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Bibliographical sketch

Tilmann Weber is Professor for Natural Products Genome Mining and Associate Scientific Director of the “Natural Products Genome Mining Group” at the Novo Nordisk Foundation Center for Biosustainability of the Technical University of Denmark. His main research interest is focused on deciphering the molecular pathways and engineering the biosynthesis of natural products by combining genetic, biochemical and bioinformatics methods. He is a pioneer in developing software for the automated genome mining (CLUSEAN, antiSMASH, antiSMASH-DB) and analysis of secondary metabolite biosynthetic pathways. His group was able to firstly elucidate the biosynthetic pathways of the elfmycin family of antibiotics and is deeply involved in developing CRISPR-based metabolic engineering tools for actinomycetes. Tilmann Weber is faculty of the DNRF-funded center of excellence “Center for Microbial Secondary Metabolites” (CeMiSt; www.cemist.dtu.dk) at DTU, and coordinator of the NNF Challenge grant “Integration of Informatics and Metabolic Engineering for the discovery of novel antibiotics” (iimena; www.iimena.org, 2017-2023) and the HE-MSCA doctoral Network MAGiC-MOLFUN, which will run from 2023-2026. He is member of the Editorial Board of “Metabolic Engineering”, and Associate Editor of “Synthetic and Systems Biotechnology”.

Employment

Professor
Novo Nordisk Foundation Center for Biosustainability
Technical University of Denmark
Kgs. Lyngby, Denmark
1 Nov 2013 → present

Natural Products Genome Mining
Technical University of Denmark
Kgs. Lyngby, Denmark
11 May 2021 → present

DTU Microbes Initiative
Technical University of Denmark
11 Feb 2022 → present

Center for Microbial Secondary Metabolites
Technical University of Denmark
12 Feb 2020 → present

25 most recent research outputs

Biosynthesis of the Azoxy Compound Azodyrecin from *Streptomyces mirabilis* P8-A2
Maleckis, M., Wibowo, M., Gren, T., Jarmusch, S. A., Sterndorff, E. B., Booth, T., Henriksen, N. N. S. E., Whitford, C. M., Jiang, X., Jørgensen, T. S., Ding, L. & Weber, T., 2024, In: ACS chemical biology. 19, 3, p. 641-653 13 p.

Commensal production of a broad-spectrum and short-lived antimicrobial peptide polyene eliminates nasal Staphylococcus aureus
Torres Salazar, B. O., Dema, T., Schilling, N. A., Janek, D., Bornikoel, J., Berscheid, A., Elsherbini, A. M. A., Krauss, S., Jaag, S. J., Lämmerhofer, M., Li, M., Alqahtani, N., Horsburgh, M. J., Weber, T., Beltrán-Beleña, J. M., Brötz-Oesterhelt, H., Grond, S., Krismer, B. & Peschel, A., 2024, In: Nature Microbiology. 9, 1, p. 200-213 14 p.

Dilarmycins A-C, Calcium-Dependent Lipopeptide Antibiotics with a Non-canonical Ca(2+)-Binding Motif
Fernández-Pastor, I., Ortiz-López, F. J., Oves-Costales, D., Martín, J., Sánchez, P., Melguizo, Á., Reyes Gonzalez, F., Weber, T. & Genilloud, O., 2024, In: Organic Letters. 26, 7, p. 1343–1347

Pepticinnamins N, O, and P, Nonribosomal Peptides from the Soil-Derived *Streptomyces mirabilis* P8-A2
Mohamed, M. M. M., Abboud, M. M., Maleckis, M., Souza, L. D. O., Moreira, J. M. A., Gotfredsen, C. H., Weber, T. & Ding, L., 2024, (Accepted/In press) In: Journal of Natural Products. 9 p.

teemi: An open-source literate programming approach for iterative design-build-test-learn cycles in bioengineering
Petersen, S. D., Levassor, L., Pedersen, C. M., Madsen, J., Hansen, L. G., Zhang, J., Haidar, A. K., Frandsen, R. J. N., Keasling, J. D., Weber, T., Sonnenschein, N. & K. Jensen, M., 2024, In: PLOS Computational Biology. 20, 3, 24 p., e1011929.

The antiSMASH database version 4: additional genomes and BGCs, new sequence-based searches and more
Blin, K., Shaw, S., Medema, M. H. & Weber, T., 2024, In: Nucleic Acids Research. 52, D1, p. D586–D589

1000+ New Complete Genomes Aid Discovery Of Natural Products
Jørgensen, T. S., Mohite, O. S., Sterndorff, E. B., Arévalo, M. Á., Blin, K., Booth, T., Charusanti, P., Faurdal, D. L., Hansen, T. Ø., Mourched, A-S., Phaneuf, P. V., Palsson, B. & Weber, T., 2023, *The Danish Microbiological Society Annual Congress 2023: Abstract book*. The Danish Microbiological Society, p. 82-82 1 p. 82

antiSMASH 7.0: new and improved predictions for detection, regulation, chemical structures and visualisation
Blin, K., Shaw, S., Augustijn, H. E., Reitz, Z. L., Biermann, F., Alanjary, M., Fetter, A., Terlouw, B. R., Metcalf, W. W., Helfrich, E. J. N., van Wezel, G. P., Medema, M. H. & Weber, T., 2023, In: Nucleic Acids Research. 51, p. 5 46 p.

