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KEEPING THE MOLECULAR BIOLOGY FLAME BURNING BRIGHT

A conversation with **JÜRGEN DEKA**, PhD, Head of External Scientific Training, EMBL International Centre for Advanced Training

The European Molecular Biology Laboratory (EMBL) is a guiding light in the life sciences — an intergovernmental organization with more than 80 independent research groups covering the spectrum of molecular biology. One of its core missions is to offer advanced training for researchers in emerging and ground-breaking topics. Around 30 conferences and 60 courses are run annually at all six EMBL sites, with the most being held at the impressive training centre in Heidelberg, Germany — the architecture of which was inspired by the DNA double helix. The programme promotes education, collaboration and cutting-edge research.

What are some of the hot topics in the 2019 programme?
Our conferences cover all aspects of molecular biology including genomics, cell and developmental biology, microbiology, molecular medicine and structural biology. Our flagship series co-organised with the European Molecular Biology Organization (EMBO) are our EMBO|EMBL Symposia, which focus on interdisciplinary, forward-thinking topics. In April, we have a conference called 'Reconstructing the Human Past — using Ancient and Modern Genomics', which will look at what we can learn about the history of humankind and migration pathways by whole-genome sequencing of ancient DNA. In May, we are hosting the 9th EMBO Workshop 'Chromatin and Epigenetics', which will cover the latest advances in the field including chromatin regulation, nuclear architecture and developmental epigenetics. The symposium 'Mechanical Forces in Development' held in July will focus on the mechanical basis of cell and tissue morphogenesis. In October, we have a conference on 'The Non-Coding Genome' exploring how non-coding RNAs regulate and influence gene-expression output.

Why shine a spotlight on training?
We offer a wide range of theoretical and practical courses on the latest techniques such as optogenetics and genome editing using the CRISPR/Cas9 system. We also offer a number of courses on microscopy including super-resolution microscopy and correlative light and electron microscopy. Many of the ideas for the courses and conference programme come out of the research that is currently going on here. The aim of our programme is to pass on the torch of knowledge to the community. Around 60 to 70% of our courses are wet-lab courses and we have dedicated training laboratories furnished with the latest equipment. Applicants for a course must send in a motivation letter describing their level of expertise and the course participants are chosen on the basis of who would benefit the most. The majority of the conferences and courses are held at our main laboratory in Heidelberg. Around 25 of our courses focus on bioinformatics and take place at our site near Cambridge in the UK — the European Bioinformatics Institute (EMBL-EBI). In addition, we have sites in Barcelona, Grenoble, Hamburg and Rome, which offer training in tissue engineering, structural biology, and epigenetics and neurobiology. We also offer online courses, particularly in bioinformatics, and are looking to expand this programme.

How are EMBL events attracting science's bright sparks?
We are one of the leading providers of courses and conferences in the world. All our speakers are scientists with an international reputation who are at the top of their field. Seven Nobel laureates will be speaking at conferences in 2019. For example, three winners of the Nobel Prize — William E. Moerner, Stefan Hell and Steven Chu — will be speaking at the symposium in October, 'Seeing is Believing — Imaging the Molecular Processes of Life'. Our events cover cutting-edge topics offering researchers the opportunity to hear about the latest findings and ideas. In fact, we actively encourage speakers to present their latest unpublished results. The atmosphere at our events is outstanding and the Advanced Training Centre in Heidelberg is purpose-built and architecturally stunning. Poster sessions are held in the part of the building that mimics the DNA double helix and we have enough space so that posters can stay up during the whole conference. Our conferences host up to 500 people, attract a very international audience and provide a lot of time for networking. At many of our conferences we offer speed-networking sessions giving researchers the opportunity to make connections with a large number of people at the beginning of the meeting. In addition, we have an excellent operational support that makes sure the events run smoothly.

How can people benefit from training?
Training broadens your horizon — sparking learning that goes far beyond what is published in the literature. Bringing together researchers from different disciplines leads to innovative thinking and creates synergies. Today, more than ever, science advances through the exchange of knowledge, concepts and ideas. Our courses are cutting-edge, giving researchers hands-on experience with the latest techniques and tools. They are also designed so that you learn while doing and can easily apply the techniques you've learnt once you are back in your own lab.

EMBL

EMBL 2019

Courses and Conferences

JANUARY

14 – 18 Jan • EMBL Course
Advanced Training with Oxford Nanopore Technologies

22 – 23 Jan • EMBL Course
Bioinformatics for Discovery

29 – 31 Jan • EMBL Course
Exploratory Analysis of Biological Data: Data Carpentry

FEBRUARY

3 – 8 Feb • EMBL Course
Analysis and Integration of Transcriptome and Proteome Data

5 – 8 Feb • EMBL Course
Introduction to Metabolomics Analysis

6 – 8 Feb • EMBL Industry Workshop
Cryo-EM in Industry and Academia

12 – 15 Feb • EMBL Course
Introduction to Multiomics Data Integration

26 – 28 Feb • EMBL Course
Bioinformatics Resources for Protein Biology

MARCH

4 – 8 Mar • EMBL Course
Immunoprofiling of Single Cells

7 – 9 Mar • EMBL–Wellcome Genome Campus Conference
Proteomics in Cell Biology and Disease Mechanisms

