

Michael M. Meijler, Ph.D.

January 2023

Curriculum vitae

• *Personal Details*

Michael M. Meijler, Ph.D.

Born 12/12/1970, Amsterdam, The Netherlands

Immigrated to Israel: January 1997

Dept. of Chemistry and National Institute for Biotechnology in the Negev, Ben-Gurion University of the Negev, Be'er Sheva, Israel

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• *Education*

B. Sc. in Chemistry, M. Sc. in Organic Chemistry - 1990-1996; University of Amsterdam, Netherlands; Dept. of Organic Chemistry, with Prof. G. J. Koomen, Thesis: "Synthesis of Brominated Indole Alkaloids".

Ph. D. - Weizmann Institute of Science, Rehovot, Israel, 1997-2002; Department of Organic Chemistry, with Prof. A. Shanzer, Thesis: "Biomimetic Design, Synthesis and Evaluation of Siderophore Analogs".

• *Employment history*

6/2015 to present: Full Professor, Dept. of Chemistry, Ben-Gurion University of the Negev, Be'er Sheva, Israel

4/2011 to 5/2015: Associate Professor (tenured), Dept. of Chemistry, Ben-Gurion University of the Negev, Be'er Sheva, Israel

8/2012 to 8/2013: Visiting Professor (Sabbatical leave), University of California, San Diego

10/2006 to 3/2011: Senior Lecturer (Assistant Professor), Dept. of Chemistry, Ben-Gurion University of the Negev, Be'er Sheva, Israel

12/2005 to 10/2006: Assistant Professor, Dept. of Chemistry, The Scripps Research Institute, La Jolla, CA, USA.

7/2002 to 11/2005: Research Associate, Dept. of Chemistry (with Prof. K. D. Janda) The Scripps Research Institute, La Jolla, CA, USA (promoted to Senior Research Associate, Aug. 2004).

• *Professional activities*

(a) Positions in academic administration:

2022 – present: Academic Advisor, Jusidman Science Center for Youth, Ben Gurion University of the Negev
2018 – 2022: Scientific Director, National Institute for Biotechnology in the Negev
2018 – 2020: Chair, Department of Chemistry
2020 – present: Promotions Committee, Department of Chemistry
2016 – 2018: Promotions Committee, Faculty of Engineering
2013 – 2016: Departmental Search Committee
2013 – present: Departmental Resources Committee
2014 – 2016: Departmental Graduate Students Committee
2006 – 2018: Departmental Computing + Website Committee (responsible for the Departmental website in English)
2011 – 2012: Chair, Departmental Graduate Students Committee
2008 – 2011: Departmental Prizes Committee

(b) Professional functions outside BGU:

- Co-organizer of the Activity-Based Protein Profiling Annual Meeting, July 2023, Weizmann Institute of Science, Israel
- Co-Chair of the Israel Chemical Society annual meeting, Feb. 2018, Tel Aviv, Israel
- Organizer of a session on Applied Microbiology at the Israel Society for Microbiology Annual Meeting, Feb. 2016, Bar-Ilan University, Israel
- Chair of the organizing committee of the 2014 Israel Chemical Society - Medicinal Chemistry Section meeting, June 2014, Weizmann Institute of Science, Rehovot, Israel
- Co-organizer of the Israel Chemical Society annual meeting, Feb. 2012, Tel Aviv, Israel
- Co-founder of the COST (European Cooperation in Science and Technology) consortium on Chemical Proteomics (together with Herman Overkleeft, Roderich Süßmuth and Ashraf Brik), functioning as financial rapporteur and in charge of short term scientific missions, 2011-present
- Co-organizer of the first COST meeting on Chemical Proteomics, April 2012, Jerusalem
- Organizer of the 1st Symposium on Nanobiotechnology, Jan. 2011, BGU, Be'er Sheva, Israel
- Co-organizer of the first "Highs in Chemistry and Biology at the Lowest Place on Earth" conference, March 2010, Ein Boqek, Israel
- Organizer of a session on Chemical Biology at the Israel Chemical Society annual meeting, Feb. 2010, Tel Aviv, Israel
- Organizer of the 2nd National Graduate Student Symposium in Organic Chemistry, Oct. 2010, Be'er Sheva, Israel
- Co-organizer of the first BGU Symposium on Chemical Biology, Oct. 2009, Be'er Sheva, Israel
- Co-organizer of the 2008 Israel Chemical Society - Medicinal Chemistry Section meeting, June 2008, Weizmann Institute of Science, Rehovot, Israel

(d) Editorial activities:

2011 – present: Academic Editor, *PLOS ONE*
2014 - Guest Editor, Special Issue on 'Quorum Sensing and Chemical Communication between Species', *Israel Journal of Chemistry*, publication date: April 2016

(e) Membership in scientific societies:

American Chemical Society, International Society for Chemical Ecology, Israel Chemical Society, Israel Society for Microbiology

• *Educational activities*

(a) Courses taught:

Chemical Biology (M.Sc./3rd year students, fall 2016 - present); 2 hours/week
 Advanced Organic Synthesis (3rd year Chemistry students) – 2008-2012, 2014-2021 (in 2014 jointly with Dr. Doron Pappo); 3 hours/week
 Organic Chemistry Laboratory (2nd year Chemistry/Chemical Engineering students) – 2010-2012; 2016 – 2018; 6 hours/week
 Advanced Organic Chemistry Laboratory (3rd year Chemistry students) – 2006-2009, 2013-2016, 2018 - present; 10 hours/week
 Organic & Biophysical Chemistry Seminar Series – 2006, 2009, 2010, 2014; 1 hour/week
 Departmental Seminar Series – 2007-2008; 1 hour/week
 Analytical Chemistry Laboratory (1st year Pharmacology students) – 2006; 4 hours/week

(b) Research Students (4 completed M.Sc., 12 completed Ph.D., 3 current M.Sc., 8 current Ph.D. students):

2008 - Liraz Shidlovsky, M.Sc. (with Prof. A. Parola)
 2009 - Matan Agmon, M.Sc.
 2013 - Luba Dubinsky, Ph.D.
 2014 - Hadas Ganin, Ph.D.
 2014 - Neri Amara, Ph.D.
 2014 - Roi Mashlach, Ph.D.
 2015 - Sarit Yerushalmi, Ph.D. (with Prof. N. G. Lemcoff)
 2015 - Nira Rabin, Ph.D.
 2015 - Hagai Reiss, M.Sc.
 2015 - Hagit Forckosh, M.Sc.
 2017 - Aviad Mandaby, Ph.D.
 2020 - Rachel Gregor, Ph.D.
 2019 - Niva Levy, Ph.D.
 2020 - Yonathan Chemla, Ph.D. (with Prof. L. Alfonta)
 2022 - Shimrit David, Ph.D.
 2022 - Alex Yashkin, Ph.D.
 Dorin Kalson (combined track, expected year of Ph.D.: 2023)
 Danielle Mantin (combined track, expected year of Ph.D.: 2023)
 Hen Mozes (combined track, expected year of Ph.D.: 2023)
 Lara Holoidovsky (combined track, expected year of Ph.D.: 2023)
 Shaked Uzi (combined track, expected year of Ph.D.: 2023)
 Zohar Tik (combined track, expected year of Ph.D.: 2024)
 Nadeem Alatawna (combined track, expected year of Ph.D.: 2024)
 Ksenia Lialin (combined track, expected year of Ph.D.: 2025)
 Osnat Gagolasvili (combined track, expected year of Ph.D.: 2026)
 Bat El Hagbi (direct Ph.D. track, expected year of Ph.D. 2026)
 Omer Sabti (expected year of M.Sc. 2023)
 Ronit Suissa (expected year of Ph.D.: 2024)

