

FALLING WALLS SCIENCE SUMMIT

KEY RESULTS OF THE PLENARY TABLE

“THE FUTURE OF IMAGING IN THE AGE OF AI”

— AI rewires how biology is captured and understood

Imaging is becoming one of the most powerful drivers of biomedical discovery, yet its potential is still limited by fragmented data, uneven quality and a disconnect between AI model builders and the scientists who use their outputs. To move from pattern recognition to genuine mechanistic insight, the field needs diverse high-quality data, federated sharing systems and tighter collaboration across disciplines.

As imaging technologies expand across scales the need for open, interoperable, AI-enabled systems is growing. New modalities, quantitative pipelines and integrated datasets are allowing researchers to map biology in unprecedented detail, link structure to dynamics, and turn images into actionable knowledge. Rethinking how images are acquired, curated, shared and analysed could dramatically accelerate discovery and improve human health.

THE PANEL CALL TO ACTION:

1 — Build diverse, high-quality imaging datasets at scale.

Invest in systematic data collection, rigorous metadata and standardised preparation so that AI models learn from rich, representative inputs and can be trusted across populations and conditions.

2 — Create a federated global infrastructure for sharing large image datasets.

Develop interoperable platforms that allow institutions to retain data locally while enabling secure search, access and model training across distributed repositories.

3 — Use AI to connect imaging across scales and uncover mechanisms.

Apply models that integrate molecular, cellular and whole-organ information over time, enabling researchers to infer causal processes and identify points for therapeutic intervention.

4 — Democratise advanced imaging through AI-enabled acquisition and analysis.

Embed AI into microscopes, scanners and sample-handling workflows to improve speed, resolution and reproducibility, making capabilities once limited to specialised centres widely accessible.

5 — Break down disciplinary walls between model builders and model users.

Train scientists who can work across imaging, biology, computation and data stewardship so that AI systems are designed with real experimental needs in mind and their outputs can be interpreted, validated and used responsibly.

This event is supported by Chan Zuckerberg Biohub Network and assembled in the framework of the Falling Walls Science Summit 2025 in Berlin. The Falling Walls Science Summit is a leading international, interdisciplinary, and intersectoral forum for scientific breakthroughs. It commemorates the fall of the Berlin Wall and aims to promote dialogue between science and society.

CHAN ZUCKERBERG
Biohub Network

PANELLISTS

Martin Hetzer

President, Institute of Science and Technology Austria (ISTA)

Paul Matthews

Director of the Rosalind Franklin Institute, Imperial College London

Stephani Otte

Vice President Imaging Science, Chan Zuckerberg Initiative

Jason Swedlow

Senior Director BioImage Data, Chan Zuckerberg Initiative

George Caputa

Senior Editor, Springer Nature, Moderator

CONTACT

Falling Walls Foundation gGmbH

Kochstraße 6–7
10969 Berlin

Web: www.falling-walls.com

PARTNER REQUEST

Dr. Andreas Kosmider
Managing Director
andreas.kosmider@falling-walls.com
Phone: +49 30 609 883 97 28
Mobile: +49 172 273 75 77

PRESS REQUEST

Felix Mihalek
PR Manager
phone: +49 30 60 988 39 780
mail: felix.mihalek@falling-walls.com

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