, K.A. Furby, A. Cantu, K. McNair, N.L. Robinett, A.G. Cobian- Guemes, B. Zgliczynski, E. Dinsdale, L.W. Kelly, B. Felts, P. Salamon, S. Sandin, J. Smith, E. Sala, **A. Luque**, R. Brainard, G. Gregoracci, B.A. Bailey, R.A. Edwards, J. Nulton, F. Thompson, F. Rohwer, "Lytic to Temperate Switching of Viral Communities," *Nature*, 531, 466-470 (**2016**). https://doi.org/10.1038/nature17193. Impact factor: 41.456. Q1. **Press***:* mentioned by 7 news outlets and 11 blogs, including Headlines and Global News, Small Things Considered, and This Week in Virology (links).
10. **Luque**, **A.,** G. Ozer, and T. Schlick, "Correlation among DNA linker length, linker histone concentration, and histone tails in chromatin," *Biophysical Journal*, 110, 2309-2319 (**2016**). https://doi.org/10.1016/j.bpj.2016.04.024. Impact factor: 3.972. Q1.
9. Ozer,* G., **A. Luque***, and T. Schlick, "The chromatin fiber: Multiscale problems and approaches," *Current Opinion in Structural Biology*, 31, 124-139 (**2015**). https://doi.org/10.1016/j.sbi.2015.04.002. Impact factor: 9.344. Q1.

8. **Luque**, **A.,** R. Collepardo-Guevara, S. Grigoryev, and T. Schlick, "Dynamic condensation of linker histone C-terminal domain regulates chromatin structure," *Nucleic Acids Research*, 42, 7553–7560 (**2014**). https://doi.org/10.1093/nar/gku491. Impact factor*:* 19.16. Q1.
7. Hernando-Pérez, M., M. Aznar, E. Pascual Vega, A. Ionel, J.R. Castón, **A. Luque**, J.R. Carrascosa, D. Reguera, and P.J. de Pablo, "The interplay between mechanics and stability of viral cages," *Nanoscale* 6, 2702–2709 (**2014**). https://doi.org/10.1039/C3NR05763A. Impact factor: 7.394. Q1.
6. **Luque**, **A.,** D. Reguera, A. Morozov, J. Rudnick, and R. Bruinsma, "Physics of shell assembly: Line tension, hole implosion, and closure catastrophe," *Journal of Chemical Physics*. 136, 184507 (**2012**). https://doi.org/10.1063/1.4712304. Impact factor: 2.894. Q1.
5. Aznar[G]*, M., **A. Luque***, and D. Reguera, "Relevance of capsid structure in the buckling and maturation of spherical viruses," *Physical Biology*. 9, 036003 (**2012**). https://doi.org/10.1088/1478-3975/9/3/036003. Impact factor 2.536. Q2.
4. Reguera, D., **A. Luque**, P. S. Burada, G. Schmid, J. M. Rubí, and P. Hänggi, "Entropic splitter for particle separation," *Physical Review Letters*. 108, 020604 (**2012**). https://doi.org/10.1103/PhysRevLett.108.020604. Impact factor*:* 9.185. Q1. **Press***:* American Physics Society (APS), Physics magazine, https://physics.aps.org/articles/v5/6.
3. Carrasco*, C., **A. Luque***, M. Hernando-Pérez, R. Miranda, J. L. Carrascosa, P. A. Serena, M. de Ridder, A. Raman, J. Gómez-Herrero, I. A. T. Schaap, D. Reguera, and P. J. de Pablo, "Built-in mechanical stress in viral shells," *Biophysical Journal*. 100, 1100–1108 (**2011**). https://doi.org/10.1016/j.bpj.2011.01.008. Impact factor: 3.972. Q1.
2. **Luque, A.** and D. Reguera, "The structure of elongated viral capsids," *Biophysical Journal*. 98, 2993–3003 (**2010**). https://doi.org/10.1016/j.bpj.2010.02.051. Impact factor: 3.972. Q1. **Press**: Universitat de Barcelona News, https://www.ub.edu/web/ub/en/menu_eines/noticies/2010/06/34.html.
1. **Luque**, **A.,** R. Zandi, and D. Reguera, "Optimal architectures of elongated viruses," *Proceedings of the National Academy of Sciences USA*. 107, 5323-5328 (**2010**). https://doi.org/10.1073/pnas.0915122107. Impact factor: 12.780. Q1. **Press***:* Universitat de Barcelona News, https://www.ub.edu/web/ub/en/menu_eines/noticies/2010/06/34.html.

