Susanne Erdmann (PhD)

Max Planck Institute for Marine Microbiology,

Celsiusstrasse 1, 28359 Bremen

Phone: +49 421 2028 734, *Mail*: serdmann@mpi-bremen.de

Age: 38, *Nationality*: German

CURRENT POSITION

Since 03/2019	Max Planck Research Group Leader "Archaeal Virology" Max Planck Institute for Marine Microbiology

PROFESSIONAL EXPERIENCE

03/2018 – 12/2018	Research Associate ithree Institute, UTS Sydney, Australia
09/2016 – 12/2017	Research Associate School of Biotechnology and Biomolecular Sciences, UNSW Sydney, Australia
09/2014 – 08/2016	EMBO Fellow/Visiting Researcher (EMBO Long-term Fellowship) School of Biotechnology and Biomolecular Sciences, UNSW Sydney, Australia
03/2013 – 04/2014	Research Associate Department of Biology, University of Copenhagen, Denmark
06/2009 – 12/2009	Research assistant Department of Biology, University of Copenhagen, Denmark
10/2006 – 03/2007	Student assistant Department of Medicine, Martin-Luther-University Halle-Wittenberg, Germany
06/2006 – 10/2006	Student assistant Department of Agriculture, Martin-Luther-University Halle- Wittenberg, Germany

EDUCATION

01/2010-03/2013	Ph.D., Microbiology University of Copenhagen, Denmark Dissertation: Studies of archaeal virus-host systems in thermal environments.
10/2003-03/2009	Diplom, Biology (M. Sci equivalent) Martin-Luther-University Halle-Wittenberg, Germany Dissertation: Expression and characterization of a putative ATPase of the exceptional archaeal virus ATV.
08/2000-08/2003	Training as hospital nurse, Clinical Center Darmstadt, Germany Certificate: registered nurse

Foreign languages: English (oral and writing), Danish (oral and writing), French (understanding)

FELLOWSHIPS/AWARDS

11/2018	DECRA Award from the Australian Research Council for 2019-2021 (440000 AUD). Award had to be refused upon taking up a position at the MPI in Bremen, Germany.
05/2018	Max Planck Research Group Leader; 2.0 Million € for the period 2019-2024.
09/2014 – 08/2016	EMBO Long-term Fellowship, School of Biotechnology and Biomolecular Sciences, UNSW Sydney, Australia
01/2010 – 12/2010	PhD Scholarship, Department of Biology, University of Copenhagen, Denmark

SUPERVISION OF GRADUATE STUDENTS AND PHD STUDENTS

Since 2019	4 PhD student (ongoing) 2 Master students (graduated)
2014 – 2019	1 PhD student (graduated), 2 Master/Honors students (graduated, one received a prestigious PhD Fellowship to continue work under my supervision) School of Biotechnology and Biomolecular Sciences, UNSW Sydney, Australia
2010 – 2014	3 PhD students (graduated), 2 Master students (graduated), 1 lab technician student (graduated) Department of Biology, University of Copenhagen, Denmark

TEACHING ACTIVITIES

02 - 6/12/2020	Practical course and Lecture Series “Marine Virology” (MarMic Master course, MPI Bremen)
27 - 31/05/2019	Lecture Series “Marine Virology” (MarMic Master course, MPI Bremen)
04/2010-05/2010	Archaea Biology course - Planning and supervision of the 6 weeks practical course - Lecture: Adaptation to habitats of high temperature, high pressure, high salt concentrations, strictly anaerobic conditions and extremes of pH

INSTITUTIONAL RESPONSIBILITIES

Since 06/2019 Faculty member, University of Bremen, Faculty 2 Biology/Chemistry, Germany
Since 11/2019 Member of steering committee MarMic Master course, MPI Bremen

INVITED PRESENTATIONS

Symposium: The Biology and Biotechnological Applicationof Archaea, September 2019, Regensburg, Germany
Invited speaker: “Archaeal virology: An archaeal plasmid goes viral.”