• *Awards and fellowships*

- (a) Awards: Kornis Family Distinguished Lecturer Award, Univ. New South Wales, Sydney, Australia, 2022.
Dean's Award for Excellence in Research, Faculty of Natural Sciences, BGU, 2013.
Toronto Prize for Excellence in Research, BGU, 2011
Dean's Award for Excellence in Research, Faculty of Natural Sciences, BGU, 2010
- (b) Fellowships: Postdoctoral Fellowship, The Skaggs Institute for Chemical Biology, The Scripps Research Institute, 2002-2004
The Feinberg Graduate School distinguished Ph.D. fellowship for academic and scientific achievements, Weizmann Institute of Science, 1998-2001
Karyn Kupcinec Summer Science School Fellowship, Weizmann Institute of Science, June – Aug. 1994.

• *Publications (91, H-index: 34 – ISI; total number of citations: 3937; without self-citations: 3779)*

1. **M. M. Meijler**, O. Zelenko, D. S. Sigman: Chemical Mechanism of DNA Scission by (1,10 phenanthroline)copper. Carbonyl Oxygen of 5-Methylenefuranone is Derived from Water. *J. Am. Chem. Soc.* 119 (5), 1135-1136, **1997**
2. B. E. A. Burm, **M. M. Meijler**, J. Korver, M. J. Wanner and G. J. Koomen: Synthesis of the Brominated Marine Alkaloids Arborescidine A, B and C. *Tetrahedron* 54 (22), 6135-6146, **1998**
3. **M. M. Meijler**, R. Arad Yellin, Z. I. Cabantchik and A. Shanzer: Synthesis and Evaluation of Iron Chelators with Masked Hydrophilic Moieties. *J. Am. Chem. Soc.* 124 (43), 12666-12667, **2002**
4. **M. M. Meijler**, M. Matsushita, L. J. Altobelli III, P. Wirsching, and K. D. Janda: A New Strategy for Improved Nicotine Vaccines using Conformationally Constrained Haptens. *J. Am. Chem. Soc.* 125 (24), 7164-7165, **2003**
5. J. A. Moss, A. R. Coyle, J.-M. Ahn, **M. M. Meijler**, J. Offer, K. D. Janda: Tandem IMAC-HPLC Purification of a Cocaine-Binding scFv Antibody. *J. Immunol. Methods*. 281 (1-2), 143-148, **2003**
6. **M. M. Meijler**, M. Matsushita, P. Wirsching, K. D. Janda: Development of Immunopharmacotherapy Against Drugs of Abuse. *Curr. Drug Discovery Techn.* 1(1), 77-89, **2004**
7. **M. M. Meijler**, G. F. Kaufmann, L. G. Hom, K. McKenzie, C. Sun, J. A. Moss, M. Matsushita, K. D. Janda: Synthesis and Biological Validation of a Ubiquitous Quorum Sensing Molecule. *Angew. Chem. Int. Ed. Engl.* 43, 2106-2108, **2004**
8. L. Qi, **M. M. Meijler**, S.-H. Lee, C. Sun, K. D. Janda: Solid-Phase Synthesis of Anandamide Analogues. *Org. Lett.* 6 (10), 1673-1675, **2004**
9. M. R. A. Carrera, G. F. Kaufmann, J. M. Mee, **M. M. Meijler**, G. F. Koob, K. D. Janda: Treating Cocaine Addiction with Viruses. *Proc. Nat. Acad. Sci. USA* 101 (28), 10416-10421, **2004**
10. M. R. A. Carrera, **M. M. Meijler**, K. D. Janda: Cocaine Pharmacology and Current Pharmacotherapies for its Abuse. *Bioorg. Med. Chem.* 12 (19), 5019-5030, **2004**

11. T. J. Dickerson, T. Lovell, **M. M. Meijler**, L. Noodleman, K. D. Janda: Nornicotine aqueous aldol reactions: Synthetic and theoretical investigations into the origins of catalysis. *J. Org. Chem.* 69 (20), 6603-6609, **2004**
12. G. F. Kaufmann, R. Sartorio, S.-H. Lee, C. Rogers, J. A. Moss, **M. M. Meijler**, B. Clapham, T. J. Dickerson, K. D. Janda: Revisiting quorum sensing: Discovery of additional chemical and biological functions for 3-oxo-*N*-acylhomoserine lactones. *Proc. Nat. Acad. Sci. USA* 102 (2), 309-314, **2005**
13. **M. M. Meijler**, G. F. Kaufmann, L. Qi, J. M. Mee, A. R. Coyle, J. A. Moss, M. Matsushita, P. Wirsching, K. D. Janda: Synthesis and Properties of Fluorescent Cocaine Probes: Tools for the High-Throughput Selection of Cocaine Binding Antibodies. *J. Am. Chem. Soc.* 127(8), 2477-84, **2005**
14. G. F. Kaufmann, **M. M. Meijler**, C. Sun, D.-W. Chen, J. M. Mee, D. P. Kujawa, T. Z. Hoffman, P. Wirsching, R. A. Lerner, K. D. Janda: Enzymatic Incorporation of Antibody-Inducible Fluorophores into DNA. *Angew. Chem. Int. Ed. Engl* 44(14), 2144-2148, **2005**
15. C. A. Lowery, K. M. McKenzie, L. Qi, **M. M. Meijler**, K. D. Janda: Quorum Sensing in *V. harveyi*: Probing the Specificity of the LuxP Binding Site. *Bioorg. Med. Chem. Lett.* 15(9), 2395-8, **2005**
16. L. Qi, N. Yamamoto, **M. M. Meijler**, L. J. Altobelli III, G. F. Koob, P. Wirsching, K. D. Janda: Δ^9 -THC immunochemical Studies: Haptens, Monoclonal Antibodies, and a Convenient Synthesis of Radiolabeled Δ^9 -THC. *J. Med. Chem.*, 48(23), 7389-7399, **2005**
17. K. M. McKenzie, **M. M. Meijler**, C. A. Lowery, G. E. Boldt, K. D. Janda: A Furanosyl-Carbonate Autoinducer in the Cell-to-Cell Communication System of *V. harveyi*. *Chem. Comm.*, 48, 4863-5, **2005**
18. M. Matsushita, **M. M. Meijler**, P. Wirsching, R. A. Lerner, K. D. Janda: A Blue Fluorescent Antibody-Cofactor Sensor for Mercury. *Org. Lett.*, 7(22), 4943-4946, **2005**
19. H. Matsushita, N. Yamamoto, **M. M. Meijler**, P. Wirsching, R. A. Lerner, M. Matsushita, K. D. Janda: Chiral Sensing Using a Blue Fluorescent Antibody. *Mol. Biosystems*, 4, 303-6, **2005**
20. G. F. Kaufmann, R. Sartorio, S.-H. Lee, J. M. Mee, L. J. Altobelli III, D. P. Kujawa, E. Jeffries, B. Clapham, **M. M. Meijler**, K. D. Janda: Antibody Interference with N-Acyl-Homoserine Lactone-Mediated Bacterial Quorum Sensing. *J. Am. Chem. Soc.* 128(9), 2802-3, **2006**
21. V. V. Kravchenko, G. F. Kaufmann, J. C. Mathison, D. A. Scott, A. Z. Katz, M. R. Wood, A. B. Brogan, M. Lehmann, J. M. Mee, K. Iwata, Q. Pan, F. Fearn, U. G. Knaus, **M. M. Meijler**, K. D. Janda, R. J. Ulevitch: *N*-(3-Oxo-acyl) homoserine lactones signal cell activation through a mechanism distinct from the canonical pathogen-associated molecular pattern recognition receptor pathways. *J. Biol. Chem.* 281(39), 28822-30, **2006**
22. E. P. Zorrilla, S. Iwasaki, J. A. Moss, J. Chang, J. Otsuji, K. Inoue, **M. M. Meijler**, K. D. Janda: Vaccination against weight gain. *Proc. Natl. Acad. Sci. USA*, 103(35):13226-31, **2006**
23. S. De Lamo Marin, Y. Xu, **M. M. Meijler**, K. D. Janda: Antibody catalyzed hydrolysis of a quorum sensing signal found in Gram-negative bacteria. *Bioorg. Med. Chem. Lett.* 17 (6), 1549-52, **2007**

