

Pier Luigi Buttigieg

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PROFESSIONAL EXPERIENCE

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|--------------------------|--|--|
| 12/2014 – Present | Scientist (Boetius Group)
Research and capacity building activities concerning the application of multivariate statistical approaches, network analysis, and semantics to microbial ecology. | Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung, Bremerhaven, Germany |
| 03/2014 – 11/2014 | Post-doctoral research associate (Hinrichs Group)
Research, data coordination, and statistical analysis of multi-faceted datasets associated with the Deep subsurface Archaea: carbon cycle, life strategies, and role in sedimentary ecosystems (DARCLIFE) project. | Centre for Marine Environmental Sciences (MARUM), Bremen, Germany |
| 08/2012 – 02/2014 | Post-doctoral research associate (Boetius Group)
Research and capacity building activities concerning the application of multivariate statistical approaches and network analysis to microbial ecology. | Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung, Bremerhaven, Germany |

EDUCATION

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|--------------------------|--|--|
| 10/2007 – 07/2012 | Integrated MSc (Marine Microbiology)/PhD (Bioinformatics)
Courses and practical focus in microbiology, biogeochemistry, bioinformatics, and molecular ecology. Doctoral work investigating environmental signatures through comparative (meta)genomics and development of an environment ontology. | Max Planck Institute for Marine Microbiology & Jacobs University Bremen gmbH, Bremen, Germany |
| 8/2004 – 6/2007 | BSc Biochemistry and Cell Biology
Courses and practical focus in biochemistry, cell biology, microbiology, and genetics. Humanities and interdisciplinary courses also pursued | Jacobs University Bremen gmbH, Bremen, Germany |

COMPUTATIONAL SKILLS

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|------------------------|---|
| R | Open source statistical computing language and software environment. |
| PostgreSQL | Open source, Structured Query Language compliant object-relational database management system |
| BASH | Command shell for command processing and scripting in Linux/Unix environments |
| Cytoscape | Open source molecular interaction network visualisation and analysis platform |
| Image / Video | Adobe Photoshop, GIMP, Camtasia, Inkscape |
| OBO-Edit | Open source biological ontology editing software |
| Protégé | Ontology editing software with advanced reasoning |
| Version control | Fluent usage of software such as SVN and Git |

ADDITIONAL SKILLS

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| Languages: | English (native), German (working knowledge), French (basic) |
| Soft skills: | Conflict resolution, self and time management, leadership skills, presentation skills |

PROJECTS

2016-present	Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems (AtlantOS)	Researching the semantics behind Atlantic Observing Systems and aligning community ontologies accordingly, particularly in regard to best practices. Participating emerging networks and capacities in Omic Observation.
2015-present	Frontiers in Arctic Marine Monitoring (FRAM)	Contributing the bioinformatics and design of FRAM's microbial multi-omic observatory capacities, transferring capacity from the Ocean Sampling Day consortium.
2009-present	The Environment Ontology (ENVO)	Lead and chief editor Leading, developing, implementing, and coordinating the EnvO project: an international, community ontology for the concise, controlled description of environments.
2014-present	The Sustainable Development Goals Interface Ontology (SDGIO)	Founding co-lead and -editor Leading a collaboration of ontologists with the United Nations Environment Programme to develop a semantic layer for the Sustainable Development Agenda for 2030
2015-present	The Biogeographic Area Ontology (BIGAEON)	Founding co-lead and chief-editor Leading a nascent collaboration with the Institut de Systématique, Evolution, Biodiversité, Paris, France, to represent the semantics of biogeography.
2015-present	The Food Ontology (FOODON)	Founding co-lead and -editor Co-leading a nascent project in collaboration with the British Columbia Centre for Disease Control, European Bioinformatics Institute, the University of California Davis, UC Berkeley, the King Abudllah University of Science and Technology, and Simon Fraser University to develop an ontology which aims to serve both food science and food web analysis in ecology.
2015-present	The Agronomy Ontology (AGRO)	Founding co-lead and -editor Co-leading a nascent project in collaboration with Bioversity International, CGIAR, and the University of California Berkeley.
2014	Deep subsurface Archaea: carbon cycle, life strategies, and role in sedimentary ecosystems (DARCLIFE)	Responsible for coordinating and conducting data analyses on multifaceted 'omics and chemical data sets at the Centre for Marine Environmental Sciences (MARUM)
2012-present	Micro B3 & Ocean Sampling Day	Responsible for capacity building and research using multivariate statistical analyses of 'omics-centric microbial ecology data.

