Curriculum Vitae: Boris Grinshpun

Webpage: *www.borisgrinshpun.com*
Github: *http://github.com/bgrinshpun*

Education

Aug 2011 — May 2017	**Columbia University**, New York, NY Ph.D. in Computational Biology
Sep 2011 — May 2014	**Columbia University**, New York, NY M.A., M. Phil.
Aug 2006 — May 2010	**Columbia University**, New York, NY B.S. in Applied Mathematics
Sep 2002 — May 2006	**Stuyvesant High School**, New York, NY

Research Experience

Jan 2018 — Present	**EMD Serono, Inc,** Billerica, MA **Structural and Digital Drug Discovery** *Postdoctoral Fellow* - Perform statistical and machine learning analysis to analyze developability and clearance of therapeutic antibodies and identify guidelines for prioritization in early discovery. Publication in preparation. - Develop mathematical equations to build in-house pharmacokinetic models for IC50 prediction of antibody drug conjugates. Incorporate equations into an in-house web platform built with RShiny and evaluate model performance on different small molecule payloads. Work done in collaboration with the antibody drug conjugate group at Merck KGaA in Darmstadt, Germany. - Analyzed human B cell repertoire from B cell sequencing of autoimmune patient samples in collaboration with next generation sequencing group at EMD Serono. Publication in preparation. - Established an ongoing collaborative cross-company initiative to design a database for reliable presentation of antibody PKPD data and to foster precompetitive data sharing. - Mentored two graduate student interns. - Represent EMD Serono on the board of the Massachusetts Industry Postdoc Association (MIPA).
Aug 2011 — May 2017	**Columbia University,** New York, NY **Department of Systems Biology** *Research Assistant / PhD Candidate (Advisor: Prof. Yufeng Shen)* - Analyzed T cell receptor repertoire data using next generation sequencing, RNAseq and TCRseq.

- Projects focused on the T cell receptor repertoire from human tissues in three collaborations with different immunology groups 1. Healthy lymphoid tissues 2. Gliomas and 3. Alloreactivity.

May 2008 — Jun 2010	**Columbia University,** New York, NY **Department of Applied Physics & Applied Mathematics** *Undergraduate Researcher (Advisor: Prof. Chris H. Wiggins)* Assisted in implementation and development of a statistical model to study the relationship between structure and function in small gene regulatory networks
May 2008 — May 2010	**Columbia University,** New York, NY **Department of Psychology** *Undergraduate Researcher (Advisor: Prof. Norma V. Graham)* Helped to develop a mathematical model to study contrast controlled adaptation in human pattern vision
Jun 2005 — Aug 2006	**City College of New York,** New York, NY **Department of Chemistry** *High School Researcher (Advisor: Prof. Glen R. Kowach)* Developed procedure for growth of large potassium niobate crystals from supersaturated solution

Skills

Scientific Areas:	Data science, machine learning, computer algorithms, bioinformatics, next generation sequencing, antibody discovery, genomics, cell biology
Programming:	R/RShiny, Python/Scikit-learn/Pandas, MATLAB, Javascript, Perl
Operating Systems:	Unix/Bash, Linux, Windows & Mac
Other Tools:	Git, AWS, Cloud Computing, Django, LaTeX, BWA, SAMtools, MOE, BLAST/IgBLAST
Foreign Languages:	Russian

Industry Training

April 2019	**Completed the course "Pharmacokinetics and Pharmacodynamics of Protein Therapeutics - Concepts and Hands-On Modeling and Simulation" taught by Bernd Meibohm and Johan Gabrielsson** – Memphis, TN

Publications * Co-first author

2018

1. Quantifying the size and diversity of the human alloresponse via high-throughput T cell receptor sequencing. Susan DeWolf* , **Boris Grinshpun***, Thomas Savage , Sai Ping Lau , Aleksandar Obradovic , Brittany Shonts , Suxiao Yang , Heather Morris , Julien Zuber , Robert Winchester , Megan Sykes , Yufeng Shen *JCI Insight* 3(15) doi: 10.1172/jci.insight.121256

2016

2. Long-term maintenance of human naïve T cells through in situ homeostasis in lymphoid tissue sites. Joseph J.C. Thome*, **Boris Grinshpun***, Brahma V. Kumar, Masaru Kubota, Yoshiaki Ohmura, Harvey Lerner, Gregory D. Sempowski, Yufeng Shen and Donna L. Farber *Science Immunology* 1(6) doi:10.1126/sciimmunol.aah6506

2015

3. Diversity and divergence of the glioma-infiltrating T-cell receptor repertoire. Jennifer Sims, **Boris Grinshpun**, Yaping Feng, Timothy H. Ung, Justin A. Niera, Jorge L. Samanamud, Peter Canoll, Jeffrey N. Bruce, Peter Sims, Yufeng Shen. *PNAS* 113(25):3529-37 doi:10.1073/pnas.1601012113

2014

4. Spatial map of human T cell compartmentalization and maintenance over decades of life. Joseph J.C. Thome, Naomi Yudanin, Yoshiaki Ohmura, Masaru Kubota, **Boris Grinshpun**, Taheri Sathaliyawala, Tomoaki Kato, Harvey Lerner, Yufeng Shen, Donna L. Farber. *Cell* 159(4):814-828. doi:10.1016/j.cell.2014.10.026