Book Chapters

1. **Luque*, A.** and D. Reguera*, "Theoretical Studies on Assembly, Physical Stability, and Dynamics of Viruses," in M.G. Mateo, editor, Structure, and Physics of Viruses, Springer (**2013**), *Subcellular Biochemistry*, 68, 553-595. https://doi.org/10.1007/978-94-007-6552-8_19.

Conference Reports

1. Hufsky, F., D. Beslic, D. Boeckaerts, S. Duchene, E. González-Tortuero, A. J. Gruber, J. Guo, D. Jansen, J. Juma, K. Kongkitimanon, **A. Luque**, M. Ritsch, G. Lencioni Lovate, L. Nishimura, C. Pas, E. Domingo, E. Hodcroft, P. Lemey, M.B. Sullivan, F. Webber, F. González-Candelas, S. Krautwurst, A. Pérez-Cataluña, W. Randazzo, G. Sánchez, M. Marz. "The International Virus Bioinformatics Meeting 2022." *Viruses*.14, no. 5:973 (**2022**). Impact factor: 5.048. Q1. https://doi.org/10.3390/v14050973.

Articles In Preparation

3. **A. Luque**, S. Nayfach, S. Benler, S. Roux, and S. White, "Modern remnants of ancient small viruses across environments." *Complete manuscript draft, submit Fall 2022. Target Journal: Nature Microbiology* (Impact factor: 30.960. Q1).
2. Cobo-López, S.[P], M. Witt[G], Forest Rohwer, and **A. Luque**, "Assessing transient dynamics in ecology: A case study on phage and bacteria populations. *Complete manuscript draft, submit Fall 2022. Target Journal: PNAS* (Impact factor: 12.780. Q1).
1. Brown, C.[G] and **A. Luque**, "pyCapsid: Obtaining the geometrical and mechanical anatomy of viral capsids." *Complete manuscript draft, submit Fall 2022. Target Journal: Bioinformatics* (Impact factor: 6.937. Q1).

FUNDING

Cumulative funding: 2,136,762 USD. Sources of funding: 2 federal grants, 1 private foundation grant, and 13 intramural grants.

Funded Grants

1,501,875 USD – Perpetual viral origins, The Gordon and Betty Moore Foundation, Award #9871, co-P.I. Nov. 2021 – Dec. 2024

