



Curriculum Vitae- Tamar Azoulay-Shemer

Education

- 2004 - 2011 **Ph.D:** The Hebrew University of Jerusalem.
Research at the Volcani Research Center, Bet Dagan and at the Faculty of Agriculture, Rehovot, Israel. Supervision by: Dr. Yoram Eyal and Prof. Eliezer E. Goldschmidt.
Research subject: *Chlorophyll degradation and fruit ripening.*
- 1999 - 2001 **M.Sc. in Biology:** Bar Ilan University, The Faculty of Life Sciences. Supervision by: Dr. Benny Motro Fast Track to MSc (B.Sc.+ M.Sc. in 4 years) Graduated with honors.
- 1997 - 2000 **B.Sc. in Biology:** Bar Ilan University, The Faculty of Life Sciences. Biotechnology Excellent Student Program, Graduated with honors.

Research Experience

- 2018 **Research Scientist** The Volcani Center, Institute, Newe Ya'ar Research Center Ramat Yishay, Israel.
- 2017 - 2018 **Independent research:** At Menachem Moshelion Laboratory, Faculty of Agriculture, Rehovot, Israel. Research subject: *Starch metabolism role in stomatal movement responses*
- 2012 - 2017 **Post-Doc:** University of California, San Diego at Prof. Schroeder .I. Julian Laboratory. Research subject: *Stomatal conductance regulation.*
- 2004 - 2011 **Ph.D.** The Hebrew University of Jerusalem. Research at the Volcani Research Center, Bet Dagan and at the Faculty of Agriculture, Rehovot. Supervision by: Dr. Yoram Eyal and Prof. Eliezer E. Goldschmidt. Research subject: *Chlorophyll degradation and fruit ripening.*

Awards & Grants (last 5 years)

- 2022-2023 ICL Group Ltd. Study of the bio-stimulating effect of different Carbon Quantum Dots on Basil.
- 2022-2023 Jewish Colonization Association (ICA), the Israeli and American board. Titled: Development of novel almond cultivars with self-fertilization capability and resistance to the major pest, the almond wasp.
- 2022-2023 Jewish Colonization Association (ICA), the Israeli and American board. Titled: Increasing almond crop production by using *P. arabica* stem-photosynthesis unique trait
- 2022-2025 Jewish Colonization Association (ICA), the Israeli and American board. Titled: Mango-protection against chilling stress.
- 2022-2023 Israel plant production and marketing. Titled: The effect of *P. arabica* stem-photosynthesis on almond crop production.
- 2022-2023 Israel plant production and marketing. Titled: Scion root-stock interaction effect on almond water use.
- 2022-2023 Israel plant production and marketing. Titled: Development of a new almond cultivar resistance to the almond wasp.
- 2021-2023 Ministry of Agriculture and Rural Development Training and Profession Service Unit (Sham). Titled: Prevention of cold damage to mango trees through dedicated spray treatments, through the activation of transpiration mechanisms in the plant.
- 2021-2022 Israel plant production and marketing. Titled: Scion root-stock interaction effect on almond water use.
- 2021- 2025 Israel Science Foundation (ISF). Titled: The role of ethylene in CO₂-induced stomatal movement.
- 2020-2023 Chief Scientist Office. Titled: Preventing mango trees chilling damage via modulation of stomatal
- 2019 Israel plant production and marketing. Titled: Preventing mango trees chilling damage via modulation of stomatal conductance.

- 2019 Volcani Research Center- "Astrategia". Equipment grant for remote sensing thermal imaging camera
- 2019 Harry B. Helmsley Charitable Trust. Equipment grant for CIRAS-3 gas exchange and two Percival CO₂ control chambers.
- 2019 Ministry of Agriculture and Rural Development. New scientist ministry of Agriculture support for Li-Cor6800.
- 2019 Ministry of Agriculture and Rural Development. New scientist ministry of Agriculture support for the construction of a new transgenic green house.
- 2018 Volcani Research Center. Lab and plant growth-room renovation.
- 2018 - 2022 Volcani Research Center. Startup - new lab establishment equipment grant.
- 2017 - 2018 Ministry of Aliyah and Immigration fellowship. Titled: Uncover signals and mechanisms that function in stomatal conductance regulation in response to elevated CO₂- and to the drought hormone ABA.
- 2017 Gordon Research Conferences, Lucca, Italy. Conference travel fellowship. Titled: The Role of Plant Volatiles in Communication.
- 2017 ILANIT/FISEB Federation of the Israel Societies for Experimental Biology. Titled: The role of guard-cell photosynthesis and leaf starch-biosynthesis in stomatal turgor production and in CO₂ induced stomatal closing.
- 2016 - 2017 Frontiers of Innovation fellowship, UCSD, San Diego, USA. Titled: Long distance signaling between mesophyll and guard cells, in CO₂-regulation of stomatal conductance.
- 2015 - 2016 Frontiers of Innovation fellowship, UCSD, San Diego, USA. Titled: Molecular mechanisms by which plants respond to the continuing rise in [CO₂].
- 2015 American Society of Plant Biologists. Conference travel fellowship. Titled: Guard cell photosynthesis is critical for stomatal turgor production, yet does not directly mediate CO₂- and ABA-induced stomatal closing.

