Daniel P. Keliher

Contact Information

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Interests

I am primarily interested in **number theory** and **arithemetic statistics**. I am also interested in algebraic geometry, data analysis, and computational genomics.

Education

Tufts University, Medford, MA — September 2017 - Present
Ph.D program in Mathematics
Advisor: Robert Lemke Oliver

Brown University, Providence, RI — September 2013 - May 2017
Sc.B in Mathematics

Research Items

6. Daniel Nava Rodrigues, Pasquale Rescigno, David Liu, et. al. *Immunogenomic analyses associate immunological alterations with mismatch repair defects in prostate cancer*. Journal of Clinical Investigation. 2018.
5. Diana Miao, Claire A. Margolis, Natalie I. Vokes, et. al. *Genomic correlates of response to immune checkpoint blockade in microsatellite-stable solid tumors*. Nature Genetics 9, 1271. 2018.
4. David Liu, Philip Abbosh, Daniel Keliher, et. al. *Mutational patterns in chemotherapy resistant muscle-invasive bladder cancer*. Nature Communications 8 (1), 2193. 2017.
3. David Liu, Philip Abbosh, Daniel Keliher, et al. *Subclonal mutational heterogeneity and survival in cisplatin-resistant muscle-invasive blasser cancer*. Journal of Clinical Oncology 2017 35:15_suppl, 4512-4512.
2. David Liu, Daniel Keliher, Philip Abbosh, et al. *Analysis of matched pre and post cisplatin-treated muscle-invasive bladder cancer reveals a candidate cisplatin mutational signature* [abstract]. In: Proceedings of the American Association for Cancer Research Annual Meeting 2017; 2017 Apr 1-5; Washington, DC. Philadelphia (PA): AACR; Cancer Res 2017;77(13 Suppl):Abstract nr 2918.
1. Diana Miao, David Liu, Daniel Keliher, et al. *Meta-analysis of genomic predictors of response to immune checkpoint therapy in metastatic melanoma* [abstract]. In: Proceedings of the American Association for Cancer Research Annual Meeting 2017; 2017 Apr 1-5; Washington, DC. Philadelphia (PA): AACR; Cancer Res 2017;77(13 Suppl):Abstract nr 571.

Talks & Presentations

- *Comparing the number of D_4 and S_4 extensions of a number field*, Palmetto Number Theory Series. (December 2018)
- *Some Results in Arithmetic Statistics*, Tufts University Graduate Student Seminar. (October 2018)
- *A Primer on Topological Data Analysis*, Tufts University Graduate Student Seminar. (March 2018)

- *Mutational Signatures in Primary and Metastatic Prostate Cancer*, DFCI Van Allen Lab. (August 2016)
- *An Introduction to the Topology of Data*, DFCI Van Allen Lab. (July 2016)

Teaching Experience

Teaching Assistant/Instructor September 2017 - Present
Tufts University Department of Mathematics
- *(Future)* Summer 2019: Intro to Calculus (Primary Instructor)
- Spring 2019: Discrete Math (TA)
- Fall 2018: Calculus I (Recitation Instructor)
- Summer 2018: SAT Math Course (Primary Instructor)
- Spring 2018: Abstract Algebra II (TA)
- Fall 2017: Abstract Algebra I (TA)

Teaching Assistant/Grader September 2014 - May 2017
Brown University Department of Mathematics
- Spring 2017: Honors Linear Algebra
- Fall 2016: Applied Algebraic Topology
- Fall 2016 & Fall 2015: Mathematical Cryptography
- Spring 2016: Abstract Algebra
- Spring 2015: Introduction to Number Theory
- Fall 2014: Calculus II for Physics/Engineering

Employment

Researcher Summers, 2014 - 2016
Dana-Farber Cancer Institute, Boston, MA
- Research related to algorithms and mathematical methods for detecting mutational signatures
- Developed RNASeq deconvolution algorithms

Visiting Undergraduate Summers, 2014-2016
The Broad Institute of MIT and Harvard, Cambridge, MA
- I held a concurrent appointment at the Broad Institute while working at DFCI in the Garraway and Van Allen Laboratories.

Data Science Intern Summer 2013
Audax Health (now Rally Health), Washington, DC
- Created prediction models to recommend content to users

Graduate Coursework

Algebra, Commutative Algebra, Algebraic Topology (three courses), Number Theory, Real Analysis, Analytic Number Theory, Algebraic Geometry (two courses), Elliptic Curves, Modular Forms

Computer Skills

R, Python, LaTeX, Mathematica, Sage, Magma

Conferences/ Workshops Attended

- Palmetto Number Theory Series XXXI* (U. South Carolina, December 2018)
- Québec-Maine Number Theory Conference (U. Laval, October 2018)
- 2018 Chicago Summer Workshop: The roots of topology: miracles of algebraic geometry, braids and Hilbert's (still open) 13th problem (UChicago, June 2018)
- Connecticut Summer School in Number Theory/Arithmetic Geometry and Number Theory Conference (UConn, June 2018)
- 32nd Automorphic Forms Workshop (Tufts, March 2018)
- Maine-Québec Number Theory Conference (UMaine, October 2017)

(Denotes I gave a talk)*

Service

- Tufts Graduate Student Seminar co-organizer, 2018-
- Tufts University Organization for Graduate Students in Mathematics (OGSM)
    - First-Year Representative, 2017-2018
    - Second-Year Representative, 2018-2019
- Brown University Symposium for Undergraduates in the Mathematical Sciences (SUMS) co-organizer, 2016, 2017
- Brown Undergraduate Math Seminar organizer, 2016-2017
- Camp Kesem at Brown University:
    - General Body member, 2015-2016
    - Treasurer, 2016-2017
    - Counselor, Summers 2016-2018