

Curriculum Vitae

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Technion Institute of Technology 2016-2020

Post-Doc

Biochemistry/Protein Biology

Research Topic: Molecular Dynamics and Experimental Studies on Type II ABC Importers and copper binding proteins

Weizmann Institute of Science 2016 Spring

Visiting Senior Scientist

Immunology

Subject: Intravital two-photon microscopy for visualization of the affinity maturation process in living mice

Hebrew University of Jerusalem 2013-2015

Post-Doc Molecular Biology

Research topic: Epidemiological study of Rickettsia spp. transmitted by Ixodid ticks in Israel

EurNegVec 2014

Diploma

Geographical Information Systems

Course: Geospatial tools in Vector Research

Bar Ilan University 2008-2013

Doctor of Philosophy (PhD)

Computational Biology

Dissertation title: Kinetics of Chronic Human Viruses - Comparative Analysis of Bio-Mathematical Models and their Clinical Implications

Weizmann Institute of Science 2008

Coursework

Computational Biology

Courses: Molecular Biology and Immunology

Memorial University of Newfoundland and Labrador 2003-2006

Master of Science in Medicine (MSc)

Medicine(Immunology)

Thesis title: Dynamical Systems Analysis of HIV Immunopathogenesis and the Effects of Antiretroviral Treatment Interruption

Memorial University of Newfoundland and Labrador 1992-2002

Bachelor of Science (BSc)

Applied Mathematics

Wingate Institute 2011

Diploma

Outdoor Fitness Instructor/Surfing Instructor

Publications

The Bacillus anthracis virulence-determinant ABC transporter MntBC-A: transport specificity and trans-membrane metal recognition. **Jessica Rose**, Oded Lewinson *et al.* (In submission to PLOS pathogens).

Intra-host cytomegalovirus gB genotype dynamics in patients with multiple infections. **Jessica Rose**, Deepali Kumar, Anders Asberg, Anders Hartmann, Alan G Jardine, Angelo A Bignamin, Avidan Neumann, Atul Humar, Vincent C Emery. In submission to PLOS ONE.

Distinct allosteric networks underlie mechanistic speciation of ABC transporters. (April 21, 2020). Burçin Acar, **Jessica Rose**, Burcu Aykac Fas, Nir Ben-Tal, Oded Lewinson and Turkan Haliloglu. *Structure*, Volume 28, Issue 6, 651 - 663.e5.

Vitamin B12 import is all about timing. (July 2018) News and view by Lutz Schmitt *Nature Chem Biology*. 14; 640–641.

Single-molecule probing of the conformational homogeneity of the ABC transporter BtuCD. (July 2018) Min Yang, Nurit Livnat Levanon, Burçin Acar, Burcu Aykac Fas, Gal Masrati, **Jessica Rose**, Nir Ben-Tal, Turkan Haliloglu, Yongfang Zhao, and Oded Lewinson. *Nature Chem Biology*. 14; 715–722.

Novel decay dynamics revealed for virus mediated drug activation in cytomegalovirus infection. (May 2017) **Rose J**, Emery VC, Kumar D, Asberg A, Hartmann A, Jardine AG, Bignamini AA, Humar A, Neumann AU. *PLoS Pathog*. 2017 May 10;13(5):e1006386.

Genetic characterization of spotted fever group rickettsiae in questing ixodid ticks collected in Israel and environmental risk factors for their infection. (March 2017). Rose J. *et al. Parasitology*. 2017 Jul;144(8):1088-1101.

The highly synergistic, broad spectrum, antibacterial activity of organic acids and transition metals. (March 2017) Zhitnitsky D, **Rose J**, Lewinson O. *Sci Rep*. 2017 Mar 15;7:44554.

L-glutamine Induces Expression of Listeria monocytogenes Virulence Genes. (Jan 2017) Haber A, Friedman S, Lobel L, Burg-Golani T, Sigal N, **Rose J**, Livnat-Levanon N, Lewinson O, Herskovits AA. *PLoS Pathog*. 2017 Jan 23;13(1):e1006161.

Human Cytomegalovirus Kinetics Following Institution of Artesunate after Hematopoietic Stem Cell Transplantation. (April 2011) Wolf DG, Shimoni A, Resnick IB, Stamminger T, Neumann AU, Chou S, Efferth T, Caplan O, **Rose J**, Nagler A, Marschall M. Clinical Virology Unit, Hadassah Hebrew University Medical Center, Jerusalem, Israel. *Antiviral Res*. 2011 Jun; 90(3): 183–186.

Kinetic modeling of Hepatitis B Virus: the relationship between HBeAg and viral kinetics. **Jessica Rose**. Mina and Everard Faculty of Life Sciences, Bar Ilan University, Ramat Gan, Israel - in progress; manuscript to be submitted.