Complete, circular genome sequence of a Bosea sp. isolate from soil
Alvarez-Arevalo, M., Sterndorff, E. B., Faurdal, D., Mourched, A. S., Charusanti, P., Jørgensen, T. S. & Weber, T., 2023, In: Microbiology Resource Announcements. 12, 9, p. 1-3

Complete Genome Sequences of the Two Strains Methylorubrum extorquens NBC_00036 and NBC_00404
Faurdal, D., Jørgensen, T. S., Alvarez-Arevalo, M., Mourched, A-S., Sterndorff, E. B., Charusanti, P. & Weber, T., 2023, In: Microbiology Resource Announcements. 12, 7, p. e0011523

Crossiellidines A-F, Unprecedented Pyrazine-Alkylguanidine Metabolites with Broad-Spectrum Antibacterial Activity from Crossiella sp.
Ortiz-López, F. J., Oves-Costales, D., Carretero-Molina, D., Martín, J., Díaz, C., de la Cruz, M., Román-Hurtado, F., Álvarez-Arévalo, M., Jørgensen, T. S., Reyes, F., Weber, T. & Genilloud, O., 2023, In: Organic Letters. 25, p. 3502-3507 4 p.

Extraction and Oxford Nanopore sequencing of genomic DNA from filamentous Actinobacteria
Alvarez-Arevalo, M., Sterndorff, E. B., Faurdal, D., Jørgensen, T. S., Mourched, A-S., Vuksanovic, O., Saha, S. & Weber, T., 2023, In: STAR Protocols. 4, 1, 24 p., 101955.

Identification and heterologous expression of the globomycin biosynthetic gene cluster
Oves-Costales, D., Gren, T., Sterndorff, E. B., Martín, J., Ortiz-López, F. J., Jørgensen, T. S., Jiang, X., Román-Hurtado, F., Reyes, F., Genilloud, O. & Weber, T., 2023, In: Synthetic and Systems Biotechnology. 8, 2, p. 206-212 7 p.

Streptomyces alleviate abiotic stress in plant by producing pteridic acids
Yang, Z., Qiao, Y., Konakalla, N. C., Strøbech, E., Harris, P., Peschel, G., Agler-Rosenbaum, M., Weber, T., Andreasson, E. & Ding, L., 2023, In: Nature Communications. 14, 14 p., 7398.

MIBiG 3.0: a community-driven effort to annotate experimentally validated biosynthetic gene clusters
Terlouw, B. R., Blin, K., Navarro-Muñoz, J. C., Avalon, N. E., Chevrette, M. G., Egbert, S., Lee, S., Meijer, D., Recchia, M. J. J., Reitz, Z. L., van Santen, J. A., Selem-Mojica, N., Tørring, T., Zaroubi, L., Alanjary, M., Aleti, G., Aguilar, C., Al-Salihi, S. A. A., Augustijn, H. E., Avelar-Rivas, J. A., & 62 othersAvitia-Domínguez, L. A., Barona-Gómez, F., Bernaldo-Agüero, J., Bielinski, V. A., Biermann, F., Booth, T. J., Carrion Bravo, V. J., Castelo-Branco, R., Chagas, F. O., Cruz-Morales, P., Du, C., Duncan, K. R., Gavriilidou, A., Gayrard, D., Gutiérrez-García, K., Haslinger, K., Helfrich, E. J. N., van der Hooft, J. J. J., Jati, A. P., Kalkreuter, E., Kalyvas, N., Kang, K. B., Kautsar, S., Kim, W., Kunjapur, A. M., Li, Y-X., Lin, G-M., Loureiro, C., Louwen, J. J. R., Louwen, N. L. L., Lund, G., Parra, J., Philmus, B., Pourmohsenin, B., Pronk, L. J. U., Rego, A., Rex, D. A. B., Robinson, S., Rosas-Becerra, L. R., Roxborough, E. T., Schorn, M. A., Scobie, D. J., Singh, K. S., Sokolova, N., Tang, X., Udwary, D., Vigneshwari, A., Vind, K., Vromans, S. P. J. M., Waschulin, V., Williams, S. E., Winter, J. M., Witte, T. E., Xie, H., Yang, D., Yu, J., Zdouc, M., Zhong, Z., Collemare, J., Linington, R. G., Weber, T. & Medema, M. H., 2023, In: Nucleic Acids Research. 51, D1, p. D603–D610 8 p.

