

Curriculum Vitae

Name: Diana David-Rus

Family status: Married

Work place:

Researcher, Department of Computational Physics and Information Technologies,
National Institute of Physics, IFIN-HH,
Bucharest, Romania, 30 Reactorului, Magurele, Romania
Email: diana.david-rus@nipne.ro
ddavid@math.rutgers.edu;

Education:

2009 - PhD Rutgers University, Biophysics and Computational Biology program

2004 - Qualifying exam(~ master) Rutgers University, Biophysics and Computational Biology Program

1999 - Physics diploma: “Neural networks and generative grammars”, University of Bucharest, Faculty of Physics.

Advisers:

Prof Joel L. Lebowitz -Mathematical-Physics department, Rutgers/USA

Prof. Monica Driscoll - Molecular Biology and Biochemistry Department, Rutgers/USA

Expertise: statistics, statistical mechanics, stochastic processes, mathematical modeling in biology, data mining- microarray data analysis.

Collaborators:

Mathematics, Physics: Joel Lebowitz, Larry Shepp, Eduardo Sontag, Eytan Domany, Alexander Morozov, Chris Wiggins, Andres Kriete, Vincent Hakim

Biophysics & Molecular Biology: Monica Driscoll, David Axelrod, Garth Patterson, Andrei J Petrescu, Mihai Ciubotaru, Natalia Cucu.

Awards

- 2011 FSR Research project award UC Louvin, Belgium
- 2010 Research project Foundation Pierre Gilles de Gennes, Paris, France
- 2008 Bevier award for PhD project thesis, Rutgers University
- 2003,2005, 2006 Leathem/Steinetz/Stauber Research Awards
- 2003-2007 Research assistant(graduate assistant)
- 2001, Rutgers University fellowship

Grants

- 2011 FSR individual research grant, Belgium
- 2010 PGG individual research grant, France
- 2003-2005 NIH research grant, US (co-participation)
- 2005-2007 NIH research grant, US (co-participation)

Organizing and Chairing activities

- June 2014 –workshop co-organizing on Statistical Physics applied in Biology, in conjunction with 9th European conference on Mathematical and Theoretical Biology, Gothemburg, Sweden.
- Co-founder “Center of Epigenetics and Computational Biology” , Bucharest Romania – established in June 2011
- May 2010- Institute of Complex system-Paris, France- Statistical Mechanics and Emergence Phenomena-speaker: Joel L. Lebowitz, Rutgers University, NJ/US
- December 2011- “ Biophysical models of chromatin structure and energetics” speaker Alexander Morozov, Rutgers Univ. NJ/US - Institute of Complex system-Paris, France

MEMBERSHIPS

Member of: American Institute of Physics: AIP

European Physics Society: EPS

European Society for Mathematical and Theoretical Biology: ESMTB,

Society of Mathematical Biology: SMB

Employment History

Professional Working Experience/ Research appointments/Positions held

USA (8 years)

- 2001-2002 Research Assistant, B. Coleman “DNA Modeling Lab”, Rutgers University, USA
- 2002-2009 Research Assistant in Driscoll lab, Dept. of Molecular Biology- Biochemistry, and Group of Joel Lebowitz, mathematical-physics Dept. of Mathematics Rutgers University.

France

- 2009-2011 postdoc Ecole Normale Supérieure, Paris, France, stability of epigenetic processes in plants using lattice models
- November 2011- April 2012 visiting researcher Institute of Complex Systems, Paris, France

Belgium

- 2010-2011 postdoc Catholic University of Leuven, understanding social interactions among elderly people using statistical physics

Romania

- May 2012-April 2013, postdoctoral position Institute of Biochemistry, Romania Academy of Science.
- February 2013- present National Institute of Physics, IFIN-HH, Department of Computational Physics and Information Technologies.

Israel

- 2003 summer research - visiting student Weizmann Physics Institute of Complex systems, group of Eytan Domany. Microarray data analysis methods for *C. elegans*

Germany

- 1999-2000-TU-Munich, pre-doctoral research under supervision of Prof. Van Hemmen - theoretical neuroscience- research studies of Visual system using Neural networks approach
- 2000-2001-TU-Munich pre-doctoral research under supervision of Prof Fisher: Molecular dynamics studies using computer simulations to understand the mechanisms of molecular machines; dynamics of the elementary processes in biological systems such as in the functional units of photosynthesis.
- 1999-2001-German Institute of aerospace, DLR- mathematical computations.
- 1998-1999 LMU-Munich, Zoology department, under supervision of Prof. Bruckmoser - research on "Electrostatics studies of water and living organism" in collaboration with the Institute of Anthropology, Romanian Academy-obtained a grant research based on this studies.