300,000 USD – Characterization and prediction of viral capsid geometries, National Science Foundation, Award 1951678, Mathematical Biology program, sole P.I.	Sep. 2020 – Aug. 2023
160,027 USD – Collaborative research: A national consortium for synergistic undergraduate mathematics via multi-institutional interdisciplinary teaching partnership (SUMMIT-P), National Science Foundation, co-PI.	Sep. 2016 – Aug. 2021
25,025 USD – University Graduate Fellowship Program to support a graduate student, sole P.I.	Aug. 2020 – Sep. 2021
3,000 USD – Prediction of the decay time of viruses from genomic information, Summer Undergraduate Research Program, San Diego State University, sole P.I.	Jul – Aug. 2020
3,000 USD – Quantification of conserved structural properties within viral lineages, Summer Undergraduate Research Program, San Diego State University, sole P.I.	May-August 2019
3,000 USD – Identifying common structural properties among microbial viruses and human viruses, Summer Undergraduate Research Program, San Diego State University, sole P.I.	May-August 2018
50,000 USD – Viromics: Area of Excellence research proposal, San Diego State University, co-PI.	Jul. 2016 – Jun. 2018
15,000 USD – Modeling phage-bacteria dynamics in mucus: A multiscale approach to phage therapy, California State University Program for Education and Research in Biotechnology (CSUPERB), sole P.I.	July 2017 – Nov. 2018
10,000 USD – Mathematical modeling of phage lifestyles and their ecological impact in coral reefs, University Grant Program, San Diego State University, sole P.I.	Jul. 2017 – Jun. 2018
22,212 USD – Course Redesign with Technology Award, California State University: Calculus for the Life Sciences	Mar. 2017 – Jun. 2018
35,000 USD – Interdisciplinary graduate fellowships in viromics, San Diego State University, co-P.I.	Sep. 2016 – Aug. 2018.
3,000 USD – Modeling phage survival in limiting bacterial growth conditions, Summer Undergraduate Research Program, San Diego State University, sole P.I..	May – Aug. 2017
16,180 USD – Course Redesign with Technology Award, California State University: Methods of Applied Mathematics	Mar. 2016 – June 2017
2,500 USD – Center for Teaching and Learning Mini-Grant: Inverting Methods of Applied Mathematics I: Learning Glass and Team-Based Learning, San Diego State University, July 2015.	Jul. 2015 – Jun. 2016
2,500 USD – Structure of phages in the human microbiome, Summer Undergraduate Research Program, San Diego State University, sole P.I.	May – Aug. 2015

Pending Grants

$1,454,160 USD – Identifying the missing structural link between ancient viruses and cellular protein compartments, NASA Exobiology Program. Co-Investigator (P.I. at SDSU with subaward $872,003).	Jul. 2022

Not Funded Grants (last 4 years)

1,284,728 USD – Identifying the missing structural link between ancient viruses and cellular protein compartments, NASA Exobiology Program. Co-Investigator (P.I. at SDSU with subaward $660,525).	Jun. 2021
47,748,555 USD – Reefense: ARKWALL, DARPA (Reefense program), Department of Defense, Co-Investigator.	Apr. 2021
788,343 USD – Identifying the common structural origin of ancient viruses and cell compartments, NASA, Exobiology Program, Co-Investigator (P.I. at SDSU with subaward 4325,847).	May 2020
2,145,998 USD - Activating Prophage in the Cystic Fibrosis Lung Microbiome. National Institute of Allergy and Infectious Diseases (NIAID-NIH), co-P.I.	Feb. 2019
1,439,898 USD - Collaborative Research: Metabolic carbon/oxygen decoupling during coral reef phase shifts. National Science Foundation (NSF), Biological oceanography. Submitted Feb 2018, co-P.I.	Feb. 2018

AWARDS, FELLOWSHIPS, AND HONORS

2020 Mentors Hall of Fame, Student Research Symposium, San Diego State University.
2019 Grant Research and Enterprise Writing Fellowship, San Diego State University (3,000 USD).
2019 Outstanding Faculty Award, College of Sciences, San Diego State University.
2019 Outstanding Faculty Award, Department of Physics, San Diego State University.
2019 Senate Teaching Excellence Award nominee, San Diego State University.
2018 Faculty Innovation and Leadership Award, California State University (10,000 USD).
2018 Top ePortfolio Award for "Calculus for the Life Sciences: Growth Mindset and Active Learning" as part of the Course Redesigned with Technology Program.
2017 California State University Program in Education and Research in Biotechnology (CSUPERB) Travel Award, Institute of Mathematical Sciences, Singapore (2,000 USD).
2017 Outstanding Faculty Award, Department of Physics, San Diego State University.
2017 Center for Teaching and Learning Academy Award, San Diego State University.
2012 Thesis Honors by the *Claustre de Doctors* of the Universitat de Barcelona, Spain.
2011 Thesis Honor Award from the Ph.D. program of the Government of Catalonia, Spain (6,000 EUR).
2010 Research Fellowship for a research visit at the University of California, Los Angeles, funded by the Government of Catalonia, Spain (7,500 EUR).
2007 Ph.D. Research Fellowship. Government of Catalonia, Spain, 2007-2010 (60,000 EUR).
2006 Extraordinary M.S. Award in Biophysics from the Universitat de Barcelona, Spain, 2006**.**
2006 Undergraduate Research Fellowship. Ministry of Education and Science, Spain (4,000 EUR).

