**Mwafaq Ibdah**   **June 2025**

**Part I: CURRICULUM VITAE**

1. **Personal**

Volcani Institute, Institute of Plant Sciences.

Research expertise: Biochemistry of plant-specialized metabolites.

E-mail: mwafaq@volcani.agri.gov.il

Personal website: <https://mwafaq.wixsite.com/mwafaq-ibdah>

Google Scholar personal site: <https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=mwafaq+ibdah&btnG>

1. **University Education and Additional Training**

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| **Years** | **Description** |
| 1992 -1994 | B.Sc., Biology, Humboldt University (Berlin, Germany).  |
| 1994 -1997 | M.Sc., Biology, Humboldt University (Berlin, Germany).Title of thesis: Activity and cell compartment of *β*-amylases in primary leaves of monocot plants.Supervision by: Dr. W. Dreier and Prof. W. Lockau. |
| 1998 -2002 | Ph.D., Life Sciences, Department of Secondary Metabolites, Leibniz Institute of Plant Biochemistry, Martin Luther University (Halle-Saale, Germany). Title of thesis: Light-induced flavonoid and betacyanin accumulation in *Mesembryanthemum crystallinum.*Supervision by: Dr. T. Vogt and Prof. D. Strack. |
| 2004-2005 | Post-doctoral position, Institute of Vegetable and Field Crops, Newe Yaar Research Center, Israel.Research subject: Functional genomics to identify genes affecting the aroma of melons and watermelons.Hosted by: Dr. Efraim Lewinsohn |
| 2005-2008 | Post-doctoral position at the University of Michigan, Department of Molecular, Cellular, and Developmental Biology (MCDB).Research subject: Identification and biochemical characterization of novel enzymes involved in the formation of benzoic acid in *Arabidopsis thaliana.*Hosted by: Professor Eran Pichersky |
| 2010-2011 | Associate Researcher at the Institute of Biological Chemistry, Washington State University, Pullman, WA, U.S.A.Research subject: Metabolic profiling of aromatic plants. Hosted by: Professor David R. Gang |

1. **Positions Held**
2. At Volcani Institute

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| **Years** | **Description** |
| 2011- 2014 | Research Scientist Rank C (equivalent to Lecturer), at the ARO, Volcani Institute, Institute of Plant Sciences, Newe Yaar Research Center, Israel. |
| 2015-2019 | Rank B (equivalent to Senior Lecturer or Assistant Professor).  |
| 2020-present | Rank A (equivalent to Associate Professor). |

1. Other

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| **Years** | **Description** |
| 2002-2004  | Research Scientist, “Frutavit Ltd.”, Teradion Industrial Park (Misgav, Israel). |
| 2008-2010 | Research Scientist, “Frutarom Ltd.”, Haifa, Israel. |

1. **Academic Contributions**
2. Supervision of M.Sc. Students

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| --- | --- | --- | --- |
|  **Years** | **Student name** | **Title of thesis** | **Supervisionwith & University** |
| 2014-2017 | Mr. Dor Rachmany | Use of resistant pear trees to cope with pear psylla: Understanding the resistance mechanism in resistant interstocks to pear psylla.Publication # 23, 26. | Dr. Liora Shaltiel-Harpaz Tel-Hai College |
| 2016-2019 | Ms. Sewar Emran | Metabolic and biochemical aspects of the interaction between species of carrots to root parasite *Orobanche*.Publication # 29. | Dr. Martin GoldwayTel-Hai College |
| 2019-2022 | Mr. Mosaab Yahyaa | Characterization of the sensitivity of different carrot varieties to *Psylla Bactericera* trigonica.Publication # 35 | Dr. Liora Shaltiel-HerpazTel-Hai College |
| 2024-present | Amit Faran | Characterize the dynamic of the fungi-vanillin interaction in *Vanilla planifolia* during bean development. | Dr.Vered Tzin, Dr. Michele ZaccaiBen Gurion University |
| 2024-present | Hanan Swaed | Identification and characterization of terpene synthases potentially involved in the formation of volatile terpenes in *Styrax officinalis* L. | Dr. Oshri MarkovichORT Braude College |

B. Guidance of Ph.D. Students

1. Post-Docs and Visiting Scientists

C1. Postdoctoral Fellows

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| **Years** | **Name** | **Research subject** |
| 2018-2020 | Dr. Bhagwat Nawade  | Developing trilobatin dihydrochalcone as a new class of phytochemical agent. Publication #24, 26-32, 35, 37-38. Review #3. Book chapters # 1,3.  |
| 2019-2020 | Dr. Kun Meng  | Comparing herbivory and plant chemical response to insects of distinct feeding guilds.Publication # 38. |
| 2023-2024 | Dr. Prasada Rao Kongala  | Biosynthesis of styrene and its analogs in *Styrax officinalis* L.Publication # 39-41. Review #5-6.  |
| 2024-present  | Dr. Baskar Bharadwaj | Understanding the biosynthesis of volatile phenylpropenes with multifaceted values.Publication # Review # 6.  |

C2. Visiting Scientists

1. Additional Academic Activities

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| **Years** | **Description** |
| 2016 | Reviewer, Ph.D. thesis of Snir Azaria: Biodegradation of the off-flavor compounds, geosmin, and 2-methylisoboreneol (MIB), in recirculating aquaculture systems. The Hebrew University of Jerusalem, Israel. |

1. Teaching Experience

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| **Years** | **Description** |
| 2012 – to date | Guiding 16 B.Sc. internship students as part of their studies at ORT Braude College |

1. **Contributions to the Scientific Community**
2. Activity in Scientific and Agricultural Committees

A1. International

A2. National

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| **Year** | **Description and role** |
| 2024 | Panel of BSF Proposal Science Advisor |

A3. Institutional (at Volcani or Other Institute)

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| **Year** | **Description** |
| 2015-present | Member of “American Society of Plant Biologists” |
| 2018-present | Member of “International Society of Chemical Ecology” |
| 2019-present  | Member of “Israel Society of Crop and Vegetable Sciences” |

1. Organization of Conferences or Other Scientific Events

B1. International

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| **Year** | **Description and role** |
| 2018 | Session Chair of the International Conference on Agricultural and Food Science. Istanbul. |

B2. National

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| --- | --- |
| **Year** | **Description and role** |
| 2014 | Co-Chair of the Scientific Committee, BERC 3rd Conference on Bio-Exploration of Valuable Natural Products Derived from Palestinian Flora: From Biodiversity to Bioindustry. Til-Nablus.  |

B3. Institutional:

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| --- | --- |
| 2020 | Organizer of Workshop on “Chemical compounds potentially involved in black fig fly interactions with *Ficus carica*”, Newe Yaar Research Center. |
| 2023 | Organizer of a Special symposium on “Plant Specialized Metabolism”, Newe Yaar Research Center. |
| 2024 | Organizer of the **first** Workshop on “Chromatography and sensor-based approaches in agriculture, food, and environmental studies.” Newe Yaar Research Center. |
| 2025 | Organizer of the **second** Workshop on “Chromatography and sensor-based approaches in agriculture, food, and environmental studies.” Newe Yaar Research Center. |

C. Review of proposals for granting agencies

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| **Year** | **Description** |
| 2024 | Reviewer (ad-hoc) of proposals for: US-Israel Binational Science Foundation (BSF). |
| 2019 | Reviewer of BARD proposal. |

