# Miri Krupkin, PhD

# *Curriculum Vitae*

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## Education

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| Ph.D., Structural Biology, Weizmann Institute of Science. | **2011 – 2016** |
| M.Sc., Structural Biology, Weizmann Institute of Science. | **2008 – 2011** |
| B.Sc., Chemistry, Bar-Ilan University, graduated *magna cum laude*. | **2005 – 2008** |

## Research Experience

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| Postdoc, laboratory of Joseph Puglisi and Elisabetta Viani Puglisi,  Stanford University.  Research focus: Architecture of HIV viral RNA | **2019 - present** |
| Postdoc, laboratory of Katharina Ribbeck,  Massachusetts Institute of Technology.  Research focus: Mucus in health and disease. | **2017 - 2019** |
| Postdoc., laboratory of Ada Yonath,  Weizmann Institute of Science.  Research focus: *Ribosome structure and function* | **2016 - 2017** |
| Ph.D., laboratory of Ada Yonath,  Weizmann Institute of Science.  Thesis: *The Origin of the Ribosome and its Paralyzation by Antibiotics*. | **2011 - 2016** |
| M.Sc., laboratory of Ada Yonath,  Weizmann Institute of Science.  Thesis: *Towards the Determination of the Structure of Mycobacterium smegmatis Ribosome.* | **2009 - 2011** |
| Rotations at Weizmann Institute of Science:  Ribosome structure and function, laboratory of Ada Yonath.  Organized lipid domains, laboratory of Lia Addadi.  Nano and bio composite materials, laboratory of Daniel Wagner. | **2008 - 2009** |
| Undergraduate research at Bar Ilan University:  Conducting polymers, laboratory of Joseph Frey. | **2007 - 2008** |

**Publications**

1. **Krupkin M**\*, Jackson LN\*, Ha B\*, Puglisi EV. “Advances in understanding the initiation of HIV-1 reverse transcription”. (submitted)
2. Matzov D, Eyal Z, Benhamou RI, Shalev-Benami M, Halfon Y, **Krupkin M**, Zimmerman E, Rozenberg H, Bashan A, Fridman M, Yonath A. “Structural insights of lincosamides targeting the ribosome of Staphylococcus aureus”. Nucleic Acids Res. 2017 Sep 29;45(17):10284-10292.
3. Wekselman I, Zimmerman E, Davidovich C, Belousoff M, Matzov D**, Krupkin M**, Rozenberg H, Bashan A, Friedlander G, Kjeldgaard J, Ingmer H, Lindahl L, Zengel JM, Yonath A. “The Ribosomal Protein uL22 Modulates the Shape of the Protein Exit Tunnel”. Structure. 2017 Aug 1;25(8):1233-1241.e3. Epub 2017 Jul 6.
4. **Krupkin M**\*, Wekselman I\*, Matzov D, Eyal Z, Diskin Posner Y, Rozenberg H, Zimmerman E, Bashan A, Yonath A. “Avilamycin and evernimicin induce structural changes in rProteins uL16 and CTC that enhance the inhibition of A-site tRNA binding”. Proc Natl Acad Sci U S A. 2016 Nov 1;113(44):E6796-E6805.
5. Eyal Z\*, Matzov D\*, **Krupkin M**, Paukner S, Riedl R, Rozenberg H, Zimmerman E, Bashan A, and Yonath A. “A novel pleuromutilin antibacterial compound, its binding mode and selectivity mechanism”. Sci Rep. 2016 Dec 13;6:39004.
6. Auerbach-Nevo T, Baram D, Bashan A, Belousoff M, Breiner E, Davidovich C, Cimicata G, Eyal Z, Halfon Y, **Krupkin M**, Matzov D, Metz M, Rufayda M, Peretz M, Pick O, Pyetan E, Rozenberg H, Shalev-Benami M, Wekselman I, … Yonath A. “Ribosomal antibiotics: Contemporary challenges”. Antibiotics (Basel). 2016 Jun 29;5(3). pii: E24.
7. Eyal Z\*, Matzov D\*, **Krupkin M**, Wekselman I, Paukner S, Zimmerman E, Rozenberg H, Bashan A, Yonath A. “Structural insights into species-specific features of the ribosome from the pathogen staphylococcus aureus”. Proc Natl Acad Sci U S A. 2015 Oct 27;112(43):E5805-14.
8. Sun L, Xiong Y, Bashan A, Zimmerman E, Shulman Daube S, Peleg Y, Albeck S, Unger T, Yonath H, **Krupkin M**, Matzov D, Yonath A. “A recombinant collagen–mRNA platform for controllable protein synthesis”. Chembiochem. 2015 Jul 6;16(10):1415-9.
9. **Krupkin M**, Bashan A, Yonath A. (2014) “Glimpse into the Origin of Life: What was First, the Genetic Code or its Products, the Proteins?” in “Why does Evolution Matter? The Importance of Understanding Evolution”, G. Trueba, ed. (Cambridge Scholars Publishing), p. 87-100.
10. Huang L, **Krupkin M**, Bashan A, Yonath A, Massa L. “Protoribosome by quantum kernel energy method”. Proc Natl Acad Sci U S A. 2013 Sep 10;110(37):14900-5.
11. **Krupkin M**, Matzov D, Tang H, Metz M, Kalaora R, Belousoff MJ, Zimmerman E, Bashan A, Yonath A. A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome. Philos Trans R Soc Lond B Biol Sci. 2011 Oct 27;366(1580):2972-8.   
    - Research highlight, “The chemical origins of life and its early evolution: an introduction”, Phil. Trans. R. Soc. B3662853–2856 (2011).
12. Bashan A, Zimmerman E, Belousoff MJ, Rozenberg H, Davidovich C, Wekselman I, Shapira T, **Krupkin M**, Yonath A. “The ribosome as drug target: lessons from 3D structures”. Isr Chem Soc. 2010, 25, 10-18.
13. Davidovich C, Belousoff M, Wekselman I, Shapira T, **Krupkin M**, Zimmerman E, Bashan A, Yonath A. “The proto-ribosome : An ancient nano-machine for peptide bond formation". Isr J Chem. 2010 Jun 18;50(1):29-35.