PRESENTATIONS

Invited Talks and Seminars

2022 Physics Seminar, Department of Biology, University of Miami, Coral Gables, FL, USA.
2022 Biology Seminar, Department of Biology, University of Miami, Coral Gables, FL, USA.
2022 Ciclo Los Viernes de la Evolución, Colegio Nacional, Mexico City, Mexico (Spanish).
2022 Mathematics Seminar, Temple University, Philadelphia, PA, USA.
2022 Mathematical Biology Colloquium, University of California, Merced, CA, USA.
2022 Computational Science Research Colloquium, San Diego State University, San Diego, CA, USA.
2022 Physics Colloquium, Florida International University, Miami, FL, USA.
2021 Biology of Viruses (BIL354), The University of Miami, Miami, FL, USA.
2021 Interdisciplinary Center for Quantitative Modeling in Biology, University of California, Riverside, USA.
2020 International Conference on Science and Technology of Complex Fluids, Universidad de Guanajuato, Guanajuato, Mexico.
2020 Computational Science Research Colloquium, San Diego State University, San Diego, USA.
2019 International Workshop on Calorimetry and Microbial Ecology, Telluride Science Research Center, Telluride, CO, USA.
2019 San Diego Microbiology Group, University of California, San Diego, USA.
2018 Computational Science Research Colloquium, San Diego State University, San Diego, CA,USA.
2018 York Cross-disciplinary Centre for Systems Analysis, University of York, UK.
2018 Coral Club, San Diego, CA, USA.
2017 International workshop on geometry and shape analysis in biological sciences, Institute for Mathematical Sciences, Singapore.
2015 Computational Science Research Colloquium, San Diego State University, San Diego, USA.
2015 Southern California Systems Biology Conference, UC Irvine, CA, USA.
2015 International Year of the Phage Conference, San Diego State University, USA.
2014 Center for Genomic Regulation, Barcelona, Spain.
2014 Condensed matter seminar series, Department of Physics, Universitat de Barcelona, Spain.
2014 Biomathematics and Computational Biology Colloquium, Courant Institute of Mathematical Sciences, New York University, New York, NY, USA.
2014 Viral Information Institute, San Diego State University, San Diego, CA, USA.
2014 Physics seminar, Hunter College of The City University of New York, New York, USA.
2013 Seminar at the Department of Biochemistry and Molecular Biology, Pennsylvania State University, Hershey, USA.
2011 Seminar condensed matter series, Universidad Autónoma de Madrid, Spain.

2010 Physics seminar, Brookhaven National Laboratory, Long Island, CA, USA.
2010 Quantitative biology seminar, University of Southern California, Los Angeles, USA.
2010 Biophysics seminar, University of California, Los Angeles, USA.
2010 Seminar, National Center of Biotechnology (CNB- CSIC), Madrid, Spain.
2009 Condensed matter seminar series, Universitat de Barcelona, Barcelona, Spain.
2009 Quantitative biology seminar, Institute of Marine Sciences (ICM-CSIC), Barcelona, Spain.

Contributed Talks

2022 FASEB Virus Structure and Assembly, Southbridge, Connecticut, USA.
2022 International Virus Bioinformatics Meeting, Valencia, Spain (online).
2020 International Colloquium Physics and Function of Protein Nanoshells: From Viruses to Biomimetic Nanocontainers, Condensed Matter Division 2020 Meeting, Madrid, Spain (online).
2020 International Coral Reef Symposium (ICRS), (cancelled due to COVID19).
2011 FISES'11: XVII National Conference on Statistical Physics, Barcelona, Spain.
2009 SEV 2009: X Spanish National Conference of Virology, Salamanca, Spain.

MENTORING

Assistant Professors (1)

Uduak George, Department of Mathematics & Statistics, SDSU. 2020 – Present

Postdoctoral Researcher (1)

Sergio Cobo-López, biophysical modeling, co-mentorship, SDSU. 2021 – Present
Margarita Salas fellowship.