24. J. Park, R. Jagasia, G. F. Kaufmann, J. C. Mathison, D. I. Ruiz, J. A. Moss, **M. M. Meijler**, R. J. Ulevitch, K. D. Janda: Infection control by antibody disruption of bacterial quorum sensing signaling. *Chemistry & Biology*, 14 (10), 1119-1127, **2007**
25. E. W. Debler, G. F. Kaufmann, **M. M. Meijler**, A. Heine, J. M. Mee, G. Pjlevaljcic, A. J. Di Bilio, P. G. Schultz, D. P. Millar, K. D. Janda, I. A. Wilson, H. Gray, R. A. Lerner: Deeply Inverted Electron-Hole Recombination in a Luminescent Antibody-Stilbene Complex. *Science*, 319, 1232 – 1235, **2008**
26. V. V. Kravchenko, G. F. Kaufmann, J. C. Mathison, D. A. Scott, A. Z. Katz, D. C. Grauer, M. Lehmann, **M. M. Meijler**, K. D. Janda, R. J. Ulevitch: Modulation of gene expression via disruption of NF- κ B signaling by a bacterial small molecule. *Science*, 321 (5886), 259-262, **2008**
27. A. V. Mayorov, N. Amara, J. Y. Chang, J. A. Moss, M. S. Hixon, D. I. Ruiz, **M. M. Meijler**, E. P. Zorrilla, and K. D. Janda: Catalytic antibody degradation of ghrelin increases whole-body metabolic rate and reduces refeeding in fasting mice. *Proc. Natl. Acad. Sci. USA*, 105(45), 17487-92, **2008**
28. M. Goldsmith, D. Avni, G. Levy-Rimler, R. Mashiach, O. Ernst, M. Levi, B. Webb, **M. M. Meijler**, N. S. Gray, H. Rosen, T. Zor: A ceramide-1-phosphate analogue, PCERA-1, simultaneously suppresses tumour necrosis factor-alpha and induces interleukin-10 production in activated macrophages. *Immunology*, 127(1), 103-115, **2009**
29. L. Amir, T. K. Tam, M. Pita, **M. M. Meijler**, L. Alfonta, E. Katz: Biofuel cell controlled by enzyme logic systems. *J. Am. Chem. Soc.*, 131(2), 826-32, **2009**
30. D. Avni, M. Goldsmith, O. Ernst, R. Mashiach, T. Tuntland, **M. M. Meijler**, N. S. Gray, H. Rosen, T. Zor: Modulation of TNF-alpha, IL-10 and IL-12p40 levels by a ceramide-1-phosphate analog, PCERA-1, in vivo and ex vivo in primary macrophages. *Immunol. Lett.*, 123, 1-8, **2009**
31. O. Bukelman, N. Amara, R. Mashiach, P. Krief, **M. M. Meijler**, L. Alfonta: Electrochemical Analysis of Quorum Sensing Inhibition. *Chem. Commun.*, 2836-2838, **2009**
32. H. Ganin, X. Tang, **M. M. Meijler**: Inhibition of *Pseudomonas aeruginosa* quorum sensing by AI-2 analogs, *Bioorg. Med. Chem. Lett.*, 19 (14), 3941-3944, **2009**
33. N. Amara, R. Mashiach, D. Amar, P. Krief, S. A. Spieser, M. J. Bottomley, A. Aharoni, **M. M. Meijler**: Covalent Inhibition of Bacterial Quorum Sensing, *J. Am. Chem. Soc.*, 131(30), 10610-9, **2009**
34. M. Goldsmith, D. Avni, O. Ernst, Y. Glucksam, G. Levy-Rimler, **M. M. Meijler**, T. Zor: Synergistic IL-10 Induction by LPS and the Ceramide-1-phosphate Analog PCERA-1 is Mediated by the cAMP and p38 MAP Kinase Pathways. *Mol. Immunol.*, 46(10), 1979-87, **2009**
35. C. A. Lowery, J. Park, C. Gloeckner, **M. M. Meijler**, R. S. Mueller, H. I. Boshoff, R. L. Ulrich, C. E. Barry, III, D. H. Bartlett, V. V. Kravchenko, G. F. Kaufmann, K. D. Janda: Defining the Mode of Action of Tetramic Acid Antibacterials Derived from *Pseudomonas aeruginosa* Quorum Sensing Signals. *J. Am. Chem. Soc.*, 131(40), 14473-9, **2009**