TEACHING EXPERIENCE

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- 2008, 2009 (Fall) – Calculus & Statistics, for Business, Social Science and Biology majors-Rutgers University-US.
 - 2001-2008 – Statistics, Linear Algebra, Calculus– tutoring US
 - 1999(summer) - Physics Sincai High-school Bucharest-Romania
 - 1998 (summer) - Calculus – Sincai High-school Bucharest-Romania (equivalent with Calculus I college level US)
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Presentations/Invited Talks

2013

4-7 July The 13th International Balkan Workshop on Applied Physics-IBWAP
2013“Mathematical framework of epigenetic DNA methylation in Repeat Elements in Arabidopsis” (poster)

26-27 March, Biotehnologii celulare și moleculare cu aplicații în medicină –Romanian Academy (IBAR)

16-20 September European Conference on Complex Systems, Barcelona Spain

2012

- Institute for Research in Biomedicine, Barcelona Spain-Aging insights from a system biology point of view.
- Mount Sinai Hospital, NY,US, group of Jun Zhu-Aging as an epigenetic process
- University of Helsinki, Finland Viikki campus, group of Yrjö Helariutta “Mathematical framework of epigenetic DNA methylation in gene body Arabidopsis”

2011

- Ecole Normale Supérieure, Paris, France-Inheritance of DNA methylation pattern in Arabidopsis
- Institute of Complex Systems, Paris, France- Epigenetics, modeling, chromatin stability

2010

- Institute of Complex system, Paris, France -stability and chromatin dynamics

2009

- Spain/Palma de Mallorca: Trends in Complex Systems,International Workshop on 150 Years after Darwin: From Molecular Evolution to Language
- US/Rutgers University: "Thermodynamics, Statistical Mechanics, and Fundamental Issues in Biology: Where do we stand?"
- Columbia University-Computational biology department-“Maintenance of epigenetics marks”.

2008

- MBB &BioMaPs, US/Rutgers University,: “ how methods from physics might give us insights, into Chromatin silencing.”
- 99th Statistical mechanics conference, Rutgers University: “Inheritance of Epigenetic Chromatin Silencing”
- Albert Einstein School of Medicine-Aging institute-microarray studies on aging

2007

- Department of Molecular Biology and Biochemistry & BioMaPs, Rutgers University: "Apoptosis vs. senescence; why cells undergo senescence rather than apoptosis; biological and mathematical considerations".
- Sixteenth International C. elegans Meeting, University of California, Los Angeles: "Microarray studies of sarcopenia signature"

2006

- Department of Molecular Biology and Biochemistry, Rutgers University: "Stochastic approaches to protein-protein interaction-what can we learn from mathematics"

2005

- University of California at Los Angeles: Fifteenth, International C. elegans Meeting, "A search for mid-life gene expression changes that might influence healthspan "

2003

- University of California at Los Angeles: Fourteen International C. elegans Meeting, "microarray studies of aging in *C.elegans*"

Conferences/workshops/schools participation (selected starting '99)

2013

June 16-29, Fundamental Problems in Stat. Phys. XIII Leuven, Belgium

2012

- Management of research-Romanian Academy
- Matlab virtual conference
- Protein synthesis degradation- Institute of Biochemistry, Romanian Academy

2010

- January 18-22, Stochastic Models in Neuroscience-Marseille, France
- December, EpiGeneSys - Network of Excellence-Paris, France
- December,16-17, Colloque PMSB-ESPCI, Paris, France

2009

- November 6, l'école-thématique " Epigénétique -Orchestrations biologiques et hérédité, au-delà de l'ADN"-Curie Institute, Paris

2008

- May 6, 20th Annual Rutgers-UMDNJ Molecular Biophysics Minisymposium
- June 9-13, BioMaPS Summer School "Chromatin Structure and Gene Regulation"
- 100th Statistical mechanics meeting-Rutgers University
- February 8, Columbia University-Computational biology departmenet-"Maintenance of epigenetics marks".

