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Qualifikationen

Promotion, PhD, University of Melbourne
1 Jan. 1997 → 1 Sept. 2001
Datum der Bewilligung: 1 Sept. 2001
Bachelor, Bachelor of Science, University of Melbourne
1 März 1992 → 31 Dez. 1996
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Organisationszugehörigkeiten

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Professur für Biomimetische Materialien
Technische Universität Dresden
1 Jan. 2014 → present

Publikationen

Thalassiosira pseudonana (Cyclotella nana) (Hustedt) Hasle et Heimdal (Bacillariophyceae): A genetically tractable model organism for studying diatom biology, including biological silica formation
Poulsen, N. & Kroeger, N., Juli 2023, (Elektronische Veröffentlichung vor Drucklegung) in: Journal of Phycology. 9 S.

On the role of cell surface associated, mucin-like glycoproteins in the pennate diatom Craspedostauros australis (Bacillariophyceae)
Poulsen, N., Hennig, H., Geyer, V. F., Diez, S., Wetherbee, R., Fitz-Gibbon, S., Pellegrini, M., & 1 weitere Kröger, N., 5 Okt. 2022, in: Journal of Phycology. 2022, 16 S.

Shedding light on silica biomineralization by comparative analysis of the silica-associated proteomes from three diatom species
Skeffington, A. W., Gentzel, M., Ohara, A., Milentyev, A., Heintze, C., Boettcher, L., Goerlich, S., & 3 weitere Shevchenko, A., Poulsen, N. & Kroeger, N., Juni 2022, in: The plant journal. 110, 6, S. 1700-1716 17 S.

Diatom adhesion and motility
Poulsen, N., Davutoglu, M. G. & Žáčková Suchanová, J., 2022, *The Molecular Life of Diatoms*. Falciatore, A. & Mock, T. (Hrsg.). Springer Nature, S. 367-393 27 S.

Diurnal transcript profiling of the diatom *Seminavis robusta* reveals adaptations to a benthic lifestyle
Bilcke, G., Osuna-Cruz, C. M., Santana Silva, M., Poulsen, N., D'hondt, S., Bulankova, P., Vyverman, W., & 2 weitere De Veylder, L. & Vandepoele, K., Juli 2021, in: The plant journal. 107, 1, S. 315-336 22 S.

Mating type specific transcriptomic response to sex inducing pheromone in the pennate diatom *Seminavis robusta*
Bilcke, G., Van den Berge, K., De Decker, S., Bonneure, E., Poulsen, N., Bulankova, P., Osuna-Cruz, C. M., & 8 weitere Dickenson, J., Sabbe, K., Pohnert, G., Vandepoele, K., Mangelinckx, S., Clement, L., De Veylder, L. & Vyverman, W., Feb. 2021, in: ISME Journal. 15, 2, S. 562-576 15 S.

The *Seminavis robusta* genome provides insights into the evolutionary adaptations of benthic diatoms (vol 11, 3320, 2020)
Osuna-Cruz, C. M., Bilcke, G., Vancaester, E., De Decker, S., Bones, A. M., Winge, P., Poulsen, N., & 18 weitere Bulankova, P., Verhelst, B., Audoor, S., Belisova, D., Pargana, A., Russo, M., Stock, F., Cirri, E., Brembu, T., Pohnert, G., Piganeau, G., Ferrante, M. I., Mock, T., Sterck, L., Sabbe, K., De Veylder, L., Vyverman, W. & Vandepoele, K., 16 Okt. 2020, in: Nature communications. 11, 1, 5331.

Genetically Programmed Regioselective Immobilization of Enzymes in Biosilica Microparticles

Kumari, E., Görlich, S., Poulsen, N. & Kröger, N., 18 Juni 2020, in: *Advanced functional materials*. 30, 25, 13 S., 2000442.

Chitin synthase localization in the diatom *Thalassiosira pseudonana*

Poulsen, N., Wustmann, M., Kröger, N. & Pée, K-H., 2020, in: *BMC materials*. 2, 10.

