**Margolin House of Science Biological Collections**

**Administrative director**: Mr. Hatem Abu Raiya
**Academic director**: Dr. Elad Chiel
**Collections manager**: Dr.Irit Zohar
**Database administrator**: Mr. Eitan Maggeni

**Margolin Biological Collections**

Biological collections housed at Margolin House of Science comprise of a large variety of specimens (n>50,000), representing different taxonomic groups.
These include fungi, bacteria, nematodes, land and aquatic invertebrates and vertebrates.
The specimens are preserved by various methods (drying, on slides, in ethanol, deep freezing, etc.).

The collections include species collected over a period of more than 80 years, including several endangered or extinct species.

One of the earliest specimens collected, is a flea belonging to the family Ceratophyllidae, collected by C. Rothschild in 1938 at the London Zoo, from a Patagonian mara (*Dolichotis patagonum*).
The flea collection includes paratypes identified by the late Prof. Michael Costa, an academic researcher at Beit Margolin.

**Movie (in Hebrew) on the flea collection housed at the Margolin House of Science:**

# History of the Margolin Biological Collections

The Margolin House of Science (“Beit Margolin”) at the Oranim Academic College of Education was established in 1947 following the passing of the naturalist and science educator Yehoshua Margolin.

Margolin believed that the knowledge of nature is the best way to link a society to their land. With that purpose, Margolin established the first zoological collection in Israel, and travelled throughout Israel to collect specimens, train school and kindergarten teachers, teach children, and develop their love to nature.

Margolin’s goal was to establish a Biological-Pedagogical Institute in Jezreel Valley, similar to the one he established in Tel Aviv. He selected the forested area of Tel Alexander as a perfect location to construct the new campus for biological studies.

On October 10th, 1947, a month after his funeral, across from his grave, the cornerstone for Margolin House of Science was established at Tel Alexander. Following Margolin’s wishes, the biological collections were split between the Biological- Pedagogical Institute of Tel Aviv and the Margolin House of Science (Oranim Academic College of Education).

[Margolin’s publications](http://oranim-primo.hosted.exlibrisgroup.com/primo_library/libweb/action/search.do?fn=search&ct=search&initialSearch=true&mode=Basic&tab=default_tab&indx=1&dum=true&srt=rank&vid=972ORA_INST_V1&frbg=&tb=t&vl%28freeText0%29=%D7%90%D7%A8%D7%9B%D7%99%D7%95%D7%9F+%D7%9E%D7%A8%D7%92%D7%95%D7%9C%D7%99%D7%9F&scp.scps=scope%3A%28972ORA_INST_ALMA_wo_999%29&vl%28108869581UI1%29=all_items&vl%281UIStartWith0%29=contains&vl%28121247796UI0%29=any&vl%28121247796UI0%29=title&vl%28121247796UI0%29=any" \t "_blank) (in Hebrew) are housed at the library of the Oranim Academic College of Education, and information in Hebrew about [Yehoshua Margolin](http://www.yoaview.com/Yoaview/SITE/?action=showobject&sn=2_676" \t "_blank) may be found online.

# Research and Collections Staff

Administrative director: Mr. Hatem Abu Raiya
Academic director: Dr. Elad Chiel
Collections manager: Dr. Irit Zohar
Database administrator: Mr. Eitan Maggeni

**Collections and Scientific Curators:**

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| Fungi- Yeast Cultures | [Prof. Yoram Gershman](https://www.oranim.ac.il/personal/yoram_ge/en/default.aspx%22%20%5Ct%20%22_blank) | Insecta | [Prof. Tamar Keasar](http://sciences.haifa.ac.il/newsci/main/index.php/en/bioinformatics/12-department-of-biology-oranim/91-tamar-keasar%22%20%5Ct%20%22_blank) |
| Bacteria | [Prof. Malka Halpern](http://sciences.haifa.ac.il/newsci/main/index.php/en/bioinformatics/12-department-of-biology-oranim/148-malka-halpern%22%20%5Ct%20%22_blank) | Amphibians | [Prof. Uri Shanas](http://research.haifa.ac.il/~shanas/%22%20%5Ct%20%22_blank) |
| Nematoda | [Dr. Amir Sapir](http://sciences.haifa.ac.il/newsci/main/index.php/en/12-department-of-biology-oranim/71-amir-sapir%22%20%5Ct%20%22_blank) | Reptiles | [Prof. Uri Shanas](http://research.haifa.ac.il/~shanas/%22%20%5Ct%20%22_blank) |
| Insecta | [Dr. Elad Chiel](http://sciences.haifa.ac.il/newsci/main/index.php/en/faculty-oranim?id=77" \t "_blank) | Aves | [Dr. Shai Markman](http://sciences.haifa.ac.il/newsci/main/index.php/en/bioinformatics/12-department-of-biology-oranim/88-shai-markman%22%20%5Ct%20%22_blank) |
| Insecta | [Prof. Tamar Keasar](http://sciences.haifa.ac.il/newsci/main/index.php/en/bioinformatics/12-department-of-biology-oranim/91-tamar-keasar%22%20%5Ct%20%22_blank) | Mammals | [Prof. Uri Shanas](http://research.haifa.ac.il/~shanas/%22%20%5Ct%20%22_blank) |
| Hexapoda | [Dr. Elad Chiel](http://sciences.haifa.ac.il/newsci/main/index.php/en/faculty-oranim?id=77" \t "_blank) | Paleontological Collection | [Dr. Irit Zohar](https://www.researchgate.net/profile/Irit_Zohar2%22%20%5Ct%20%22_blank) |
| Scorpiones | [Dr. Eran Gefen](http://sciences.haifa.ac.il/newsci/main/index.php/en/faculty-oranim?id=83" \t "_blank) | Geological Collection | [Dr. Irit Zohar](https://www.researchgate.net/profile/Irit_Zohar2%22%20%5Ct%20%22_blank) |
| Marine invertebrates | [Dr. Shai Shafir](https://www.oranim.ac.il/personal/shai_s/en/default.aspx%22%20%5Ct%20%22_blank) | Fish | [Dr. Irit Zohar](https://www.researchgate.net/profile/Irit_Zohar2%22%20%5Ct%20%22_blank) |

