Ariel J. Ben-Sasson

arielbs10@gmail.com, ariel@molcore.bio

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About me

Driven by my long-standing vision to seamlessly integrate modern technology and biology, I have developed a broad cross-disciplinary scientific expertise in modern computational protein design, machine learning, self-assembly, biomaterials, solid-state physics, and device development. My passion lies in integrating engineering principles with biological systems, and conversely, aiming to unlock the transformative potential of biological and living materials for bio-hardware.

Key achievements

- **Founder & CEO** of MolCore, post-evolution-biologics drug discovery platform.
- **Co-founder & Ex-CTO** of ZipBio gene-therapy drug-discovery startup focusing on biological function compression for drug delivery and optimization.
- Hired, trained, built, and managed the R&D teams across drug development companies; both human and agentic.
- Secured NFX and moreVC seed funding within 2 months from ideation.
- Led **4** drug dev. programs from inception to positive in vitro validation, **1** reaching positive preclinical studies within **under 6 months**.
- **First author** on **10** papers, **h-index**: 12, **Citations**: 778.
- First author on a paper in Nature and Co-author on a follow up paper in Cell. A Correspondence author on 2 papers.
- Won 7 prominent scientific and industry awards, including: SPIE, TSMC (award), and MRS
- Won 3 competitive research fellowships: HFPS Cross-Disciplinary Fellowship (award), Viterbi (Postdoc), and Azrieli (PhD)
- Inventor on 8 patents

Technical skills

- Programming: Python, PyTorch, PyRosetta, Rosetta (C++), PyMOL, MatLab.
- Computational infrastructure: Cloud (GCP), Modal, HPCs.
- IDEs and tools: Claude code, Codex, Cursor, GitHub.
- Experimental: Experienced in Biological and organic wet labs as well as in clean rooms technology.
- Peripheral skills: aviation, helicopter pilot, trail runs, orienteering.
- Languages: English, Hebrew, French

Work

• Founder and CEO, *molCore*, stealth mode, Seattle, WA	02/2026 - pres.
• Scientist-in-residence, acting head of Computational biology, drug discovery, *Abiologics*, Boston, MA	06/2025 - pres.
• Scientific Advisory Board Member, Strategy and ML de novo protein and enzyme design. *Decycle Bio*, Seattle, WA	06/2025 - pres.
• Co-Founder and CTO, ***ZioBio Inc***. Generative AI protein design for gene therapy, Seattle, WA	10/2022 - 06/2025
• R&D Rosetta - ML aided protein/peptides drug discovery, *PROTEIC BIOSCIENCE*, Canada (renamed to *DiaGen AI*)	2021 - 10/2022
• Consultant/ Project management, computational protein design and engineered biology, **MAFAT,** Israel	2021 - 10/2022
• Senior Research Fellow: De-novo protein materials design **Baker Lab (2024 Chemistry Nobel Prize),** Institute for Protein Design, University of Washington	2013 - 2021

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Specific work achievements

- Pioneered and lead the development of the first de novo binary 2D protein materials (Nature, Rev.)
- Co-led a **6** years collaborative effort of developing synthetic, de novo-designed protein materials as tools to interrogate biological systems and direct cell fate (Cell, 2023)
- Development of computational pipelines combining rational and ML methods for protein modeling, generation, and design
- T-cell proofreading, immunogenicity, understanding (Accepted to PNAS, bioRxiv)
- Drug delivery methods development (industry sponsored research project with Amgen)
- Developed computational design strategies for protein supramolecular materials.
- Developed code in Rosetta (C++) and PyRosetta (python) for symmetry aware design.
- Initiated and managed collaborative projects (Cambridge, Berkeley, and Harvard, MIT).
- Drafted and submitted successful grant applications to the NSF and private foundations.
- Mentored undergraduate and PhD candidate lab members.
- Experienced in analytical instruments (TEM, SEM, SAXS, DLS, CD, UV-vis and Optical Microscopy, micro-fluidics, AFM, ALD, Thermal-evaporators, photolithography, etc.).

Education

PhD in Nanoscience and Nanotechnology (GPA: 94.7) 2006 - 2013
Organic Materials and Devices Lab, Technion – Israel Institute of Technology
Thesis: *Block-copolymers-Based Logic Elements Applied to Vertical Organic Field-Effect Transistors*.

B.Sc. in Biomedical Engineering (cum laude, GPA: 90.6) 2002 - 2006
Technion – Israel Institute of Technology
Major: Imaging and Digital Signal Processing.
Final project: *Neural Networks Feedback Algorithms development*

PhD research

Technion – Israel Institute of Technology

- Pioneered and led the development of the Organic Vertical Field-Effect Transistor (VOFET), established its operational physics, fabrication methodologies, and proof-of-concept demonstration.
- Developed scalable soft-lithography block-copolymer self-assembling based methods for the VOFET fabrication, i.e. centimeter scale nano textured layers.
- Built a soft solid-state physics 2D/3D drift-diffusion toolkit in MATLAB, to uncover the operating mechanisms of VOFET-based logic elements.
- Co-developed a sparse matrix inversion algorithm for memory and computational efficiency, enabling 3D simulations involving ultra-large matrices (>10^6X10^6).
- Developed Monte-Carlo simulations incorporating geometric and physical constraints to model asymmetric energy& charge transfer in soft light-emitting organic systems.
- Proficient in clean-room techniques and processing methods development.
- **undergraduate research**: Developed a rational framework for **Multilayer Perceptron (MLP)**. The project led to the spinout of Cortica, an early autonomous AI venture (2006).