EARLY RESEARCH EXPERIENCE

- 2008-2009** Max Planck Institute for Marine Microbiology
Lab rotation project: Bioinformatics (Prof. F.O. Glöckner)
Investigation of metagenomic transcription factor dynamics in relation to physicochemical variation in epipelagic systems
Lab rotation project: Molecular ecology (Dr. A. Wichels, Alfred Wegener Institute)
Investigation of microbial diversity sampled along a 30°W Atlantic transect (VISION cruise 2006) with DGGE
Lab rotation project: Biogeochemistry (Prof. A. Boetius)
Investigation of bacterial functional community structure in Gulf of Mexico sediments with TRFLP analysis of dissimilatory sulfite reductase genes
- 2006-2007** Jacobs University Bremen
Guided research project: Cell biology (Prof. K. Brix)
Examination of the effects of cathepsin B inhibition during scratch-wound healing: in vitro approaches with HaCaT keratinocytes
Guided research project: Microbiology (Prof. M. Ullrich)
Identification of a *Pseudomonas syringae* levansucrase transcriptional regulator via heterologous expression studies in *P. putida*
- 7-9/2005** Forschungszentrum Jülich, Jülich, Germany
Internship: Microbial expression group (Dr. F. Rosenau)
Investigation of the heterologous expression of levansucrase in *Pseudomonas putida*, *P. aeruginosa*, and *Burkholderia glumae*

TEACHING EXPERIENCE

2014-present	Introduction to uni- and multivariate statistics for microbial ecology , Max Planck Institute for Marine Microbiology & University of Bremen, Bremen, Germany	Lecturer and Instructor of Record Annual introduction of MSc students to statistical concepts and techniques relevant to their work in microbial ecology as a component of the International Max Planck Research School for Marine Microbiology's <i>MarMic</i> programme,
2013-present	Analysis of community structure with multivariate methods , Max Planck Institute for Marine Microbiology & University of Bremen, Bremen, Germany	Co-instructor Annual contribution to a practical laboratory course in microbial oceanography.
01/2017	<u>GLOMAR</u> Introduction to statistical programming in R , Centre for Marine Environmental Sciences (MARUM), Bremen, Germany	Instructor Introduction to statistical programming for life scientists
04/2016	Traditional and emerging flavours of multivariate statistics , Leibniz Center for Tropical Marine Ecology, ZMT, Bremen, Germany	Lecturer An R roundtable crash course in multivariate statistics for ecology.
11/2015	Shaping the semantic layer by mining digitised data: an encounter between iDigBio's plant records and the Environment Ontology , Webinar for the Integrated Digitized Biocollections (iDigBio) community	Lead host Co-presented with Grant Godden
09/2015	EBI Metagenomics Course , European Bioinformatics Institute, Hinxton, UK	Instructor – Analysing taxonomic and statistical analysis Invited lecturer, contributed to an international training course in metagenomics.
03/2015	Ocean Sampling Day Analysis Jamboree , European Bioinformatics Institute, Hinxton, UK	Instructor – multivariate analysis A MicroB3 workshop focused on the multifaceted analysis of metagenomic and marker gene sequences derived from the first Ocean Sampling Day event in 2014.
12/2014	European Nucleotide Archive / EBI Metagenomics Portal Sample Annotation Workshop . European Bioinformatics Institute, Hinxton, UK.	Instructor – effective use of ontologies Trained an international group of microbial ecologists in the use of ontologies in enriching metagenomics records.
03/2014	A flavour of multivariate statistical methods in aid of microbial ecology , European Bioinformatics Institute, Hinxton, UK	Instructor An extended session focusing on multivariate statistical approaches required to analyse large datasets arising from next-generation 'omics technologies.
2010 – 2013	Video Tutor GmbH	Academic Director <i>Pro bono</i> work. Directed an international team of graduate students in creating online e-learning resources for secondary school students. Now also a social e-learning initiative targeting underserved students in Namibia.
07/2013	A crash course in R , Max Planck Institute for Marine Microbiology & University of Bremen, Bremen, Germany	Co-instructor Three day crash course geared towards microbial ecologists concerning the statistical programming language and environment, R.