Identification of proteins in the adhesive trails of the diatom *Amphora coffeaeformis*

Lachnit, M., Buhmann, M. T., Klemm, J., Kroeger, N. & Poulsen, N., 9 Sept. 2019, in: *Philosophical Transactions of the Royal Society B: Biological Sciences*. 374, 1784, 9 S., 20190196.

Biom mineralization as a Paradigm of Directional Solidification: A Physical Model for Molluscan Shell Ultrastructural Morphogenesis

Schoeppler, V., Granasy, L., Reich, E., Poulsen, N., de Kloe, R., Cook, P., Rack, A., & 2 weitere Puzstai, T. & Zlotnikov, I., Nov. 2018, in: *Advanced materials*. 30, 45, 1803855.

Establishing super-resolution imaging for proteins in diatom biosilica

Groger, P., Poulsen, N., Klemm, J., Kroger, N. & Schlierf, M., 9 Nov. 2016, in: *Scientific reports*. 6, 8 S., 36824.

Biochemical Composition and Assembly of Biosilica-associated Insoluble Organic Matrices from the Diatom *Thalassiosira pseudonana*

Kotzsch, A., Pawolski, D., Milentyev, A., Shevchenko, A., Scheffel, A., Poulsen, N., Shevchenko, A., & 1 weitere Kroeger, N., 4 März 2016, in: *Journal of Biological Chemistry*. 291, 10, S. 4982-4997 16 S.

Isolation and biochemical characterization of underwater adhesives from diatoms

Poulsen, N., Kröger, N., Harrington, M. J., Brunner, E., Paasch, S. & Buhmann, M. T., Apr. 2014, in: *Biofouling*. 30, 4, S. 513-523 11 S.

NITRATE AND CARBONATE CONCENTRATION FOR HIGH GLUCOSE CONTENT IN MICROALGAE

Kroger, N., Poulsen, N. & Miller, S. J., 30 Jan. 2014, IPC (Internationalen Patentklassifikation) C12M 1/00 A I, Patent Nr. WO2014018338, Prioritätsdatum 23 Juli 2012, Prioritätsnr. US201213556048

A Tyrosine-rich Cell Surface Protein in the Diatom *Amphora coffeaeformis* identified through Transcriptome Analysis and Genetic Transformation

Buhmann, M. T., Poulsen, N., Klemm, J., Kröger, N. & Kennedy, M. R., 2014, in: *PLoS ONE*.

Pentylsine clusters mediate silica targeting of silaffins in *Thalassiosira pseudonana*

Poulsen, N., Scheffel, A., Sheppard, V. C. & Kröger, N., 12 Juli 2013, in: *Journal of Biological Chemistry*. 288, 28, S. 20100-20109 10 S.

Live Diatom Silica Immobilization of Multimeric and Redox-Active Enzymes

Sheppard, V. C., Scheffel, A., Poulsen, N. & Kroeger, N., Jan. 2012, in: *Applied and environmental microbiology*. 78, 1, S. 211-218 9 S.

A Systematic Screen to Discover and Analyze Apicoplast Proteins Identifies a Conserved and Essential Protein Import Factor

Poulsen, N., 1 Dez. 2011, in: *PLOS pathogens*. 7, 12, e1002392.

Nanopatterned protein microrings from a diatom that direct silica morphogenesis

Scheffel, A., Poulsen, N., Shian, S. & Kröger, N., 22 Feb. 2011, in: *Proceedings of the National Academy of Sciences of the United States of America : PNAS*. 108, 8, S. 3175-3180 6 S.

Characterization of an Endoplasmic Reticulum-associated Silaffin Kinase from the Diatom *Thalassiosira pseudonana*

Sheppard, V., Poulsen, N. & Köger, N., 8 Jan. 2010, in: *Journal of Biological Chemistry*. 285, 2, S. 1166-1176 11 S.

