

MICHAL BREKER-DEKEL

The Alexander Silberman Institute of Life Sciences • The Hebrew University of Jerusalem

Phone: +972-52-7044593 • Email: michal.breker@mail.huji.ac.il**PERSONAL INFORMATION**

Web of Science Researcher ID: ABS-5753-2022

URL for web site: www.brekerlab.com

Status: Married+six. I am the biological mother of my two daughters (28/3/2019, 16/2/2022) and a mother figure for my husband's four kids that lost their mother after an 18 months battle with colon cancer.

Date of birth: April 4, 1980

Nationality: Israeli

ACADEMIC POSITIONS

The Hebrew University of Jerusalem Senior Lecturer (Assistant Professor), Department of Plant and Environmental Sciences, The Alexander Silberman Institute of Life Sciences, Faculty of Science	Jerusalem, Israel	07/2019-Present
The Rockefeller University Postdoctoral associate Advisor: Prof. Fred Cross	New-York, USA	01/2015-01/2019
The Simons Foundation Simons Society Junior Fellow	New-York, USA	07/2015-06/2018

INDUSTRIAL POSITIONS

CultivO₂ Ltd. Co-founder and CSO for algae engineering	Jerusalem, Israel	02/2024-Present
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EDUCATION

Ph.D. Molecular Genetics, The Weizmann Institute of Science Advisor: Prof. Maya Schuldiner Title: <i>"Utilizing high-content microscopy to describe single-protein behavior and whole-proteome dynamics in response to biological perturbations."</i>	Israel	2009-2014
M.Sc. Immunology, The Weizmann Institute of Science Advisor: Prof. Steffen Jung Title: <i>"In vivo development and functionality of the mononuclear phagocyte system."</i>	Israel	2007-2008
B.Sc. Interdisciplinary Program of Neuroscience, Tel-Aviv University <i>Cum laude</i>	Israel	2003-2006

EMPLOYMENT

BVR Systems System integrator and QA	Israel/South Korea	2001-2003
Compulsory service at IDF military Graduate of "Haman Talpiot", intelligence analysis	Israel	1998-2001

GRANTS

European Research Council (ERC) starting grant	2023-2028
Israel Science Foundation (ISF) personal grant	2023-2028
Israel Innovation Authority – Joint research with Prof. Ofra Benny	2023-2025
The Hebrew University center for Sustainability - Joint research with Prof. Ofra Benny	2023-2025
University of Illinois – Joint Research and Innovation Seed Grants program with Dr. Steven Burgess	2022-2023
BSF start up grant in collaboration with Dr. Masayuki Onishi/Duke University	2020-2022

SELECTED HONORS AND AWARDS

ASPB women's young investigator travel award (WYITA)	2021
Junior fellow, Simons Society of Fellows, Simons Foundation, NY, USA	2015-2018

Life Sciences Research Foundation (LSRF) postdoctoral award (declined due to alternative fellowship)	2015
The L'Oréal-UNESCO For Women in Science Award (presented every year to two outstanding women scientists in Israel)	2014
The Israel National Postdoctoral Award Program for Advancing Women in Science The Weizmann Institute of Science, Israel	2014
The Gad Resheff memorial prize for outstanding PhD students, Weizmann Institute of Science, Israel	2014
Aharon Katzir student travel fellowship, Weizmann Institute of Science, Israel	2013
FEMS travel grant, Yeast genetics and molecular biology conference, Germany	2013
Azrieli Systems Biology Innovative student award, Weizmann Institute of Science, Israel	2012
Schoenheimer travel grant, Department of Systems Biology, Harvard Medical School, MA, USA	2012
Travel grant and award for best oral presentation, IRB PhD symposium, Barcelona, Spain	2011
Student grant, Kahn Family Foundation Systems Biology Program, Weizmann Institute of Science, Israel	2011
Travel grant, 36th FEBS congress, Torino, Italy	2011
Student grant for a joint international project between the Weizmann Institute of Science and MIT	2010
Travel grant and participation award, young scientific forum and 35th FEBS congress, Sweden	2010
Wolf Foundation scholarship (full year) for excellence in exact sciences, Israel	2006
Dean's award for outstanding achievements, Tel-Aviv University, Israel	2005, 2006
Scholarship for outstanding students in memory of David Zik, Tel-Aviv University, Israel	2005
Rector's award for outstanding achievements, Tel-Aviv University, Israel	2004