List of Publications

- Brukental H., Doron-faigenboim A., Bar-Ya'akov I., Harel-Beja R., **Azoulay-Shemer, T.** and Holland, D.. Revealing the genetic components responsible for the unique photosynthetic stem capability of the wild almond *Prunus arabica* (Olivier) Meikle. *Frontiers* (2021)
- Schulze, S., Dubeaux, G., Ceciliato, P.H.O., Munemasa, S., Nuhkat, M., Yarmolinsky, D., Aguilar, J., Diaz, R., **Azoulay-Shemer, T.**, Steinhorst, L., Offenborn, J.N., Kudla, J., Kollist, H. and Schroeder, J.I. (2021), A role for calcium-dependent protein kinases in differential CO₂- and ABA-controlled stomatal closing and low CO₂-induced stomatal opening in *Arabidopsis*. *New Phytol*, 229: 2765-2779.
- Zhang J, De-oliveira-Ceciliato P, Takahashi Y, Schulze S, Dubeaux G, Hauser F, **Azoulay-Shemer T**, Töldsepp K, Kollist H, Rappel W-J, & Schroeder JI. (2018) Insights into the Molecular Mechanisms of CO₂-Mediated Regulation of Stomatal Movements. *Current Biology* 28(23): R1356 - R1363.
- Negi, J., Munemasa, S., Song, B., Tadakuma, R., Fujita, M., **Azoulay-Shemer, T.**, Engineer, C. B., Kusumi, K., Nishida, I., Schroeder, J. I., Iba, K. (2018) Eukaryotic lipid metabolic pathway is essential for functional chloroplasts and CO₂ and light responses in *Arabidopsis* guard cells. *PNAS* 4;115(36):9038-9043.
- Azoulay-Shemer T.**, Schwankl, N., Rog, I., Moshelion, M. Schroeder, J.I. (2018) Starch biosynthesis by AGPase, but not starch degradation by BAM1/3 and SEX1, is rate-limiting for CO₂-regulated stomatal movements under short day conditions. *FEBS letter* 592(16):2739-2759.
- Azoulay-Shemer T.**, Hsu, P.K., Schroeder, J.I. (2017) Seeing is believing. News and Views, *Nature Plants* (3):765-766.
- Azoulay-Shemer T.** , Bagheri A, Wang C, Palomares A, Stephan AB, Kunz, H.H, Schroeder JI. (2016) Starch biosynthesis in guard cells but not in mesophyll cells functions in CO₂ -induced stomatal closing. *Plant Physiology* 171(2):788-798.
- Azoulay-Shemer T.**, Palomares A, Bagheri A, Israelsson-Nordstrom M, Engineer CB, Bargmann BO, Stephan AB, Schroeder JI. (2015) Guard cell photosynthesis is critical for stomatal turgor production, yet does not directly mediate CO₂ - and ABA-induced stomatal closing. *Plant J* 83: 567-581

- Engineer CB, Hashimoto-Sugimoto M, Negi J, Israelsson-Nordström M, **Azoulay-Shemer T**, Rappel W-J, Iba K, Schroeder JI. (2015) CO₂ Sensing and CO₂ Regulation of Stomatal Conductance: Advances and Open Questions. *Trends in Plant Science* 21(1):16-30.
- Azoulay-Shemer, T.**, Harpaz-Saad, S., Eyal, Y. and Goldschmidt, E.E. (2011) Pathway of Chlorophyll Breakdown in Citrus Fruit Peel, as Compared with Senescing *Arabidopsis* Leaves and Other Plant Systems. *ISHS Acta Horticulturae*. 892.
- Azoulay-Shemer, T.**, Harpaz-Saad, S., Cohen-Peer, R., Mett, A., Gidoni, D., Lovat, N., Krokhin, O., Spicer, V., Standing, G.K., Goldschmidt, E.E. and Eyal, Y. (2011) Dual, N and C-terminal, processing of citrus chlorophyllase precursor within the plastid membranes leads to the mature enzyme. *Plant Cell Physiol.* 52(1):70-83.
- Azoulay-Shemer, T.**, Harpaz-Saad, S., Belausov, E., Lovat, N., Krokhin, O., Spicer, V., Standing, K.G., Goldschmidt, E.E., Eyal, Y. (2008) Citrus chlorophyllase dynamics at ethylene-induced fruit color-break; a study of chlorophyllase expression, post-translational processing kinetics and in-situ intracellular localization. *Plant Physiology* 148: 108-118.
- Harpaz-Saad, S., **Azoulay, T.**, Arazi, T., Ben-Yaakov, E., Mett, A., Shibolet, Y.M., Hortensteiner, S., Gidoni, D., Gal-On, A., Goldschmidt, E.E., Eyal, Y. (2007) Chlorophyllase is a rate-limiting enzyme in chlorophyll catabolism and is post-translationally regulated. *Plant Cell* 19: 1007-1022.