2007

- April 11-12, Symposium: "Origins of Life: Adapting to the Environment" , Princeton University, IAS.
- May 6-8, 97th Statistical Mechanics Meeting , Rutgers University
- June: Fifteenth International C. elegans Meeting, University of California at Los Angeles
- July: Summer school in complexity, Imperial College of London, England
- May, 95'th Statistical Mechanics Meeting , Rutgers University

2006

- Spring Seminars series, Simons center for system biology, Institute for Advanced study, Princeton.
- May 3 - 5, Sequence, Structure and Systems Approaches to Predict Protein Function, DIMACS Center - Rutgers
- May 9 - 11, Clustering Problems in Biological Networks, DIMACS Center – Rutgers
- May 8 - 12, Conference: "Determination of Longevity", Princeton University IAS.
- May 22 - 26, Short Course: Biological Development ,Life Science Auditorium, Life Sciences Building, Busch Campus, Rutgers
- August 2, 2006 Computational Tumor Modeling ,DIMACS Center - Rutgers
- December 96'th Statistical Mechanics Meeting , Rutgers University

2005

- March 1 - 2, A Field Guide to GenBank and NCBI Molecular Biology Resources ,DIMACS Center - Rutgers
- April 20-22 conference on Collectives formation and specialization in Biological systems, LANL, Los Alamos National Laboratory
- 7-11 May 8th PIMS Graduate Mathematics Modelling Camp (GIMMC), University of Lethbridge, Canada
- 15-19 May 9th PIMS-Industrial Problem Solving Workshop (IPSW), University of Calgary, Canada
- June 25- June 29, Fifteenth International C. elegans Meeting, University of California at Los Angeles
- December, 94'th Statistical Mechanics Meeting , Rutgers University,

2004

- April 13 - 14, DIMACS Short Course: Gene Expression Resources at the National Center for Biotechnology Information (NCBI)
- May, 91th Statistical Mechanics Meeting , Rutgers University
- June 8 - 9, 2004 Genomic Instability in Cancer: Biological and Mathematical Approaches, Institute for Advanced Study, Princeton, NJ
- June 21 - 25, 2004 BioMaPS/DIMACS/MBBC/PMMB Short Course: Transcriptional Regulation from Molecules to Systems and Beyond
- December, 92th Statistical Mechanics Meeting , Rutgers University

2003

- May, 89'th Statistical Mechanics Meeting , Rutgers University
- May 22, Data Mining and Epidemiology DIMACS Center - Rutgers
- June 23 - 28, Introduction to Modern Concepts in Biology for Mathematical and Physical Scientists ,DIMACS Center - Rutgers

- June 29 - July 3, Fourteenth International C. elegans Meeting, University of California at Los Angeles
- July 7-August 15 research -visiting student Weizmann Physics Institute of Complex systems, group of Eytan Domany, Israel.
- October 30 - 31, Data Mining Techniques in Bioinformatics DIMACS Center - Rutgers
- December 10 - 11, A Field Guide to GenBank and NCBI Molecular Biology Resources ,DIMACS Center - Rutgers
- December, 90'th Statistical Mechanics Meeting , Rutgers University

2002

- 8-10 April , Complexity in Biosystems: Innovative Approaches at the Interface of Experimental and Computational Modeling DIMACS, Rutgers University:
- 14 - 16 June, East Coast Worm Meeting University of New Hampshire, Durham,
- 26 - 30 August, Introduction to Epidemiological Studies (I, II) DIMACS Center - Rutgers
- 24 - 25 October Visualization and Data Mining ,DIMACS Center - Rutgers

2000

- International Conference on Neuroscience & Biophysics, Munich, Germany.

1999

- Winter school on Biophysics & Neuroscience, Weizmann Institute , Department of Physics of Complex Systems

Books (in libraries: Amazon.com, Barnes & Nobles)

- Diana David-Rus “Theoretical studies of aging”-Oct. 2009 VDM Publishing House Ltd-Germany
- Diana David-Rus Quantitative studies of aging using statistical mechanics and probabilistic approaches

Computer languages: Matlab, Mathematica, Maple, R language, C

Languages: English (excellent), French , German (understanding level) , Romanian (first language)