CHIARA HERZOG, PH.D.

Epigenetics | Ageing | Molecular Research

I am interested in the molecular basis of ageing and age-related disease, combining computational and experimental biology. My main research interest is epigenetics. I have contributed to several epigenomic biomarkers and patents, and led human intervention studies to explore the malleability and interpretability of these biomarkers.

EDUCATION

2019 — **University of Edinburgh**
Ph.D. in Neuroscience — Edinburgh, UK

Thesis: Molecular and cellular mechanisms of microglia-mediated neuroprotection

2015 — **University of Edinburgh**
M.Sc by Research in Integrative Neuroscience (*distinction*) — Edinburgh, UK

Thesis: Molecular characteristion of the synaptic Disks large (Dlg)-associated signalling complex in *Drosophila melanogaster*

2014 — **Innsbruck Medical University**
B.Sc. in Molecular Medicine (*distinction*) — Innsbruck, AT

- Graduated from degree top of my class aged 19
- Joint classes with the medical school plus courses in molecular biology, genomics, bioinformatics, statistics, and others

EXPERIENCE

Current | 2024 — **King's Prize Fellow (junior group leader)**
King's College London — London, UK

Current | 2023 — **Biomarkers of Aging Consortium**
Executive Committee

Current | 2020 — **Honorary research fellow**
University College London — London, UK

CONTACT INFO

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KEY TOPICS

- epigenetics
- multiomic human studies
- disease risk prediction
- ageing research
- cancer

Last updated on 2025-09-11.

2024 | 2020

Senior scientist and lecturer

European Translational Oncology Prevention and Screening Institute — University of Innsbruck, AT

- Lead of computational biology team, specialising in high-dimensional DNA methylation data analysis
- Development of epigenetic predictors, leading to multiple patents and a clinically-available test for endometrial cancer
- Co-PI on a multi-omic human lifestyle intervention study (TirolGESUND, NCT05678426) assessing the impact of lifestyle changes on omic biomarkers of disease and ageing

2020 | 2019

Associate business development manager

BioClavis, Ltd. — Glasgow, UK

- Scientific liaison for academic and clinical research collaborations at an omics-based precision diagnostics company

2019 | 2019

Postdoctoral researcher

Centre for Discovery Brain Sciences (Dr. Leah Herrgen) — University of Edinburgh, UK

MENTORSHIP AND TEACHING

Current | 2022

Epigenetics and Cancer

Molecular and Cellular Developmental Biology (M.Sc.) — University of Innsbruck, AT

- Developed new course to teach translational cancer research, focusing on omic profiling and analysis for personalized cancer risk monitoring and early detection; clinical study design, biomarkers, biobanking, ethics

SELECTED PUBLICATIONS

[§] contributed equally, [†] corresponding author, ★ highlighted

2025

Multi-modal atlas of lifestyle interventions reveals malleability of ageing-linked molecular features

bioRxiv, 2025; doi: 10.1101/2025.08.30.673115

Herzog C[†], Vavourakis CD, [...] & Widschwendter M

★

Systemic multi-omic remodelling underlies health benefits of intermittent fasting

bioRxiv, 2025; doi: 10.1101/2025.08.30.673138

Herzog C[†], Vavourakis CD, [...] & Widschwendter M

Longitudinal multi-omic evaluation of biomarkers of health and ageing over smoking cessation intervention

bioRxiv, 2025; doi: 10.1101/2025.08.29.673135

Herzog C[†], Vavourakis CD, [...] & Widschwendter M

The impact of intermittent fasting, exercise and resilience training on cardiometabolic health: a randomized clinical trial

N/A*(under revision)*

Herzog C[§], Plaikner S[§], [...] & Widschwendter M

Standards for biomarker data collection in clinical trials by longevity biotechnology companies

npj Aging, *(under revision)*

Herzog C[§], Poganik J[§], [...] Barzilai N, Moqri M

★ **Systems epigenetic approach towards non-invasive breast cancer detection**
Nature Communications, 2025; doi: 10.1038/s41467-024-53696-2
Herzog C, Theeuwes B, Jones A, [...] & Widschwendter M

Functionally enriched epigenetic clocks reveal tissue-specific discordant aging patterns in individuals with cancer
Communications Medicine, 2025; doi: 10.1038/s43856-025-00739-4
Herzog C, Redl E, Barret J, Aminzadeh-Gohari S, Weber DD, Tevini J, Lang R, Kofler B, Widschwendter M

Validation of blood-based detection of breast cancer highlights importance for cross-population validation
Nature Communications, 2025; doi: 10.1038/s41467-025-57265-z
Theeuwes B, Ambatipudi S, Herceg Z, Herzog C[§†], Widschwendter M[§†]

2024

Challenges and Recommendations for the Translation of Biomarkers of Aging
Nature Aging, 2024; doi: 10.1038/s43587-024-00683-3
Herzog C[§], Goeminne L[§], Poganik JR[§], Barzilai N, Belsky DW, [...] & Gladyshev VN

Cervical cancer screening using DNA methylation triage: a population-based cohort study
Nature Medicine, 2024; doi: 10.1038/s41591-024-03014-6
Schreiberhuber L[§], Barrett JE[§], Wang J, Redl E, Herzog C, [...] & Widschwendter M

★ **Cigarette smoking and e-cigarette use induce shared DNA methylation changes linked to carcinogenesis**
Cancer Research, 2024; doi: 10.1158/0008-5472.CAN-23-2957
Herzog C, Jones A, Evans I, Raut JR, Zikan M, Cibula D, Wong A, Brenner H, Richmond RC, Widschwendter M

