Ranen Aviner, Ph.D.

Department of Biology | Stanford ranen@stanford.edu | +1-415-9374187

EDUCATION AND RESEARCH TRAINING

Postdoctoral training with Prof. Judith Frydman (Stanford) and Raul Andino (UCSF) 2015-present

Studied mechanisms and outcomes of ribosome remodeling during viral infection and neurodegeneration; identified a novel co-translational enzymatic modification that can be targeted to inhibit RNA virus infection; established a new paradigm of ribosome-mediated neurotoxicity in Huntington's disease.

Ph.D. Molecular Biology, Tel Aviv University (TAU), Israel 2009-2015

Thesis title: *Deciphering the Mitotic Translatome* | Advisor: Prof. Orna Elroy-Stein

Developed proteomic technique to profile newly synthesized proteins in cells and tissues; characterized the protein translation and degradation landscape of the mammalian cell cycle; uncovered cancer-associated dysregulation of translation elongation; Ph.D. work featured on the 2015 TAU Annual Report.

B.Sc. Biology (Magna cum Laude), TAU, Israel 2004-2008

PUBLICATIONS

Aviner R, Lee, TT, Masto VB, Gestaut D, Li K, Andino R, Frydman J. *Altered translation elongation on PolyQ expansions disrupts proteostasis in Huntington's Disease*. Under review in Science.

Xiao Y, Lidsky P, Shirogane Y, **Aviner R**, Li W, Catching BA, Talbot D, Doitsh G, Su W, Gekko CE, Zheng W, Nayak A, Ernst JD, Brodsky L, Brodsky E, Rousseau E, Capponi S, Bianco S, Nakamura R, Jackson PK, Frydman J, Andino R. *A broad-spectrum antiviral strategy that protects from respiratory viruses including SARS-CoV-2 infection and disease*. Under revision for Cell.

Aviner R, Li K, Frydman J, Andino R. (**2021**). *Co-translational proline hydroxylation is essential for flavivirus biogenesis*. Nature. 596, 558–564

Aviner, R. (**2020**) *The science of puromycin: from studies of ribosome function to applications in biotechnology*. Comput Struct Biotechnol J. 18, 1074–1083

Aviner R, Frydman J. (**2020**) *Proteostasis in viral infection: unfolding the complex virus–chaperone interplay*. Cold Spring Harb Perspect Biol. 12(3), a034090

Aviner R†*, Hoffman S†, Elman T, Shenoy A, Geiger T, Elkon R, Ehrlich M, Elroy-Stein O*. (**2017**) *Proteomic analysis of polyribosomes identifies splicing factors as potential regulators of translation during mitosis*. Nucleic Acids Res. 45(10), 5945-5957

Zur H†, **Aviner R**†, Tuller T. (**2016**) *Complementary post transcriptional regulatory information is detected by PUNCH-P and ribosome profiling*. Sci. Rep. 6, 21635

Aviner R, Shenoy A, Geiger T, Elroy-Stein O. (**2015**) *Uncovering hidden layers of cell cycle regulation through integrative multi-'omic' analysis.* PLoS Genet. 11(10), e1005554

Aviner R, Geiger T, Elroy-Stein O. (**2014**) *Genome-wide identification and quantification of protein synthesis in cultured cells and whole tissues by puromycin-associated nascent chain proteomics (PUNCH-P)*. Nat Protoc. 9(4), 751-60

Aviner R*, Geiger T, Elroy-Stein O*. (**2013**) *PUNCH-P for global translatome profiling: methodology, insights and comparison to other techniques*. Translation. 1, e27516

Aviner R, Geiger T, Elroy-Stein O. (**2013**) *Novel proteomic approach reveals cell cycle specific fluctuations in mRNA translation*. Genes Dev. 27(16), 1834-44

- Top 5 Most Read Articles for Aug 2013, highlighted in Nat Chem Biol. and SciBX

Sivan G†, **Aviner R**†, Elroy-Stein O. (**2011**) *Mitotic modulation of translation elongation factor 1* leads *to hindered tRNA delivery to ribosomes*. J. Biol. Chem. 286(32), 27927-35

† Co-equal contribution * Co-corresponding author

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PATENTS

Frydman J, Andino R, **Aviner R**. (**2020**) *Composition and Methods for Treating Virus Infection.* US Provisional Patent 63/035,185 filed June 5, 2020. Patent pending.

