Dana Lorber Curriculum Vitae

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Main interests

Mechanogenomics in skeletal muscles. Chromatin organization and function. Imaging and quantitative image analysis in live intact organisms.

Current Position

Research Associate, Weizmann Institute of Science.

Education

2004 **Ph.D.** in Biomedical Engineering, Technion, Israel Inst. of Technology, Israel

1997 **M.Sc.** in Biomedical Engineering, Technion, Israel Inst. of Technology, Israel

1994 **B.Sc.** in Mechanical Engineering, Tel Aviv University, Israel

Publications

Brener, A., **Lorber, D**., Reuveny, A., Toledano, H., Porat-Kuperstein, L., Lebenthal, Y., Weizman, E., Olender, T., Volk, T., Sedentary Behavior Impacts on the Epigenome and Transcriptome: Lessons from Muscle Inactivation in *Drosophila* Larvae, Cells, (2023), https://doi.org/10.3390/cells12192333

Adame-Arana, O., Bajpai, G., **Lorber, D**., Talila Volk, T., Safran. S. A., Regulation of chromatin microphase separation by binding of protein complexes, eLife (2023), https://doi.org/10.7554/eLife.82983

Amiad Pavlov, D., Unnikannan, CP., **Lorber, D**., Bajpai, G., Olender, T., Stoops, E., Reuveny, A., Safran, S., Volk, T., The LINC Complex Inhibits Excessive Chromatin Repression, Cells, (2023), https://doi.org/10.3390/cells12060932

Lorber, D., Volk, T., Evaluation of chromatin mesoscale organization, APL Bioengineering, Vol. 6, 010902, (2022), https://doi.org/10.1063/5.0069286

Ben-Zaken, S., Nefussy, B., Meckel, Y., Eliakim, A., Nemet, D., Gotkine, M., **Lorber, D.**, Zeev, A., Drory, V. E., Common genetic basis of ALS patients and soccer players may contribute to disease risk, Neurological Sciences, (2022), https://doi.org/10.1007/s10072-022-05990-4

Horev, A*., **Lorber, D***., Vardi-dvash, N., Zlotnik, Y., Biederko, R., Ifergane, G., et al. A Comparison Between Pressure Wire and Microcatheter Measurements for Evaluating the Cerebral Venous Pressure Gradient. *Front. Neurol.* 12, 1–8. (2021). **(*equal contributors),** https://doi.org/10.3389/fneur.2021.711870

Amiad-pavlov, D*., **Lorber, D*.,** Bajpai, G., Reuveny, A., Roncato, R., Alon, R., Safran, S., Volk, T. Live imaging of chromatin distribution reveals novel principles of nuclear architecture and chromatin compartmentalization, Science Advances, Vol. 7, no. 23, eabf6251, (2021) **(*equal contributors),** DOI: 10.1126/sciadv.abf6251

Bajpai, G., Pavlov, D. A., **Lorber, D**., Volk, T., Safran, S. Mesoscale phase separation of chromatin in the nucleus, eLife (2021);10:e63976, DOI: 10.7554/eLife.63976

Lorber, D., Rotkopf, R., Volk, T. A minimal constraint device for imaging nuclei in live: Drosophila contractile larval muscles reveals novel nuclear mechanical dynamics. *Lab Chip* **20**, 2100–2112 (2020), https://doi.org/10.1039/D0LC00214C

Reuveny, A., Shnayder, M., **Lorber, D.,** Wang, S., Volk, T. Ma2/d promotes myonuclear positioning and association with the sarcoplasmic reticulum. *Dev.* **145**, (2018), https://doi.org/10.1242/dev.159558

Neufeld, T., Ludwig, B., Barkai, U., Weir, GC., Colton CK., Evron, Y., Balyura, M., Yavriyants, K., Zimermann, B., Azarov, D., Maimon, S., Shabtay, N., Rozenshtein, T., **Lorber D.,** Steffen, A., Willenz, U., Bloch, K., Vardi. P,, Taube, R., Vos, P, Lewis, EC, Bornstein, RS., and Rotem, A. 2013. The Efficacy of an Immunoisolating Membrane System for Islet Xenotransplantation in Minipigs. *PLoS ONE*. **8**, (2013), https://doi.org/10.1371/journal.pone.0070150

Non-academic publication

Lorber, D., Imaging nuclear dynamics and chromatin organization in a live intact organism: the design of the minimal constraint device, FocalPlane (2022), https://doi.org/10.1242/focalplane.8864

Invited talk

Muscle mechanobiology: Muscles, Chromatin and the forces that connect them, **King's College London,** May 9, 2023.