GRC Archaea: Ecology, Metabolism and Molecular Biology. July 2019, Les Diablerets, CH
Selected speaker: "An Archaeal Plasmid Goes Viral"

JAMS (Joint Academic Microbiology Seminars), August 2017, Sydney
Invited speaker: “A plasmid goes viral: reassessing distinctions between viruses and plasmids”

Thermophiles 2015, Santiago de Chile, Chile:
Invited speaker: “Crenarchaeal virus-host interactions in *Sulfolobus* – explored by transcriptomics and proteomics.”

JAMS (Joint Academic Microbiology Seminars), January 2015, Sydney
Invited speaker: "Virus-host interactions in extreme environments, hot versus cold"

Thermophiles 2013, Regensburg, Germany:
Selected speaker: "Complex CRISPR immune responses to viruses from different geographical locations that infect laboratory strains of *Sulfolobus*."

CRISPR: Evolution, Mechanisms and Infection 2013, University of St Andrews, UK:
Selected speaker: "CRISPR spacer acquisition of type I-A and III-B systems in *Sulfolobus*."

Thermophiles 2011, Big Sky, Montana, USA:
Selected speaker: "Virus-host interactions of the crenarchaeal bicaudaviridae *Acidianus* two-tailed virus (ATV) and *Sulfolobus tengchongensis* spindle-shaped virus (STSV2)."

REVIEWING EXPERIENCE

- Since 08/2019 Editorial Board, Biology of Archaea, Frontiers in Microbiology (Journal)
- Review of articles for *Molecular Ecology*, *FEMS Microbiology Letters*, ISME
- Review of Grant applications for the Australian Research Council (ARC) and German Research Foundation (DFG)

MEMBERSHIPS OF SCIENTIFIC SOCIETIES
Since 06/2019 Member, VAAM (Association for General and Applied Microbiology), Germany

TECHNICAL SKILLS AND EXPERTISE

- Electron microscopy (sample preparation and visualisation)
- Isolation and characterisation of new archaea and new archaeal viruses from environmental samples (media design and design of isolation methods)
- Genome sequencing, assembly and genome analyses (archaeal host organisms and viruses)
- Studies of virus-host interactions (virus entry and life cycle, host defence systems e.g. CRISPR)
- Purification and biochemical characterisation of proteins and protein-protein interactions
- Genetic engineering and development of genetic tools for newly isolated organisms

PUBLICATIONS (20)
Students supervised by Susanne Erdmann are indicated by their names underlined.

Book Chapters (1)

Erdmann, S. & Garrett, R.A. Archaeal viruses of the Sulfolobales: isolation, infection and CRISPR spacer acquisition. CRISPR: Methods and Protocols. Methods Mol Biol. 1311:223-32 (2015).

Refereed Journal Articles (19)

Hamm, J.N., **Erdmann, S.**, Eloe-Fadrosh, E.A, Angeloni, A., Zhong, L., Brownlee, C., Williams, T.J., Barton, K., Carswell, S., Smith, M.A., Brazendale, S., Hancock, A.M., Allen, M.A., Raftery, M.J. & Cavicchioli, R. Unexpected host dependency of Antarctic Nanohaloarchaeota. PNAS. 116: 14661-14670 (2019).

Liao, Y., Ithurbide, S., de Silva, RT., **Erdmann, S**., Duggin, IG. Archaeal cell biology: diverse functions of tubulin-like cytoskeletal proteins at the cell envelope. Emerging Topics in Life Sciences. 2:547-559 (2018)

Papathanasiou, P., **Erdmann, S.**, Leon-Sobrino, C., Sharma, K., Urlaub, H., Garrett, RA., Peng, X. Stable maintenance of the rudivirus SIRV3 in a carrier state in Sulfolobus islandicus despite activation of the CRISPR-Cas immune response by a second virus SMV1. RNA Biol. 13:1-9 (2018).

Tschitschko, B., **Erdmann, S.**, DeMaere, MZ., Roux, S., Panwar, P., Allen, MA., Williams, TJ., Brazendale, S., Hancock, AM., Eloe-Fadrosh, EA., Cavicchioli R. Genomic variation and biogeography of Antarctic haloarchaea. Microbiome. 6:113 (2018).