36. L. Dubinsky, L. M. Jarosz, N. Amara, P. Krief, V. Kravchenko, B. P. Krom, **M. M. Meijler**: Synthesis and validation of a probe to identify quorum sensing receptors, *Chem. Commun.*, 47, 7378-80, **2009**
37. D. Avni, A. Philosoph, **M. M. Meijler**, T. Zor: The ceramide-1-phosphate analog PCERA-1 modulates TNF α and IL-10 production in macrophages via the cAMP-PKA-CREB pathway in a GTP-dependent manner, *Immunology*, 129(3), 375-385, **2010**
38. M. Levi, **M. M. Meijler**, A. Gómez-Muñoz, T. Zor: Distinct receptor-mediated activities in macrophages for natural ceramide-1-phosphate (C1P) and for phospho-ceramide analogue-1 (PCERA-1), *Mol. Cell. Endocrinol.*, 314(2), 248-255, **2010**
39. N. Amara, B. P. Krom, G. F. Kaufmann, **M. M. Meijler**: Macromolecular Inhibition of Quorum Sensing: Enzymes, Antibodies and Beyond, *Chem. Rev.*, 111(1), 195-208, **2011**
40. M. Goldsmith, A. Daka, N. F. Lamour, R. Mashlach, Y. Glucksam, **M. M. Meijler**, C. E. Chalfant, T. Zor: A ceramide analog inhibits cPLA2 activity and consequent PGE2 formation in LPS-stimulated macrophages, *Immunol. Lett.* 135, 136-143, **2011**
41. J. Rayo, N. Amara, P. Krief, **M. M. Meijler**: Live cell labeling of native intracellular bacterial receptors using aniline-catalyzed oxime ligation, *J. Am. Chem. Soc.* 133(19), 7469-75, **2011**; This paper was highlighted in Science & Technology Concentrates of C&EN, May 09, **2011**, Volume 89, number 19
42. L. M. Jarosz, E. S. Ovchinnikova, **M. M. Meijler**, B. P. Krom: Microbial Spy Games and Host Response; roles of a *Pseudomonas aeruginosa* small molecule in communication with other species, *PLOS Pathogens*, 7(11), e1002312, **2011**
43. L. Dubinsky, B. P. Krom, **M. M. Meijler**: Diazirine Based Photoaffinity Labeling, *Bioorg. Med. Chem.* 20(2), 554-570, **2012**
44. D. Amar, I. Berger, N. Amara, G. Tafa, **M. M. Meijler**, A. Aharoni: The Transition of Human Estrogen Sulfotransferase from Generalist to Specialist Using Directed Enzyme Evolution, *J. Mol. Biol.*, 416(1), 21-32, **2012**
45. H. Ganin, Y. Danin-Poleg, Y. Kashi, **M. M. Meijler**: *Vibrio cholerae* Autoinducer CAI-1 Interferes with *Pseudomonas aeruginosa* Quorum Sensing and Inhibits its Growth, *ACS Chem. Biol.*, 7, 659-665, **2012**
46. N. Ofer, M. Wishkautzan, **M. M. Meijler**, Y. Wang, A. Speer, M. Niederweis, E. Gur: Ectoine biosynthesis in *Mycobacterium smegmatis*, *Appl. Environ. Biol.*, 78(20), 7483-7486 **2012**
47. H. Ganin, J. Rayo, N. Amara, N. Levy, P. Krief, **M. M. Meijler**: Sulforaphane and erucin, natural isothiocyanates from broccoli, inhibit bacterial quorum sensing, *MedChemComm*, **2012**; This paper was highlighted in Science & Technology Concentrates of C&EN, October 08, **2012**, Volume 90, number 41, and in RSC Chemistry World, October 4, **2012**

48. M. Ritenberg, S. Kolusheva, H. Ganin, **M. M. Meijler**, R. Jelinek: Biofilm Formation on Chromatic Sol–Gel/Polydiacetylene Films, *ChemPlusChem*, 77(9), 752-757, **2012**
49. J. Monfregola, J. L. Johnson, **M. M. Meijler**, G. Napolitano, S. D. Catz: Munc13-4 regulates the oxidative response and is essential for phagosomal maturation and bacterial killing in neutrophils, *J. Biol. Chem.* 287(53), 44603-44618, **2012**
50. L. Amir, S. Carnally, J. Rayo, S. Rosenne, S. Melamed Yerushalmi, O. Schlesinger, **M. M. Meijler**, L. Alfonta: Surface Display of a Redox Enzyme and its Site Specific Wiring to Gold Electrodes, *J. Am. Chem. Soc.* 135, 70-73, **2013**
51. R. Mashlach, **M. M. Meijler**: Total synthesis of pyoverdine D, *Org. Lett.*, 15(7), 1702-1705, **2013**
52. S. Melamed Yerushalmi, N. G. Lemcoff, **M. M. Meijler**: Multivalent alteration of quorum sensing in *Staphylococcus aureus* *Chem. Commun.*, 49, 5177-5179, **2013**
53. Y. Glucksam-Galnoy, R. Sananes, N. Silberstein, P. Krief, V. V. Kravchenko, **M. M. Meijler**, T. Zor: The bacterial quorum-sensing signal molecule N-3-oxo-dodecanoyl-L-homoserine lactone reciprocally modulates pro- and anti-inflammatory cytokines in activated macrophages *J. Immunol.*, 191 (1), 337-44, **2013**
54. L. Dubinsky, A. Delago, N. Amara, P. Krief, J. Rayo, T. Zor, V. V. Kravchenko, **M. M. Meijler**: Species selective diazirine positioning in tag-free photoactive quorum sensing probes *Chem. Commun.*, 49, 5826-5828, **2013**
55. N. Rabin, A. Delago, B. Inbal, P. Krief, **M. M. Meijler**: Tailor Made LasR Agonists Modulate Quorum Sensing in *Pseudomonas aeruginosa* *Org. Biomol. Chem.*, 11, 7155-7163, **2013**
56. A. Achiron, R. Mashlach, R. Zilkha-Falb, **M. M. Meijler**, M. Gurevich: Polymerase I Pathway Inhibitor Ameliorates Experimental Autoimmune Encephalomyelitis, *J. Neuroimmunol.*, 263, 91-97, **2013**
57. A. Mandabi, H. Ganin, J. Rayo, **M. M. Meijler**: Karrikins from Plant Smoke Modulate Bacterial Quorum Sensing, *Chem. Commun.*, 50, 5322-5325, **2014**
58. E. W. Bachtar, B. M. Bachtar, L. M. Jarosz, L. Amir, H. Sunarto, H. Ganin, **M. M. Meijler**, B. P. Krom: AI-2 of *Aggregatibacter actinomycetemcomitans* Inhibits *Candida albicans* Biofilm Formation, *Frontiers Cell. Inf. Microbiol.*, 4, 94, **2014**
59. M. Köhn, **M. M. Meijler**, M. Kaiser: Building Up a Chemical Proteomics Network in Europe and Beyond, *ACS Chem. Biol.*, 9, 1647-1648, **2014**
60. A. Mandabi, H. Ganin, **M. M. Meijler**: Synergistic Activation of Quorum Sensing in *Vibrio harveyi*, *Bioorg. Med. Chem. Lett.*, 25, 3966-3999, **2015**
61. B. P. Krom, N. Levy, **M. M. Meijler**, M. A. Jabra-Rizk: Farnesol and *Candida albicans*: Quorum Sensing or Not Quorum Sensing? *Isr. J. Chem.* 56, 295-301, **2016**