06/2013	MicroB3 Training in: Multivariate analysis of marine microbial biodiversity , Jacobs University Bremen gGmbH, Bremen, Germany	Co-instructor One week course introducing multivariate analytical approaches to an audience of microbial ecologists.
06/2012	Joint EU-US theoretical and practical training course on marine bioinformatics: “Marine Omics” , Bremen, Germany	Co-instructor One week course introducing a range of theory and techniques from bioinformatics to an audience of microbial ecologists.
2009-2012	Multi-domain tutor in the MarMic programme , Max Planck Institute for Marine Microbiology, Bremen, Germany	Teaching Assistant Tutored masters students in bioinformatics, marine physics, marine eukaryotic microbiology, molecular ecology, oceanography and marine geology

SUPERVISION AND ADVISING

s –supervisor, cos – co-supervisor, com – committee member, a – adviser

All activities conducted at the Max Planck Institute for Marine Microbiology, Bremen, Germany

Doctoral projects

2016-present	Katy Hoffman	Physiological and genomic characterization of thermophilic methanotrophic archaea and their partner bacteria	a
2014-present	Joesephine Rapp	Investigation of the functions of active microbial populations in deep-sea Arctic sediments	com
2014-present	Meghan Chaffee	High-resolution diversity and functional analyses of annual bacterioplankton blooms in the North Sea	com
2014-2016	Christiane Hassenrúck	Implications of ocean acidification for microbial life and for microbial interactions	a
2013-2015	Viola Krukenberg	Physiological and genomic characterization of thermophilic methanotrophic archaea and their partner bacteria	a

MSc Projects

2015	Nataly Guevara	The effect of ocean acidification and an El Niño event on microbial communities and aggregate formation in the Galapagos archipelago	a
2009	Miriam Grace	Exploring microbial community responses to marine pollution: insights from ecological genomics	cos

Lab rotations

2012	Brandon Seah	MaSu EDA – A bioinformatical observatory for microbial environmental genomics	s
2010	Liz Robertson	Ecogenomic Profiling and Comparative Genomics of Hyperthermophilic Bacteria and Archaea.	s
2010	Olga Matanseva	Ontology-driven comparative genomics of marine microbes	s

Scientific assistants

2016	Shujian Zhu	Application of minimal entropy decomposition on	
2015	Megi Mustafai	Enhancement of multivariate statistical analysis applications for microbial ecology	s