1. Outreach:

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| **Year** | **Description** |
| 2020 | Participated in a radio interview “Gali Zahal, GLZ”.<https://youtu.be/IoXQWjtuTiI> |
| 2024 | Participated in a radio interview “The Golan Heights”.<https://www.golanradio.com/agriculture/episode/575fd1e2/-> |

E. Editorial responsibilities:

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| **Year** | **Description** |
| 2011-present | Review Editor: Plant Metabolism and Chemodiversity, Frontiers in Plant Science. |
| 2016 | Reviewer, Ph.D. thesis of Snir Azaria: Biodegradation of the off-flavor compounds, geosmin, and 2-methylisoboreneol (MIB), in recirculating aquaculture systems. The Hebrew University of Jerusalem, Israel. |
| 2016-present | Reviewer of manuscript for: Frontiers Plant Science, International Journal of Molecular Sciences, Journal of Agriculture and Food Chemistry. Journal of Engineering and Technological Sciences. |

F. Organization of Courses

1. **Participation in Scientific Meetings and Conferences**
2. International Meetings

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| **Year** | **Title of meeting** | **Location** | **Role** |
| 2001 | Phytochemical Society of North America | Oklahoma City, USA | Poster presenter  |
| 2007 | Gordon Research Conference, Floral & Vegetative Volatiles | Les Diablerets, Switzerland | Attendee |
| 2010 | 2nd International Conference on Industrial Biotechnology | Padova, Italy | Speaker |
| 2012 | 26th International Conference on Polyphenols | Florence, Italy | Poster presenter |
| 2012 | 3rd Banff Conference on Plant Metabolism | The Banff Center, Banff, Alberta, Canada | Speaker |
| 2013 | 11th International Meeting on Biosynthesis, Function, and Biotechnology of Isoprenoids in Terrestrial and Marine Organisms | Crete, Greece | Poster presenter |
| 2014 | BERC 3rd Conference, Bio-Exploration of Valuable Natural Products Derived from Palestinian Flora: From Biodiversity to Bioindustry | Til-Nablus, Palestine Authority | Invited lecture |
| 2014 | Gordon Research Conferences: Plant Volatiles | Ventura CA,USA | Poster presenter |
| 2014 | ISAHN Polyphenols | Lisbon, Portugal | Speaker |
| 2015 | Agriculture and Climate Change Conference | Amsterdam, Netherlands | Poster presenter |
| 2015 | 18th International Plant Protection Congress | Germany,Berlin | Speaker |
| 2015 | Pheromones and Other Semio-Chemicals in Integrated Production | IsraelJerusalem | Invited lecture |
| 2016 | 11th Wartburg Symposium on Flavor Chemistry & Biology | Germany,Eisenach | Invited lecture |
| 2017 | HPIS 2017Hemipteran-Plant Interaction Symposium | Spain,Madrid | Poster presenter |
| 2017 | ICSS 2017International Conference on Science and Society: Biopiracy and Phytomedicine  | Mainz Germany | Invited lecture |
| 2018 | Gordon Research Conferences: Plant Volatiles | Renaissance Tuscany Il Ciocco in Lucca (Barga) Italy | Poster presenter |
| 2018 | International Conference on Agricultural and Food Science 2018 | Istanbul, Turkey | Invited lecture |
| 2019 | World Congress on Biochemistry and Enzymology | Amsterdam, Netherlands | Keynote speaker |
| 2019  | International Plant Science Conference | Rostock,Germany | Invited lecture |
| 2019 | 13th World Congress on Polyphenols Applications | Valetta,Malta | Invited lecture |
| 2022 | Trends in Natural Products Research: A PSE Young Scientists’ Meeting (PSE-YSM2022) |  Crete,Greece | Speaker |
| 2022 | 6th International Symposium on Phytochemicals in Medicine and Food (6-ISPMF) | Hangzhou, China(Zoom-meeting) | Invited speaker |
| 2023 | **V. International Conference on Agricultural, Biological, and Life ScienceEdirne, Turkey**(AGBIOL 2023) | Trakya University Balkan Congress Center in Edirne | Speaker |
| 2025 | **The 11th International Mediterranean Symposium on Medicinal and Aromatic Plants** | Rimini-Italy | Speaker |

1. Active Participation in National Meetings

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| **Year** | **Title of meeting** | **Role** |
| 1999 | Day of German Science Research  Leibniz Institute for Plant Biochemistry, Halle-Saale,  Germany | Poster presenter |
| 1999 | Meeting of German Botanical Society Bonn-Röttgen, Germany | Poster presenter |
| 2000 | Meeting of German Botanical Society Jena, Germany  | Poster presenter |
| 2015 | Annual Meeting of the Israel Society of Plant Sciences ARO, Israel  | Poster presenter |
| 2021 | Agricultural Science Conference, Tel-Aviv, Israel  | Speaker |
| 2022 | Israel Socity of Crop and Vegetables Sciences, Rhovot, Israel | Speaker |
| 2023 | Israel Socity of Crop and Vegetables Sciences, Rhovot, Israel | Speaker |
| 2023 | Special symposium on “Plant Specialized Metabolism”, Newe Yaar Research Center, Israel | Speaker |
| 2024 | Chromatography and sensor-based approaches in agriculture, food, and environmental studies, Newe Yaar, Israel | Speaker |

1. Active Participation in Institutional Meetings

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| --- | --- | --- |
| **Year** | **Title of meeting** | **Role** |
| 2016 | Annual Meeting of the Production and Marketing Board of Almond Mattityahu Research Station, Israel  | Speaker |
| 2017 | Annual Meeting of the Production and Marketing Board of Almond Newe Yaar, ARO, Israel  | Speaker |
| 2020 | Annual Meeting of the Production and Marketing Board of Fig Newe Yaar, ARO, Israel  | Speaker |
| 2020 | Annual Meeting of the Production and Marketing Board of Carrot ARO, Israel | Speaker |
| 2021 | Annual Meeting of the Production and Marketing Board of Carrot Shallit Carrots, Moshav Gan HaShomron, Israel | Speaker |
| 2023 | Annual Meeting of the Production and Marketing Board of Carrot Newe Yaar, Israel | Speaker |

1. **Research Grants**
2. Competitive Grants (National and International)