Doctoral Students (3)

Diana Lee, Computational Science, SDSU. 2016 – Present
NSF G-STEM Scholarship, Computational Science Qualcomm Award, SIAM CSE Award, Grace Hopper Scholar 2017, SACNAS Scholar, Viral Information Institute Interdisciplinary Graduate fellowship.

James Mullinix, Computational Science, SDSU. 2015 – Present
NSF G-STEM Scholarship, Student Travel Award, Computational Science Tioga Research Award and Natural Selection, Inc. Award.

Kevin Joiner, Computational Science, SDSU. 2015 – 2018
SMART Fellowship, Department of Defense, NSF G-STEM Scholarship, Computational Science ESET Research Award.

Master Students (10)

Aurora Vogel, Applied Mathematics, co-mentorship, SDSU. 2021 – Present
Emma Sully, Applied mathematics, lab internship, SDSU. Summer 2021
Brandon Ricafrente, Physics, SDSU. 2020 – Present
Colin Brown, Physics, SDSU. 2019 – Present
Matthew Witt, Physics, SDSU. 2017 – 2019
Emily Jasien, Applied Mathematics, SDSU. 2015 – 2017
Shahir Sikder, Mathematics, SDSU. 2015 – 2016
Emma George, Cell Molecular Biology, co-mentorship, SDSU. 2015 – 2016
Maria Aznar, Biophysics, co-mentorship, Universitat de Barcelona. 2010 – 2011

Undergraduate Students (17)

Vaishnavi Patel, Biology, SDSU. 2022 – Present
Caitlin Bartels, Biology, SDSU. 2020 – Present
Jessica Vogt, Computer Science, SDSU. Fall 2021
Neilsen Lu, Mathematics, SDSU. 2020 – 2021
Antonio Cobarrubia, Physics, SDSU. 2018 – 2019
Austin Crispin-Smith, Physics, SDSU. 2018 – 2019
Jarod Tall, Physics, SDSU. 2018 – 2019
Meg Robinson, Mathematics, SDSU. 2018 – 2019
Malida Hecht, Physics, SDSU. 2018 – 2019

Nicole Tomassi, Mathematics, SDSU.	2017 – 2019
Kendrick Uy, Mathematics, SDSU.	2017 – 2018
James Hellfeier, Physics, SDSU.	2017 – 2018
Fanwei (Ashley) Meng, Statistics, SDSU.	2017 – 2018
Max Anthenelli, Physics, SDSU.	2016 – 2018
Luke Turner, Physics, SDSU.	Spring 2017
Paul Johnson, Mathematics, SDSU.	Summer 2016
Diana Lee, Mathematics, SDSU.	2015 – 2016

TEACHING

Doctoral Thesis Committees (7 total and 3 as chair)

Jason Baer, Cell Molecular Biology, SDSU – UCSD, committee member.	Ongoing
Brandie White, Cell Molecular Biology, SDSU – UCSD, committee member.	Ongoing
Diana Lee, Computational Science, SDSU – CGU, **committee chair**.	Ongoing
James Mullinix, Computational Science, SDSU – CGU, **committee chair**.	Ongoing
Jody Fisher, Ecology, Flinders University, Australia, external evaluator.	2021
Kevin Joiner, Computational Science, SDSU – CGU, **committee chair**.	2018
Daniel Cuevas, Computational Science, SDSU – CGU, committee member.	2018

Master Thesis Committees (36 total and 5 as chair)