PEER-REVIEWED PUBLICATIONS

- 2016 ten Hoopen P, Amid C, Buttigieg PL, et al. (2016) [Value, but high costs in post-deposition data curation](#). *Database*. 2016: bav126.
- Pafilis E, Buttigieg PL, Ferrell B, et al. (2016). [EXTRACT: Interactive extraction of environment metadata and term suggestion for metagenomic sample annotation](#). 2016: baw005.
- Fernández-Méndez M, Turk-Kubo KA, Buttigieg PL, et al. (2016). [Diazotroph Diversity in the Sea Ice, Melt Ponds, and Surface Waters of the Eurasian Basin of the Central Arctic Ocean](#). *Front Microbiol*. 7:1–18.
- Buttigieg PL, Pafilis E, Lewis SE, et al. (2016). [The environment ontology in 2016: bridging domains with increased scope, semantic density, and interoperation](#). *J Biomed Semant*. 7(1): 57.
- Koureas D, Hardisty A, Vos R, et al. (2016). [Unifying European Biodiversity Informatics \(BioUnify\)](#). *Research Ideas and Outcomes*. 2: e7787.
- Schnetzler J, Kopf A, Bietz MJ, et al. (2016) [MyOSD 2014: Evaluating oceanographic measurements contributed by citizen scientists in support of Ocean Sampling Day](#). *J Microbiol Biol Educ*. 17(1): 163 - 171.
- 2015 Thessen, AE, Bunker DE, Buttigieg PL, et al. (2015) [Emerging semantics to link phenotype and environment](#). *PeerJ* 3:e1470.
- Buttigieg PL, Ramette A (2015) [Biogeographic patterns of bacterial microdiversity in Arctic deep-sea sediments \(HAUSGARTEN, Fram Strait\)](#). *Front Microbiol*. 5: 660.
- 2014 Wörmer L, Elvert M, Fuchser J, et al. (2014) [Ultra-high-resolution paleoenvironmental records via direct laser-based analysis of lipid biomarkers in sediment core samples](#). *Proc Natl Acad Sci USA*. 111(44):15669-74.
- Buttigieg PL, Ramette A (2014) [A Guide to Statistical Analysis in Microbial Ecology: a community-focused, living review of multivariate data analyses](#). *FEMS Microbiol Ecol*. 90: 543–550. (<http://mb3is-megx.net/gustame>)
- Ramette A, Buttigieg PL (2014) [The R package otu2ot for implementing the entropy decomposition of nucleotide variation in sequence data](#). *Front Microbiol*. 5:601.
- Walls RL, Guralnick R, Deck J, et al. (2014) [Meeting report: advancing practical applications of biodiversity ontologies](#). *Stand Genomic Sci*. 9:17.
- Walls RL, Deck J, Guralnick R, et al. (2014) [Semantics in Support of Biodiversity Knowledge Discovery: An Introduction to the Biological Collections Ontology and Related Ontologies](#). *PLoS ONE*. 9(3): e89606.
- Katayama T, Wilkinson MD, Aoki-Kinoshita KF, et al. (2014) [BioHackathon series in 2011 and 2012: penetration of ontology and linked data in life science domains](#). *J Biomed Semant*. 5:5.
- 2013 Buttigieg PL, Morrison N, Smith B, et al. (2013) [The environment ontology: contextualising biological and biomedical entities](#). *J Biomed Semant*. 4(43).
- Deck J, Barker K, Beaman R, et al. (2013) [Clarifying concepts and terms in biodiversity informatics](#). *Stand Genomic Sci*. 8:352-359.
- Buttigieg PL, Hankeln W, Kostadinov I, et al. (2013) [Ecogenomic perspectives on domains of unknown function: Correlation-based exploration of marine metagenomes](#). *PLoS ONE*. 8(3): e50869.
- 2011 Kostadinov I, Kottmann R, Ramette A, et al. (2011) [Quantifying the effect of environment stability on the transcription factor repertoire of marine microbes](#). *Microb Inform Exp*. 1(1):9.
- Yilmaz P, Kottmann R, Field D, et al. (2011) [Minimum information about a marker gene sequence \(MIMARKS\) and minimum information about any \(x\) sequence \(MIxS\) specifications](#). *Nat Biotechnol*. 29(5):415-20.
- Hankeln W, Wendel NJ, Gerken J, et al. (2011) [CDinFusion – Submission-Ready, On-Line Integration of Sequence and Contextual Data](#). *PLoS ONE*. 6(9):e24797.
- 2010 Hankeln W, Buttigieg PL, Fink D, et al. (2010) [MetaBar - a tool for consistent contextual data acquisition and standards compliant submission](#). *BMC Bioinformatics*. 11:358.
- Buttigieg, PL (2010) [Perspectives on presentation and pedagogy in aid of bioinformatics education](#). *Brief Bioinform*. 11(6):587-97.

Kottmann R, Kostadinov I, Duhaime MB et al. (2010) [Megx.net: integrated database resource for marine ecological genomics](#). *Nucleic Acids Res.* **38**(Database issue):D391-5.

- 2008** Zhurina D, Srivastava A, Weingart H, Buttigieg PL, Ullrich M (2008) Regulation of the Levansucrase Genes from *Pseudomonas syringae* pv. *glycinea* at the Level of Transcription. In Fatmi M, Collmer A, Iacobellis NS, et al. (Eds.) [Pseudomonas syringae Pathovars and Related Pathogens – Identification, Epidemiology and Genomics](#). pp. 265-69. Dordrecht: Springer Netherlands.
- 2007** Büth H, Buttigieg PL, Ostafe R, Rehders M, Dannenmann StR, Schaschke N, Stark H-J, Boukamp P, and Brix K (2007) [Cathepsin B is essential for regeneration of scratch-wounded normal human epidermal keratinocytes](#). *Eur J Cell Biol.* **86** (11-12): 747-61.