*\* Equal contribution.*

**Conferences and Presentations**

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| **2020** | CSHL Retroviruses 2020, Cold Spring Harbor Laboratory, USA. |
| **2020** | Conference on Retroviruses and Opportunistic Infection- CROI 2020, Boston, USA. |
| **2020** | Bay Area CryoEM Meeting, CA, USA. |
| **2019** | Frontiers of Biophysics 17th Course, Erice, Italy. |
| **2019** | Structural Biology Department, Stanford School of Medicine, USA.  *Guest seminar:* Layers of Protection: from molecular mechanisms to organism defense |
| **2019** | Simons Electron Microscopy Center, New York Structural Biology Center, USA.  *Guest seminar:* Avilamycin Induces Structural Changes in Ribosomal Proteins uL16 And CTC That Enhance the Inhibition Of A-Site tRNA Binding |
| **2019** | Biochemistry and Biophysics Department, UCSF, USA.  *Guest seminar:* Layers of Protection: from molecular mechanisms to organism defense. |
| **2019** | Chemistry Department, University of Utah, USA.  *Guest seminar:* Layers of Protection: from molecular mechanisms to organism defense. |
| **2019** | The 4th Annual MIT-Harvard Microbiome Symposium, Boston.  **Organizer**. **Chairperson**. |
| **2018** | MIT Path of Professorship, MIT, USA. |
| **2017** | Structural Mass Spectrometry Workshop, Weizmann Institute of Science, Israel. |
| **2016** | Biological Engineering Department, MIT, USA.  *Guest seminar:* Origin of The Ribosome and its Paralyzation by Antibiotics |
| **2016** | Cincinnati Children’s Hospital Medical Center, USA.  *Guest seminar:* Origin of The Ribosome and its Paralyzation by Antibiotics |
| **2016** | Ribosome Structure and Function EMBO conference, Strasbourg, France.  *Poster:* The structure of avilamycin bound to the large ribosomal subunit. |
| **2016** | Israel Society for Astrobiology and the Origin of Life (ILASOL) annual meeting,  Ben-Gurion University, Israel.  *Talk:* The origin of the ribosome: A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome. |
| **2016** | 8th Graduate Students Chemistry Symposium, Ben-Gurion University, Israel.  *Talk:* Avilamycin induces structural changes in rProteins uL16 and CTC that enhance the inhibition of A-site tRNA binding |
| **2016** | Israel Crystallography Association (ICA) Meeting, Tel-Aviv University, Israel.  *Talk:* The structure of avilamycin bound to the large ribosomal subunit. |
| **2015** | Frontiers in Chemical Sciences Symposium, Weizmann Institute of Science, Israel.  **Organizer. Panel leader.** |
| **2015** | Genetics, Genomics and Evolution (GGE) conference, Tel-Aviv University, Israel.  *Talk\*:* The origin of the ribosome: A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome.  **\*Best Talk Award.** |
| **2014** | The Society for Molecular Biology and Evolution SMBE2014 meeting, San Juan, Puerto Rico.  *Poster:* The origin of the ribosome: A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome. |
| **2014** | The RNA society 19th annual meeting, Quebec, Canada.  *Poster:* The origin of the ribosome: A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome. |
| **2014** | Structure and dynamics of RNA interactions, Montreal, Canada.  *Poster:* The origin of the ribosome: A vestige of a prebiotic bonding machine is functioning within the contemporary ribosome. |
| **2014** | ILANIT, Federation of the Israel Societies for Experimental Biology, Eilat, Israel. *Poster:* The proto-ribosome and the origin of life |
| **2013** | School of medicine, Stanford, USA.  *Guest seminar:* The Ribosome’s Origin – The Proto Ribosome. |
| **2013** | Ribosomes, Napa, USA.  *Poster:* The Ribosome’s Origin – The Proto Ribosome. |
| **2013** | The 63rd Lindau Nobel Laureate Meeting, Germany. |
| **2013** | RNA Bioinformatics Structure Function and Regulation Workshop, Technion, Israel.  *Talk:* The Ribosome’s Origin – The Proto Ribosome. |
| **2012** | Israel Society for Astrobiology and the Origin of Life (ILASOL) annual meeting, Weizmann Institute of Science, Israel.  *Talk:* A vestige of a prebiotic bonding entity is functioning within the contemporary ribosome. |
| **2011** | ILANIT, Federation of the Israel Societies for Experimental Biology, Eilat, Israel. *Poster:* Mycobacterium Smegmatis Ribosome as A Tool for A Structural Insight into Antibiotics Action on Pathogens |
| **2011** | Structural Biology Department, Weizmann Institute of Science, Israel.  *Seminar:* Towards the Determination of the Structure of Mycobacterium smegmatis Ribosome. |
| **2010** | BCA/CCP4 Summer School in Protein Crystallography, Oxford, UK *Talk:* Towards the Determination of the Structure of *Mycobacterium smegmatis* Ribosome”. |