Arribas-Hernández, L., Bressendorff, S., Henning Hansen, M., Poulsen, C., **Erdmann, S.**, Brodersen P. An m6A-YTH Module Controls Developmental Timing and Morphogenesis in Arabidopsis. Plant Cell. 30:952-967 (2018).

Erdmann, S., Tschitschko, B., Zhong, L., Raftery M. & Cavicchioli R. A plasmid from an Antarctic haloarchaeon uses specialized membrane vesicles to disseminate and infect plasmid-free cells. Nat. Microbiol. 2:1446-1455 (2017).

Sheppard, C., Blombach, F., Belsom, A., Schulz, S., Daviter, T., Smollett, K., Mahieu, E., **Erdmann, S.**, Tinnefeld, P., Garrett, P., Grohmann, D., Rappsilber, J.
& Werner, F. Repression of RNA polymerase by the archaeo-viral regulator ORF145/RIP. Nat Commun. 7:13595 (2016).

Cavicchioli, R. & **Erdmann, S**. The discovery of Antarctic RNA viruses: a new game changer. Mol Ecol. 24(19):4809-11 (2015).

Garrett,R.A., Shah,S.A.,**Erdmann, S.**, Liu G, Mousaei M, León-Sobrino C, Peng W, Gudbergsdottir S, Deng L, Vestergaard G, Peng X, She Q. CRISPR-Cas Adaptive Immune
Systems of the Sulfolobales: Unravelling Their Complexity and Diversity. Life (Basel). 5(1):783-817 (2015).

Luk, A.W., Williams, T.J., **Erdmann, S.**, Papke, R.T. & Cavicchioli R. Viruses of Haloarchaea. Life (Basel). 4(4):681-715 (2014).

Happonen, L.J., **Erdmann, S.**, Garrett, R.A. & Butcher, S.J. Adenosine Triphosphatases of Thermophilic Archaeal Double-stranded DNA Viruses. Cell Biosci. 4:37 (2014).

Erdmann, S., Le Moine Bauer, S. & Garrett RA. Inter-viral conflicts that exploit host CRISPR immune systems of Sulfolobus. Mol Microbiol. 91:900-917 (2014).

Erdmann, S., Chen, B., Huang, X., Deng, L., Liu, C., Shah, SA., LeMoine Bauer, S., Sobrino, CL., Wang, H., Wei, Y., She, Q., Garrett, RA., Huang, L. & Lin, L. A novel single-tailed fusiform Sulfolobus virus STSV2 infecting model Sulfolobus species. Extremophiles 18:51-60 (2014).

Erdmann, S., Shah, A.S. & Garrett, R.A. SMV1 virus-induced CRISPR spacer acquisition from the conjugative plasmid pMGB1 in Sulfolobus solfataricus P2. Biochem Soc Trans. 41:1449-1458 (2013).

Shah, S.A., **Erdmann, S.**, Mojica, F.J.M. & Garrett, R.A. Protospacer recognition motifs: Mixed identities and functional diversity. RNA Biology 10:891-899 (2013).

Erdmann, S. & Garrett R.A. Selective and hyperactive uptake of foreign DNA by adaptive immune systems of an archaeon via two distinct mechanisms. Mol. Microbiol. 85:1044-1056 (2012).

Erdmann, S., Scheele, U. & Garrett, R.A. AAA ATPase p529 of Acidianus two-tailed virus and host receptor recognition. Virology 421:61-66 (2011).

Scheele, U., **Erdmann, S.**, Ungewickell, J.E., Felisberto-Rodrigues, C., Ortiz-Lombardía, M. & Garrett RA. Chaperone role for proteins p618 and p892 in the extracellular tail development of Acidianus two-tailed virus ATV. J Virol. 85:4812-4821 (2011).

Garrett, R.A., Shah, S.A., Vestergaard, G., Deng, L., Gudbergsdottir, S., Kenchappa, C.S., **Erdmann, S.** & She Q. CRISPR-based immune systems of the Sulfolobales: complexity and diversity. Biochem Soc Trans. 39:51-57 (2011).