Kinetic of Chronic Human Viruses - Comparative Analysis of Bio-Mathematical Models and their Clinical Implications. (2013). **Jessica Rose**, Doctoral Thesis, Bar Ilan University, Ramat Gan, Israel.

Dynamical Systems Analysis of HIV Immunopathogenesis and the Effects of Antiretroviral Treatment Interruption. (2006) **Jessica Rose**, Master's Thesis, Memorial University of Newfoundland, Canada.

Accomplishments:

- June 2018-June 2019 Lab Manager – Stand-in Lab Manager, Technion, Israel
- Nov 2018-Jan2020 Mentoring and lab organization duties, Technion, Haifa, Israel
- Jan 2019 Crystallography techniques, Technion, Israel
- Jan 2018 Autodock and Modeller software for computational docking of small molecules for drug discovery, Technion/TAU, Israel
- April 2017 Attended Molecular Dynamics Workshop, Boğaziçi Üniversitesi, Istanbul, Turkey
- Nov 2017 Nano Differential Scanning Fluorimetry (Nanodsf) training, Technion, Haifa, Israel
- April 2016 Live Imaging using 2-Photon Microscopy, Weizmann Institute, Rehovot, Israel
- Feb 2014-June 2015 Lab Demonstrator, The Koret Veterinary School of Medicine, Hebrew University of Jerusalem, Rehovot, Israel
- Nov 2013-June 2015 Molecular Analyst of Rickettsiae as Zoonotic Pathogens (Post-Doc Research), Koret Veterinary School of Medicine, Rehovot, Israel.
- Oct 2008-Dec2012 CMV/HBV Clinical Data Analyst and Mathematical Modeler (PhD Research), Bar Ilan University, Ramat Gan, Israel.
- June 2003-Sept 2006 HIV Laboratory Researcher (MSc Research), The Health Sciences Centre, St. John's, NL, Canada
- June 2004 -Sept 2006 Student Lab Researcher (MSc Research), Development and Optimization of Immunological Assays, The Health Sciences Centre, St. John's, NL, Canada
- June 2004-Sept 2006 Student Lab Demonstrator, The Health Sciences Centre, St. John's, NL, Canada
- Jan 20, 2015 Geographical Information Systems (GIS) workshop, Hebrew University of Jerusalem, Jerusalem, Israel.
- Nov 2014 GIS Training School: Geospatial tools in vector research, Naples, Italy
- May 2009 Workshop on Mathematical Modeling in Biology and Medicine at the Interuniversity Centre Dubrovnik, Dubrovnik, Croatia.
- Sept 1999-April 2001 Undergraduate Teaching Assistant, Department of Mathematics and Statistics, Memorial University of Newfoundland, St. John's, NL, Canada
- Sept 1992-April 2000 University Writing Centre Tutor, Memorial University of Newfoundland, St. John's, NL, Canada
- Sept 1993-April 1995 University English as a Second Language Tutor, Memorial University of Newfoundland, St. John's, NL, Canada

General:

- Protein Biology: Protein purification using size exclusion chromatography (ÄKTA), surface plasmon resonance (BIAcore), Isothermal Titration Calorimetry (ITC), mutant strand synthesis, plasmid purification, gel electrophoresis, protein expression techniques including Western blot analysis, molecular techniques including DNA extraction, Polymerase Chain Reaction (PCR) both conventional and Real Time
- Rickettsiology: Tick collection techniques and identification of Ixodid tick biotopes (2013-2015) and classification of Ixodid ticks by gender and species (2013), Real time PCR, Sequence analysis, Phylogenetic analysis
- Advanced Immunological Methods: ELISpot, ELISA, Flow Cytometry, Confocal Microscopy, CTL assays, B-cell transformation
- Radiation Safety Course: Radioisotope user permit (Canadian Nuclear Safety Commission)
- Biosafety Level 3 Lab training: Working with hazardous pathogens such as HIV and Hepatitis C
Safety training for Chemical and Biological Research
- First Aid/CPR: Magen David Adom
- Outdoor fitness Instructor's Course
- Surfing Instructor's Course
- Certified Member of the National Health and Fitness Program of the Canadian Society for Exercise Physiology (Certified Fitness Consultant – CFC)

Selected Presentations and Meetings

Jessica Rose (2019). Molecular dynamics of ABC transporters – defining allosteric pathways – lecture to students in Faculty.

Jessica Rose (2018). Molecular dynamics of ABC transporters – defining allosteric pathways – presentation of latest published results.

Jessica Rose (2017). Molecular dynamics of ABC transporters – defining allosteric pathways. Meeting at Technion.