Presentations

*Evaluation of mesoscale chromatin organization in vivo***, INC seminar series**, October 13, 2022: https://www.youtube.com/watch?v=Nb0Z-vnQegg

Live imaging of chromatin distribution reveals novel principles of nuclear architecture and chromatin compartmentalization, In Phase? Physics and Biology of Protein Condensates, **Weizmann Institute of Science**, September 7-8, 2022.

Live imaging of chromatin distribution reveals novel principles of nuclear architecture and chromatin compartmentalization, Seeing is Believing: Imaging the Molecular Processes of Life, **EMBL Symposium**, October 5-8, 2021.

Muscle nuclei in Nesprin mutants show aberrant mechanical dynamics*, Physics of living systems: From molecules to tissues,* **EMBO Works**hop*, June 7-10, 2021.*

It's alive! Muscle nuclei in Nesprin mutants show aberrant mechanical dynamics**, Nucleus science talk seminar series,** October 13, 2020.

How Do Your Muscles and Bones Know You Have Been to the Gym? A Short Introduction to Cellular Mechanotransduction, **The 5th International Congress of Exercise and Sport Sciences, The Academic College at Wingate**, June 7-10, 2018.

Awards

2019	Poster award, IMB conference on *Chromosomes Territories & nuclear Architecture*
2000–2003	"The Outstanding Teaching Assistant's Award" for seven consecutive semesters
1997	The Gutwirth Memorial Fellowship for Excellence at the Technion

Academic appointment

2012-2015 Faculty member, B.Sc. programs, Medical Engineering Department and Mechanical Engineering Department, ORT Hermelin Academic College of Engineering and Technology

Teaching and mentoring experience (principal)

B.Sc. programs, Medical Engineering Department and Mechanical Engineering Department, ORT Hermelin Academic College of Engineering and Technology.

Courses developed and taught: heat transfer, biomechanics, flow in biological systems, engineering measurements and experiments (theory and lab).

I also mentored 12 students in 7 final design projects.

B.Ed. Studies in Physical Education, Zinman College of Physical Education and Sports Sciences at the Wingate Institute.

Developed and taught the courses: “Tissue and Cell Mechanics" and "Fundamentals of statics and dynamics".

B.Sc. program, teaching assistant at the Technion, "Applied Mechanics I"

Employment

2020- Research Associate, Weizmann Institute of Science

2015-2020 Academic Advisor, Weizmann Institute of Science

2014-2015 Volunteer Advisor, Weizmann Institute of Science

2010 -2011 Senior Researcher, Beta O2

2008-2009 Laboratory Manager, Oplon Pure Science (BioActivity)

2006-2008 RBC preservation product manager and Lab manager, Core Dynamics

Patent

WO2008/032314 for: “Systems, Devices and Methods for Freezing and Thawing Biological Materials”

Press

Nature's Scriptorium, at Biomedical Picture of the Day, 19.6.22: http://www.bpod.mrc.ac.uk/archive/2022/6/19

Pack it In, at Biomedical Picture of the Day, 22.9.21: http://www.bpod.mrc.ac.uk/archive/2021/9/22

On the Outskirts of the Nucleus: A novel imaging method reveals a surprising arrangement of DNA in the cell's nucleus, a publication by the Weizmann institute of Science featuring our work on chromatin organization, 5.9.2021: https://wis-wander.weizmann.ac.il/life-sciences/outskirts-nucleus

3D Distribution and Compartmentalization of Chromatin in the Nucleus, a publication by Arivis, showcasing our collaboration on 3D distribution analysis, 2021: https://www.arivis.com/case-studies/distribution-and-compartmentalization-chromatin-nucleus