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| --- | --- | --- | --- | --- | --- |
| **Granting source** |  |  |  |  | **Budget**  |
| **Year** | **Duration (years)** | **Role\*** | **Title (short)** | **Total (USD)**  | **Researcher (USD)**  |
| Chief Scientist – Ministry of Agriculture | 2013 | 3 | CI | The use of resistant pear trees to cope with psylla | 90,000 | 5,000 |
| **Collaborators**: Shaltiel-Harpaz. Liora.PI, Holland, Doron.CI, and Gershman, Yoram.CI |
| US–Israel Binational Agricultural Research and Development(BARD) | 2014 | 3 | PI | How temperature stress changes carrot flavor: elucidating the genetic determinants of undesired taste in carrots |  290,000 | 145,000 |
| **Collaborators**:Tholl, Dorothea.PI, and Simon, Phillip W.CI |
| Ministry of Agriculture Chief Science (Biotechnology) | 2014 | 3 | PI | Developing sweet tasting grapefruits based on dihydrochalcones  | 250,000 | 180,000 |
| **Collaborators**:Lewinshon, Efraim.CI and Eyal, Yoram.CI |
| Chief Scientist – Ministry of Agriculture  |  2015 |  3 | CI | Natural phytoecdesteroids from local wild plants for friendly management of insect pests |  120,000  |  5,000 |  |
| **Collaborators**: Aly, Radi.PI and Ghanim, Murad.CI |  |
| Chief Scientist – Ministry of Agriculture  | 2016 | 3 | PI | Detecting the causes for differences in the susceptibility of almond species to *Eurytoma amygdali*, as a means of improving the integrated pest management interface |  84,000 | 70,000 |  |
| **Collaborators**: Reuveny, Haim.CI and Holland, Doron.CI |  |
| Chief Scientist – Ministry of Agriculture  | 2016 | 3 | CI | Integration of a resistant root-stock for the aphid Eriosoma lanigerum in IPM apple orchards | 120,000 | 20,000 |  |
| **Collaborators**: Reuveny, Haim.CI  |
| Chief Scientist – Ministry of Agriculture  | 2017 | 3 |  CI | Characterization of genetic mechanisms for Sclerotium rolfsii resistance in peanut |  90,000 |  5,000 |
| **Collaborators**: Hovav, Ran.PI and Dafny-Yelin, Mary.CI |
| Chief Scientist – Ministry of Agriculture and Food Security (Nitzan) | 2017 | 3 | PI | Developing trilobatin/naringin dihydrochalcone as a new-style sweeting agent |  85,000  |  | 60,000 |
| **Collaborators**: Lewinshon, Efraim.CI  |
| US-Israel Binational Science Foundation (BSF) | 2018 | 3 | PI | Elucidation of the biochemical pathway leading to the biosynthesis of asarone and its derivatives in *Daucus carota* | 202,000 | 101,000 |  |
| **Collaborators**: Doudareva, Natalia.CI |  |
| Chief Scientist – Ministry of Agriculture  | 2018 | 3 | CI | The contribution of biodiversity in the field to health-promoting phytochemicals in produce: a test of concept in leafy vegetables | 130,000  | 36,000 |
| **Collaborators**: Sadeh, Asaf.PI |
| Chief Scientist – Ministry of Agriculture  | 2019 | 3 | PI | Characterization of the sensitivity of various carrot cultivars to carrot psylla and yellow disease to improve the production of carrots | 72,000 | 43,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.CI |
| Chief Scientist – Ministry of Agriculture  | 2019 | 3 | CI | Developing methods to detect Mediterranean fruit fly subplot hot spots in apple orchards and using them for precision pest control | 58,000 | 10,000 |
| **Collaborators**: Blank, Lior.PI and Shaltiel-Harpaz, Liora.CI |
| US-Israel Binational Science Foundation (BSF) | 2022 | 3 | PI | Biosynthesis of styrene and its analogs in *Styrax officinalis* L. | 213,000 | 106,500 |
| **Collaborators**: Doudareva, Natalia.CI |
| Chief Scientist – Ministry of Agriculture | 2023 | 3 | CI | Providing natural resistance against pear psylla through the use of resistant inter-stock in a commercial spadona orchard - in model plots | 130,000 | 33,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.PI |
| US-Department of Agriculture-National Institute for Food and Agriculture -(NIFA) | 2024 | 3 | CI | Understanding the biosynthesis of volatile phenylpropenes with multifaceted values | 650,000 | 140,000 |
| **Collaborators**:Tholl, DorotheaPI, Simon, Phillip W.CI, and Haak, David.CI |
| US–Israel Binational Agricultural Research and Development(BARD) | 2025 3 PI Deciphering VOC-mediated 310,000 155,00 long-distance signaling in orange carrot |
|  | **Collaborators:** Doudareva, Natalia.CI |

\*PI = Principal Investigator; CI = Cooperating Investigator

 B. Non-Competitive Grants

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| --- | --- | --- | --- | --- | --- |
| **Granting source** |  |  |  |  | **Budget**  |
| **Year** | **Duration (years)** | **Role\*** | **Title (short)** | **Total** **(USD)**  | **Researcher (USD)**  |
| Israel Plant Gene Bank | 2015 | 1 | PI | Metabolomic profiling of roots and seeds of a wild population of carrot (*Daucus* spp. L.) in Israel | 12,000 | 12,000 |
| **Collaborators**: None |
| Production and Marketing Board of Figs  | 2015 | 1 | CI | Reducing the damage caused by the black fig fly *Silba adipata* MacAlphine figs with an emphasis on understanding the relationship between volatiles secreted by the fertilized fruit fly and black fig | 28,000 | 6,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.PI |
| MIGAL Translational Research Pilot study grants  | 2017 1 CI Development of a Carrot psyllid 36,000 18,000 attractant to reduce  yellows disease |
|  | **Collaborators**: Shaltiel-Harpaz, Liora.PI |
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| Production and Marketing Board of Carrot  | 2019 | 1 | CI | Examining the presence of natural enemies of carrots and their impact on the reduction of the pest population and yellow disease  |  75,000 | 18,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.PI |
| Production and Marketing Board of Carrot  | 2020 | 1 | PI | Examination of attractants and /or repellents of a wild carrot variety under field conditions in the Western Negev to reduce damage from carrot yellows disease |  51,000 | 30,000 |
| **Collaborators**: Shaltiel-Harpaz. Liora.CI |
| Jewish Charitable Association(ICA) | 2020 2 PIDevelopment of fig fly 52,500 26,100 attractants and /or repellents to reduce fig fruit damage |
|  | **Collaborators**: Shaltiel-Harpaz, Liora.CI |

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| Production and Marketing Board of Carrot  | 2022 |  1 |  PI | Examining the effects ofspraying of sabinene on carrot psylla under field conditions | 12,000 | 12,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.CI |
| Production and Marketing Board of Carrot  | 2023 | 1 | PI | Wild carrot as a trap Plants for carrot psylla | 20,000 | 20,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.CI |
| Shaham | 2025 | 1 | CI | Biological control of carrot psylla | 10,000 | 2,000 |
| **Collaborators**: Shaltiel-Harpaz, Liora.PI, Ziv Mi-Tal, Shani Ishgur-Greenberg, Shimon  Steinberg, Jonathan Eran |

\*PI = Principal Investigator; CI = Cooperating Investigator |
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1. Industry (Private Sector)

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| **Granting source** |  |  |  |  | **Budget**  |
| **Year** | **Duration (years)** | **Role\*** | **Title (short)** | **Total** **(USD)**  | **Researcher (USD)**  |
| Terra Kama Ldt. | 2023 | 1 | PI | Enzyme test of *β*-glucosidase to improve the taste of wine, beer, and fruit juices | 32,500 | 32,500 |
| **Collaborators**: None |

\* PI = Principal Investigator; CI = Cooperating Investigator

1. **Awards**

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| **Year** | **Description** |
| 2003 | Recipient of the “MA′OF” scholarship for new faculty and for outstanding Arab lectures.  |
| 2004 | Recipient of an Israel Ministry of Science and Technology Scholarship for Arab-Israeli Scientists. |

# Mwafaq Ibdah June 2025

##### Part II: LIST OF PUBLICATIONS

Abbreviation Key:

X \* Equal Contribution with First Author

X \*\* Corresponding Author *(in cases where the researcher is the Corresponding Author)*

XPI Principal Investigator

XCI  Cooperating Investigator

XS Student

XT                    Technician or Research Engineer

XPD           Postdoctoral fellow

IF Journal Impact Factor (according to Web of Science)

Q Journal Ranking (according to Web of Science)

1. **Articles in Reviewed Journals**

1. Vogt, T., **Ibdah**, **M**., Schmidt, J., Wray, V., Nimtz, M., and Strack, D. (1999).

Light-induced betacyanin and flavonol accumulation in bladder cells of *Mesembryanthemum crystallinum*.