Jessica Rose (2015). Environmental risk factors for Spotted Fever Group Rickettsiae in Israel. ISRAEL SOCIETY FOR PARASITOLOGY,

Jessica Rose (2015). Rickettsia species detected in questing Rhipicephalus ticks in Israel: A comparative analysis. Short presentation of post-doctoral work at Faculty seminar series, Rehovot, Israel.

PROTOZOOLOGY AND TROPICAL DISEASES (2014) - Annual meeting.

Jessica Rose (2014). A short introduction to dynamical systems modeling. Short presentation of previous studies and the usefulness of ordinary differential equations modeling at Faculty seminar meeting, Rehovot, Israel.

Jessica Rose (2014). Epidemiological study of *Rickettsia* spp. transmitted by Ixodid ticks in Israel. Short presentation of post-doctoral work at NVHU annual meeting, Rehovot, Israel.

Jessica Rose (2014). Epidemiological study of *Rickettsia* spp. transmitted by Ixodid ticks in Israel. Short presentation of post-doctoral work at MERC annual meeting, Dead Sea, Israel.

Jessica Rose (2014). Middle Eastern Regional Cooperation Program (MERC) annual meeting (2014). Dead Sea, Israel.

Jessica Rose (2013). Bio-Mathematical Modeling of CMV Intracellular dynamics with the anti-viral effect of Ganciclovir. Lecture at Tel Aviv University (Tal Pupko Lab Meeting), Tel Aviv, Israel.

Jessica Rose (2013). Bio-Mathematical Modeling of CMV Intracellular dynamics with the anti-viral effect of Ganciclovir. Guest lecturer at Tel Aviv University (Biomath Seminar Series), Tel Aviv, Israel.

Jessica Rose (2012). Mathematical Modeling of viral dynamics. Presentation at Hebrew University of Jerusalem (PDF application process), Ein Kerem, Israel.

Jessica Rose (2012). Bio-Mathematical Modeling of viral dynamics and clinical implications. Lecture at Bar Ilan University (Student/Faculty Seminar Series), Ramat Gan, Israel.

Jessica Rose (2010). Bio-Mathematical Modeling of Cytomegalovirus and Clinical Implications (Update). Lecture at Interuniversity Centre Dubrovnik, Dubrovnik, Croatia.

Jessica Rose (2009). Bio-Mathematical Modeling of Cytomegalovirus and Clinical Implications. Seminar at ITB Berlin, Germany.

Jessica Rose (2005). Mathematical Modeling of HIV Immunopathogenesis and the Effects of Antiretroviral Treatment Interruption. The Twelfth International Workshop on HIV Dynamics and Evolution, 2005 Abstracts.

Jessica Rose (2005). Mathematical Modeling of HIV Immunopathogenesis and the Effects of Treatment Interruption. Scientific Days, Memorial University of Newfoundland.

Honours and Awards

- FIRST PLACE at PRO longboard event in Herzliya, Israel – National champion female Longboarder - currently ranked third in country
- PDF grant awarded for PDF position at Technion
- PDF stipend awarded for PDF position at Hebrew University of Jerusalem
- Bar Ilan University President's Scholarship – 'Outstanding PhD Degree Student' Certificate of Gratitude for teaching autistic children to surf
- Zeta Zaltas Award (15th Annual Immunology Graduate Student Research Forum)
- Honorable Mention (International MCM: The Mathematical Contest in Modeling), The Consortium of Mathematics and its Applications
- Member of the Newfoundland and Labrador Literacy Coalition (youngest member ever invited)
- Awarded 1st place in a National Video Competition to promote literacy sponsored by the United Nations

Extracurricular Activities, Volunteer Service and Leadership

- Member of volunteer organization Plastic Free Israel Haifa
- Free surfer
- Freelance photographer
- (June 2015) Surfing Instructor, Octopus Surf Club, Caesaria, Israel
- (April 2010-2014) Surfing Instructor, Israel Surf Club, Tel Aviv, Israel (April 2012-2014) Teacher/trainer for autistic children
- (April 2013) Resurf Project Volunteer - volunteered to help underprivileged kids learn to surf, Tel Aviv, Israel (April 2012) Bustan PermaNegev program – volunteer worker in Bedouin village, Negev desert, Israel (November 2011) Peace Conference, Jerusalem Inter-Cultural Center, Jerusalem, Israel
- (2011) Eclipse (now Shelter) Recording/Rehearsal Space - volunteer builder
- (2008-2014) Keyboard player in ALTNEULAND, independent rock band based out of Tel Aviv, Israel (2011-present) Independent electronic artist
- (2008-2010) Capoeira student with Cordão De Ouro, Israel (2008) Introductory SCUBA diving course
- (1992-1995) Volunteer hospital worker - worked with post-stroke elderly patients at Grace General Hospital in St. John's, Newfoundland, Canada

References

Available upon request