OTHER PUBLICATIONS

- 2016** Buttigieg PL. [A brief encounter with ontology in the context of environmental monitoring](#). Environment Under Review: United Nations Environment Programme Document Repository.
- 2015** [A Common Approach for developing SDG integrated indicators](#). In collaboration with United Nations Environment Programme.
- [Clarifying terms in the SDGs: representing the meaning behind the terminology](#). In collaboration with United Nations Environment Programme. Circulated at the 2nd Meeting of the [Inter-Agency Expert Group on Sustainable Development Goal Indicators](#), working on behalf of the United Nations Statistical Department.
- [Design and development of integrated indicators for the Sustainable Development Goals Report](#). In collaboration with United Nations Environment Programme.

REVIEWER ACTIVITY

Journals	Algorithms for Molecular Biology	Evolutionary Bioinformatics
	Briefings in Bioinformatics	Frontiers in Microbiology
	Database	Nature Scientific Reports
	Ecological Dissertations in the Aquatic Sciences	Microbial Informatics and Experimentation
	Ecological Informatics	Peer J
	Environmental Microbiology and EM Reports	PLoS ONE
		The ISME Journal

PROFESSIONAL MEMBERSHIPS (Past and present)

Taxonomic Data Working Group (TDWG)
International Society for Clinical Biostatistics (ISCB)
Genomic Standards Consortium (GSC)
International Organization for Systematic and Evolutionary Biology

CONFERENCES, MEETINGS & WORKSHOPS

i – invited speaker / discussant, pc – programme committee member, co – co-organiser, ch – session chair, r – remote attendance, a – absent, work presented by co-contributor

- Planned in 2017** [2017 TDWG Biodiversity Information Standards Conference](#). Theme: "Data Integration in a Big Data Universe: Associating Occurrences with Genes, Phenotypes and Environments." Ottawa, Canada: October 1-6.
- 2016**
- Ung V, Buttigieg PL. [BiGAEOn: an ontology for biogeographic areas](#). [2016 TDWG Biodiversity Information Standards Conference](#). Santa Clara, San Carlos, Alajuela Province, Costa Rica: December 4-9. pc
 - Pearlman J, Buttigieg PL, Simpson P, et al. [Existing and Emerging Best Practices for Ocean Observation](#). American Geophysical Union Fall Meeting. San Francisco, USA: December 12-16. a
 - Follow up workshop in the implementation of a [Thesaurus for Ecological Field Observations](#). Centre de Synthèse et d'Analyse sur la Biodiversité. Supported by Region Provence-Alpes-Cote d'Azur Aix-en-Provence, France: November 21-24. i
 - Buttigieg PL. Embedding food semantics in ecology at all scales. International Conference/Consortium/Center for Food Ontology, Operability, Data and Semantics ([IC³-FOODS](#)). University of California Davis, California, USA: November 7-9. r
 - Krukenberg V, Buttigieg PL. The semantics of microbial observation in polar ecosystems: harmonising knowledge, information, and data through ontology (poster). [16th International Symposium on Microbial Ecology](#). Montreal, Canada: August 21-26. a
 - [Seventh International Conference on Biomedical Ontology \(ICBO\)](#). Corvallis, Oregon, USA: 1-4, August. co pc ch
 - Buttigieg PL, Walls RL, Jensen M, Mungall CJ. [Environmental semantics for sustainable development in an interconnected biosphere](#).
 - Devare M, Aubert C, Laporte MA, Valette L, Arnaud E, Buttigieg PL. [Data-driven Agricultural Research for Development: A Need for Data Harmonization Via Semantics](#).
 - Griffiths E, Dooley D, Buttigieg PL, Hoehndorf R, Brinkman F, Hsiao W. [FoodON: A Global Farm-to-Fork Food Ontology](#).
 - Buttigieg PL. Approaching the semantics behind environmental terminologies. Part of an effort to create a [Thesaurus for Ecological Field Observations](#). Centre de Synthèse et d'Analyse sur la Biodiversité. Supported by Region Provence-Alpes-Cote d'Azur Aix-en-Provence, France: July 18-21. i
 - [9th International Conference on Formal Ontology in Information Systems \(FOIS\)](#). University of Savoie, Annecy, France: July: 6-9. pc
 - Participant in [The 2nd AtlantOS General Assembly](#). Kiel, Germany: June 28-30. Focus areas as discussant:
 - Work Package 6: [Cross-cutting issues and emerging networks](#)
 - Work Package 7: [Data flow and data integration](#)
 Posters presented:
 - Buttigieg PL. PolarOn: a semantic layer for polar marine observations.
 - Katja Metfies, Ian Salter, Pier Luigi Buttigieg, et al. Establishing 'omics capacities for microbial observation in the Frontiers for Arctic Marine Monitoring (FRAM) programme.
 - Tegetmeyer H, Metfies K, Salter I, et al. Polar and deep sea microbial observatories. [Marine Microbiome Discovery and Innovation](#). Aldershof Con.vent, Berlin, Germany: June 27-30. a