# Research at Margolin House of Science: Selected Publications

**Sapir, A**., Dillman, A.R., Connon, S.A., Grupe, B.J., Ingels, J., Mundo-Ocampo, M., Levin, L.A., Baldwin, J.G., Orphan, V.J., & Sternberg, P.W. (2014). Microsporidia-nematode associations in methane seeps reveal basal fungal parasitism in the deep sea. *Front Microbiology, 5*, 43.

Shih, P.Y., Lee, J.S., Shinya, R., Kanzaki, N., Pires-daSilva, A., Badroos, J.M., Goetz, E., **Sapir, A.**, & Sternberg, P.W. (2019). Newly Identified Nematodes from Mono Lake Exhibit Extreme Arsenic Resistance. *Current Biology, 29 (19)*, 3339-3344.
 **Chiel, E**. & Kuslitzky, W. (2016). Diversity and abundance of house fly Pupal Parasitoids in Israel, with first records of two Spalangia L. species, *Environmental Entomology, 45*, 283-291.

Priscila, G.P., J., B.M., Maya, L., Assaf, M., Yair, B.D., Neta, M.D., J., P.S., Lilach, I.K., & **Elad, C**. (2017). An exceptional family: Ophiocordyceps‐allied fungus dominates the microbiome of soft scale insects (Hemiptera: Sternorrhyncha: Coccidae). *Molecular Ecology, 26,* 5855-5868.
 **Broza, M**., Pereira, R.M., & Stimac, J.L. (2001). The nonsusceptibility of soil Collembola to insect pathogens and their potential as scavengers of microbial pesticides. *Pedobiologia, 45*, 523-534.
 **Broza, M., Poliakov**, D., Gruia, M., & Bretfeld, G. (2004a). Soil collembolan communities on north- and south-facing slopes of an eastern Mediterranean Valley. *Pedobiologia, 48,* 537-543.

**Broza, M., Poliakov, D**., Gruia, M., & Bretfeld, G. (2004b). Soil collembolan communities on north- and south-facing slopes of an eastern Mediterranean valley. *Pedobiologia, 48(5-6),* p.537-543.

**Broza, M.**, Blondheim, S., & Nevo, E. (1998). New species of mole crickets of the Gryllotalpa gryllotalpa group (Orthoptera: Gryllotalpidae) from Israel, based on morphology, song recordings, chromosomes and cuticular hydrocarbons, with comments on the distribution of the group in Europe and the Mediterranean region. *Systematic Entomology, 23*, 125-135.

Sharaby, Y., Rodríguez-Martínez, S., Pecellin, M., Sela, R., Peretz, A., Höfle, M. G.,**Halpern, M**. & Brettar, I. (2018) Virulence traits of environmental and clinical Legionella pneumophila MLVA genotypes. *Applied and Environmental Microbiology, 84,* e00429-18.

Laviad-Shitrit, S., Izhaki, I., Arakawa, E. & Halpern, M. (2018). Wild waterfowl as potential vectors of Vibrio cholerae and Aeromonas species. *Tropical Medicine and International Health*. doi:10.1111/tmi.13069
 **Talal, S**., Tesler, I., Sivan, J., **Ben-Shlomo, R**., Muhammad Tahir, H., Prendini, L., Snir, S., & **Gefen, E**. (2015). Scorpion speciation in the Holy Land: Multilocus phylogeography corroborates diagnostic differences in morphology and burrowing behavior among Scorpio subspecies and justifies recognition as phylogenetic, ecological and biological species. *Molecular Phylogenetics and Evolution, 91*, 226-237.
 **Zohar, I**. (2017) Fish exploitation during the Quaternary: Recent knowledge, in: Enzel, Y., Bar-Yosef, O. (Eds.), *Quaternary of the Levant: Environments, Climate Change, and Humans*, Cambridge University Press, University Printing House, Cambridge, United Kingdom, pp. 369-376.