*Phytochemistry* 52: 583-592.

<https://pubmed.ncbi.nlm.nih.gov/10570827/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

2. **Ibdah**, **M**., Krins, A., Seidlitz, H.K., Heller, W., Strack, D., and Vogt, V. (2002).

Spectral dependence and dose-response of flavonol and betacyanin accumulation in *Mesembryanthemum crystallinum* under enhanced UV radiation.

*Plant Cell Environ*. 25: 1145-1154.

 <https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1365-3040.2002.00895.x>

IF: 6.1;Category: Plant Sciences; Rank 20/265 (Q1)

3. **Ibdah**, **M**., Zhang, X.H., Schmidt, J., and Vogt, T. (2003).

**A novel Mg++ dependent *O*-methyltransferase in the phenylpropanoid metabolism of *Mesembryanthemum crystallinum.***

*J. Biol. Chem*. 278: 43961-43972.

<https://pubmed.ncbi.nlm.nih.gov/12941960/>

IF: 4.0;Category: Biochemistry and Molecular Biology; Rank 100/313 (Q2)

4. Lewinsohn, E., Sitrit, Y., Bar, E., Azulay, Y., **Ibdah**, **M**., Meir, A., Yosef, E., Zamir, D., and Tadmor, Y. (2005).

Not just colors - carotenoid degradation as a link between pigmentation and aroma in tomato and watermelon fruit.

*Trends Food Sci. Tech*. 16: 407-415.

<https://www.sciencedirect.com/science/article/pii/S0924224405001536>

IF:15.1;Category: Food Science and Technology; Rank 2/173 (Q1)

5. **Ibdah**, **M**., Azulay, Y., Portnoy, V., Wasserman, B., Bar, E., Meir, A., Burger, Y., Hirschberg, J., Schaffer, A.A., Katzir, N., Tadmor, Y., and Lewinsohn, E. (2006).

Functional characterization of *CmCCD1*, a carotenoid cleavage dioxygenase from melon.

*Phytochemistry* 67: 1579-89.

<https://pubmed.ncbi.nlm.nih.gov/16563447/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

6. Koeduka, T., Louie, G.V., Orlova, I., Kish, C.M., **Ibdah**, **M**., Wilkerson, C.G., Baiga T.J., Noel, J.P., Dudareva, N., and Pichersky, E. (2008).

The multiple phenylpropene synthases in both *Clarkia breweri* and *Petunia hybrida* represent two distinct protein lineages.

*Plant J*. 54: 362-374.

<https://pubmed.ncbi.nlm.nih.gov/18208524/>

IF: 6.2; Category: Plant Sciences; Rank 19/265 (Q1)

7. **Ibdah**, **M**., Chen, Y.T., Wilkerson, C.G., and Pichersky, E. (2009).

An aldehyde oxidase in developing seeds of *Arabidopsis* *thaliana* converts benzaldehyde to benzoic acid.

*Plant Physiol*. 150: 416-423.

<https://pubmed.ncbi.nlm.nih.gov/19297586/>

IF: 6.6; Category: Plant Sciences; Rank 18/265 (Q1)

8. **Ibdah**, **M**.and Pichersky, E. (2009).

Arabidopsis Chy1 null mutants are deficient in benzoic acid-containing glucosinolates in the seeds.

*Plant Biol*. 11: 574-481.

<https://pubmed.ncbi.nlm.nih.gov/19538395/>

IF: 4.2;Category: Plant Sciences; Rank 42/265 (Q1)

9. Botnick, I., Xue, W., Bar, E., **Ibdah**, **M**., Schwartz, A., Joel, D.M., Lev, E., Fait, A., and Lewinsohn,

 E. (2012).

Distribution of primary and specialized metabolites in *Nigella sativa* seeds, a spice with vast traditional and historical uses.

 *Molecules* 17: 10159-10177.

 <https://pubmed.ncbi.nlm.nih.gov/22922285/>

IF: 4.2;Category: Biochemistry and Molecular Biology; Rank 88/313 (Q2)

10. Serfaty, M., **Ibdah**, **M**., Fischer, R., Chaimovitsh, D., Saranga, Y., and Dudai, N. (2013).

Dynamics of yield components and stevioside production in *Stevia rebaudiana* grown under different planting times, plant stands, and harvest regimes.

 *Ind. Crop Prod.* 50: 731-736.

 <https://www.sciencedirect.com/science/article/pii/S0926669013004809>

IF: 5.6;Category: Agronomy; Rank 8/126 (Q1)

11. Shalata, A., Ramirez, M.C., Desnick, R.J., Priedigkeit, N., Buettner, C., Lindtner, C., Mahroum, M., Abdul-Ghani, M., Dong, F., Arar, N., Camacho-Vanegas, O., Zhang, R., Camacho, S.C., Chen, Y., **Ibdah**, **M**., Defronzo, R., Gillespie, V., Kelley, K., Dynlacht, B.D., Kim, S., Glucksman, M.J., Borochowitz, Z.U., and Martignetti, J.A. (2013).

 Morbid obesity resulting from inactivation of the ciliary protein cep19 in humans and mice.

*Am. J. Hum. Genet*. 6: 1061-1071.

<https://pubmed.ncbi.nlm.nih.gov/24268657/>

IF: 8.1;Category: Genetics and Heredity; Rank 12/191 (Q1)

12. Yahyaa, M.T, Bar, E., Dubey, NK., Meir, A., Davidovich-Rikanati, R., Hirschberg, J., Aly, R., Tholl, D., Simon, PW., Tadmor, Y., Lewinsohn, E., and **Ibdah**, **M**.\*\*PI (2013).

 Formation of norisoprenoid flavor compounds in carrot (*Daucus carota* L.) roots: characterization of a cyclic-specific carotenoid cleavage dioxygenase 1 gene.

 *J. Agric. Food Chem.* 61: 12244-12252.

<https://pubmed.ncbi.nlm.nih.gov/24289159/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

13. **Ibdah**, **M**.,and Gang, DR. (2014).

Use of coupled ion mobility spectrometry-time of flight mass spectrometry to analyze saturated and unsaturated phenylpropanoic acids and chalcones.

 *Chem. Cent. J*. 8: 38. doi: 10.1186/1752-153X-8-38.

<https://pubmed.ncbi.nlm.nih.gov/24987454/>

IF: 4.215; Category: Chemistry,

Multidisciplinary; Rank 65/178 (Q2)

14. Aly, R.\*, Dubey, NK.\*, Yahyaa, M.\*T, Abu-Nassar, J.,and **Ibdah**, **M**.\*\* (2014).

Gene silencing of CCD7 and CCD8 in *Phelipanche aegyptiaca* by tobacco rattle virus system retarded the parasite development on the host.

 *Plant Signal. Behav.* 9, e29376.

<https://pubmed.ncbi.nlm.nih.gov/25763619/>

IF: 2.8; Category: Plant Sciences; Rank 80/265 (Q2)

15. **Ibdah**, **M**.\*\*, Dubey, N.K., Eizenberg, H., Dabour, Z., Abu-Nassar, J., Gal-On, A., and Aly, R. (2014).