62. A. Delago, A. Mandabi, **M. M. Meijler**: Natural Quorum Sensing Inhibitors – Small Molecules, Big Messages, *Isr. J. Chem.*, 56, 310-320, **2016**
63. S. Katz, O. Ernst, D. Avni, M. Athamna, A. Philosoph, L. Arana, A. Ouro, L. A. Hoferlin, **M. M. Meijler**, C. E. Chalfant, A. Gómez-Muñoz, T. Zor: Exogenous ceramide-1-phosphate (C1P) and phospho-ceramide analogue-1 (PCERA-1) regulate key macrophage activities via distinct receptors, *Immunol. Lett.*, 169, 73-81, **2016**
64. N. Amara, R. Gregor, J. Rayo, R. Dandela, E. Daniel, N. Liubin, H. M. E. Willems, A. Ben-Zvi, B. P. Krom, **M. M. Meijler**: Fine-Tuning Covalent Inhibition of Bacterial Quorum Sensing *ChemBioChem*, 17, 825-835, **2016**
65. M. Ritenberg, S. Nandi, S. Kolusheva, R. Dandela, **M. M. Meijler**, R. Jelinek: Imaging *Pseudomonas aeruginosa* Biofilm Extracellular Polymer Scaffolds with Amphiphilic Carbon Dots *ACS Chem. Biol.*, 5, 1265-1270, **2016**
66. R. Dandela, R. Mashlach, R. Adepur, R. Gregor, M. Athamna, E. Zecharia, O. Ernst, T. Zor, **M. M. Meijler**: Synthesis and evaluation of a tag-free photoactive phospho-ceramide analogue-1 (PCERA-1) probe to study immunomodulation in macrophages *Chem. Commun.*, 53(27), 3842-3845, **2017**
67. Y. Elharar, S. Schlussek, N. Hecht, **M. M. Meijler**, E. Gur: The regulatory significance of tag recycling in the mycobacterial Pup-proteasome system *FEBS J.*, 284(12), 1804-1814, **2017**
68. N. Nandakumar, R. Dandela, J. Gopas, **M. M. Meijler**: Quorum sensing modulators exhibit cytotoxicity in Hodgkin's lymphoma cells and interfere with NF-kappa B signaling *Bioorg. Med. Chem. Lett.*, 27(13), 2967-2973, **2017**
69. S. David, A. Mandabi, S. Uzi, A. Aharoni, **M. M. Meijler**: Mining plants for bacterial quorum sensing modulators *ACS Chem. Biol.* 13(1), 247-252, **2018**
70. R. Gregor, S. David, **M. M. Meijler**: Chemical strategies to unravel bacterial-eukaryotic signaling *Chem. Soc. Rev.*, 47(5), 1761-1772, **2018**
71. O. Schlesinger, R. Dandela, A. Bhagat, **M. M. Meijler**, L. Xia, L. Alfanta: Photo-switchable microbial fuel-cells *Biotechnol. Bioengin.*, 115(5), 1355-1360, **2018**
72. R. Dandela, D. Mantin, B. F. Cravatt, J. Rayo, **M. M. Meijler**: Proteome-wide mapping of PQS-interacting proteins in *Pseudomonas aeruginosa* *Chem. Sci.*, 9(8), 2290-2294, **2018**
73. O. Schlesinger, M. Pasi, R. Dandela, **M. M. Meijler**, L. Alfanta: Electron transfer rate analysis of a site-specifically wired copper oxidase *Phys. Chem. Chem. Phys.* 20(9), 6159-6166, **2018**
74. R. Malishev, E. Tayeb-Fligelman, S. David, **M. M. Meijler**, M. Landau, R. Jelinek: Reciprocal Interactions between Membrane Bilayers and *S. aureus* PSM alpha 3 Cross-alpha Amyloid Fibrils Account for Species-Specific Cytotoxicity *J. Mol. Biol.*, 430(10), 1431-1441, **2018**
75. H. Ganin, N. Kemper, S. Meir, I. Rogachev, S. Ely, H. Massalha, A. Mandabi, A. Keren-Paz, A. Shanzer, **M. M. Meijler**, S. Malitsky, A. Aharoni, I. Kolodkin-Gal: Indole derivatives maintain the

status quo between beneficial biofilms and their plant hosts *Molecular plant-microbe interactions*, in press, **2019**

76. O. Gorelik, N. Levy, L. Shaulov, K. Yegodayev, **M. M. Meijler**, N. Sal-Man: Vibrio cholerae autoinducer-1 enhances the virulence of enteropathogenic Escherichia coli *Sci. Rep.* 9, 4122, **2019**

77. A. Gupta, L. Holoidovsky, et al, **M. M. Meijler**, C. J. Arnusch: Silver-doped laser-induced graphene for potent surface antibacterial activity and anti-biofilm action *Chem. Commun.* 55(48), 6890-93, **2019**

78. C. Mozes and **M. M. Meijler**: Modulation of Bacterial Quorum Sensing by Strigolactones *ACS Chem. Biol.* 15(8), 2055-2059, **2020**

79. L. Holoidovsky, **M. M. Meijler**: Synthesis and Evaluation of Indole-Based Autoinducers on Quorum Sensing in Vibrio cholerae *ACS Infectious Diseases* 6(40), 572-76, **2020**

80. O. Malka, D. Kalson, K. Yaniv, R. Shafir, M. Rajendran, O. Ben-David, A. Kushmaro, **M. M. Meijler**, Raz Jelinek: Cross-kingdom inhibition of bacterial virulence and communication by probiotic yeast metabolites *Microbiome* 9(1), 1-15, **2021**

81. J. H. Cai, A. Jozwiak, et al, **M. M. Meijler**, S. Meir, I. Rogachev, A. Aharoni: Glycosylation of N-hydroxy-pipecolic acid equilibrates between systemic acquired resistance response and plant growth *Mol. Plant*, 14 (3), 440-455, **2021**

82. A. A Aksenov, I. Laponogov, et al, **M. M. Meijler**, et al, P. C. Dorrestein, K. Veselkov: Auto-deconvolution and molecular networking of gas chromatography-mass spectrometry data *Nat. Biotechnol.*, 39(20), 169-173, **2021**

83. J. Rayo, R. Gregor, N. T. Jacob, et al, V. V. Kravchenko, **M. M. Meijler**: Immunoediting Role for Major Vault Protein in Apoptotic Signaling Induced by bacterial N-Acyl Homoserine Lactones *Proc. Natl. Acad. Sci. USA*, 118(12), **2021**

84. A. Yashkin, J. Rayo, L. Grimes, M. Welch, **M. M. Meijler**: Short-Chain Reactive Probes to Unravel the Pseudomonas Aeruginosa Quorum Sensing Regulon *Chem. Sci.*, 12 (12), 4570-4581, **2021**

85. A. Delago, R. Gregor, L. Dubinsky, R. Dandela, A. Hendler, P. Krief, J. Rayo, A. Aharoni, **M. M. Meijler**: A bacterial quorum sensing molecule elicits a general stress response in Saccharomyces cerevisiae *Front. Microbiol.* 12: 632658, **2021**

86. E. Ozer, K. Yaniv, E. Chetrit, A. Boyarski, **M. M. Meijler**, R. Berkovich, A. Kushmaro, L. Alfonta: An inside look at a biofilm: Pseudomonas aeruginosa flagella biotracking *Science Advances* 7 (24), eabg8581, **2021**

87. S. Laps, F. Atamleh, G. Kamnesky, S. Uzi, **M. M. Meijler**, A. Brik: Insight on the Order of Regioselective Ultrafast Formation of Disulfide Bonds in (Antimicrobial) Peptides and Miniproteins *Angew. Chem. Int. Ed.* 60 (45), 24137-24143, **2021**

88. R. Gregor, M. Probst, et al, **M. M. Meijler**, I. Mizrahi: Mammalian gut metabolomes mirror microbiome composition and host phylogeny *ISME J*, 1-13, **2022**

