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EDUCATION

PhD, Biology (2024) Middle East Technical University, Department of Biological Sciences, Ankara, Türkiye

Thesis: *Investigation of the Effects of Lithium on Locomotor Activity, Circadian Rhythm, and Learning Using Computational Methods in Honey Bees*

MSc, Biology (2018) Middle East Technical University, Department of Biological Sciences, Ankara, Türkiye

Thesis: *Differences in Learning Performance and Related Behaviors Across Three Honey Bee Subspecies from Turkey*

BSc, Biology (2015) Middle East Technical University, Department of Biological Sciences, Ankara, Türkiye

WORK EXPERIENCE

Researcher, Middle East Technical University, Center for Robotics and Artificial Intelligence (ROMER).

Founder & CEO, Vitaliter Natural Sciences and Engineering R&D Ltd. (March 2016 – November 2018)

LANGUAGE and COMPUTER SKILLS

Turkish, English, Python, R, Matlab, SPSS

PUBLICATIONS

PUBLICATIONS in SCI and SCI-EXPANDED JOURNALS

1. Ulrich, J., Stefanec, M., Rekabi-Bana, F., Fedotoff, L., Roucek, T., Gundeger, B., Saadat, M., Blaha, J., Janota, J., Hofstadler, D., Zampachu, K., Keyvan, E. E., **Erdem, B.**, Sahin, E., Alemdar, H., Turgut, A., Arvin, F., Schmickl, T., & Krajník, T. (2024). Autonomous tracking of honey bee behaviors over long-term periods with cooperating robots. *Science Robotics*, 9, eadn6848. <https://doi.org/10.1126/scirobotics.adn6848>
2. Ekici, S., Bozkaya, O., Sevin, **Erdem, B.**, Arslan, O. C., Cinar, O. O., Bozkaya, E., & Ekici, H. (2024). Investigation of the biological activity and toxicity of bioactive silver nanoparticles synthesized via Vitex agnus-castus seed extract on honey bees. *Veterinary Research Communications*, 48, 3813-3821. <https://doi.org/10.1007/s11259-024-10550-6>
3. **Erdem, B.**, Arslan, O. C., Sevin, S., Gozen, A. G., Agosto-Rivera, J. L., Giray, T., & Alemdar, H. (2023). Effects of lithium on locomotor activity and circadian rhythm of honey bees. *Scientific Reports*, 13, 19861. <https://doi.org/10.1038/s41598-023-46777-7>

4. Arslan, O. C., **Erdem, B.**, Somel, M., Giray, T., & Kence, M. (2023). Effects of coumaphos on locomotor activities of different honeybee (*Apis mellifera* L.) subspecies and ecotypes. *Apidologie*, 54, 39. <https://doi.org/10.1007/s13592-023-01017-9>
5. Arslan, O. C., Sevin, S., & **Erdem, B.** (2023). Practical protocol for honey bee immobilization for oral administration of drugs and pathogens. *Journal of Apicultural Research*; 62(4), 932-935. <https://doi.org/10.1080/00218839.2021.2014645>
6. Sevin, S., Bommuraj, V., Chen, Y., Afik, O., Zarchin, S., Barel, S., Arslan, O. C., **Erdem, B.**, Tutun, H., & Shimshoni, J. A. (2022). Lithium salts: assessment of their chronic and acute toxicities to honey bees and their anti-Varroa field efficacy. *Pest Management Science* 78(11), 4507-4516. <https://doi.org/10.1002/ps.7071>
7. Kirman, E.A., Asar, N. V., **Erdem, B.**, Turkyilmaz, I. (2022). Effects of abutment length and platform size on the retention of implant-supported CAD/CAM crowns using six different cements. *Journal of Dental Sciences*, 17(1), 601-603. <https://doi.org/10.1016/j.jds.2021.04.013>

PUBLICATIONS in TURKISH-INDEXED JOURNALS

1. **Erdem, B.**, & Özkök, A. (2017). Can food supplement produced from apilarnil be alternative to testosterone replacement therapy? *Hacettepe Journal of Biology and Chemistry*, 45(4), 635 – 638. DOI: 10.15671/HJBC.2018.207

PREPRINTS

1. **Erdem, B.**, Ince, A., Sevin, S., Arslan, O. C., Gozen, A. G., Giray, T., & Alemdar, H. (2024). Api-TRACE: A system for honey bee tracking in a constrained environment to study bee learning process and the effect of lithium on learning. *bioRxiv*. <https://doi.org/10.1101/2024.09.24.614513>
2. Yapar, E., Sağlıcan, E., Dönertaş H. M., Özkurt, E., Hu, H., Guo, S., **Erdem, B.**, Rohlf, R. V., Khaitovich, P., Somel, M. (2021). Convergent evolution of primate testis transcriptomes reflects mating strategy. *bioRxiv*. <https://doi.org/10.1101/010553>

PATENT

1. **Erdem, B.**, Arslan O. C., & Mulayim M. S. (2018). *Turkish Patent No. TR 2016 14275 B “Separation of apilarnil lipid extract and its use as a testosterone enhancer”* Ankara: Turkish Patent and Trademark Office.