- Making sure machines can act on your environmental metadata: Understanding ontological annotations. [The 18th Workshop of the Genomic Standards Consortium](#). Crete, Greece: June 12-15. i
- [CGIAR](#)-sponsored workshop on the implementation of an interoperable agro-ecology ontology. A follow-up to PhenoHarmonIS (May 9-13). Montpellier, France: June 1-5. i
- Buttigieg PL. Semantics for sensing the Arctic: representing ecological phenomena from the sea ice to the abyss. [Ontological Approaches to Sensor Data Analysis Conference](#). Buffalo, NY, USA: May 19-20. i r
- Buttigieg PL. [ENVO: Unifying the semantics of agronomy, environment, and sustainable development](#). PhenoHarmonIS - [Semantics for Harmonization and Integration of Phenotypic and Agronomic Data](#). Montpellier, France: May 9-13. i
 - Mini-workshops:
 - Developing an [Agronomy Ontology](#)
 - [Expert-Knowledge for Ecosystem Services](#)
- Buttigieg PL. [The growing scope of environmental ontology](#). [The 5th UK Ontology Network Meeting](#). Newcastle, UK: April 14.
- Buttigieg PL. Building the semantics of marine ecosystems: Integrating into the semantic layer. In support of knowledge management and discover for [Ocean Certain](#). Istanbul, Turkey: March 10-12. i
- Buttigieg PL. Bringing environmental semantics closer to organismal phenotypes through habitats and global biogeographic regions. ‘[Complex Data Integration with phenotypes](#)’ Final Annual Summit meeting of the [Phenotype Ontology Research Coordination Network](#). Biosphere2 Tucson, AZ, USA: February 26-28. i
- 2015** Approaches to developing a multi-domain semantic layer. Lawrence Berkeley National Laboratory, Berkeley, CA, USA: December 14-18. co
- Workshop on the foundation of an Ontology for Biogeographic Areas. Institut de Systématique, Evolution, Biodiversité Paris, France: November 25 - December 2. co
- Buttigieg PL. Synchronising the semantic layer with text-based knowledge discovery in ecology. [Text Mining in the Natural Sciences Workshop](#). Part of the [Ocean Certain](#) project. Trondheim. Norway: November 12-13. i
- Buttigieg PL. An introduction to the SDG Interface Ontology and an invitation to domain specialists to contribute to the SDGIO. United Nations Environment Programme Headquarters, United Nations Campus, Nairobi, Kenya: October 2-5. i
- Buttigieg PL. Environmental semantics in support of sustaining biodiversity. [Taxonomic Data Working Group \(TDWG\) Annual Meeting](#). Session: [Semantics for Sustaining Biodiversity](#). Nairobi, Kenya: September 28 – October 1. i
- Buttigieg PL. Numerical ecology approaches to the analysis of high-dimensional data. [Ocean Sampling Day Analysis Jamboree](#). European Bioinformatics Institute. Hinxton, UK: March 9-13. i
- Buttigieg PL, Ramette A. Navigating the multidimensional space of microbial ecology data in the meta’omic era. [36th Annual Meeting of the International Society for Clinical Biostatistics](#). Utrecht, The Netherlands: August 23-27. i
- Buttigieg PL. Supporting genomic epidemiology with environmental semantics. [Sixth International Conference on Biomedical Ontology \(ICBO\) + Genomics Hackathon + Third International Workshop on Definitions in Ontologies \(IWOOD\)](#). Lisbon, Portugal: July 27-30. i
- Buttigieg PL. Challenges in the analysis of microbial ecology data. [Big Data: Mathematical methods and applied problems](#). TU Chemnitz. Chemnitz, Germany: July 2-3. i