Aurora Vogel, Applied Mathematics, SDSU, **committee chair**.	Ongoing
Brandon Ricafrente, Physics, SDSU, **committee chair**.	Ongoing
Colin Brown, Physics, SDSU, **committee chair**.	Ongoing
Anneke van der Geer, Cell and Molecular Biology, SDSU, committee member.	Ongoing
Fernando Vasquez, Chemistry, SDSU, committee member.	Ongoing
Zach Barvian, Physics, SDSU, committee member.	Ongoing
Ashton Ballard, Cell and Molecular Biology, SDSU, committee member.	Ongoing
Jenna Aquino, Cell and Molecular Biology, SDSU, committee member.	Ongoing
Michelle An, Bioinformatics, SDSU, committee member.	2021
Jon Parsons, Physics, SDSU, committee member.	2021
Angelica Bloomquist, Applied Mathematics, SDSU, committee member.	2021
Allen Zheng, Cell and Molecular Biology, SDSU, committee member.	2021
Ryan Hesse, Ecology, SDSU, committee member.	2020
Alex Escobar, Cell and Molecular Biology, SDSU, committee member.	2020
Danielle Slemons, Cell and Molecular Biology, SDSU, committee member.	2020
Ryan Hesse, Ecology, SDSU, committee member.	2020
Daeheon Oh, Bioinformatics, SDSU, committee member.	2020
Melissa Giluso, Bioinformatics, SDSU, committee member.	2020
Matthew Witt, Physics, SDSU, **committee chair**.	2019
Garrett Scott Gallear, Physics, SDSU, committee member.	2019
Adam Barno, Cell and Molecular Biology, SDSU, committee member.	2019
Tyler Collins, Bioengineering, SDSU, committee member.	2019
Brandon Reyes, Cell and Molecular Biology, SDSU, committee member.	2018
Saichetana Macherla, Bioinformatics, SDSU, committee member.	2018
Emily Jasien, Applied Mathematics, SDSU, **committee chair**.	2017
Ryan Strum, Physics, SDSU, committee member.	2017
Kyle Levi, Bioinformatics, SDSU, committee member.	2017
Matt Gallagher, Cell and Molecular Biology, SDSU, committee member.	2016
Samuel Dickey, Physics, SDSU, committee member.	2017
Benjamin Yeoman, Bioengineering, SDSU, committee member.	2017
Shea Grenier Davies, Cell and Molecular Biology, SDSU, committee member.	2017
Andrew Hatch, Bioinformatics, SDSU, committee member.	2016
Shahir Sikder, Mathematics, SDSU, committee member.	2016
Lance Boling, Cell and Molecular Biology, SDSU, committee member.	2016
Blaire Robinson, Bioinformatics, SDSU, committee member.	2016
Emma George, Cell and Molecular Biology, SDSU, committee member.	2016

Undergraduate Senior Thesis Supervised (5)

Antonio Cobarrubia, Physics, SDSU.	2019
Austin Crispin-Smith, Physics, SDSU.	2019
Jarod Tall, Physics, SDSU.	2019
James Hellfeier, Physics, SDSU.	2018
Max Anthenelli, Physics, SDSU.	2018