PROJECTS

PROJECT MANAGER

1. *Development of a Biosensor Using Honey Bees for Detection of Explosives and Narcotic Substances* (July 2016 – September 2017). Supported by Scientific and Technological Research Council of Türkiye (TUBITAK) under the 1512 program. (Budget: \$ 5,200)

2. *Effects of Light and Serotonin on Sex Determination in Water Fleas (Daphnia magna)* (September 2013 – September 2014). Supported by Scientific and Technological Research Council of Türkiye (TÜBİTAK) under the 2209-A program. (Budget: \$ 750)

RESEARCHER

1. RoboRoyal: ROBOTic Replicants for Optimizing the Yield by Augmenting Living Ecosystems (Aralık 2021 - Ongoing). Supported by EU Horizon 2020 FET Open. (Project manager: Erol Sahin / Budget: 334,625€)
2. *Study of Behavioral Interactions and Nutrition of Queen and Worker Bees to Determine Queen Bee Health and Needs* (June 2021 – June 2022). Supported by METU Scientific Research Projects Coordination Unit (Project Manager: Hande Alemdar / Budget: \$ 1,175)

SCHOLARSHIP

1. Scientific and Technological Research Council of Türkiye - TÜBİTAK BİDEB 2250 Graduate Performance Scholarship (September 2022 – November 2024)
2. Project assistant. Hive 4.0: Artificial intelligence-based objective approaches in honeybee monitoring. Middle East Technical University, Department of Computer Engineering, (May 2022 – November 2024) Supported by TÜBİTAK
3. The Council of Higher Education - YOK 100/2000 Doctoral Fellowship in Bioinformatics – Biostatistics field (2019 – 2021)
4. Project assistant. Investigation of the neural basis of attention in the fruit fly. TOBB Economy and Technology University, Psychology Department (December 2017 – July 2018) Supported by TÜBİTAK

AWARD

Erdem, B., Akpolat, M. T., & Arslan, O. C. (Kovan Team) "*Development of a biosensor for detecting explosives and narcotics using honey bees.*" Special Prize in the IDEA Category of the "New Ideas New Businesses" Technopreneurship Program, Organized by METU Technopolis and METU. December 5, 2015, Ankara.

CONFERENCE PRESENTATIONS

INTERNATIONAL CONFERENCE PRESENTATIONS

1. **Erdem, B.**, Arslan, O. C., Sevin, S., Gödelek, O., Gözen A. G., Agosto Rivera, J. L., Giray, T. & Alemdar, H. "*Effect of lithium on locomotor activity, circadian rhythm and social behaviors of honeybees.*" 47th Apimondia International Apicultural Congress. August 24-28, 2022. İstanbul, Türkiye. Abstract Book: p 83 (Oral Presentation)
2. Roboroyale Consortium. "*Robotic replicants for improving queen bee health and persistence of the honey bee colony.*" 47th Apimondia International Apicultural Congress. August 24-28, 2022. İstanbul, Türkiye. (Poster Presentation)

3. **Erdem, B.**, Arslan, O. C., Kence, M., Somel, M., & Giray, T. “*Determining the differences of learning abilities and behaviors between the three honey bee subspecies.*” 45th Apimondia International Apicultural Congress. September 29 – October 4, 2017. İstanbul, Türkiye. Abstract Book: p 205 (Poster Presentation)
4. Sağlıcan, E., Dönertaş, M., Rohlf, R., Özkurt, E., Hu, H., Neme, R., **Erdem, B.**, Khaitovich, P., & Somel, M. “*Mechanisms of convergent testis transcriptome evolution in primates.*” 86th Annual Meeting of the American Association of Physical Anthropologists, organized by AAPA. April 19-22, 2017. New Orleans, USA. Abstract Book: p 364 (Oral Presentation) (SCI-Exp)
5. Parvizi, P., Turan, Z. G., Özkurt, E., Baloglu, O., **Erdem, B.**, Karaca, M., Erbaba, B., Burduloğlu, H. C., Doğru, E., Somel, M. “*Testing the hypothesis that chronic stress accelerates brain aging in a mouse model.*” 3rd International Congress of the Molecular Biology Association of Türkiye, organized by İzmir Institute of Technology & Molecular Biology Association of Türkiye. September 10-12, 2014. İzmir, Türkiye. Abstract Book: p 186 (Poster Presentation)

NATIONAL CONFERENCE PRESENTATIONS

1. **Erdem, B.**, Mandacı, B. C., Kence, M., Beklioğlu, M. “*The effect of serotonin in hypoxia induced hemoglobin producing pathway in water fleas (Daphnia magna).*” Ecology and Evolutionary Biology Symposium, organized by Ecology and Evolutionary Biology Society of Türkiye & İstanbul Technical University. July 11-13, 2017. İstanbul, Türkiye. Abstract Book: p 40 (Poster Presentation)
2. **Erdem, B.**, Usal, K. A., & Hohenberger, A. “*Smell recognition and odor – shape matching.*” 4th International Symposium on Brain and Cognitive Science, organized by Hacettepe University. April 30, 2017. Ankara, Türkiye. (Poster Presentation)
3. **Erdem, B.** “*Daphnia: a rising model organism.*” Laboratory Animal Science 3rd National Congress, organized by Erciyes University. September 26-28, 2013. Kayseri, Türkiye. Abstract Book: pp 68-69 (Oral presentation in Turkish)
4. **Erdem, B.** “*Biological origins of obesity and food-based regulations for prevention.*” Turkish 11th Food Congress, organized by Mustafa Kemal University & The Association of Food Technology. October 11-12, 2012. Hatay, Türkiye. Abstract Book: p 18 (Oral presentation in Turkish)

TRAININGS & CERTIFICATES

1. *T-Jump Entrepreneurship Accelerator Camp*, February 9-19, 2016. METU Technopolis, San Francisco, USA
2. *New Ideas New Businesses Technopreneurship Program*, June – September 2015. METU Technopolis, Ankara, Türkiye
3. *Mt. Erciyes & Sultan Reeds Nature Education Certificate*. August 2010. Erciyes University & TÜBİTAK, Kayseri, Türkiye