*Cucumber Mosaic Virus* as a carotenoid inhibitor reducing *Phelipanche aegyptiaca* infection in tobacco plants.

 *Plant Signal. Behav.* 9:10, e97216.

 <https://pubmed.ncbi.nlm.nih.gov/25482816/>

IF: 2.8; Category: Plant Sciences; Rank 80/265 (Q2)

16. **Ibdah**, **M**., Berim, B., Martens, S., Valderrama, A.L.H., Palmieri, L., Lewinsohn, E., and Gang D.R. (2014).

Identification and cloning of an NADPH-dependent hydroxycinnamoyl-CoA double bond reductase involved in dihydrochalcone formation in *Malus* x *domestica* Borkh.

 *Phytochemistry* 107:24-31.

<https://pubmed.ncbi.nlm.nih.gov/25152451/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

17. Yahyaa, M.T, Tholl, D., Cormier, G., Jensen, R., Simon, P.W., and **Ibdah**, **M**.\*\*PI (2015).

Identification and characterization of terpene synthases potentially involved in the formation of volatile terpenes in carrot (*Daucus carota* L.) roots.

*J. Agric. Food Chem.*63:4870-4878.

<https://pubmed.ncbi.nlm.nih.gov/25924989/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

18. Yahyaa, M.T, Matsuba, Y., Brandt, W., Doron-Faigenboim, A., Bar, E., McClain, A.,Davidovich-Rikanati, R., Lewinsohn, E., Pichersky, E., and **Ibdah**, **M**.\*\*PI(2015).

Identification, functional characterization, and evolution of terpene synthases from a basal dicot.

*Plant Physiol.* (Special Issues*)* 169:1683-1697.

<https://pubmed.ncbi.nlm.nih.gov/26157114/>

IF: 6.6;Category: Plant Sciences; Rank 18/265 (Q1)

19. Yahyaa, M.T, A Berim, A., Isaacson, T., Marzouk, S., Bar, E., Davidovich-Rikanati, R., Lewinsohn, E., and **Ibdah**, **M**.\*\*PI (2015).

Isolation and functional characterization of carotenoid cleavage dioxygenase1 from *Laurus nobilis* L. (Bay Laurel) fruits.

*J. Agric. Food Chem.*63:8275-8282*.*

<https://pubmed.ncbi.nlm.nih.gov/26359684/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

20. Yahyaa, M.T, Davidovich-Rikanati, R., Eyal, Y., Shachter, A., Marzouk, S., Lewinsohn, E., and **Ibdah**, **M**.\*\*PI (2016).

Identification and characterization of UDP-glucose: Phloretin 4′-*O*-glycosyltransferase from *Malus* x *domestica* Borkh.

*Phytochemistry* 130:47-55.

<https://pubmed.ncbi.nlm.nih.gov/27316677/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

21. Yahyaa, M.T, Davidovich-Rikanati, R., Eyal, Y., Shachter, A., Marzouk, S., Lewinsohn, E., and **Ibdah**, **M**.\*\*PI (2017).

Characterization of three chalcone synthase-like genes from apple (*Malus* x *domestica* Borkh.).

*Phytochemistry* 140:125-133.

<https://pubmed.ncbi.nlm.nih.gov/28482241/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

22. Yahyaa, M.T, Ibdah, M., Marzouk, S., and **Ibdah**, **M**.\*\*PI (2018).

Profiling of the terpene metabolome in carrot fruits of wild (*Daucus carota* L. ssp. *carota*) accessions and characterization of a geraniol synthase.

*J. Agric. Food Chem.* 66:2378-2386.

<https://pubmed.ncbi.nlm.nih.gov/27673494/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

23. Shaltiel‐Harpaz, L., Gerchman, Y., **Ibdah**, **M**., Kedoshim, R., Rachmany, D.S, Hatib, K., Bar‐Yaakov, I., Soroker, V., and Holland, D. (2018).

Grafting on resistant interstocks reduces scion susceptibility to pear psylla, *Cacopsylla bidens*.

*Pest Management Sci*. 70: 234-239.

<https://pubmed.ncbi.nlm.nih.gov/28967187/>

IF: 3.8; Category: Entomology; Rank 8/109 (Q1)

24. Yahyaa, M.T, Berim, B., Nawade, B.PD, Ibdah, M., Dudareva, N., and **Ibdah**, **M**.\*\*PI (2019).

Biosynthesis of methyleugenol and methylisoeugenol in *Daucus carota* leaves: Characterization of eugenol/isoeugenol synthase and *O*-methyltransferase.

 *Phytochemistry* 159: 197-189.

<https://pubmed.ncbi.nlm.nih.gov/30634080/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

25. Taha-Salaime, L., Davidovich-Rikanati, R., Sadeh, A., Abo-Nassar, J., Marzouk, S., Yahyaa, M., **Ibdah**, **M**., Ghanim, M., Inbar, M., and Aly, R. (2019).

Phytoecdysteroid and clerodane content in three wild *Ajuga* species in Israel.

*ASC Omega* 4: 2369-2376.

<https://pubs.acs.org/doi/abs/10.1021/acsomega.8b03029>

IF: 3.7; Categorie: Chemistry, Multidisciplinary Sci; Rank 86/231 (Q2)

26. Yahyaa, M.T, Rachmany, D.S, Shaltiel-Harpaz, L., Nawade B.PD, Sadeh, A., Ibdah, M., Gerchman, Y., Holland, D., and **Ibdah**, **M**.\*\*PI (2019).

A *Pyrus communis* gene for *p*-hydroxystyrene biosynthesis: has a role in defense against the

pear psylla

*Cacopsylla biden.*

*Phytochemistry* 161: 107-116.

<https://pubmed.ncbi.nlm.nih.gov/30825705/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

27. Nawade, B. PD, Yahyaa, M.T, Reuveny H., Shaltiel-Harpaz, L., Eisenberg, O., Faigenboim, A., Bar-Yakkov, I., Holland, D., and **Ibdah**, **M**.\*\*PI (2019).

Profiling of volatile terpenes from almond (*Prunus dulcis*) young fruits and characterization of seven terpene synthase genes.

[*Plant Sci.*](https://www.sciencedirect.com/science/journal/01689452)287: 110187.

<https://pubmed.ncbi.nlm.nih.gov/31481200/>

IF: 4.2;Category: Plant Sciences; Rank 42/265 (Q1)

**Since previous promotion**

28. Nawade, B.PD, Shaltiel-Harpaz, L., Yahyaa, M.T, Bosamia, C. T., Kabaha, A., Kedoshim, R., Zohar, M., Isaacson, T., and **Ibdah**, **M**.\*\*PI (2020).

Analysis of apocarotenoid volatiles during the development of *Ficus carica* fruits and characterization of carotenoid cleavage dioxygenase genes.

[*Plant Sci.*](https://www.sciencedirect.com/science/journal/01689452)290: 110292.

<https://pubmed.ncbi.nlm.nih.gov/31779901/>

IF: 4.2;Category: Plant Sciences; Rank 42/265 (Q1)

29. Emran, S.S, Nawade, B.PD, Yahyaa, M.T, Abu Nassar, J., Tholl. D., Eizenberg, H., and **Ibdah**, **M**.\*\*PI (2020).

Broomrape infestation in carrot (*Daucus carota*): Changes in carotenoid gene expression and carotenoid accumulation in the parasitic weed *Phelipanche aegyptiaca* and its host.