★ **Validation of Biomarkers of Aging**
Nature Medicine, 2024; doi: 10.1038/s41591-023-02784-9
Moqri M[§], Herzog C[§], Poganik JR[§], Kejun Y, Justice J, Belsky DW, [...] & Ferucci L

2023

Technical and biological sources of unreliability of Infinium type II probes of the Illumina MethylationEPIC BeadChip microarray
Clinical Epigenetics, 2024; doi: 10.1186/s13148-024-01739-2
Nazarenko T, Vavourakis CD, Jones A, Evans I, Watson A, Brandt K, [...] Herzog C[§†] & Widschwendter M[§†]

Performance of the WID-qEC test versus sonography to detect uterine cancers in women with abnormal uterine bleeding (EPI-SURE): a prospective, consecutive observational cohort study in the UK
Lancet Oncology, 2023; doi: 10.1016/S1470-2045(23)00466-7
Evans I[§], Reisel D[§], Jones A[§], Bajrami A[§], Nijjar S, Solangon SA, Arora R, Redl E, Schreiberhuber L, Ishaq-Parveen I, Rothärmel J, Herzog C, Jurkovic D, Widschwendter M

Devising reliable and accurate epigenetic clocks: choosing the optimal computational solution
bioRxiv, 2023; doi: 10.1101/2023.10.13.562187
Vavourakis CD, Herzog C[§†] & Widschwendter M[§†]

★ **Biomarkers of aging for the identification and evaluation of longevity interventions**
Cell, 2023, 186(18), 3758-3775; doi: 10.1016/j.cell.2023.08.003
Moqri M[§], Herzog C[§], Poganik J R[§], Justice J, Belsky DW, Higgins-Chen A, [...] & Gladyshev VN

2022 **A simple cervicovaginal epigenetic test for screening and rapid triage of women with suspected endometrial cancer: validation in several cohort and case/control sets**
Journal of Clinical Oncology, 2022, 40(33), 3828; doi: 10.1200%2FJCO.22.00266
Herzog C[§], Marín F[§], Jones A, Evans I, Reisel D, Redl E, [...] & Widschwendter M

For a full list of publications, please visit my website.

INVITED TALKS

2026 **Biomarkers of Aging**
GRC Systems Aging Conference — Newry, ME, US

2025 **What the epigenome remembers: ageing, disease risk, and the tissues we overlook**
Aging: From Biology to Therapeutic Opportunities — London, UK

2025 **Validation of ageing biomarkers**
EHA-SWG Scientific Workshop on From Aging Hematopoietic Stem Cells to Age-related Diseases: Opportunities for Intervention — Barcelona, ES

2025 **Biomarkers of Aging**
Longevity Summit Dublin — Dublin, IE
Keynote

2024 **The Path to Biomarker Standardization**
Foresight Vision Weekend — Bückeburg, DE
Keynote

2024 **Panelist at 'A shared definition of longevity medicine in Italy' session**
Milan Longevity Summit — Milan, IT

2022 **Harnessing the epigenetic footprint of cervical samples for breast and ovarian cancer detection and prediction**
Young European Scientist Meeting — Porto, PT
I was an invited keynote speaker presenting alongside highly esteemed researchers, such as Nobel Prize winners Prof. Drew Weissman and Prof. William Kaelin

CONFERENCE TALKS

2025 **Systems Epigenetic Approach towards Noninvasive Breast Cancer Detection**
Epigenomics of Common Disease — Cambridge, UK
Herzog C, Widschwendter M

2022 **CSHL Mechanisms of Aging**
Discordance in general and epithelial ageing signatures indicates hormone-mediated cancer risk — Cold Spring Harbor, New York
Herzog C, Widschwendter M

AWARDS

2025 — **Rising Star**
Longevity Summit Dublin — Dublin, UK
peer nomination-based award

2025 — **Young Data Scientist of the Year (shortlisted)**
Pistoia Alliance — London, UK

2025 — **Prof. Anthony Mellows Medal**
King's College London — London, UK

2024 — **Life Science Award – Basic Science**
Austrian Association of Molecular Life Sciences and Biotechnology — Graz, AT
most prestigious award for an early-career life scientist in Austria

2024 — **AGO Young Scientist Award**
Austrian Working Group for Gynaecologic Oncology — Salzburg, AT

2023 — **Prof. Ernst Brandl Prize**
Ernst Brandl Stiftung — Schwaz, AT

2020 — **Falling Walls Lab Austria Winner**
Falling Walls Lab — Innsbruck, AT

FUNDING

2025 — **Francis Crick Institute Networking Award**
Francis Crick Institute — London, UK

2024 — **King's Prize Fellowship**
King's College London — London, UK

2024 — **King's Mechanobiology Centre Funding**
King's College London — London, UK

PATENTS

2024 — **Patent filed – breast cancer detection**

2024 — **Patent filed – endometrial cancer detection**

2022 — **Methods for detecting and predicting breast cancer**

OTHER EXPERIENCE AND ACTIVITIES

Current | 2025 — **Scientific advisory board**
Aniva Health — Berlin, DE

Current | 2023

Scientific board member
Aeon Foundation
Brussels, BE/Rome, IT

SELECTED PRESS AND MEDIA

2024

Feature article on epigenetic impacts of smoking
The Times
London, UK
On cover of The Times (link to article)

2024

Live TV Interview with Sky News
Sky News
London, UK
Live TV Interview on study of epigenetic impacts of smoking and e-cigarettes

2023

Tech & Science Daily: Womb cancer 2023 test breakthrough 'cuts diagnosis time'
The Standard
London, UK
Newspaper article and podcast