Luke Pierik

Department of Mathematics, University of California, Irvine
Irvine, California 92697
971-221-4997 lpierik@uci.edu

Education

University of California, Irvine **Sep. 2024**
PhD in Mathematics (in progress) *Irvine, California*

University of California, Irvine **Sep. 2023 – Aug. 2024**
Mathematical, Computational, and Systems Biology Gateway Program *Irvine, California*

University of St Andrews **Sep. 2022 – Aug. 2023**
MSc in Mathematical Biology *St Andrews, Scotland*

University of Southern California **Aug. 2017 – May 2022**
BA in Applied and Computational Mathematics; BA in Physics *Los Angeles, California*

Research Experience

Moffitt Cancer Center **July 2021 – Aug. 2022**
Student Research Assistant *Tampa, Florida*

- Worked at the Anderson Mathematical Oncology Laboratory which studies the evolutionary dynamics of cancer and develops methodologies to improve treatment outcomes. Supervisors: Dr. Alexander Anderson and Dr. Jeffrey West.
- Introduced a pharmacokinetic model to improve a metric determining optimal cancer treatment schedules.
- Created procedures in MATLAB to determine model dynamics and their clinical applications.
- Lead a paper considering the interaction between 2nd-order effects and pharmacokinetics with respect towards optimal treatment schedules.
- Delivered a 1-hour presentation to the Integrated Mathematical Oncology department titled: "Second Order Effects of Chemotherapy and Cachexia" based on the year-long research at Moffitt.

Teaching Experience

Department of Mathematics | UC Irvine
Teaching Assistant

- Math 5A: Calculus for Life Sciences I Summer 2025
- Math 5B: Calculus for Life Sciences II Summer 2025
- Math 3D: Elementary Differential Equations Summer 2025

Work Experience

Purple Ruler **Jan. 2023 – May 2023**
Online Mathematics Tutor *Canterbury, England*

- Developed unique lesson plans for students (ages 14-16) preparing for the UK's Graduate Certificate of Secondary Education (GCSE) Exams.
- Clearly delivered material while prioritizing student engagement by implementing online educational resources.
- Utilized student-specific data from schools to guide tailored lesson planning.

Joint Education Project **Sep. 2019 – Sep. 2021**
ReadersPlus Mathematics Tutor *Los Angeles, California*

- Tutored two elementary school students per semester in math (1st quartile performance) one hour twice a week.
- Maximized learning experiences by consulting monthly with teachers about student confidence and academic performance.
- Improved students' math proficiency to grade-level standards through directed and engaging lesson plans.
- Conducted lesson plans and lead interactive activities for an after-school science program.

Povinelli Nanophotonics Laboratory **June 2021 – July 2021**
Diversity, Equity, and Inclusion Intern *Los Angeles, California*

- Worked 15 hours per week researching attrition rates among underrepresented minorities (URMs) studying STEM.
- Engaged in biweekly meetings discussing literature-informed causes and solutions of unequal URM achievement in STEM.
- Developed a report reviewing STEM attrition literature and proposing measures to increase USC Physics' URM engagement.

Honors and Awards

University of St Andrews Dean's List **2022 – 2023**

- Rewarded for the 2022/23 academic session for obtaining a mean grade above 16.5 (corresponds with a "first" degree classification).

University of Southern California Dean's List **2018 – 2022**

- Awarded to students with a GPA of 3.5 or greater while taking at least 12 graded units.
- Received honor for 5 semesters between 2018 and 2022.

"Top 100 Submission" for the Summer of Math Exposition **Summer 2022**

- Teaching competition hosted by one of the world's most subscribed math education YouTube channels, 3Blue1Brown.
- Article on the network effect was chosen in the top 10% of all math content produced and was one of 25 written submissions in the top 100.

Outreach and Volunteering

UCI Math Circle **Oct. 2023 – Dec. 2024**

Mentor *University of California, Irvine*

- Weekly lead a group of students between 6th and 12th grade in problems focused on developing advanced mathematical problem solving skills.
- Collaborated with guest mathematics professors to introduce novel problems for around 30 Math Circle students.

Letters to a Pre-Scientist **Oct. 2022 – May 2025**

STEM Professional *United States*

- Correspond with a middle-school student four times throughout the academic year as a mentor scientist.
- Share my experience in STEM with students and reveal opportunities and challenges in higher education.
- Introduce students to STEM careers and share ways they can prepare for them.

Publications

- **L. Pierik**, P. McDonald, A.R. Anderson, J. West. Second-order effects of chemotherapy pharmacodynamics and pharmacokinetics on tumor regression and cachexia. Bulletin of Mathematical Biology. 2024 May;86(5):47

Preprints

- J. West, B. Desai, M. Strobl, **L. Pierik**, R. Vander Velde, C. Armagost, R. Miles, M. Robertson-Tessi, A. Marusyk, A. Anderson, 2021, "Antifragile Therapy," BioRxiv

Articles

- L. Pierik, 2022, Introducing the Mathematics of the Network Effect, <https://medium.com/@lukepierik/introducing-the- mathematics-of-the-network-effect-f8f04a1542b76>
- L. Pierik, 2021, Best Practices for Increasing URM Retention in Physics, <https://nanophotonicslab.usc.edu/2021/07/13/best-practices-for-increasing-urm-retention-in-physics/>