*Sci. Rep.* 10: 1-10.

<https://pubmed.ncbi.nlm.nih.gov/31942014/>

IF: 3.8;Category: Multidisciplinary

Sciences; Rank 25/134 (Q1)

30. Muchlinski, A., **Ibdah**, **M**.PI, Ellison, S., Yahyaa, M.T, Nawade, B.PD, Laliberte, S., Senalik, D., Simon, P., Whitehead, S., and Tholl, D. (2020).

Diversity and function of terpene synthases in the production of carrot aroma and flavor compounds.

*Sci. Rep.* 10: doi.org/10.1038/s41598-020-66866-1.

<https://pubmed.ncbi.nlm.nih.gov/33173152/>

IF: 3.8;Category: Multidisciplinary

Sciences; Rank 25/134 (Q1)

31. Nawade, B.PD, Yahyaa, M.T, Kabaha, A., Kedoshim, R., Bosamia, C. T., and **Ibdah**, **M**.\*\*PI (2020).

Characterization of terpene synthase genes potentially involved in black fig fly (*Silba adipata*) interactions with *Ficus carica.*

[*Plant Sci.*](https://www.sciencedirect.com/science/journal/01689452) 298:110549.

<https://pubmed.ncbi.nlm.nih.gov/32771161/>

IF: 4.2;Category: Plant Sciences; Rank 42/265 (Q1)

32. Nawade, B.PD, Yahyaa, M.T, Davidovich-Rikanati, R., Lewinsohn, E., and **Ibdah**, **M**.\*\*PI (2020).

Optimization of culture conditions for the efficient biosynthesis of trilobatin from phloretin by engineered *Escherichia coli* harboring the apple phloretin-4′-*O*-glycosyltransferase.

*J. Agric. Food Chem*. 68:14212-14220.

<https://pubmed.ncbi.nlm.nih.gov/33089679/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

33. Schlesinger, D., Salama, F., Davidovich Rikanati, R., Tal, O., Yahyaa, M.T, Faigenboim, A., **Ibdah**, **M**., Inbar, M., Lewinsohn, E. (2021).

Further insights on the *Datura innoxia* hyoscyamine 6*β*-hydroxylase (DiH6H) based on biochemical

characterization and molecular modeling.

*Am. J. Plant Sci.,* 12:53.

<https://www.scirp.org/html/5-2604826_106706.htm>

IF: 1.5;Category: Plant Science and Agronomy; Rank 216

34. Warburg, S., Yahyaa, M.T, Lahav, T., Medina, S., Freilich, S., Gal, S., Palevsky, E., Inbar, M. and **Ibdah**, **M**.\*\* (2021).

UV-induced citrus resistance to spider mites (*Tetranychus urticae*).

*Crop Protection*, 144, p.105580.

<https://www.sciencedirect.com/science/article/pii/S0261219421000508>

IF:2.5;Category: Agronomy; Rank 29/126 (Q1)

35. Shaltiel-Harpaz, L., Yahyaa, M.T, Nawade, B.PD, Dudareva, N., and **Ibdah**, **M**.\*\*PI (2021).

Identification of a wild carrot as carrot psylla (*Bactericera trigonica*) attractant and host plant chemistry.

*Plant Sci*.: 111011.

<https://pubmed.ncbi.nlm.nih.gov/34482913/>

IF: 4.2;Category: Plant Sciences; Rank 42/265 (Q1)

36. Agmon, S., Kunta, S., Dafny-Yelin, M., Moy, J., **Ibdah**, **M**., Harel, A., Levy, Y., and Hovav, R. (2022).

Mapping of stem rot resistance in peanut indicates significant effect for plant architecture locus.

*Crop Science*, 62, 2197–2211

<https://doi.org/10.1002/csc2.20803>.

IF: 2.0;Category: Agronomy; Rank 39/126 (Q2)

37. **Ibdah**, **M**.\*\*, Hino, S., Nawade, B.PD, Yahyaa, M.T, Bosamia, TC., and Shaltiel-Harpaz, L. (2022).

Identification and characterization of three nearly identical linalool/nerolidol synthase from *Acorus calamus.*

 *Phytochemistry:* 202: 113318.

<https://pubmed.ncbi.nlm.nih.gov/35872238/>

IF: 3.2;Category: Biochemistry and Molecular Biology; Rank 155/313 (Q2)

38. Meng, K., Eldar-Liebreich, M., Nawade, B.PD, Yahyaa, M.T, Shaltiel-Harpaz, L., Coll, M., Asaf Sadeh, A., **Ibdah**, **M**.\*\*CI (2023).

Analysis of apocarotenoid volatiles from lettuce (*Lactuca sativa*) induced by insect herbivores and characterization of carotenoid cleavage dioxygenase gene.

*3 Biotech: 13:94.*

[*https://pubmed.ncbi.nlm.nih.gov/36845074/*](https://pubmed.ncbi.nlm.nih.gov/36845074/)

IF: 2.6;Category: Biotechnology and Applied Microbiology; Rank 95/174 (Q3)

39. Huang, X., Yahyaa, M.T, Kongala, P.PD, Maoz, I., Dudareva, N., **Ibdah**, **M**.\*\*PI (2024).

 Biosynthesis of elemicin and isoelemicin in *Daucus carota* leaves.

 *Plant J.*: <https://doi.org/10.1111/tpj.17201>.

 <https://pubmed.ncbi.nlm.nih.gov/39693218/>

IF: 6.2; Category: Plant Sciences; Rank 19/265 (Q1)

40. Hill A.J., Cohen Y., Aidlin-Harari S., Silberstein M., Blank L., Schmilovitch Z., Mendelsohn O., Lidor G., Ohaliav K., Orlov V., Kongala P. PD, **Ibdah**, **M**.CI, Shaltiel-Harpaz L. (2025).

Characterizing hot spots of Mediterranean fruit fly infestation in apple orchards: implications for pest monitoring and management.

Journal of Applied Entomology (**accepted)**

IF: 1.7; Category: Entomology; Rank 34/109 (Q2)

41. Hill, A.J., Shaltiel-Harpaz, L., Zilberstien, M., Aidelin-Harari, S., Kongala, P. PD, Mendelsohn, O., Blank, L., **Ibdah**, **M**.CI(2025).

Apple orchard volatiles composition at medfly *Ceratitis capitata* (Wiedemann) hot spots.

**Chemoecology (accepted)**

IF: 1.6; Category: Ecology; Rank 131/197 (Q3)

42. Kaur, S., **Ibdah**, **M**., Yoneyama, K., Simon, P., Westwood, J., Tholl, D. (2025).

Reduced strigolactone exudation as a key resistance mechanism in wild carrots against *Phelipanche aegyptiaca*.

Plant and Cell Physiology: in revision

IF: 4.0; Category: Plant Sciences; Rank 46/265 (Q1)

**Five selected publications (since previous promotion)**

**Publication 29:** <https://pubmed.ncbi.nlm.nih.gov/31942014/>

**Publication 30:** <https://pubmed.ncbi.nlm.nih.gov/33173152/>

**Publication 32:** <https://pubmed.ncbi.nlm.nih.gov/33089679>

**Publication 35:** <https://pubmed.ncbi.nlm.nih.gov/34482913/>

**Publication 39*:***<https://pubmed.ncbi.nlm.nih.gov/39693218/>

1. **Books, Reviews and Opinion Articles**

 **Reviews**

* + - 1. **Ibdah**, **M**.**\*\***, Martens, S., and Gang, R.G. (2018).