Properties of Multidrug-Resistant Mutants Derived from Heterologous Expression Chassis Strain Streptomyces albidoflavus J1074
Dolya, B., Hryhorieva, O., Sorochynska, K., Lopatniuk, M., Ostash, I., Tseduliak, V-M., Sterndorff, E. B., Jørgensen, T. S., Gren, T., Dacyuk, Y., Weber, T., Luzhetskyy, A., Fedorenko, V. & Ostash, B., 2023, In: Microorganisms. 11, 1176.

Selection and domestication of novel environmental bacteria for the valorization of lignocellulosic biomass
van der Maas, L. N. L., Jørgensen, T. S., Heidelbach, S., Weber, T., Albertsen, M. & Ingemann Jensen, S., 2023, *The Danish Microbiological Society Annual Congress 2023: Abstract book.* The Danish Microbiological Society, p. 17-17 1 p. 12

Systems Analysis of Highly Multiplexed CRISPR-Base Editing in Streptomycetes
Whitford, C. M., Gren, T., Palazzotto, E., Lee, S. Y., Tong, Y. & Weber, T., 2023, In: ACS Synthetic Biology. 12, p. 2353−2366 14 p.

UmetaFlow: An untargeted metabolomics workflow for high-throughput data processing and analysis
Kontou, E. E., Walter, A., Alka, O., Pfeuffer, J., Sachsenberg, T., Mohite, O. S., Nuhamunada, M., Kohlbacher, O. & Weber, T., 2023, In: Journal of Cheminformatics. 15, 12 p., 52.

Complete Genome Sequence of the Collinolactone Producer Streptomyces sp. Strain Go40/10
Sterndorff, E. B., Jørgensen, T. S., Garzon, J. F. G., Schmid, J. C., Grond, S. & Weber, T., 2022, In: Microbiology Resource Announcements. 11, 8, 2 p.

Discovery of gargantulides B and C, new 52-membered macrolactones from *Amycolatopsis* sp. Complete absolute stereochemistry of the gargantulide family
Carretero-Molina, D., Ortiz-López, F. J., Gren, T., Oves-Costales, D., Martín, J., Román-Hurtado, F., Sparholt Jørgensen, T., de la Cruz, M., Díaz, C., Vicente, F., Blin, K., Reyes, F., Weber, T. & Genilloud, O., 2022, In: Organic Chemistry Frontiers. 9, 2, p. 462-470 9 p.

High-quality genome-scale metabolic network reconstruction of probiotic bacterium Escherichia coli Nissle 1917
van ‘t Hof, M., Mohite, O. S., Monk, J. M., Weber, T., Palsson, B. O. & Sommer, M. O. A., 2022, In: BMC Bioinformatics. 23, 1, 23 p., 566.

Identification of the Biosynthetic Gene Cluster for Pyracrimycin A, an Antibiotic Produced by *Streptomyces* sp.
Nielsen, J. B., Gren, T., Mohite, O. S., Jørgensen, T. S., Klitgaard, A. K., Mourched, A-S., Blin, K., Oves-Costales, D., Genilloud, O., Larsen, T. O., Tanner, D., Weber, T., Gotfredsen, C. H. & Charusanti, P., 2022, In: ACS chemical biology. 17, 9, p. 2411-2417 7 p.

Long-Read Metagenome-Assembled Genomes Improve Identification of Novel Complete Biosynthetic Gene Clusters in a Complex Microbial Activated Sludge Ecosystem
Sánchez-Navarro, R., Nuhamunada, M., Mohite, O. S., Wasmund, K., Albertsen, M., Gram, L., Nielsen, P. H., Weber, T. & Singleton, C. M., 2022, In: mSystems. 7, 6, 15 p., e0063222.

Pangenome analysis of Enterobacteria reveals richness of secondary metabolite gene clusters and their associated gene sets
Mohite, O. S., Lloyd, C. J., Monk, J. M., Weber, T. & Palsson, B. O., 2022, In: Synthetic and Systems Biotechnology. 7, 3, p. 900-910 11 p.

Prizes

Clarivate Highly Cited Researcher 2020
Weber, Karl Tilmann (Recipient), 2020

Clarivate Highly Cited Researcher 2021
Weber, Karl Tilmann (Recipient), 16 Nov 2021

Clarivate Highly Cited Researcher 2022
Weber, Karl Tilmann (Recipient), 15 Nov 2022

Clarivate Highly Cited Researcher 2023
Weber, Karl Tilmann (Recipient), 15 Nov 2023

Corrits Akademiske Rejselegat
Weber, Karl Tilmann (Recipient), 12 Feb 2019

Guest Professorship at the East China University of Science and Technology, Shanghai, China
Weber, Karl Tilmann (Recipient), 20 Nov 2019