2013

5. Analyzing T cell repertoire diversity by high-throughput sequencing. **Boris Grinshpun**, Jennifer Sims, Peter Canoll, Jeffrey N. Bruce, Peter Sims, Yufeng Shen. *Global Conference on Signal and Information Processing (GlobalSIP), IEEE.* doi:10.1109/GlobalSIP.2013.6736810

2010

6. Statistical method for revealing form-function relations in biological networks. Andrew Mugler, **Boris Grinshpun**, Riley Franks, and Chris H. Wiggins. *Proceedings of the National Academy of Sciences*, 108(2):446-451. doi:10.1073/pnas.1008898108

Conference Talks and Invited Presentations

2019

1. Towards clearance prediction for antibodies using Simple Descriptors. **Boris Grinshpun**, *Chemical Consulting Group User Group Meeting & Conference.*

2. **Invited Speaker**. Life after the PhD. **Boris Grinshpun**, *Columbia University Medical Center Data Science Club..*

2013

3. High throughput sequence analysis of the TCR repertoire in glioma-associated immune dysregulation. **Boris Grinshpun**, Jennifer Sims, Peter Sims, Jeffrey N. Bruce, Peter D. Canoll, Yufeng Shen. *American Society of Human Genetics.*

Posters and Abstracts

2015

1. TCR clonal analysis reveals tissue-specific compartmentalization of human naïve and memory T cell subsets. **Boris Grinshpun**, Joe Thome, Donna Farber, Yufeng Shen. *Keystone Symposium: Systems Immunology: From Molecular Networks to Human Biology.*

2. Divergence of Intratumoral T Cell Repertoires Reflects Gene Expression in the Glioma Microenvironment. Jennifer Sims, **Boris Grinshpun**, Yaping Feng, Timothy H. Ung, Justin A. Niera, Jorge L. Samanamud, Peter Canoll, Jeffrey N. Bruce, Peter Sims, Yufeng Shen. *Society for Neuro-Oncology*

2014

3. Quantitative characterization of TCR repertoires for immune profiling of human tissue samples. **Boris Grinshpun**, Joe Thome, Jennifer S. Sims, Jeffrey N. Bruce, Donna Farber, Yufeng Shen. *HudsonAlpha Immunogenomics.*

4. IT-32 Divergence of intratumoral and systemic T cell repertoires reflects local monocyte profiles during glioma progression. Jennifer Sims, **Boris Grinshpun**, Yaping Feng, Justin Neira, Jorge Samanamud, Benjamin Amendolara, Peter Canoll, Peter Sims, Yufeng Shen, Jeffrey Bruce. *Society for Neuro-Oncology.*

5. TCR repertoire divergence reflects micro-environmental immune phenotypes in glioma. Jennifer Sims, **Boris Grinshpun**, Yaping Feng, Justin Neira, Jorge Samanamud, Peter Canoll, Peter Sims, Yufeng Shen, Jeffrey Bruce. *J Immunother Cancer.*

2013

6. High-throughput sequencing of tumor-associated T cell receptors in human and murine glioma Jennifer Sims, **Boris Grinshpun**, Yaping Feng, Benjamin Amendolara, Yufeng Shen, Peter Canoll, Peter Sims, Jeffrey Bruce. *Society for Neuro-Oncology.*

7. Tumor-associated T cell receptor repertoires in low- and high-grade gliomas. Jennifer S Sims, **Boris Grinshpun**, Benjamin I Amendolara, Yufeng Shen, Peter D Canoll, Peter A Sims and Jeffrey N Bruce. *J Immunother Cancer.*

2010

8. "Buffy contrast adaptation" with a single Gabor patch. Norma Graham, S. Sabina Wolfson, Ian Kwok, **Boris Grinshpun**. *Journal of Vision* 10(7):1386, 2010.

2009

9. Modeling the interaction of two rapid adaptation processes: contrast comparison and contrast normalization. Norma Graham, S. Sabina Wolfson, Stephanie Pan, Gauri Wable, Ian Kwok, **Boris Grinshpun**. *Society for Neuroscience.*

Duties and Awards

1. EMD Serono Multiplier Award
   - December 2019
   - Recognition from the company for my contributions during the year

2. Massachusetts Industry PostDoc Association (MIPA) Leadership Board
   - November 2018 – Present
   - Co-organized cross company symposium and other events attended by >50 postdocs.

3. Columbia University Microbiome Working Group – Co-founder
   - July 2015 –2017
   - Organized bi-weekly meetings attended by >150 students, scientists, and clinicians to discuss microbiome research.

4. Columbia Department of Systems Biology – Co-host of RNA-Seq Lecture Series
   - June 2015
   - Co-hosted and organized a lecture series to introduce principles of high-throughput sequencing to the broader academic community.

5. Intel ISEF 2015 Grand Awards Judge – Computational Biology and Bioinformatics
   - May 2015

6. Columbia Department of Systems Biology – Student Seminar Organizer
   - 2013-2015

7. Society for Industrial and Applied Mathematics (Columbia University Chapter)
   - President 2009-2010
   - Leader of MATLAB Help Room

8. Attardo SEAS Named Scholar 2008-2010

9. Columbia Deans List: Spring and Fall 2007