 Biosynthetic pathway and metabolic engineering of plant dihydrochalcones.

*J. Agric. Food Chem.* 66: 2273-2280. doi: 10.1021/acs.jafc.7b04445.

<https://pubmed.ncbi.nlm.nih.gov/29171271/>

IF: 5.7;Category: Agriculture, Multidisciplinary; Rank 7/89 (Q1)

* + - 1. Paparella, A., Shaltiel-Harpaza, L., and **Ibdah**, **M**.\*\* (2021).

 *β*-Ionone: Its occurrence, biological function, and metabolic engineering.

*Plants* (Basel). 10 (4): 754. doi:10.3390/plants10040754.

<https://pubmed.ncbi.nlm.nih.gov/33921545/>

IF: 4; Category: Plant Sciences; Rank 46/265 (Q1)

* + - 1. Paparella, A., Nawade, B.PD, Shaltiel-Harpaz, L. and **Ibdah**, **M**.**\*\*** (2022).

A review of the botany, volatile composition, biochemical and molecular aspects, and traditional uses of *Laurus nobilis*.

 *Plants* (Basel). 11(9): 1209. doi: 10.3390/plants11091209.

 <https://pubmed.ncbi.nlm.nih.gov/35567209/>

IF: 4; Category: Plant Sciences; Rank 46/265 (Q1)

* + - 1. Bashir, T., Anam Ul Haq, S., Masoom, S., **Ibdah**, **M**., and Husaini, M.A. (2023).

Quality trait improvement in horticultural crops: OMICS and modern biotechnological Approaches.

*Mol. Biol. Rep*., 50 (10): 8729-8742. doi: 10.1007/s11033-023-08728-3.

<https://pubmed.ncbi.nlm.nih.gov/37642759/>

IF: 2.6; Category: Biochemistry & Molecular Biology; Rank 204/313 (Q3)

5. Paparella, A., Kongala, P.PD, Serio, A., Rossi, C., Shaltiel-Harpaza, L., Amjad M. Husaini, A.M., and **Ibdah**, **M**.\*\*(2024).

Challenges and opportunities in the sustainable improvement of carrot production.

*Plants* (Basel). 13(15):2092. doi: 10.3390/plants13152092.

<https://pubmed.ncbi.nlm.nih.gov/39124210/>

IF: 4; Category: Plant Sciences; Rank 46/265 (Q1)

6. Paparella, A., Serio, A., Shaltiel-Harpaz, L., Bharadwaj, R.PD, Kongala, P.PD, and I**bdah**, **M**.\*\*(2025).

Styrax spp: Habitat, phenology, phytochemicals, biological activity and applications."

*Plants* (Basel)*.* 14(5):746. doi: 10.3390/plants14050746.

<https://pubmed.ncbi.nlm.nih.gov/40094721/>

IF: 4; Category: Plant Sciences; Rank 46/265 (Q1)

1. **Book Chapters**

1. Gonda, I., Burger, J., Schaffer, A.A., **Ibdah**, **M**., Tadmor, Y., Katzir, K., Fait, A., and Lewinsohn, E. (2016).

Biosynthesis and perception of melon (*Cucumis melo* L.) aroma.

In “Biotechnology in Flavor Production” 2nd edition.

Edited by Nativ Dudai and Daphna Havkin-Frenkel.

Chapter 11, 281-305.

Oxford: Wiley-Blackwell Publishing Ltd.

2. **Ibdah**, **M**.\*\*PI, Yahyaa, M.T, Muchlinski, A., Nawade, B.PD, and Tholl, D. (2019).

Carrot volatile terpene metabolism: Terpene diversity and biosynthetic genes

In “The Carrot Genome” 1st edition.

Edited by Philip Simon

Chapter 16, 279-294

Springer Nature Switzerland AG

3. Nawade, B,PD. Yahyaa, M.T, Lewinsohn, E., and **Ibdah**, **M**.\*\*(2020)

Vegetative and fruit volatiles for human consumption

In “ Biology of Plant Volatiles” 1st edition.

Edited by Eran Pichersky and Natalia Dudareva

Chapter 5, 79-95

CRC Press, Taylor & Francis Group, Boca Raton.

1. **Articles in Reviewed Journals in Hebrew**
2. **Articles in Non-Reviewed Journals in Hebrew and English**

1. Shalata, A., **Ibdah**, **M**., Abushqara, E., and Safadi, M. (2003).

The efficacy of ascorbic acid derivatives (frutavit preparations) for quality preservation in shredded lettuce.

*Daruna (Education and literary articles produced in the Arab college for education in Israel-Haifa)* 36, 221-237.

2. **Ibdah**, **M**., Lavid, N., Lewinsohn, E., Amit, A., and Dror, N. (2010).

Green Routes to Green Notes.

*Chem. Engineer. Transac*. 20: 241-246.

3. Shaltiel‐Harpaz, L., Gerchman, Y., Holland, D., **Ibdah**, **M**., BarYaakov, I., Rachmany, D.S, Hatib, K., and Soroker, V. (September 2016).

Dealing with pear psylla using resistant pear trees.

*Alon Hanotea* 70:16-22.

4. Shaltiel-Harpaz, L., Kedoshim, R., Rachmany, D.S, Yahyaa, M.T,and **Ibdah**, **M**. (September 2017).

The secret of communication between the fig fruit that has not ripened to the fertilizing wasp and its exploitation to control the fly.

*Alon Hanotea* 71:44-47.

5. Eisenberg, O., Bar-Yakkov, I., Hatib, K., Holland, D., Dag, A., Reuveny H., Shaltiel-Harpaz, L., **Ibdah**, **M**. (2020).

Sensitivity of almond fruit to almond seeds wasps (*Eurytoma amygdali* Enderlein (Hymenoptera: Eurytomidae)

*Alon Hanotea* 74:18-54.

6. Azoulay-Shemer, T., Holland, D., Eisenberg, O, Bar-Yakkov, I, Hatib, K., Bahar, O.,Shaltiel-Harpaz, L., Sade, N., Shapira, O, Sperling, O., Haroubi, D., **Ibdah**, **M**. andSteinberg, D. (2024).

 Improvement and development of almond varieties adapted to climate change and adaptin horticultural practices to their cultivation.

*Yevol Shia,* 213:44-52.

1. **Articles in Symposium Proceedings (including Acta Horticulturae)**

Gang, R. D., Davin, L. B., **Ibdah**, **M**., Lange, B. M., Norman G. Lewis, G. N., Turner, G. W., Shion, H., Witkop, G., Harris, D., and Millar, A. (2012).

Probing medicinal plant phytochemical factories through in situ MALDI tissue imaging using Quadrupole Ion Mobility Time-of-Flight Mass Spectrometry.

*Pharmaceutical Biol.,* 50: 567-568.

<https://www.researchgate.net/publication/294232217>

1. **Granted Patents, Registered Cultivars and Application Development**

1. **Ibdah**, **M**. (2019).

Identification and characterization of UDP-glucose: phloretin 4′-*O*-glucosyltransferase

from *Malus* x *domestica* Borkh.