89. D. Petras, V. V. Phelan, et al, **M. M. Meijler**, et al, P. Dorrestein, M. Wang: GNPS Dashboard: collaborative exploration of mass spectrometry data in the web browser *Nat. Methods*, 19 (2), 134-136, **2022**
90. I. Tsirkas, D. Dovrat, M. Thangaraj, I. Brouwer, A. Cohen, Z. Paleiov, **M. M. Meijler**, T. Lenstra, A. Aharoni: Transcription-replication coordination revealed in single live cells *Nucl. Acids Res.* 50 (4), 2143-2156, **2022**
91. O. Gorelik, A. Rogad, L. Holoidovsky, M. M. Meijler, N. Sal-Man: Indole intercepts the communication between enteropathogenic *E. coli* and *Vibrio cholerae* *Gut Microbes* 14 (1), 2138677, **2022**

• *Editorials*

1. **M. M Meijler**: Quorum Sensing and Communication Between Species, *Isr. J. Chem.*, 56, 264, **2016**
2. **M. M. Meijler**: Understanding the Collective Nose of Bacteria, *Cell Chem. Biol.*, 3, 317-318, 2016

• *Lectures and Presentations at Meetings and Invited Seminars (2006-2018)*

(a) Invited lectures at conferences / meetings

1. M. M. Meijler; 2006, “Interference with Bacterial Communication through Synthetic Probes”, Minerva Conference on Organic Synthesis, Weizmann Institute of Science, Rehovot, Israel.
2. M. M. Meijler; 2007, “Chemical Interference with Bacterial Group Behavior”, Annual Meeting of the Israel Chemical Society, Tel-Aviv, Israel.
3. M. M. Meijler, N. Amara; 2008, “Chemical Disruption of Bacterial Communication”, Meeting on: “Novel Antibiotics, Old and New Targets”, Department of Chemistry and Biochemistry, University of Notre Dame, Indiana, USA.
4. N. Amara, R. Mashlach, D. Amara, P. Krief, A. Aharoni, M. M. Meijler; 2009, “Covalent Inhibition of Bacterial Quorum Sensing”, Annual Meeting of the Israel Chemical Society, Tel-Aviv, Israel.
5. M. M. Meijler, N. Amara; 2009, “Synthetic Probes to Target Communication Within and Between Species”, Sackler Symposium on Total Synthesis, Tel-Aviv University, Tel-Aviv, Israel.
6. M. M. Meijler, 2009, “Chemical Communication Within and Between Species”, Symposium on Chemical Biology, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
7. M. M. Meijler, 2010, “Chemical Signaling between Prokaryotes and Eukaryotes”, Israel Society of Microbiology, Fall Meeting on Biofilms, Kibbutz Ginosar, Israel
8. M. M. Meijler, 2010, “Visualizing Interference with Bacterial Communication”, NWO Meeting on Design, Synthesis and Biomolecular Chemistry; Lunteren, The Netherlands.
9. M. M. Meijler, 2011, “Jamming Bacterial Communication as a Method to Inhibit Virulence”, Symposium of the Israel Society for Medicinal Chemistry, Weizmann Institute of Science, Rehovot, Israel.
10. M. M. Meijler, 2011, “Jamming Bacterial Communication as a Method to Inhibit Virulence”, International Meeting on Antibiotic and Bioactive Compounds, ICCA-12, Berlin, Germany.
11. M. M. Meijler, 2011, “Visualization of Bacterial Communication”, 4th ASM Conference on Cell-Cell Communication in Bacteria, Miami, USA.
12. M. M. Meijler, 2012, “Chemical Communication Between *P. aeruginosa* and Eukaryotes”, Israel Society for Microbiology Annual Meeting, Bar-Ilan University, Ramat Gan, Israel.

13. M. M. Meijler, 2012, "Chemical Communication Between Species", 1st COST Meeting on Chemical Proteomics, Jerusalem, Israel.
14. M. M. Meijler, 2012, "Jamming and Visualizing Chemical Communication between Bacteria" Organic Chemistry Symposium in Honor of Prof. Benzion Fuchs, Tel Aviv University, Israel
15. M. M. Meijler, 2013, "Chemical Communication Between Species: What are Bacteria Telling Us?", Israel Society for Mass Spectrometry, Weizmann Institute of Science, Rehovot
16. M. M. Meijler, 2013, "Chemical Communication Between Species: Balancing Warfare and Coexistence", Israel Society for Microbiology Fall Meeting, Nazareth
17. M. M. Meijler, 2014, "Chemical Communication Between Species: Balancing Warfare and Coexistence", American Chemical Society Meeting, Dallas, TX , USA (Special Symposium on Chemical Communication between Bacteria)
18. M. M. Meijler, 2014, "Chemical crosstalk within and between species", International Society of Chemical Ecology Annual Meeting, Urbana-Champaign, Illinois, USA
19. M. M. Meijler, 2014, "Effective Modulation of Biofilm Formation through Controlled Release of Quorum Sensing Inhibitors", 9th Biennial Meeting of the Israeli Chapter of the Controlled Release Society, Maalot Tarshiha, Israel
20. M. M. Meijler, 2014, "Expanding Nature's Toolbox to Target and Unravel Communication Between Species", COST CM1004 Fall Meeting on "Chemical Synthesis of Probes for Chemical Proteomics and Elucidation of Biosynthetic Pathways", Heidelberg, Germany
21. M. M. Meijler, 2015, "Unraveling chemical communication between species with reactive probes", Mining the Chemical Proteome, Symposium on Target Discovery Using Chemical Probes and their Application in Chemical Biology, University of Oxford, UK
22. M. M. Meijler, 2015, "Chemical Communication Between Bacteria and Eukaryotes: How Do We Coexist?", at the Symposium on Infectious Diseases and Their Control - Past, Present, and Future. Ben-Gurion University of the Negev, Be'er Sheva, Israel
23. M. M. Meijler, 2015, "Targeting Chemical Communication Networks in *Pseudomonas aeruginosa* with Tag-free Photoaffinity Probes", 2nd Annual Microbiology & Infectious Diseases Asia Congress, Singapore
24. M. M. Meijler, 2016, "Expanding Nature's Chemical Toolbox to Target and Unravel Communication Between Species", Annual Meeting of the Israel Chemical Society, Tel-Aviv, Israel.
25. M. M. Meijler, 2017, "Targeting Chemical Communication Networks in Bacteria and Eukaryotes with Tag-free Photoaffinity Probes", Israel Society for Mass Spectrometry, Weizmann Institute of Science, Rehovot
26. M. M. Meijler, 2017, "Targeting Chemical Communication Networks in Bacteria and Eukaryotes with Tag-free Photoaffinity Probes", Activity-Based Protein Profiling and Bio-Orthogonal Chemistry Meeting, Leiden University, Leiden, The Netherlands
27. M. M. Meijler, 2017, "Chemical Communication Between Bacteria and Eukaryotes: How Do We Coexist and Can We Prevent Disease?", 2nd Internacional Caparica Conference in Antibiotic Resistance 2017, Costa de Caparica, Portugal
28. M. M. Meijler, 2017, "Chemical Probes to Unravel Chemical Communication Between Bacteria and Eukaryotes", 6th American Society for Microbiology Conference on Cell-Cell Communication in Bacteria, Athens, Georgia, USA
29. M. M. Meijler, 2018, "Targeting Chemical Communication Networks in Bacteria and Eukaryotes with Tag-free Photoaffinity Probes", Israel Society for Microbiology Annual Meeting, Ben-Gurion University of the Negev, Be'er Sheva, Israel
28. M. M. Meijler, 2019, "Chemical probes as tools to understand and target microbial communication inside us", UK-Israel Synergy Meeting in Microbiology: Targeting the bad guys: exploring ways to improve the selectivity of antimicrobial agents in multi-species environments