Courses Taught

Calculus for the Life Sciences, MATH 124, 3 units, lecture, 128 students, SDSU.	Spring 2022
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 6 sections, SDSU.	Spring 2022
Communication in Interdisc. Appl. Math., MATH 695, 3 units, lecture, 4 students, SDSU.	Spring 2022
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 129 students, SDSU.	Fall 2021
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 6 sections, SDSU.	Fall 2021
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 174 students, SDSU.	Spring 2021
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 6 sections, SDSU.	Spring 2021
Communication in Interdisc. Appl. Math., MATH 695, 3 units, lecture, 10 students, SDSU.	Spring 2021
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 105 students, SDSU.	Fall 2020
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 4 sections, SDSU.	Fall 2020
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 125 students, SDSU.	Spring 2020
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 4 sections, SDSU.	Spring 2020
Methods of Applied Mathematics II, MATH 342B, 3 units, lecture, 31 students, SDSU.	Spring 2020
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 68 students, SDSU.	Fall 2019
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 3 sections, SDSU.	Fall 2019
Methods of Applied Mathematics I, MATH 342A, 3 units, lecture, 45 students, SDSU.	Fall 2019
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 89 students, SDSU.	Spring 2019
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 4 sections, SDSU.	Spring 2019
Methods of Applied Mathematics II, MATH 342B, 3 units, lecture, 26 students, SDSU.	Spring 2019
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 95 students, SDSU.	Fall 2018
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 4 sections, SDSU.	Fall 2018
Methods of Applied Mathematics I, MATH 342A, 3 units, lecture, 36 students, SDSU.	Fall 2018
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 99 students, SDSU.	Spring 2018
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 4 sections, SDSU.	Spring 2018
Methods of Applied Mathematics II, MATH 342B, 3 units, lecture, 27 students, SDSU.	Spring 2018
Calculus for the Life Sciences, MATH 124, 3 units, lecture, 83 students, SDSU.	Fall 2017
Calculus for the Life Sciences, MATH 124, 1 unit, lab coordinator, 3 sections, SDSU.	Fall 2017
Methods of Applied Mathematics I, MATH 342A, 3 units, lecture, 43 students, SDSU.	Fall 2017
Methods of Applied Mathematics II, MATH 342B, 3 units, lecture, 42 students, SDSU.	Spring 2017
Methods of Applied Mathematics I, MATH 342A, 3 units, lecture, 52 students, SDSU.	Fall 2016
Methods of Applied Mathematics II, MATH 342B, 3 units, lecture, 34 students, SDSU.	Spring 2016
Methods of Applied Mathematics I, MATH 342A, 3 units, lecture, 49 students, SDSU.	Fall 2015
Fluid Mechanics Laboratory, 25 students, Universitat de Barcelona.	Fall 2010

Participation in Teaching Training Workshops

California State University Summer Institute: Course Redesign with Technology.	Summer 2018
California State University Summer Institute: Course Redesign with Technology.	Summer 2017
SDSU Center for Teaching and Learning program: Scholarly Teaching through Evidence and Practice program.	2016 – 2017
SDSU Center for Teaching and Learning reading club: Brown, Roediger III, and McDaniel, “Make it stick: The science of successful learning.”	Summer 2016
California State University Summer Institute: Course Redesign with Technology.	Summer 2017
Attended 25 SDSU Center for Teaching and Learning workshops.	2015 – 2016
Workshop on Scientific Teaching.	Spring 2013

Curriculum Development and Teaching Innovations

In MATH 124, Incorporated GradeScope as an online grading system; Expanded synchronous and asynchronous activities using TopHat in lectures and lab sections.	Fall 2021

Development and teaching of a new course: Communication in Interdisciplinary Applied Mathematics (MATH 695).	Spring 2021
Implemented online transition for synchronous class combining Zoom, Top Hat, and Crowdmark in MATH 124 and Math 342B.	Spring 2020
Developed classroom response system activities using the student response system Top Hat in MATH 124.	Fall 2019
Implemented specifications-grading (contract grading) scheme in MATH 124 and Math 342AB.	2018 –2019
Applied backward design for the redesign of MATH 124 using the Knowledge survey instrument.	Fall 2017
Created the 600-level graduate course “Communication in interdisciplinary applied mathematics” (MATH 695).	Fall 2018
Implemented guidelines for better student climate in team-based learning in MATH 342A and MATH 342B.	2016 – 2017
Produced Learning Glass lectures for the Calculus series and the Math Learning Center.	Fall 2016
Developed team-based learning pedagogy and student evaluation for MATH 342A and B.	2015 – 2016
Produced Learning Glass lectures accessible online for MATH 342A and B.	2015 – 2016

SERVICE

Service for the Department

Diversity committee.	2018 – 2022
Department website committee.	2021 – 2022
Math & Stats Learning Center committee.	2016 – 2020
Search committee: Biomathematics assistant professor position.	2016 – 2017
Internship committee.	2016 – 2017
Training workshop for teaching assistants.	2016 – 2017
Condensed Matter Seminars Organizer (Universitat de Barcelona): Seminars organized: 41, including graduate students, postdocs, and professors.	2008 – 2011
Fundamental Physics Department Council (University of Barcelona): Elected graduate student representative.	2008 – 2011
Physics Faculty Council (University of Barcelona): Elected graduate student representative.	2007 – 2011
Physics Studies Council (University of Barcelona): Elected undergraduate student representative.	2005 – 2006