- [SONet - finalizing a harmonized data model for observations & measurements](#). NSF INTEROP “SONet” project (#0753144). National Center for Ecological Analysis and Synthesis. Santa Barbara, CA, USA: June 27 – July 1. i
- Buttigieg PL. Environments in spatial semantics. [Spatial Ontologies for e-Science](#). Vespucci Institutes 2015. College of the Atlantic, Bar Harbor, ME, USA: June 21-27.
- [SONet Lake Ontology working group](#). NSF INTEROP “SONet” project (#0753144). National Center for Ecological Analysis and Synthesis. Santa Barbara, CA, USA: June 2-4. i
- [Text-mining to shape the semantic layer for plant environments](#). Rancho Santa Ana Botanic Garden. A workshop funded by the Phenotype Research Coordination Network. Claremont, CA, USA: May 25-31. co
- Invited Workshop on the semantics of EcoCities. [EcoCity Builders](#): A United Nations accredited NGO. Oakland, CA, USA: May 19-25. i
- SDG-Multipurpose Indicator Development Task Team meeting. United Nations Headquarters. New York City, NY, USA: May 16-18. i
- [Workshop on the harmonisation of semantic efforts describing “observations and measurements”](#). NSF INTEROP “SONet” project (#0753144). National Center for Ecological Analysis and Synthesis. Santa Barbara, CA, USA: March 5-6. i
- [BCO/ENVO/RO/GeoLink/DataONE Ontology alignment meeting](#). NSF INTEROP “SONet” project (#0753144). National Center for Ecological Analysis and Synthesis. Santa Barbara, USA: March 2-4. i
- Senior Expert Meeting on Building Ontologies for Integrated Indicators. United Nations Environment Programme. New York City, NY, USA: February 27 - March 1 co
- Eye on Earth Consortium Meeting convened by the United Nations Environment Programme / Department of Early Warning and Assessment. United Nations Campus, Bonn, Germany: February 3-5. i
- 2014** United Nations Environment Programme [Senior Expert Meeting on Integrated Measures for Monitoring. International Union for the Conservation of Nature Headquarters](#). Gland, Switzerland: December 3-5. i
- European Nucleotide Archive / EBI Metagenomics Portal Sample Annotation Workshop. European Bioinformatics Institute, Hinxton, UK: December 1-2. i
- Buttigieg PL. Standardising the Description of Environments: Perspectives from the Environment Ontology Project. [NIEHS Workshop for the Development of a Framework for an Environmental Health Science Language](#). Raleigh, NC, USA: September 15-16. i
- Buttigieg PL, Ramette A. Effects of hosts, spatial scales, and taxonomic resolution on microbial diversity in a rapidly changing world. Presented at: [International Symposium on Microbial Ecology](#). Seoul, South Korea: 24-29 August.
- Buttigieg PL. Meaningfully mobilising genomic information with environmental descriptors. Presented at: [Phenotype RCN](#). Biosphere2, Tucson, AZ, USA: February 21-23. i
- Buttigieg PL. An Introduction to the Environment Ontology. Presented at: [The Biocollections Ontology / Population and Community Ontology Workshop](#). University of Arizona. Tucson AZ, USA: February 18-20. i

