

Beate Ehrhardt, Ph.D.

Employment

Mathematical Innovation Research Fellow at the Institute for Mathematical Innovation, Bath, UK	10/2022-present
Scientific lead in statistical analysis and application of machine learning to interdisciplinary research in academia and for consultancy projects	
Mathematical Innovation Research Associate at the Institute for Mathematical Innovation, Bath, UK	11/2018-09/2022
Interdisciplinary research: Statistical analysis and application of machine learning to academic colleagues across all faculties, to businesses, and the public sector	
Senior Research Statistician at "AstraZeneca", Cambridge, UK	09/2016-10/2018
Design and analysis of complex experiments to inform strategic decision making In-vitro: organs-on-chips, cell-based assays, mass spectrometry, RNA-Seq, siRNA; In-vivo: neurobehavioral screens and xenografts	

Education

PhD in Statistics at University College London, UK	2012–2016
PhD thesis on "Understanding community structure in large networks" Supervisor: Professor Patrick J. Wolfe	
Diploma in Mathematics (equivalent to UK MSc) at University of Bremen, Germany	2006–2012
Statistical research on causality in genetics (1 year)	

Awarded Consultancy projects (Lead) and Patents

<i>AstraZeneca: Optimal experimental design for FGX</i>		
Scientific Lead: £55,776	Total Bath Budget: £55,776	
<i>AstraZeneca: In-vivo analysis tools</i>		
Scientific Lead: £120,848	Total Bath Budget: £120,848	
<i>AstraZeneca: Bespoke in-vitro data analysis</i>		
Scientific Lead: £83,664	Total Bath Budget: £83,664	
<i>Patent: High-Content Imaging of Microfluidic Devices</i>		
Serial No.: 17/375,237		

Awarded Grants (Research Co-I/ Researcher)

<i>EWS-C19: Building an Early Warning System for community-wide infectious disease</i>		
Research Co-I: £23,656	Total Bath Budget: £436,509	EPSRC
<i>ISCF Manufacturing Made Smarter Research Centres Being Smart Today - Invest in People</i>		
My time: £60,382	Total Bath Budget: £4,945,086	EPSRC
<i>CRIISP: Psychosocial mechanisms of chronic pain</i>		
My time: £34,504	Total Bath Budget: £3,906,036	MRC
<i>CHIPP: High impact chronic pain and UK biobank: presentation, transitions and targets for intervention</i>		
My time: £37,898	Total Bath Budget: £296,726	MRC
<i>Self-driven, dynamic, real-world haptic assessment for optimal pain management in the community and clinic</i>		
Researcher: £10,000	Total Bath Budget: £10,000	Innovate UK
<i>Network analysis and natural language processing to detect online radicalization</i>		
Researcher: £9,520	Total Bath Budget: £35,520	Home Office
<i>NIHR Care Pathways for Early Psoriatic Arthritis</i>		
Researcher: £21,249	Total Bath Budget: £149,534	NIHR

Peer reviewed journal publications

1. D. Vitali, C. Woolley, B. Ehrhardt, et al. (2024) "How well can we measure chronic pain impact in existing longitudinal cohort studies? Lessons learned" *The Journal of Pain*, (in press).
2. J. Lazarus, I. Cioroianu, B. Ehrhardt, et al. (2023) "Data-driven digital health technologies in the remote clinical care of diabetic foot ulcers: a scoping review" *Front. Clin. Diabetes Healthc.*, **4**(1212182).
3. M. Franke, K.-D. Thoben, B. Ehrhardt (2023) "The Faceted and Exploratory Search for Test Knowledge" *Information*, **14**(45).
4. E. Murphy, B. Ehrhardt, C. Gregson, O. Von Arx, A. Hartley, M. Whitehouse, M. Thomas, G. Stenhouse, T. Chesser, C. Budd, and H.S. Gill (2022) "Machine learning outperforms clinical experts in classification of hip fractures". *Scientific Reports*, **12**(2058).
5. H. Coffé, J. Givens, B. Ehrhardt(2022) "Career lengths of members of parliament in mixed-member proportional electoral systems". *Journal of Legislative Studies*, 1–15.
6. K. Tse, O. Hammar, and B. Ehrhardt (2020) "Making decisions on subjective data: Aligning statistics with science to improve outcomes on the modified Irwin test". *Journal of Pharmacological and Toxicological Methods*, **99**(106595), 410–421.
7. J. D. S. Martin, B. Ehrhardt, M. B. Paczkowski et al. (2019) "An innovative non-invasive technique for subcutaneous tumour measurements". *PLoS ONE*, **14**(10), 1–14.
8. B. Ehrhardt et al. (2019) "Introducing the first automated high-content confocal imaging of Liver and Kidney Organ-Chips". *Lab on a Chip*, **19**(3), 410–421.
9. B. Ehrhardt and P. J. Wolfe (2019) "Network modularity in the presence of covariates". *Siam Review*, **61**(2), 261–276.
10. J. W. A. Fletcher, B. Ehrhardt, A. MacLeod, et al. (2019)"Non-locking screw insertion: No benefit seen if tightness exceeds 80% of the maximum torque." *Clinical Biomechanics*, **70**, 40–45.
11. B. Ehrhardt et al. (2016) "*Statistical inference, learning and models in big data*". *International Statistical Review*, **84**(3), 371–389.

Awards and Honours

Covid Awards for an exceptional contribution in response to the Covid pandemic	12/2020
Invited research visit at the Fields institute, Toronto, Canada. Program on Inference, Statistical Learning, and Models for Big Data	01–03/2015
Captain of the winning team of the 2014 RSS Statistical Analytics Challenge.	05–07/2014

Memberships

Core member of the Centre for Pain Research, Bath, UK.	08/2020-present
Core member of the Centre for Therapeutic Innovation, Bath, UK.	08/2020-present
Member of the Centre for Mathematics and Algorithms for Data, Bath, UK.	08/2019-present