

## Speakers

## Leonid Kruglyak, Ph.D.



Fred Hutchinson Cancer Research Center  
1100 Fairview Ave North (D3-100)  
Seattle, Washington 98109  
USA

- 1983–1987 A.B., Physics Princeton University, Princeton, NJ
- 1987–1990 M.A., Ph.D. in Physics University of California, Berkeley, CA
- 1991 Visiting Scientist, NEC Research Institute, Princeton, NJ
- 1991–1992 Member of the School of Natural Science, Institute for Advanced Study, Princeton, NJ
- 1992–1993 NSF-NATO Postdoctoral Fellow, Oxford University, Oxford, England
- 1993–1998 Research Scientist, Whitehead Institute for Biomedical Research, Cambridge, MA
- 1998–present Associate Member, Fred Hutchinson Cancer Research Center, Seattle, WA
- 1998–present Affiliate Associate Professor, Department of Genetics, University of Washington, Seattle, WA
- 1999–present Affiliate Associate Professor, Department of Molecular Biotechnology, University of Washington, Seattle, WA

## Honors

- 1983–1987 National Merit Scholar
- 1987 Kusaka Memorial Prize in Physics, Princeton University
- 1987 Sigma Xi
- 1987 Phi Beta Kappa
- 1987 Highest Honors in Physics, Princeton University
- 1987–1990 Fannie and John Hertz Graduate Fellow
- 1991–1992 Fellow of Forbes College, Princeton University
- 1992–1993 NSF-NATO Postdoctoral Fellow
- 1994–1999 Special Emphasis Research Career Award, NHGRI,  
1999–present James S. McDonnell Centennial Fellow in Human Genetics, 1999

## Single-nucleotide polymorphisms in human genetics

Recently, attention has focused on the use of whole-genome linkage disequilibrium (LD) studies to map common disease genes. Such studies would employ a dense map of single-nucleotide polymorphisms (SNPs) to detect association between a marker and disease based on LD between the marker and a disease-risk gene variant. Construction of SNP maps is currently underway. One key question is the required marker density of such maps. I have used population simulations to estimate the extent of LD around common gene variants in the general human population as well as in isolated populations. Two main conclusions have emerged from these investigations. First, a useful level of LD is unlikely to extend beyond an average distance of approximately 3 kb in the general population, which implies that at least 500,000 SNPs will be required for whole-genome LD mapping studies in samples drawn from this population. Second, the extent of LD is similar in isolated populations unless either their history meets a set of specific criteria, such as a very narrow founding bottleneck and slow early growth, or the frequency of the variant is low (<5%). Another important question concerns the choice of strategy for SNP discovery. I will discuss the impact of different SNP discovery strategies on the properties of the resulting catalogue of SNPs.