- 2012** Buttigieg PL. Introducing the Environment Ontology: A community tool for semantically controlled environmental description. Presented at: [NBDC/DBCLS BioHackathon](#). Toyama, Japan: September 2-7. i
- The [14th Meeting of the Genomics Standards Consortium: Genomics Enabled Place Based Research](#) and the [Biocode Commons Hackathon](#). Oxford, UK: September 18-20. r
 - Buttigieg PL. An Introduction to the Environment Ontology. Presented at: [From Signals to Environmentally Tagged Sequences](#). [EU COST Action ES1103](#). Heraklion, Greece: September 27-29. i, r
 - [Semantics of Biodiversity Workshop](#). Sponsored by [RCN4GSC](#) (NSF), [Morphbank](#) (NSF), [Kansas University's Biodiversity Institute](#), and [BiSciCol](#) (NSF), in collaboration with the [National Center for Biomedical Ontology](#). University of Kansas Biodiversity Institute, Lawrence, Kansas: May 16-18.
- 2011** Buttigieg PL. Applying the Environment Ontology in Ecological Genomics. Presented in a session co-chaired by PLB and Barry Smith (U Buffalo) at: [The 12th meeting of the Genomic Standards Consortium](#). Bremen, Germany: September 28-30 co, ch
- Buttigieg PL, Kottmann R, Pommier T, Glöckner FO. Exploring niche specialisation in marine microbes by context-enabled comparative genomics. [BioSystematics 2011](#). Berlin, Germany: September 21-27.
- 2010** Hankeln W, Buttigieg PL, Kostadinov I, et al. [Applying graph theoretic approaches to microbial metagenomes: ecological perspectives on function](#). The First ACM International Conference on Bioinformatics and Computational Biology. Niagara Falls, NY, USA: August 2-4. a
- Buttigieg PL. Mobilising genomic data: ontology-enabled comparative genomics. [Locating Biology: The Development and Application of an Environment Ontology](#). Leibniz-Zentrum für Informatik. Dagstuhl, Germany: February 21-26. i
- 2009** Buttigieg PL, Kottmann R, Pommier T, and Glöckner FO. Investigating environmental signatures in genomic data: the value of structured habitat descriptors in comparative analysis. Presented at: ISMB/ECCB, M3: [Metagenomics, Metadata, & Metaanalysis](#). Stockholm, Sweden: June 27.
- 2007** Zhurina D, Srivastava A, Weingart H, Buttigieg PL, and Ullrich M. [Regulation of the levansucrase genes from Pseudomonas syringae pv. glycinea at the level of transcription](#). Presented at: Association for General and Applied Microbiology (VAAM) annual conference. Osnabrück, Germany: April 1-4.

AWARDS

- 2015** Gold Teaching Excellence Award for practical instruction in uni- and multivariate statistics at the International Max Planck Research School for Marine Microbiology, Bremen, Germany.
- 2014** Two Collaborative Exchange Awards by the Phenotype RCN to support exchange between EnvO and iDigBio as well as the European Bioinformatics Institute.
- 2014** Co-recipient of the IUBRocks Award, granted by Jacobs University Bremen, recognising exceptional community contributions in developing intercultural activities, college policy construction and implementation, and mentorship.
- 2012** Teaching Excellence Award for tutorials in Bioinformatics at the International Max Planck Research School for Marine Microbiology, Bremen, Germany.
- 2011** Teaching Excellence Award for tutorials in Bioinformatics at the International Max Planck Research School for Marine Microbiology, Bremen, Germany.
- 2005-2007** Member of the President's list, Jacobs University Bremen
- 2004-2007** Merit scholarship for undergraduate study, Jacobs University Bremen

OUTREACH

- 2012-present** Verdala International School, Malta Annual visits and presentations discussing the nature of scientific careers and the value of transdisciplinary education with college-bound, [International Baccalaureate Diploma](#) candidates
- 2017/01** [Kunstbar](#) Bremen with the [MarMic class of 2021](#) Data collection of flavour profiles international whisk(e)y samples for analysis in the multivariate numerical ecology, after Lapointe FJ & Legendre P (1994) [A Classification of Pure Malt Scotch Whiskies](#). *Appl Statist.***43**(1): 237-257.
- 2015** [Hegarty's Irish Pub](#) Bremen Co-design and -organisation of a biologically themed pub quiz, as part of the Royal Society of Biology's [Biology Week 2015](#)
- Documenting Ocean Sampling Day Advised documentary film-makers on delivery of genomics and marine microbial ecology to general audiences. Extensively edited documentary narrative for accuracy and comprehensibility.