Protein-Mediated Layer-by-Layer Syntheses of Freestanding Microscale Titania Structures with Biologically Assembled 3-D Morphologies

Fang, Y., Wu, Q., Dickerson, M. B., Cai, Y., Shian, S., Berrigan, J. D., Poulsen, N., & 2 weitere Kroeger, N. & Sandhage, K. H., 22 Dez. 2009, in: *Chemistry of materials*. 21, 24, S. 5704-5710

Protein-Enabled Synthesis of Monodisperse Titania Nanoparticles On and Within Polyelectrolyte Matrices

Kharlampieva, E., Slocik, J. M., Singamaneni, S., Poulsen, N., Kroeger, N., Naik, R. R. & Tsukruk, V. V., 24 Juli 2009, in: *Advanced functional materials*. 19, 14, S. 2303-2311 9 S.

The Phaeodactylum genome reveals the evolutionary history of diatom genomes

Bowler, C., Allen, A. E., Badger, J. H., Grimwood, J., Jabbari, K., Kuo, A., Maheswari, U., & 70 weitere Martens, C., Maumus, F., Otilar, R. P., Rayko, E., Salamov, A., Vandepoele, K., Beszteri, B., Gruber, A., Heijde, M., Katinka, M., Mock, T., Valentin, K., Verret, F., Berges, J. A., Brownlee, C., Cadoret, J-P., Chiovitti, A., Choi, C. J., Coesel, S., De Martino, A., Detter, J. C., Durkin, C., Falciatore, A., Fournet, J., Haruta, M., Huysman, M. J. J., Jenkins, B. D., Jiroutova, K., Jorgensen, R. E., Joubert, Y., Kaplan, A., Kröger, N., Kroth, P. G., La Roche, J., Lindquist, E., Lommer, M., Martin-Jezequel, V., Lopez, P. J., Lucas, S., Mangogna, M., McGinnis, K., Medlin, L. K., Montsant, A., Oudot-Le Secq, M-P., Napoli, C., Obornik, M., Parker, M. S., Petit, J-L., Porcel, B. M., Poulsen, N., Robison, M., Rychlewski, L., Rynearson, T. A., Schmutz, J., Shapiro, H., Siaut, M., Stanley, M., Sussman, M. R., Taylor, A. R., Vardi, A., von Dassow, P., Vyverman, W., Willis, A., Wyrwicz, L. S., Rokhsar, D. S., Weissenbach, J., Armbrust, E. V., Green, B. R., Van de Peer, Y. & Grigoriev, I. V., 13 Nov. 2008, in: *Nature*. 456, 7219, S. 239-244

Bioenabled surface-mediated growth of titania nanoparticles

Kharlampieva, E., Tsukruk, T., Slocik, J. M., Ko, H., Poulsen, N., Naik, R. R., Kröger, N., & 1 weitere Tsukruk, V. V., 3 Sept. 2008, in: *Advanced materials*. 20, 17, S. 3274-3279 5 S.

Biochemistry and Molecular Genetics of Silica Biomineralization in Diatoms

Kröger, N. & Poulsen, N., 20 März 2008, *Handbook of Biomineralization: Biological Aspects and Structure Formation*. Wiley-VCH, Weinheim [u. a.], Band 1. S. 43-58 16 S.

Diatoms—From Cell Wall Biogenesis to Nanotechnology

Kröger, N. & Poulsen, N., 2008, in: *ANNUAL REVIEW OF GENETICS*. 42, S. 83-107 24 S.

Identification of peptides capable of inducing the formation of titania but not silica via a subtractive bacteriophage display approach

Fang, Y., Poulsen, N., Dickerson, M. B., Cai, Y., Jones, S. E., Naik, R. R., Kröger, N., & 1 weitere Sandhage, K. H., 2008, in: *Journal of materials chemistry*. 18, 32, S. 3871-3875 5 S.

Silica Immobilization of an Enzyme through Genetic Engineering of the Diatom *Thalassiosira pseudonana*

Poulsen, N., Berne, C., Spain, J. & Kröger, N., 2007, in: *Angewandte Chemie - International Edition*. 119, 11, S. 1875-1878 4 S.