29. M. M. Meijler, 2019, "Unraveling Chemical Communication Between Species: Tales of Love and War", The 4th ADAMA-BGU Symposium in Organic Chemistry
30. M. M. Meijler, 2019, "Synthetic Probes to Unravel Communication between Species", 3rd Symposium on Chemistry at the Interface of Biology and Medicine, 2019, Patras, Greece
31. M. M. Meijler, 2021, "Exploring Chemical Signaling Events that Guide Coexistence Between Species", Asian Chemical Biology Initiative Jerusalem Meeting (Online)
32. M. M. Meijler, 2022, "Chemical Information Exchange Between Species", Chemical Interdisciplinary life of microbes: from single cells to multicellular aggregates, Max Planck Inst. Phys. Complex Syst., Dresden
33. M. M. Meijler, 2022, "Chemical information exchange as a regulator of war and love between species", Biennial Meeting on Cell Cell Communication in Bacteria, Univ. of Cambridge, UK
34. M. M. Meijler, 2022, "Chemical Information Exchange Between Species: Living Together by the Grace of Good Chemistry", Israel Chemical Society Symposium Honoring Wolf Prize Laureates, Raanana, Israel

(b) Oral presentations at conferences / meetings

35. M. M. Meijler, 2010, "Chemical Communication Within and Between Species", American Chemical Society, 240th National Meeting, Boston, USA.
36. M. M. Meijler, 2013, "Chemical Communication within and Between Species", Challenges in Chemical Biology, RSC Meeting, Boston, MA, USA
37. M. M. Meijler, 2013, "Chemical Communication within and Between Species", 15th Asian Chemical Congress, Singapore
38. M. M. Meijler, 2014, "Chemical Signaling Within and Between Species", 2nd Annual International Conference on Chemistry, Athens Institute for Education and Research, Athens, Greece

(c) Invited seminars at universities / institutes:

39. Department of Cellular Microbiology, Max Planck Institute for Infection Biology, Berlin, Germany, 2007
40. Department of Biomedical Engineering, University Medical Center Groningen, The Netherlands. 2007
41. Department of Biotechnology Engineering, Ben-Gurion University of the Negev, Be'er-Sheva, Israel, 2007
42. Department of Chemistry, Bar-Ilan University, Ramat Gan, Israel, 2007
43. The National Institute for Biotechnology in the Negev, Ben-Gurion University of the Negev, Be'er Sheva, Israel, 2008
44. Department of Biochemistry, Hebrew University of Jerusalem, Jerusalem, Israel, 2009
45. Department of Biochemistry, Tel-Aviv University, Tel-Aviv, Israel, 2010
46. Department of Organic Chemistry, Weizmann Institute of Science, Rehovot, Israel, 2010
47. Department of Chemistry, Ben-Gurion University of the Negev, Be'er Sheva, Israel, 2010
48. Department of Chemistry, Hebrew University of Jerusalem, Jerusalem, Israel, 2010
49. Department of Pharmacology, Hebrew University of Jerusalem, Jerusalem, Israel, 2010
50. Department of Microbiology, Hebrew University of Jerusalem, Jerusalem, Israel, 2011
51. Department of Chemistry, University of Wisconsin, Madison, WI, USA, 2011
52. Department of Chemistry, The Scripps Research Institute, La Jolla, CA, USA, 2011
53. Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands, 2012
54. Department of Chemistry, UCSD, San Diego, CA, USA, 2012

55. Department of Chemistry, University of Hawaii, Honolulu, HI, USA, 2013
56. Department of Chemistry, Yale University, New Haven, CT, USA, 2013
57. Department of Life Sciences, Bar-Ilan University, Israel, 2013
58. Institute of Animal Science, Volcani Research Center, Beit Dagan, Israel, 2014
59. The National Institute for Biotechnology in the Negev, Ben-Gurion University of the Negev, Be'er Sheva, Israel, 2014
60. Department of Chemistry, Cambridge University, Cambridge, UK, 2014
61. Department of Chemistry, University of Illinois at Urbana-Champaign, 2014
62. Department of Chemistry, University of Basel, Switzerland, 2014
63. Department of Chemistry, University of Padova, Italy, 2014
64. Department of Chemistry, Tel Aviv University, Israel, 2014
65. Department of Chemistry, Bar Ilan University, Israel, 2014
66. Department of Chemistry, Israel Institute of Technology (Technion), Israel, 2014
67. Netherlands Cancer Institute (NKI), The Netherlands, 2015
68. Department of Chemistry, Leiden University, The Netherlands, 2015
69. Department of Microbiology, University of Washington, WA, USA, 2015
70. Department of Pathology, Stanford University, CA, USA, 2015
71. Department of Microbiology, Migal Galilee Research Institute, Kyriat Shmona, Israel, 2015
72. Department of Microbiology and Immunology, Ben-Gurion University of the Negev, Be'er Sheva, Israel, 2015
73. Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands, 2015
74. Department of Plant Sciences, Weizmann Institute of Science, Rehovot, Israel, 2016
75. Department of Plant Sciences, Tel Aviv University, Tel Aviv, Israel, 2016
76. School of Biotechnology and Biomolecular Sciences, University of New South Wales, Australia, 2016
77. Department of Plant Sciences, Australia National University, Canberra, Australia, 2016
78. Department of Desalination and Water Treatment, The Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Be'er Sheva, Israel, 2017
79. Department of Molecular Biology and Ecology of Plants, Tel Aviv University, Tel Aviv, Israel, 2017
80. Adama Organic Chemistry Forum, Adama AGAN Ltd., Airport City, Israel, 2017
81. School of Chemistry, Tel Aviv University, 2018
82. Department of Chemistry, Hong Kong University, Hong Kong, 2018
83. Department of Physiology and Cell Biology, Tel Aviv University, 2018
84. Division of Chemistry and Department of Biochemistry, University of Texas Southwestern Medical Center, Dallas, Texas, USA, 2021 (by Zoom)
85. University of New South Wales, Sydney, Australia, Kornis Distinguished Lecturer, 2022
86. Department of Chemistry, Bar-Ilan University, Ramat Gan, Israel, 2022

• *Patents*

- 2008, E. P. Zorrilla, M. M. Meijler, K. D. Janda; Vaccine immunoconjugates comprising ghrelin polypeptides for control of obesity (WO/2008/016976).
- 2009, M. M. Meijler, N. Amara: Covalent Inhibition of Bacterial Quorum Sensing (WO/2011/001419 A1).
- 2016, M. M. Meijler, J. Rayo, N. Amara: Covalent Inhibition of Quorum Sensing (US9242951 B2)