INVITED/CHOSEN TALKS

Faculty of Life sciences, Bar-Ilan University (Invited)	Israel	2023
Mendel Early Career Symposium, GMI (Invited)	Austria	2023
Faculty of dental medicine, The Hebrew University (Invited)	Israel	2023
Plant Sciences and Genetics in Agriculture, The Hebrew University (Invited)	Israel	2021
ILANIT, Federation of the Israel Societies for Experimental Biology (Invited)	Israel	2020
ISM, the Israel Society for Microbiology (Invited)	Israel	2020
Molecular Biology Department, Princeton University (Invited)	USA	2017
Annual ASPB symposium, American Society of Plant Biology	USA	2017
Annual conference of the Simons Society of Fellows	USA	2017
ILANIT, Federation of the Israel Societies for Experimental Biology	Israel	2017
Simons Foundation, Simons Society of Fellows	USA	2017
Annual Charles H. Revson Foundation Biomedical Fellows Meeting (Invited)	USA	2016
Plant Sciences Department, WIS (Invited)	Israel	2013
Yeast genetics and molecular biology conference	Germany	2013
Biological Sciences and Systems Biology Departments, Columbia University	USA	2013
Harvard Systems Biology Department, Harvard University (Invited)	USA	2013
Systems biology retreat, WIS	Israel	2012
Biological Chemistry Department, WIS	Israel	2012
Epigenetics meets Systems Biology conference (Invited)	Israel	2012
Joint meeting of the Minerva grant awardees, WIS	Israel	2012
James Minna Heinemann Stiftung conference	Germany	2012
<i>Mitochondria, dynamics and neurodegenerative diseases</i> conference (Invited)	Israel	2012
Endocrinology Department, Schneider Children's Medical Center (Invited)	Israel	2012
<i>Life in motion: dynamics of molecules and systems</i> conference	Barcelona, Spain	2011
<i>Folding and degradation of proteins in the ER</i> conference	Switzerland	2011
Annual seminar of the Israeli yeast community, Bar Ilan University (Invited)	Israel	2011

TEACHING EXPERIENCE

Introduction to plant sciences (undergraduate students)	2023-Present
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The Hebrew University of Jerusalem, Israel	
Advanced methods in molecular biology course (undergraduate students) The Hebrew University of Jerusalem, Israel	2020-Present
Plant Sciences seminar (undergraduate students) The Hebrew University of Jerusalem, Israel	2020-Present
Teaching Assistant, Advanced light microscopy course (graduate students) The Weizmann Institute of Science, Israel	2010

ORGANISATION OF SCIENTIFIC MEETINGS

Panel moderator, Cell Biology - Homeostasis and trafficking, ASPB, Online	2021
Co-organizer, the annual symposium of the Simons Society of Fellows, NY, USA	2018

INSTITUTIONAL RESPONSIBILITIES AT THE HEBREW UNIVERSITY OF JERUSALEM

Organizer, departmental weekly seminar, Department of Plant and Environmental Sciences	2020-2022
Committee member, Reinhold scholarship for excellent students, Department of Plant and Environmental Sciences	2019-2020
Faculty Member, Department of Plant and Environmental Sciences, The Alexander Silberman Institute of Life Sciences, Faculty of Science	2019-Present

REVIEWING ACTIVITIES

Guest editor leading a special issue "Systems Genetics and Genomics of Green Microalgae" in <i>genes</i> journal	2024
Reviewer of proposals, U.S-Israel Binational Science Foundation	2022
Review panel member in travel grant awards, U.S-Israel Binational Science Foundation	2019
Journal reviewer: <i>Molecular BioSystems</i> , <i>Scientific Reports</i>	2016-Present

PATENTS

Benny O & **Breker M.** Provisional Patent: MULTI SCAFFOLD-CELL CONSTRUCT AND USE THEREOF - US Provisional Patent Application No. 63/533,929. Commercialized to CultivO2 Ltd. on February 2024.