FELLOWSHIPS AND AWARDS

Human Frontier Science Program (**HFSP**) Long-Term Postdoctoral Fellowship (int'l)	2016
European Molecular Biology Organization (**EMBO**) Long-Term Postdoctoral Fellowship (int'l)	2015
Rothschild Yad-Hanadiv Postdoctoral Fellowship (nationwide, Israel)	2015
Prof. Ben-Shaul Award, Switzerland Institute of Developmental Biology (TAU)	2013
Award for Excellence in Research and Teaching (TAU)	2013
Constantiner Institute of Molecular Biology travel grant (TAU)	2013
Award for Excellence in Research and Teaching (TAU)	2010
Anat Krauskopf travel grant (TAU)	2010
Ela Kodesz Institute travel grant (TAU)	2010
Dean's list (TAU)	2008

CONFERENCES AND MEETINGS

EMBL Translational Control: Ribosome collisions fuel a vicious cycle of proteotoxicity in Huntington's Disease (online). *Speaker* 2021

The Israel Young Academy Postdoc meeting: Antiviral Design Based on Principles of Polysome Modularity (online). *Speaker* 2020

Hadas Zur Memorial Systems Biology Conference: Differential utilization of co-translational networks during infection informs antiviral development (online). *Invited speaker* 2020

CSHL Translational Control: Proteomic analysis of specialized polysome formation reveals key pathogenic strategies and therapeutic targets in viral infection (online). *Speaker* 2020

FISEB (ILANIT): The ribosome strikes back: probing and perturbing co-translational processes to combat viral infection (Eilat, Israel). *Speaker* 2020

Bay Area RNA Conference: Proteomic Analysis of Polysomes Reveals Hidden Layers of Host Interactions in RNA viruses (San Francisco, USA). *Speaker* 2019

GRC Stress Proteins in Growth, Development and Disease: Remodeling of co-translational proteostasis networks by RNA viruses offers insight into new antiviral strategies (Barga, Italy). *Speaker* 2019

Rothschild-Yad Hanadiv Colloquium: Ribosome composition analysis illuminates search for novel antiviral strategies (Jerusalem, Israel). *Speaker* 2018

Chan Zuckerberg Biohub inaugural inter-campus meeting: Anti-viral discovery through profiling of cotranslational virus-host interactions (San Francisco, USA). *Speaker* 2017

EMBO Fellows Meeting: Using poliovirus to study co-translational nascent chain interactions (Boston, USA). *Poster* 2016

CSHL Translational Control: Global profiling of protein synthesis reveals dynamic translational control along the mammalian cell cycle (Cold Spring Harbor, USA). *Poster* 2014

GRC Biology of Aging: PUNCH-P, a novel proteomic approach for monitoring protein synthesis (Barga, Italy). *Poster* 2013

FISEB (ILANIT): Translation regulation during mitosis (Eilat, Israel). *Speaker* 2011

CSHL Translational Control: Modulation of translation elongation factor (eEF1) activity is associated with hindered tRNA delivery (Cold Spring Harbor, USA). *Poster* 2010

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TEACHING AND OTHER PROFESSIONAL ACTIVITIES

Reviewer for JMB, Front. Mol. Biosci., Angewandte Chemie, CPB	2015-present
BSL3 Biosafety Lab Training, UC Irvine National BSL3 Training Program (3 days)	Jul 2020
EMBO Lab Leadership Course (3 days)	Oct 2019
Online course coordinator, Introduction to Cell Biology, TAU (4 semesters)	2011–2012
Teaching assistant, Introduction to Cell Biology, TAU (100 hours)	2010–2012
Guest lecturer, Translation and Editing Program, Beit Berl Academic College (12 hours)	2010–2011
Head translator/editor, TransCom Global Ltd.	2003–2006

LEADERSHIP AND MENTORING

Mentor 2018-present

- Trained and supervised one undergraduate student, two graduate students and one staff scientist on their own individual projects

Stanford's out in STEM (oSTEM) mentor 2020-present

- Advised one undergraduate student who identifies as LGBTQ

Regional Manager, ScienceAbroad—the Organization of Israeli Scientists Abroad 2017-2019

- Organized discussion groups and social gatherings
- Hosted international PIs for small-group career development meetings
- Participated in strategic discussions over organizational goals and objectives

Volunteer, Chan Zuckerberg Biohub 2017-2019

- Organized inter-campus Biohub meetings to encourage participation of scientists from diverse backgrounds

Co-organizer, JewCSF 2015-2017

- Volunteer group supporting Jewish life at UCSF
- Organized social gatherings for Jewish students, trainees and allies

Graduate student mentor 2013-2015

- Trained four undergraduate students on the basics of experimental lab work