

## Sasha (Aleksandr) Rayshubskiy

### Education

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<b>Ph.D.</b> , Harvard University, Department of Neurobiology <i>Thesis: "Neural control of steering in walking <i>Drosophila</i>"</i> <i>Thesis advisor: Rachel Wilson</i>	2013 – 2019
<b>Post baccalaureate</b> , Columbia University, School of General Studies	2010-2013
<b>M.Eng.</b> , Cornell University	2002
<b>B.S.</b> , Cornell University	1998-2002

### Positions

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<b>Rowland Fellow</b> , Principal Investigator, Rowland Institute at Harvard University	starting October 2020
<b>Postdoctoral Fellow</b> , Department of Neurobiology, Harvard University <i>Supervisor: Rachel Wilson</i>	2020
<b>Research Assistant</b> , Department of Biomedical Engineering, Columbia University <i>Supervisor: Elizabeth Hillman</i>	2010-2013
<b>Advisory Software Engineer</b> , Computational Biology Center, IBM Watson Research Center <i>Supervisor: Blake Fitch</i>	2001-2010
<b>Software Engineer</b> , Cornell High Energy Synchrotron Source, Cornell University <i>Supervisor: Arthur Weaver</i>	1998-2001

### Publications

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1. **Rayshubskiy, A**, Holtz, SL, D'Alessandro, I, Li AA, Vanderbeck, QX, Haber, IS, Gibb, PW, Wilson, RI (2020) Neural circuit mechanisms for steering control in walking *Drosophila*. *bioRxiv*
  2. **Rayshubskiy, A**, Wojtasiewicz, TJ, Mikell, CB, Bouchard, MB, Timerman, D, Youngerman, BE, McGovern, R.A., Otten, M.L., Canoll, P., McKhann, GM, Hillman, EMC (2013). Direct, intraoperative observation of ~0.1Hz hemodynamic oscillations in awake human cortex: Implications for fMRI. *NeuroImage*, 87.
  3. Reumann M, Fitch BG, **Rayshubskiy A**, Pitman MC, Rice JJ. (2011) Orthogonal recursive bisection as data decomposition strategy for massively parallel cardiac simulations. *Biomed Tech* (Berl).
  4. **Rayshubskiy A**, Fitch BG, Pitman MC, Germain RS. Parallel In-Memory Database Reference Manual. (2010) *IBM Technical Report*, RC24973.
  5. Fitch BG, **Rayshubskiy A**, Eleftheriou M, Ward TJC, Giampapa ME, Pitman MC, Pitera JW, Swope WC, Germain RS. Blue Matter: Scaling of n-body simulations to one atom per node. (2008) *IBM Journal of Research and Development*, 52(1.2).
  6. Fitch BG, **Rayshubskiy A**, Eleftheriou M, Ward TJC, Giampapa M, Pitman MC, Germain RS. Blue matter: approaching the limits of concurrency for classical molecular dynamics. (2006) *In SC '06: Proceedings of the 2006 ACM/IEEE conference on Supercomputing*, 87.
  7. Eleftheriou M, Fitch BG, **Rayshubskiy A**, Ward TJC, Germain RS. Scalable framework for 3d FFTs on the Blue Gene/L supercomputer: Implementation and early performance measurements. (2005) *IBM Journal of Research and Development*, 49(2.3).

### Honors & Awards

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National Research Service Award – F31	2016-2019
IBM First Plateau Invention Achievement Award	2006
IBM Research Division Award	2005

IBM First Patent Application Invention Achievement Award	2004
Gold medal in Physics, Brooklyn Technical High School, NY	1998
<i>Part of a team</i>	
National Medal of Technology and Innovation (IBM Blue Gene Team)	2008
IBM Blue Gene Core Team Award	2003

## Patents

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US 8082108	Fitch, B. <b>Rayshubskiy, A.</b> Germain, R. Pitman, M. Pairwise Fragment Interaction Computation. (2011)
US 7788310	Eleftheriou, M. <b>Rayshubskiy, A.</b> Fitch, B. Germain, R. Ward, TJC. Multi-Dimensional Transform For Distributed Memory Network. (2010)
US 7860695	Fitch, B. <b>Rayshubskiy, A.</b> Germain, R. Pitman, M. Method of Creating a Load Balanced Spatial Partitioning of a Structured, Diffusing System of Particles. (2010)

## Presentations

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### Podium presentations:

1. *Descending neurons that mediate central-complex evoked steering*, U19 meeting, CalTech, 2019
2. *External and internal steering guidance signals converge onto descending neurons that control heading direction in walking Drosophila*, Central Complex V, Janelia Farm Research Center, 2018
3. *Descending neurons that mediate sensory-evoked steering*, U19 meeting, CalTech, 2018
4. *Neural correlates of behavioral choice in the Drosophila brain*, Department of Neurobiology seminar series, Harvard University, 2017

### Poster presentations:

1. *Neural control of heading direction in walking Drosophila*, Cosyne, 2019
2. *External and internal steering guidance signals converge onto descending neurons that control heading direction in walking Drosophila*, Society for Neuroscience, San Diego, 2018
3. *External and internal steering guidance signals converge onto descending neurons that control heading direction in walking Drosophila*, HHMI meeting, Janelia Farm Research Center, 2018
5. *Neural dynamics underlying behavioral variability during osmotropotaxis in Drosophila*, Central Complex IV, Janelia Farm Research Center, 2016
6. *In-vivo cellular resolution of flavoprotein and NADH autofluorescence dynamics in the rat somatosensory cortex*. Society for Neuroscience, 2012
7. *In-vivo cellular resolution of flavoprotein and NADH autofluorescence dynamics in the rat somatosensory cortex*. Gordon Conference on Brain Metabolism and Blood Flow, 2012
8. *Multispectral optical imaging of hemodynamic fluctuations in the human cortex during neurosurgery*. Society for Neuroscience, 2011
9. *Ultrafast multispectral optical imaging of the human cortex during neurosurgery*. ECI Conference on Advances in Optics for Biotechnology, Medicine and Surgery, 2011

## Service

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Mentored under-represented high school students, HPREP, Harvard University	2013-2014
Research volunteer, Emergency Medicine Department, New York Presbyterian, NY	2011
Asthma Literacy Program, Bronx Lebanon Hospital, NY	2010-2011
Lecturer in High Performance Computing (IBM collaboration), KAUST University, Saudi Arabia	05/2010