# Margolin House of Science: Collections for Teaching

Each of the collections is used for teaching biological science and science education.
 **Selected courses that use the collections:**
Invertebrate anatomy and evolution
Vertebrate anatomy and evolution I
Vertebrate evolution II
Ecology, taxonomy, and evolution
Zoogeography
Introduction to entomology (insects)
Biology and ecology of bees (Apidae)
Introduction to ichthyology (fish)
Biology, ecology and evolution of Aves (birds)
From macroalgae to spermatophytes

# Programs for the Public

The collections are also used for public education, including selected courses for students from kindergarten to high school. Additionally, there are days for the public to visit.
Twice a year we actively participate in the European and Israeli Day of Science, hosting more than 1000 visitors at the Margolin House of Science.

**Manager of the Margolin Biological Collections: Dr. Irit Zohar**

Irit Zohar is the collection manager of the Beit Margolin Biological Collections, in charge of cataloguing, digitization, and conservation of the collections.

Irit has participated in several SYNTHESIS trainings in collections management, as well as a fluid preservation course, the CETAF shipping workshop, courses at the Mobilise training school, and more.

Irit’s research focuses on comparative anatomy and osteology of fish (from different habitats), by establishing a reference collection, and by using both traditional methods and new techniques (Micro CT; 3D camera).

The fish osteological collection includes more than 600 skeletons of fish from various habitats: the Mediterranean Sea, Red Sea, freshwater, and the Nile (Egypt). This collection is used to identify fish remains recovered from lacustrine sediments, animals gut contents, and archaeological sites in the southern Levant and South Africa. Identification of the fish remains helps reconstruct species composition from aquatic habitats, and changes in fish communities through time (diversity, speciation, body size, etc.), from the Lower Paleolithic (1.5 MYA) to historical periods. Analysis of the fish remains helps characterize their economic value to past populations, and detect past fishing technologies and processing methods.

Irit conducted several taphonomical experiments on fish natural death and fish bone survival following burning and cooking (using XRD and FTIR), as well as ethnographic studies on fish exploitation by traditional fishing communities in Panama (central America) and Sinai (Egypt).

Recent studies focus on identifying the fish isotopic signature (18O/16O; 87Sr/86Sr) as an environmental marker of the aquatic habitat in which the fish were captured.

**Selected publications:**

Zohar, I. (2017). Fish exploitation during the Quaternary: Recent knowledge, in: Enzel, Y., Bar-Yosef, O. (Eds.), *Quaternary of the Levant: Environments, Climate Change, and Humans*, Cambridge University Press, University Printing House, Cambridge, United Kingdom, pp. 369-376.

Zohar, I., Dayan, T., Goren, M., Nadel, D., & Hershkovitz, I. (2018). Opportunism or aquatic specialization? Evidence of freshwater fish exploitation at Ohalo II- a waterlogged Upper Paleolithic site. *PLoS ONE*, *13(6),* 1-28.

Sisma-Ventura, G., Tütken T., Zohar I., Pack, A., Sivan, D., Lernau, O., Gilboa A., & Bar-Oz, G. (2018). Tooth oxygen isotopes reveal Late Bronze Age origin of Mediterranean fish aquaculture and trade. *Scientific Reports, 8*, 14086-14097.

Zohar, I. & Artzy, M. (2019). The role of preserved fish: Evidence of fish exploitation, processing and long-term preservation at the Eastern Mediterranean, during the Late Bronze Age (14th-13th Centuries BCE). *Journal of Archaeological Science: Reports, 23*, 900-909.

Zohar I. & Cooke, R. (2019). The role of dried fish: A multivariate model for identifying fish long-term preservation in the past. *Journal of Archaeological Science: Reports, 26*, 101864.

Sisma-Ventura G., Tütken T., Peters S., Bialik, O. M., Zohar I., & Pack A. (2019).

Past aquatic environments in the Levant inferred from stable isotope compositions of carbonate and phosphate in fish teeth. Past aquatic environments in the Levant inferred from stable isotope compositions of carbonate and phosphate in fish teeth. *PLOS ONE 14*, e0220390.

Fisher, E. Cawthra, H.C., Esteban, I., Jeradino, A., Neumann, F.H., Oertle, A., Pargeter, J., Saktura, R. B., Szabó, K., & Zohar, I. (2020). Coastal occupation and foraging during the Last Glacial Maximum and Early Holocene at Waterfall Bluff, eastern Pondoland, South African. *Quaternary Research*, 1-41.