# LISA ROGERS, PHD

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## PROFILE

Dr. Lisa Rogers' superpower is the ability to harness the powers of mathematics for the forces of good. Lisa specializes in creative problem-solving, mathematical and statistical modeling, data visualization, data science and analysis, machine learning, and directing research.

## EDUCATION

**Ph.D. Mathematics** Rensselaer Polytechnic Institute, Troy, NY. 2010.
**B.S. Mathematics** Rensselaer Polytechnic Institute, Troy, NY. 2006.

## EXPERIENCE

**Senior Data Scientist,** hyphaeDelity Project, 2021 - Present.
Created algorithm, GUI, and Mac App utilizing Python's OpenCV library for quantifying the amount of pseudohyphal growth in yeast colonies. App processes and analyzes hundreds of images in less than a minute. Used software to perform statistical analyses of growth indices and phenotypic variability for 16 strains of *S. Cerevisiae*.

**Founder, CEO and STEAM Director,** TranscendED Consulting, 2014 - Present.
Founded educational consulting company, TranscendED Consulting. Developed integrated STEAM curriculum and programs for secondary schools. Mentored students of all ages and backgrounds with math and science skills, research projects, standardized test preparation, and school admissions preparation. Managed employees and client relationships, developed business model, website, programs, and advertisement strategy.

**National Science Foundation Postdoctoral Research Fellow,** NYU Courant Institute of Mathematical Sciences, 2010 - 2013.
Developed mechanistic mathematical model of chemical and electrical neuron activity governing human sleep-wake cycle dynamics. Implemented numerical algorithms for simulating and solving mathematical models. Extensively recorded and presented research findings. PI: Dr. Charles Peskin.

**Summer Undergraduate Research Experience Mathematical Research Advisor**, NYU - Courant Institute of Mathematical Sciences, 2012 - 2013.
Coordinated and conducted weekly group research meetings and discussions. Trained and advised undergraduates with a variety of projects and backgrounds to conduct and present mathematical and computational research.

**Mathematical Modeling Instructor,** NYU - Courant Institute of Mathematical Sciences, 2013.
Developed and executed Mathematical Modeling course material on applied topics. Developed objective methods for student project evaluation. Trained students in quantitative and qualitative interdisciplinary research techniques needed for real-world problem solving.

**Mathematics Research Assistant,** Rensselaer Polytechnic Institute, 2008 - 2010.
Performed mathematical and biological studies of neuronal regulation mechanisms and dynamics governing human sleep-wake cycles and circadian rhythms. Developed theoretical mathematical framework and model of human sleep-wake system. Completed and extensively presented research project for thesis work. Advisor: Dr. Mark Holmes.

**Mathematics and Biology Research Assistant,** Beth Israel Deaconess Medical Center Scammell Lab, Harvard Medical School, 2009.
Completed training in Animal Subject Research Practices, SleepSign sleep scoring software and experimental sleep stage analysis. Performed prolonged wake studies on orexin knockout mice. Adapted sleep scoring software output for MATLAB analysis. Advisor: Dr. Tom Scammell.

## ADDITIONAL EXPERIENCE AND PROJECTS

**Financial Literacy Project,** PS 41, Fall 2018.
Created and successfully implemented interdisciplinary Financial Literacy curriculum for 5th graders at The Greenwich Village School (PS 41). Students learned about budgeting, taxes, banking, credit, debit, checking accounts, and setting financial goals. Students created and financially planned small businesses. Project culminated in “Shark Tank” style pitches for students’ unique small business products and services.

**STEM Stars,** International School of Brooklyn and PS 32, 2016-2019.
Created, directed, and taught STEM Stars after school program for International School of Brooklyn and PS 32 in Brooklyn, grades 1-3. Students worked individually and in small groups doing interactive activities and experiments involving, but not limited to, the Engineering Design Process, Genetics, Game Theory and Design, Cryptography, Neuroscience, Kinematics, Fractals, and Physical and Chemical Reactions.

**STEM Camp,** Prospect Park, Summer 2016.
Created, directed, and taught summer STEM camp in Prospect Park for kids ages 7-12. Students participated in hands-on activities similar to those in STEM Stars.

**Computational Science Training for Undergraduates in the Mathematical Sciences (CSUMS) Research Advisor**, Rensselaer Polytechnic Institute, 2006 - 2008.
Trained undergraduates in numerical implementation skills, modeling skills as well as written and oral presentation skills in the computationally intensive sciences. Advised and managed projects for all students during semester as well as a select group who continued to do funded research during the summer. Facilitated group research discussions and work sessions.

**Mathematical Contest in Modeling Group Mentor and Organizer**, New York University and Rensselaer Polytechnic Institute, 2006 - 2013.
Developed and ran weekly applied problem sessions for undergraduates, training them for the Mathematical Contest in Modeling.

## TECHNICAL SKILLS

Python, OpenCV, Git, R, SQL, Javascript, MATLAB, Octave, XPP, LaTeX, MS Office, OpenOffice, G Suite, MacOS, Linux, Windows.

## PUBLICATIONS

**Disparity in pseudohyphal morphogenic switching response to the quorum sensing molecule 2-phenylethanol in commercial brewing strains of Saccharomyces cerevisciae,** FEMS Microbes, January 2023.

**HYPHAEdelity: A quantitative image analysis tool for assessing peripheral whole colony filamentation,** FEMS Yeast Research, November 2022.

**A Mathematical Model of the Human Sleep Wake System,** Lambert Academic Publishing, 2016.

## INTERESTS

Mathematical Models, Data Science, Deep Learning, Medical and Neurological Modeling, Neuroscience of Learning and Memory, Music (Singer and Trumpet Player), Dance, Swimming, Comic Books, Sci-Fi, Video Games, Cooking, Plants and Gardening.