PUBLICATIONS

- Kafri M., Patena W., Martin L., Wang L., Gomer G., Ergun S L., Sirkejian A K., Goh A., Wilson A T., Gavrilenko S E., **Breker M.**, Roichman A., McWhite C D., Rabinowitz J D., Cross F R., Wuhr M., Jonikas M C. (2023) Systematic identification and characterization of genes in the regulation and biogenesis of photosynthetic machinery. *Cell* (25), 5638-5655.
- Breker-Dekel M.**, Dutcher SK. & Tulin F. (2023) Chapter 15: Mutagenesis and Genome Resequencing. The Chlamydomonas Sourcebook: Introduction to Chlamydomonas and Its Laboratory Use. Third Edition.
- Li J., **Breker M.**, Graham M., Schuldiner M., Hochstrasser M. (2019) AMPK regulates ESCRT-dependent microautophagy of proteasomes concomitant with proteasome storage granule assembly during glucose starvation. *PLoS Genet* (15).
- Breker M.**, Lieberman, K., & Cross FR. (2018) Comprehensive Discovery of Cell-cycle-essential Pathways in *Chlamydomonas reinhardtii*. *Plant Cell* (6), 1178-1198.
- Cohen N*, **Breker M***, Bakunts A., Pesek K., Chas A., Argemi J., Orsi A., Gal L., Chuartzman S., Wigelman Y., Jonas F., Walter P., Ernst R., Aragon T., van Anken E., Schuldiner M. (2017) Iron affects Ire1 clustering propensity and the amplitude of endoplasmic reticulum stress signaling. *J Cell Sci* (19), 3222-3233.
*equal contribution
- Cross F.R., **Breker M.**, & Lieberman K. (2017) Validated Bayesian differentiation of causative and passenger mutations. *G3* (7), 2081-2094.
- Herbst R.H., Bar-Zvi D., Reikhav S., Soifer I., **Breker M.**, Jona G., Shimoni E., Schuldiner M., Levy A., & Barkai N. (2017) Heterosis as a consequence of regulatory incompatibility. *BMC Biology* (1), 38.
- Breker M.**, Lieberman K., Tulin F., & Cross F.R. (2016) High-throughput robotically assisted isolation of temperature-sensitive lethal mutants in *Chlamydomonas reinhardtii*. *J Vis Exp* (118).
- Ravarani C., Chalancon G., **Breker M.**, Sanchez de Groot N., & Babu M.M. (2015) Affinity and competition for TBP are molecular determinants of gene expression noise. *Nature Communications* (7), 10417.
- Breker M.** & Schuldiner M. (2014) The emergence of proteome-wide technologies: systematic analysis of proteins comes to age. *Nature Reviews Molecular Cell biology* (15), 453-464.
- Avci D., Fuchs S., Schrul B., Fukumori A., **Breker M.**, Frumkin I., Chen CY., Biniossek ML., Kremmer E., Schilling O., Steiner H., Schuldiner M., & Lemberg MK. (2014) The yeast ER-intramembrane protease Ypf1 refines nutrient sensing by regulating transporter abundance. *Molecular Cell* (56), 630-640.

12. **Breker M.**, Gymrek M., Moldavski O. & Schuldiner M. (2013) LoQAtE – LOfcalization and Quantitation ATlas of the yeast proteome. A new tool for multiparametric dissection of single-protein behavior in response to biological perturbations in yeast. *Nucleic Acids Research* (42), D726-D730.
13. **Breker M.** & Schuldiner M. (2013) commentary for Lynes EM, et al. in F1000, DOI: 10.3410/f.718049489.793481240
14. **Breker M.**, Gymrek M. & Schuldiner M. (2013) A novel single-cell screening platform reveals proteome plasticity during yeast stress responses. *Journal of Cell Biology* (200), 839-850.
*Recommended by Faculty of 1000.
*Highlighted in: Short B. (2013) The plastic proteome. *Journal of Cell Biology* (200), 685.
15. Peters L. Z*, Hazan R*, **Breker M***, Schuldiner M. & Ben-Aroya S. (2013) Formation and dissociation of proteasome storage granules (PSGs) are regulated by cytosolic pH. *Journal of Cell Biology* (201), 663-671.
*equal contribution
*Recommended by Faculty of 1000.
16. Nadler M*, **Breker M***, Gruber R., Azia A., Gymrek M., Eisenstein M., Willison K.R., Schuldiner M. & Horovitz A. (2012) Interactions of subunit CCT3 in the yeast chaperonin CCT/TRiC with Q/N-rich proteins is revealed by high-throughput microscopy analysis. *PNAS* (109), 18833-18838.
*equal contribution
17. Powis K., Schrul B., Tienson H., Gostimskaya I., **Breker M.**, High S., Schuldiner M., Jakob U. & Schwappach B. (2012) Get3 is a holdase and moves to sites of protein triage when membrane targeting is blocked. *Journal of Cell Science* (126), 473-483.
18. Yona S., Kim KW., Wolf Y., Mildner A., Varol D., **Breker M.**, Strauss-Ayali D., Viukov S., Guilliams M., Misharin A., Hume DA., Perlman H., Malissen B., Zelzer E., Jung S. (2012) Fate Mapping Reveals Origins and Dynamics of Monocytes and Tissue Macrophages under Homeostasis. *Immunity* (38), 1073-1079.
19. **Breker M.** & Schuldiner M. (2009) Explorations in Topology – Delving Underneath the Surface of Genetic Interaction Maps. *Molecular BioSystems* (5), 1473-1481.
*This paper was chosen as a model paper to be part of the RSC Project Prospect, in which compounds and scientific concepts are linked to related articles, compounds and ontology terms.