Service for the College

Biomath Meeting coordinator.	2017 – 2022
Maximizing Access to Research Careers (MARC) advisory board member.	2016 – 2022
Search committee member (Computational biology assistant professor position).	2020 – 2021
Learning Glass lecture for the provost during his visit to the College of Science.	2019 – 2020
Learning Glass training for students in MBIO 610: Advanced topics in molecular biology.	2016 – 2018
Biomath Meeting coordinator, Diversity committee, Math & Stats Learning Center committee.	2017 – 2018
Workshop on Modeling in Microbiology: NIH-SDSU Bridges Baccalaureate program.	2015 – 2018
Search committee member (Biomathematics assistant professor position), Math Learning Center committee, Internship committee, Teaching Assistant training workshop.	2016 – 2017
Search committee member: Endowed chair in Biomedical research, assistant professor position in virology.	2015 – 2017
Lecture on Structural Virology in MBIO 610: Advanced topics in molecular biology.	2015 – 2016

Service for the University

Speaker at the SDSU High-Impact teaching symposium.	2017 – 2018
Speaker at the ITS session for new faculty.	2016 – 2017
Member of the Postdoc Council associated with the Office of Postdoctoral Affairs at New York University.	2010 – 2011

Service for the Profession

Review Editor on the Editorial Board of Phage Biology the international journal of Frontier in Microbiology (Impact Factor 4.076).	2020 – 2022
Editorial Board of Soft Matter Physics as a Review Editor for the international journal Frontier in Physics (Impact Factor 2.579).	2020 – 2022
Panel reviewer, National Science Foundation (NSF): Divisions of Molecular Cellular Biosciences (MCB), Division of Mathematical Sciences (DMS), and Division of Geosciences (Geo). Panels: 4. Reviews written: 24. Proposals evaluated: 80.	2020 – 2022
Ad hoc reviewer for the National Science Foundation and the US-Israel Binational Science Foundation (BSF). Proposals reviewed: 3.	2020 – 2021
Reviewer for international journals, including Proceedings of the National Academy of Sciences USA, Nature Communications, Journal of the American Chemical Society (JACS), mSystems, PLoS One, Journal of Chemical Physics (JCP), Physical Review E (PRE), IEEE Transactions of NanoBioscience, and PRIMUS. Articles reviewed: 29.	2015 – 2021
Member of the local committee organizing the XXI Sitges International Conference: Statistical mechanics of molecular biophysics. Sitges (Spain), June 2-6, 2008.	2007 – 2008

Service for the Community

Advisor for robotics and phage therapy project (High School, San Diego).	2021 – 2022
Spring Science Day outreach for the San Diego community at the SDSU Coastal Lab.	2019 – 2020
Summer Workshop on Quantitative Biology for the NIH Bridges Baccalaureate program.	2015 – 2017
“Viruses: The new allies?” (Virus: Els nous aliats?). Talk addressed to graduate and undergraduate students (Universitat de Barcelona).	2007 – 2008
“Entropy: The dictatorship of time and other daily questions” (L’entropia: La dictadura del temps i altres questions de cada dia). Talk addressed to high school students. IES Miquel Biada (High School), Mataró (Spain).	2007 – 2008

Professional Associations

Member of the European Bioinformatics Virus Center.	2020 – Present
Contributing Member of the American Society for Microbiology.	2020 – Present
Member of the International Society for Viruses of Microorganisms.	2016 – Present
Member of the New York Academy of Science.	2011 – 2012
Member of the Interdisciplinary Spanish Network on the Biophysics of Viruses.	2011 – 2015
Member of the Biophysical Society.	2009 – 2012
Member of the Institute of Nanoscience and Nanotechnology of Barcelona.	2008 – 2011

OTHER

Programming languages

FORTRAN, C, C++, Bash, Awk, Python, R, Jekyll, Git.

Languages spoken

Spanish (native), Catalan (native), English (fluent), Portuguese (fluent), French (basic).