US Patent No: US2019/0062768A1

**Mwafaq Ibdah June 2025**

Part III: DESCRIPTION OF MAJOR ACHIEVEMENTS

1. **Impact of my research**

Dr. Ibdah’s research has uncovered and defined critical biosynthetic pathways responsible for the production of specialized plant metabolites with significant biological and commercial value. These compounds play essential roles in plant defense and hold vast potential for pharmaceutical and industrial applications, laying the groundwork for innovative uses in health and biotechnology sectors.

1. **Contribution to Agricultural Sciences**

**1.** Dr. Mwafaq Ibdah’s research career has significantly advanced our understanding of plant specialized metabolism and its applications in agriculture. His early work (1998–2002) at the Leibniz Institute of Biochemistry in Germany, in collaboration with the Helmholtz Institute, focused on the stress response of the halophyte *Mesembryanthemum crystallinum* to UV light. This led to the identification of novel flavonol and betacyanin compounds with protective roles and the discovery of a new methyltransferase involved in their biosynthesis. These findings broadened scientific knowledge of plant defense mechanisms and enzyme diversity (Reviewed publication # 1-3).

**2.** During his first postdoctoral experience in Israel (2004-2005), Dr. Ibdah employed functional genomics to identify genes responsible for aroma production in melons and watermelons (Reviewed publication # 4 and 5, 3; Book Chapter # 1).

**3.** He continued this line of research at the University of Michigan (2005–2008), where he uncovered enzymes and pathways involved in benzoic acid biosynthesis, a key precursor for valuable plant metabolites such as Taxol and methyl benzoate. Notably, he characterized the CHY1 gene in Arabidopsis and demonstrated the enzymatic conversion of benzaldehyde to benzoic acid (Reviewed publication # 6-8).

**4.** At Washington State University (2010–2011), Dr. Ibdah used advanced metabolomics techniques (UPLC-Q-IMS-TOFMS) to study phenylpropanoic acids and chalcones in plant extracts (Reviewed publication # 13).

**5.** Since 2011, his research at the Newe Yaar Research Center in Israel has been devoted to understanding and manipulating the biosynthesis of natural sweeteners in apples-specifically, dihydrochalcones. He identified a key enzyme, *p*-coumaroyl-CoA double-bond reductase, and developed a novel approach to enhance the natural sweetness of fruits, with potential health benefits for consumers seeking low-calorie options (Reviewed publication # 16, 20, 21, 32; review # 1, and patent # 1; Recipient of two grants from Chief Scientist -Ministry of Agriculture and Food Security, 2014 and 2017).

**6.** Dr. Ibdah has also investigated the genetic and biochemical basis of flavor in carrots. Responding to consumer concerns over off-flavors, he identified several terpene synthase genes and a novel carotenoid cleavage dioxygenase that influence volatile compound profiles in different carrot varieties. These discoveries contribute to breeding strategies for improved flavor quality (Reviewed publications # 12, 17, 22, 30, book chapter # 2, and review # 5; Recipient of two grants from BARD 2014; Israel Plant Gene Bank 2015).

**7.** Expanding his research into pest management, Dr. Ibdah explored the volatile emissions of fig fruits and their role in attracting the black fig fly, a major pest. He identified key terpene biosynthetic genes in *Ficus carica*, laying the groundwork for the development of kairomonal traps and sustainable pest control through metabolic engineering (Reviewed publications # 28, 31; Recipient of grant from Production and Marketing Board of Figs, 2015; and from ICA, 2020).

**8.** In almonds (*Prunus dulcis*), his work focused on terpene synthase genes linked to resistance against the almond seed wasp. These genes may serve as molecular markers in breeding programs to enhance pest resistance in commercial almond varieties (Reviewed publication # 27; Recipient of a grant from Chief Scientist -Ministry of Agriculture and Food Security, 2016).

**9.** Lastly, Dr. Ibdah has initiated a project on the sustainable production of styrene, an important industrial compound, using *Styrax officinalis*. He identified genes involved in styrene biosynthesis and is engineering tobacco plants for eco-friendly production of styrene analogs, offering a plant-based alternative to petroleum-derived methods (Recipient of BSF 2021; publication in preparation; Review # 6).

1. **Achievements in Applied Research**(Specifying major contribution to agriculture and/or the environment in Israel and abroad)

**1. Adaptation of Already Existing Technology: Identification of a Wild Carrot as a Trap Plant for Carrot Psylla**

Carrot is a major global crop and a significant agricultural product in Israel, covering 3,217 hectares with an annual yield of 220,402 tons. Commercial production, however, faces major threats from carrot psylla (Bactericera trigonica), the vector responsible for transmitting the damaging yellows disease. In this project, I adapted existing germplasm screening and volatile profiling techniques to identify a wild carrot accession from the Newe Yaar carrot germplasm collection that naturally attracts carrot psylla. By utilizing established protocols in volatile organic compound (VOC) analysis and bioassays, I demonstrated that this wild carrot emits specific VOCs that are highly attractive to adult psylla. Furthermore, I showed that these volatiles have insecticidal effects on psylla nymphs and influence oviposition behavior. This discovery repurposes the traditional concept of trap cropping by integrating it with precise chemical ecology tools and insect behavior assays. The adapted protocol forms the basis for a practical, field-ready application that carrot growers can implement to reduce psylla populations. This trap plant strategy has the potential to lower carrot psylla damage by 70–90%, offering a sustainable, environmentally friendly pest management solution that builds on existing agronomic and ecological practices.

**2. Improvement and Adaptation of Existing Technology: Production of Plant-Derived**

 **Trilobatin Dihydrochalcone as a Zero-Calorie Sweetener**

The increasing prevalence of chronic diseases like diabetes, obesity, Alzheimer’s, and some cancers is strongly tied to excessive sugar intake. Plant-derived dihydrochalcones, such as trilobatin, offer a natural, zero-calorie sweetener alternative that may help curb sugar consumption and improve health. Leveraging microbial biosynthesis and metabolic engineering, I enhanced existing biotechnological platforms to enable sustainable, high-yield trilobatin production in microbial cell factories. This eco-friendly approach replaces traditional chemical synthesis and offers a scalable, commercially viable method for producing high-purity trilobatin as a health-promoting sweetener for the food industry.

**3. Development of Ground-Breaking, Novel Technology: Integrated Resistance-Based**

 **Strategy for Controlling Pear Psylla**

Pear psylla (*Cacopsylla bidens*) is a major pest threatening pear cultivation in Israel, which spans approximately 3,500 hectares. Over the past decade, we have developed and refined an innovative, integrated approach for managing this pest, based on the discovery of natural resistance in two pear accessions from the Newe Yaar collection. Our research led to the identification of genetic, biochemical, and molecular traits associated with psylla resistance. A key breakthrough was the development of a novel grafting strategy that leverages resistant rootstocks to protect susceptible commercial cultivars. In parallel, we characterized specialized volatile organic compounds produced by the resistant accessions, which demonstrated insecticidal activity against pear psylla across all life stages- eggs, nymphs, and adults. By combining rootstock grafting with the deployment of naturally occurring insecticidal compounds, we created a comprehensive control protocol that can be practically implemented by growers. This integrated strategy has the potential to reduce pear psylla damage by approximately 90%, offering a sustainable and effective alternative to conventional pesticide-based control methods.