



181 Longwood Avenue
Boston, Massachusetts 02115-5804

Department of Medicine
Channing Division of Network Medicine

Channing Network Science Seminar

March 25, 2016, 11am @ 5th floor conference room



Speaker: Kirill Korolev, Ph.D.
Assistant Professor
Department of Physics, Boston University
<https://sites.google.com/site/kirillskorolev/>

Mutations slow down cancer

The conventional view is that only a handful of mutations are needed for cancer progression, yet tumor genomes carry thousands of genetic changes. I will discuss our recent work showing that most cancer mutations are damaging to the tumor. Cancer progression is then akin a tug-of-war between a few strong mutations that promote cancers and many weak mutations that hold it back. This theory predicts that majority of genetic lesions fail to become clinical cancers and explains many paradoxical observations in genomic and clinical data. Recent experiments confirm many of our predictions and suggest that genetic load presents a possible target for anticancer therapy.

Bio: Dr. Korolev is an Assistant Professor at Boston University in the Department of Physics and Graduate Program in Bioinformatics. He uses simple mathematical models to study theoretical population biology, microbial communities, and cancer. The research in his group is motivated by the desire to understand how ecological interactions, evolution, and physical processes control complex, dynamic biological systems. His recent work includes the discovery of evolutionary barriers to cancer progression, developing signatures of impending ecological transitions, and finding factors that promote or destabilize microbial mutualism. Dr. Korolev received a PhD in physics from Harvard University in 2010, and he was a Pappalardo postdoctoral fellow at MIT until 2013.

Hosted by Yang-Yu Liu