• *Research Grants*

Title	Funding Organisation	Role	Size & duration of funding
Molecular Recognition, Interspecies and Interkingdom Communication	Rich Initiative for Excellence in the Negev	PI	\$150,000 as seed money to set up a synthetic bioorganic chemistry laboratory. From 10/2006-9/2007
Molecular Recognition, Interspecies and Interkingdom Communication	Tuman Foundation	PI	\$250,000 as seed money to set up a synthetic bioorganic chemistry laboratory. From 10/2007-9/2009
Molecular Unraveling of Crosstalk Between Bacterial and Eukaryotic Cells	Human Frontier Science Program, Young Investigator Grant.	PI	\$750,000 (shared with Dr. Bastiaan Krom, UMCG, The Netherlands, 50%). From 10/2007-10/2010
Investigations into Communication Between Bacterial and Mammalian Cells	German Israel Foundation, Young Scientist Grant	PI	\$52,000. From 12/2007-12/2008
Synthetic Probes to Unravel Bacterial Signaling Events	US Israel Binational Science Foundation, Startup Grant	PI	\$60,000. From 10/2007-10/2009
Protein Design and Engineering Laboratory at Ben-Gurion University of the Negev	The Wolfson Foundation, Equipment Grant	PI	\$400,000 (shared with three other groups, 25%). From 8/2007-8/2010
Safra Center for the Design and Engineering of Functional Biopolymers	The Safra Foundation	PI	\$1,800,000 (shared with five other groups, 16%). From 6/2008-6/2011
Plugging into Bacteria	Israel Science Foundation (ISF), Converging Technologies Grant.	Co-PI	\$300,000 (shared with Dr. Lital Alfonta, 25%). From 10/2007-10-2010
Enzymatic Silencing of Quorum Sensing	National Institute for Biotechnology in the Negev Exploratory Grant.	Co-PI	\$20,000 (shared with Dr. Amir Aharoni, BGU, 50%). From 7/2007-7/2008
An Integrated Chemical Platform to Elucidate Eukaryotic Sensing of Bacterial Crosstalk	European Research Council Starting Grant	PI	\$1,960,000. From 10/2009-10/2014
Chemical Interference with Bacterial Group Behavior	Israel Science Foundation (ISF), Personal Grant	PI	\$250,000 (shared with Dr. Amir Aharoni, BGU, 50%). From 10/2009-10/2013
Chemical Proteomics to Study Bacterial Virulence	US-Israel Binational Science Foundation	PI	\$170,000 From 10/2013-10/2017
Unraveling Chemical Information Warfare between Species	Israel Science Foundation (ISF), Personal Grant	PI	\$380,000 From 10/2015-10/2019

Synergistic Approaches to Fight Bacterial Infections	Ministry of Science and Technology, Infrastructure Grant	PI	\$514,000 (shared with Profs. Timor Baasov and Micha Fridman). From 1/2016-1/2019
Combating Antibiotic Resistance in Mycobacterium tuberculosis	Ministry of Science and Technology, Infrastructure Grant	PI	\$275,000 (shared with Dr. Eyal Gur). From 10/2017-10/2020
Chemical Proteomics Inside Us: Unraveling Chemical Communication Between Bacteria and Humans	Deutsche Forschungs Gemeinschaft, DIP	PI	\$1,882,000 (shared with Prof. Matthias Mann and Prof. Eran Elinav). From 1/2019-1/2024
Chemical Regulation of Pathogenic Gut Bacteria	Israel Science Foundation (ISF), Personal Grant	PI	\$450,000 From 10/2020-10/2024

• *Synopsis of research*

Quorum Sensing

An important focus of the research in my group (funded by ISF (and ISF Converging Technologies), the NIBN and HFSP) is the study of bacterial intra- and interspecies signaling mechanisms. Cell-to-cell communication is used by single-cell organisms to coordinate their behavior and function in such a way that they can adapt to changing environments and possibly compete with multicellular organisms. Chemical communication is used by bacteria to coordinate population-wide gene expression and has been termed “quorum sensing” (QS). Examples of QS-controlled behaviors are biofilm formation, virulence factor expression, antibiotic production and bioluminescence. These processes are beneficial to a bacterial population only when they are carried out in a coordinated fashion at high cell density. Quorum sensing systems exist in both Gram-positive and -negative bacteria and a variety of oligopeptides and *N*-acyl-homoserine lactones have been identified as QS molecules. Many QS systems and molecules have not been characterized fully, and we aim to clarify the role of various known and unknown QS molecules in bacterial signaling (in human pathogens such as *Vibrio cholerae*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*, as well as plant pathogens such as *Agrobacterium tumefaciens* and *P. syringae*) through synthesis and evaluation of candidate compounds. In the course of these explorations we have identified potent natural QS agonists and antagonists (e.g. compounds in plant smoke, broccoli plants and in competing bacteria (*highlighted in C&EN*), 57) and we are developing methodologies to study a wide variety of newly discovered and undiscovered QS molecules and their activities (*highlighted in C&EN*). As part of studies to design QS antagonists of *P. aeruginosa* and *S. aureus* we have synthesized several highly active covalent and non-covalent QS inhibitors. In addition, we have completed the first total synthesis of the important siderophore of *P. aeruginosa*, pyoverdine D, enabling us to study important and unknown links between siderophore signaling and QS regulation.

Bacterial-Eukaryotic Interkingdom Signaling

A second major research theme in my group (funded by ERC, BSF, DIP, GIF and HFSP) deals with the various ways that bacteria and eukaryotes interact with each other chemically. Recent reports have shown that many QS molecules can also have a plethora of direct effects on eukaryotes. Diverse eukaryotes have been found to react strongly to the presence of these compounds. My group currently examines two aspects of this very exciting phenomenon: i) the molecular mechanism behind the

sensing; ii) the resulting chemical response upon sensing the bacteria; Specifically, we examine the hypothesis that diverse eukaryotic species have developed mechanisms to react to the presence of specific bacterial QS molecules in a receptor mediated fashion, with focused experiments that are designed to provide greater insight into the primary molecular mechanism of QS molecule induced effects on mammals, fungi and nematodes. More specifically, we aim to identify receptors that are highly specific for the *Pseudomonas aeruginosa* QSM 3-oxo-C₁₂-HSL (C12), as no receptor has been identified yet. This is a significant challenge (directly related to the physicochemical properties of the small, amphiphilic C12), one that we currently address using an innovative platform of chemical, biochemical and microbiological investigations. Identification of specific QSM receptors in eukaryotes will allow us to further understand the complex mechanisms and evolution of coexistence between prokaryotes and eukaryotes. Ultimately the insight obtained from these experiments could lead to: a) new approaches in the treatment of *P. aeruginosa* infections, most notably in the clinical setting of cystic fibrosis, as well as to potential new drugs for the treatment of autoimmune diseases; b) an increased understanding of general principles that guide the evolution of symbiotic relationships between competing and coexisting species; c) the development of an integrated chemical proteomics platform that will enable the discovery of unknown receptors for small hydrophobic bioactive compounds. We have recently shown the successful application of our methodology to label specifically proteins in *P. aeruginosa* and mimic the effect of C12 in human bronchial epithelial cells and in the fungus *C. albicans*. We have also fine-tuned the position of the diazirine photolabel to enable optimal labeling of eukaryotic cells, and we have developed a new imaging method to visualize receptor labeling in living mammalian cells. We have also identified new aspects of interkingdom signaling. Moreover, we have recently identified a number of relevant candidate receptors for C12 in both epithelial cells and in the yeast *S. cerevisiae*, and we constantly further validating these breakthrough findings.