May 21, 2026

IQCB
Institute for Quantitative & Computational Biosciences

ReALity
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Institute of Molecular Biology

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Bridging the Gap between Molecular Innovation and Systems Engineering

21.05.2026 09:30 AM - 02:30 PM Seminar room at IMB, Ackermannweg 4, 55128 Mainz

Joint workshop by IQCB and Fraunhofer IESE (Kaiserslautern) with involvement of the Institute of Molecular Biology, the ReALity Initiative and the Center for Healthy Aging.

The workshop will explore how high-integrity software engineering can accelerate basic research and the clinical translation of advanced therapies. The short talks are aligned with the following thematic pillars:

1. **The "Reliability Gap" in AI:** As AI gains prominence in research and we move toward AI-driven personalized digital health, how do we ensure safety, reliability, and reproducibility? How can high-integrity data engineering ensure that machine learning outcomes are reproducible and verifiable?
2. **Digital Twins and Modeling Biological Complexity**: Where molecular modeling meets systems engineering to create predictive models for system- or patient-level responses.
3. **Translating Advanced Therapy Medicinal Products (ATMPs) to the Bedside**: Mainz plays a prominent role in the development of gene therapy medicinal products, CAR-T cell workflows, and tissue regeneration. Moving from experimental protocols to standardized clinical products presents challenges where interdisciplinary interactions are often transformative.
4. **Engineering for an Aging Society**: How can we better integrate personalized medicine into long-term care? We seek perspectives on developing AI solutions that remain robust and ethical when applied to the multi-morbidities of an aging population.

Space is limited to 90 participants. We kindly invite you to **register here** at your earliest convenience to secure your spot. Applications will be processed on a first-come, first-served basis.

Contact

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Agenda – Bridging the Gap between Molecular Innovation and Systems Engineering

Start	Topic	Speaker	Affiliation	Pillar
09:00	Registration			
09:30	Opening	Peter Baumann	JGU	
09:40	Digital twins in clinical research – Revolutionizing research by virtualization	Philipp Wild	UMC	2
10:00	"OnkOpti" and "Pharma 4.0 – RNAuto"	Andreas Jedlitschka	IESE	3
10:30	Don’t look back in AInger: AI for drug discovery	Paul Czodrowski	JGU	2
10:50	Coffee Break			
11:05	Quality Control for multi-omics data	Maximilian Sprang	JGU	1
11:25	Standardizing AI Uncertainty Management and AI Assurance in Medical Environments	Michael Kläs	IESE	1
11:55	Perspectives on the "Reliability Gap" in AI	Stefan Kramer	JGU	1
12:15	Answer Set Programming for Reliable Clinical Decision Support in Oncology	Andre Thevapalan	UMC	1
12:30	Lunch break			
13:00	From Uncertainty to Trust: Addressing the Reliability Gap in AI Health Systems via Robust Feature Selection	Robin Mertens	UMC	1
13:20	"FHIRStarter" and "SATURN"	Patricia Kelbert	IESE	1
13:40	Digital Twins for Female Patients (PETRA)	Patricia Kelbert	IESE	2
13:55	Bridging Simulation and ML to Decode HUWE1 E3 Ligase Target Selectivity	Ritika Aggarwal	JGU	2
14:05	Active Learning – Guided Peptide Design for Modulating Condensate Properties upon Recruitment	Kumar Gaurav	JGU	2
14:15	Quantifying Systemic and Organ-Specific Bio-Age Acceleration via Proteomics and Image-Based DL	Vincent ten Cate	UMC	4
14:30	Bilateral Exchange & Networking Finale			

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