Bioenabled synthesis of rutile (TiO₂) at ambient temperature and neutral pH

Kroger, N., Dickerson, M. B., Ahmad, G., Cai, Y., Haluska, M. S., Sandhage, K. H., Poulsen, N., & 1 weitere Sheppard, V. C., 2006, in: *Angewandte Chemie - International Edition*. 45, 43, S. 7239-7243

MOLECULAR GENETIC MANIPULATION OF THE DIATOM THALASSIOSIRA PSEUDONANA (BACILLARIOPHYCEAE)

Poulsen, N., Chesley, P. & Kröger, N., 2006, in: *Journal of Phycology*. 42, 5, S. 1059-1065 7 S.

A new molecular tool for transgenic diatoms: Control of mRNA and protein biosynthesis by an inducible promoter-terminator cassette

Poulsen, N. & Kröger, N., Juli 2005, in: *FEBS Journal*. 272, 13, S. 3413-3423 11 S.

Biosilica nanofabrication in diatoms: The structures and properties of regulatory silaffins

Kröger, N. & Poulsen, N., 2005, *Biological and Bio-Inspired Materials and Devices*. Materials Research Society, S. 1-6 6 S. (Materials Research Society Symposium Proceedings, Band 873).

Silica morphogenesis by alternative processing of silaffins in the diatom *Thalassiosira pseudonana*
Poulsen, N. & Kröger, N., 8 Okt. 2004, in: Journal of Biological Chemistry. 279, 41, S. 42993-42999 7 S.

Biosilica formation in diatoms: Characterization of native silaffin-2 and its role in silica morphogenesis
Poulsen, N., Sumper, M. & Kröger, N., 24 Sept. 2003, in: Proceedings of the National Academy of Sciences of the United States of America : PNAS. 100, 21, S. 12075-12080 6 S.

Diatom gliding is the result of an actin-myosin motility system
Poulsen, N., Spector, I., Spurck, T., Schultz, T. & Wetherbee, R., 1999, in: Cell Motility and the Cytoskeleton. 44, 1, S. 23-33 11 S.

Phylogenetic Diversity of Parabasalian Symbionts from Termites, Including the Phylogenetic Position of *Pseudotrypanosoma* and *Trichonympha*
Poulsen, N., Nov. 1998, in: Journal of Eukaryotic Microbiology. 45, 6, S. 643-650 8 S.

Aktivitäten

Diatom Gliding

Poulsen, N. (Redner:in)
10 Nov. 2022

Journal of Phycology (Fachzeitschrift)

Poulsen, N. (Mitherausgeber:in)
1 Jan. 2022 → ...

The Molecular Life of Diatoms

Mock, T. (Veranstalter:in), Poulsen, N. (Veranstalter:in), Allen, A. (Veranstalter:in), Bones, A. (Veranstalter:in), Falciatore, A. (Veranstalter:in), Kroth, P. (Veranstalter:in), Thamatrakoln, K. (Veranstalter:in), Young, J. (Veranstalter:in)
14 Juli 2019 → 18 Juli 2019

Understanding the molecular mechanism of diatom underwater adhesion

Poulsen, N. (Redner:in)
2019

Trailins: a new protein family in the adhesive trails of diatoms

Poulsen, N. (Redner:in), Kröger, N. (Beteiligte Person)
9 Juli 2017 → 13 Juli 2017

A Sticky Situation: Unraveling the Secrets of Diatom Adhesion & Motility

Poulsen, N. (Redner:in)
6 März 2017 → 7 März 2017

A sticky situation: understanding the mechanism of diatom adhesion

Poulsen, N. (Redner:in), Kröger, N. (Beteiligte Person)
20 Juni 2016 → 24 Juni 2016

Isolation and biochemical characterization of underwater adhesives from diatoms

Poulsen, N. (Redner:in)
6 Juli 2014 → 10 Juli 2014

Diatoms: Life in a Glasshouse

Poulsen, N. (Redner:in)
5 Mai 2014 → 7 Mai 2014

Phycologia (Fachzeitschrift)
Poulsen, N. (Mitherausgeber:in)
1 Jan. 2012 → 31 Dez. 2014