

EMBLetc.

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Why time is of the essence in development

EMBL developmental biologists – with help from other disciplines – pursue the significance of time, timing, and transitions in organisms during their development.

Developmental biologists have long appreciated the critical importance of when things happen, at what pace, and how they correlate with the major transitional events of development. With progress in theory, imaging technology, and techniques like microfluidics, scientists



are now able to study developing systems in a much more dynamic manner – yielding findings that could even be drivers for preventing and treating developmental diseases and disorders. Fundamental research conducted by scientists at EMBL Heidelberg is helping us gain a clearer understanding of living systems and the varied internal and external cues that provoke changes in form, function, and behaviour.



Embracing the genome sequencing revolution



EMBL's Genomics core facility provides end-to-end support to researchers all over the world and stands at the forefront of scientific breakthroughs.

EMBL's GeneCore, also known as the Genomics Core Facility, has lived through the revolution in the field of genomics. The facility started out in 2001 as a Sanger sequencing provider, under the aegis of biologist Vladimir Benes, who still leads the facility today. Twenty-two years later, it has evolved into an advanced next-generation sequencing platform which plays a pivotal role in supporting researchers across EMBL's member states with its wide array of advanced genomics services. It serves as a vital resource, facilitating groundbreaking research and fostering scientific innovation.

Image credit: Stuart Ingham/EMBL





The secret of molecular promiscuity

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The Löw Group at EMBL Hamburg explores the structures of promiscuous molecules critical for nourishment and drug absorption.

How do cells eat? While they don't have mouths, they have a set of transporter molecules specialised in taking up different nutrients, such as sugars, fats, and pieces of digested proteins – called peptides. Peptide transporters are quite unusual because they are highly 'promiscuous', which means they can transport almost any type of short peptide, regardless of its shape and

Image credit: Isabel Romero Calvo/EMBI



composition. How do they achieve this? The Löw Group at EMBL Hamburg and CSSB is trying to untangle this mystery. Using structural biology methods, they explore how this molecular promiscuity works and how it could be used for improving drug absorption in the future.

ALUMNI SPOTLIGHT: SARA FAHS

Advocating for a generalist approach to science and life

Sara Fahs writes about key insights from her journey in science, during a career spanning academia and industry.

Sara Fahs is an Associate Director at BioNTech SE, where for the last several years, she has been advancing projects in the area of translational medicinal chemistry. Originally trained as a chemist, Fahs is a strong advocate for a generalist approach to science,

where building a range of skills and knowledge areas enhances one's creativity as well as problem-solving abilities.



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Deciphering the data deluge: how large language models are transforming scientific data curation

Large language models are changing the way we carry out scientific data curation, annotation, and research, setting the stage for a more efficient understanding of scientific literature.

In a world inundated with data, curating valuable information has never been more challenging, or more important. From academic papers to scientific databases, the deluge of new information can be overwhelming, leaving researchers in a constant struggle to keep up. However, a groundbreaking innovation in artificial intelligence is helping to transform



the data curation landscape: large language models (LLMs) such as those behind ChatGPT. Powered by sophisticated deep-learning algorithms, these models are revolutionising how we streamline and curate massive volumes of data.

Looking back: the moment EMBL was established

Transforming the idea of a European life science laboratory into reality, the EMBL Agreement was signed 50 years ago by representatives from 10 of its founding member states.

The pivotal moment in the establishment of EMBL was the signing of the EMBL Agreement on May 10, 1973, followed by its ratification in July 1974. The idea for the creation of a European molecular biology laboratory was first proposed when two Nobel Prize-winning biologists, John Kendrew and James Watson, met with Leo Szilard, Hungarian-German-American physicist and inventor, and Victor Weisskopf, Director General of CERN, in Geneva in December 1962. Taking place 11 years later, the EMBL Signing Agreement Ceremony was a significant event attended by prominent figures from the worlds of science and politics who had played pivotal roles in the establishment of EMBL.



Image credit: Karen Arnott/EMBL-EBI



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Taking science on the road

With the advanced mobile laboratory, EMBL is taking its service offerings to new heights, bringing cutting-edge life science technologies to the field in a way never seen before.

The Advanced Mobile Laboratory (AML) brings cutting-edge technology directly to the field, helping researchers carry out advanced sample preparation, metadata acquisition, and analysis – immediately after sample collection. EMBL acknowledges the generous support of many institutions, donors, and sponsors, in particular the

Manfred Lautenschläger Foundation, as well as Eppendorf SE, and Carl Zeiss Microscopy, in helping make the AML possible.





ALUMNI SPOTLIGHT: BAUBAK BAJOGHLI

Impact of access to imaging technologies on scientific achievements

Baubak Bajoghli, Director of Austrian Bioimaging/CMI, discusses his passion for

imaging and his work straddling basic and applied research in biology.



Baubak Bajoghli's interest in microscopy began at the age of 14, when he visited a medical diagnostics laboratory for a high school project. In a career spanning both fundamental and translational research, Bajoghli has kept his passion for imaging alive, and recently taken up a role as the Director of Austrian Bioimaging/CMI,

where he works to improve access to advanced microscopy infrastructure for researchers.





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