**Awards and Fellowships**

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| **2016** | Travel fellowship award, Cincinnati Children’s Hospital Medical Center, USA. |
| **2015** | Best talk, Genetics, Genomics and Evolution conference, Tel Aviv  University. |
| **2013** | Vallee travel fellowship award, “The 63rd Lindau Nobel Laureate Meeting”,  Germany. |
| **2012 - 2016** | Adams Ph.D. fellowship of the Israel Academy of Sciences and Humanities. |
| **2007** | Schächter summer scholarship for research, Bar-Ilan University. |
| **2006** | Dean's Honors list, Bar-Ilan University. |

**Other Activities**

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| **2020** | Reviewer Board for the international peer-reviewed journal Antibiotics. |
| **2019** | Organizer of the MIT-Harvard Microbiome symposium, Boston. |
| **2018** | Mentor at the MRL summer internship program, MIT. |
| **2018** | Panel speaker: Finding a postdoc, MIT. |
| **2018 - 2019** | Organizer of “GlycoBioClub”- the MIT Glycobiology journal club, MIT. |
| **2017 - 2018** | Science outreach at the Boston Science Museum, Boston. |
| **2015** | Organizer of the Frontiers in Chemical Sciences Symposium, Israel. |
| **2015** | Panel leader: Gender Balance in Chemical Sciences, Frontiers in Chemical Sciences Symposium, Weizmann Institute of Science. |
| **2013** | Chair of Weizmann Institute Student Council, Israel. |
| **2013** | Panel organizer and speaker: How to choose a rotation lab, Weizmann Institute of Science. |
| **2010** | BCA/CCP4 Summer School in Protein Crystallography at Oxford, UK. |
| **2009 - 2017** | Synchrotron user. Locations: ESRF, France. SLS, Swiss. Diamond, UK. |
| **2009 - 2016** | Instructor in “Chetz”, “The De-Shalit Research Camp (Zuta)” and other youth science programs of the Davidson Institute of Science Education, Israel. |