11 – 15 Mar • EMBL Course
Data Visualisation

11 – 15 Mar • EMBL Course
Target Engagement in Biology and Drug Discovery

13 – 15 Mar • EMBO Workshop
Visualizing Biological Data (VIZBI 2019)

17 – 20 Mar • EMBO | EMBL Symposium
Synthetic Morphogenesis: From Gene Circuits to Tissue Architecture

17 – 22 Mar • EMBL Course
Genome Engineering: CRISPR/Cas

19 – 20 Mar • EMBL Course
Exploring Human Genetic Variation

25 – 29 Mar • EMBO Practical Course
Optogenetics: From Design to Cell Signalling to Tissue Morphogenesis

26 – 29 Mar • EMBL Course
Introduction to RNA-Seq and Functional Interpretation

27 – 28 Mar • EMBL Course
Transgenic Animals – Micromanipulation Techniques

31 Mar – 3 Apr • EMBO | EMBL Symposium
Reconstructing the Human Past – Using Ancient and Modern Genomics

APRIL

1 – 5 Apr • EMBL Course
Livestock Genomics

1 – 5 Apr • EMBL Course
Statistical Methods in Bioinformatics with R/Bioconductor

7 – 12 Apr • EMBO Practical Course
High–Accuracy CLEM: Applications at Room Temperature and *in Cryo*

8 – 12 Apr • EMBL Course
RNA–Sequence Analysis

10 – 13 Apr • EMBO | EMBL Symposium
Probing Neural Dynamics with Behavioural Genetics

MAY

1 – 4 May • EMBO Workshop
Chromatin and Epigenetics

2 – 4 May • EMBL Course
Techniques for Studying Iron in Health and Disease

5 – 10 May • EMBL Conference
8th Congress of the International BioIron Society

5 – 10 May • EMBO Practical Course
Quantitative Proteomics: Strategies and Tools to Probe Biology

12 – 18 May • EMBO Practical Course
Single-Cell Omics

13 – 17 May • EMBL Course
Fundamentals of Widefield and Confocal Microscopy and Imaging

13 – 17 May • EMBL Course
Functional Insights into Biological Data Through Network Analysis

15 – 18 May • EMBO | EMBL Symposium
The Identity and Evolution of Cell Types

19 – 24 May • EMBL Course
Advanced Fluorescence Imaging Techniques

28 – 30 May • EMBL Conference
BioMalPar XV: Biology and Pathology of the Malaria Parasite

JUNE

2 – 8 Jun • EMBO Practical Course
Extracellular Vesicles: From Biology to Biomedical Applications

3 – 4 Jun • EMBL Conference
Biological Solutions for the Global CO2 Challenge

3 – 7 Jun • EMBL Course
Whole Transcriptome Data Analysis

4 – 6 Jun • EMBL Course
Bioinformatics for Principal Investigators

4 – 6 Jun • EMBL Course
Managing a Bioinformatics Core Facility

10 – 14 Jun • EMBL Course
Metagenomics Bioinformatics

12 – 19 Jun • EMBO Practical Course
Microbial Metagenomics: A 360° Approach

17 – 20 Jun • EMBL Course
Cancer Genomics

24 – 28 Jun • EMBL Course
Summer School in Bioinformatics

JULY

1 – 5 Jul • EMBL Course
Shift Your DNA and RNA Sequencing Library Preparation into Hyper–Drive

2 – 4 Jul • EMBO Workshop (Barcelona)
Limb Development and Regeneration: New Tools for a Classic Model System

3 – 6 Jul • EMBO | EMBL Symposium
Mechanical Forces in Development

8 – 12 Jul • EMBL Course
Systems Biology: From Large Datasets to Biological Insight

8 – 13 Jul • EMBL Course
Super-Resolution Microscopy

10 – 13 Jul • EMBO | EMBL Symposium
New Approaches and Concepts in Microbiology

15 – 19 Jul • EMBL Course
Bioinformatics for Immunologists

21 – 26 Jul • EMBL Course
Proteomics Bioinformatics

29 Jul – 2 Aug • EMBL Course
Hands-On Flow Cytometry – Learning by Doing!

AUGUST

28 – 29 Aug • EMBL Conference
A Life for Science – Symposium in Memory of Fotis Kafatos

SEPTEMBER

2 – 6 Sep • EMBL Course
Chromatin Signatures During Differentiation: Integrated Omics

4 – 7 Sep • EMBO Workshop
Protein Synthesis and Translational Control

8 – 17 Sep • EMBO Practical Course
Current Methods in Cell Biology

9 – 12 Sep • EMBL Course
Attacking Open Chromatin with ATAC Sequencing

10 – 11 Sep • EMBL Course
Finding Evidence in Research Publications

11 – 13 Sep • EMBO | EMBL Symposium
Multiomics to Mechanisms – Challenges in Data Integration

15 – 22 Sep • EMBO Practical Course
Synthetic Biology in Action: Bridging Natural/Non-Natural

16 – 20 Sep • EMBL Course
Structural Bioinformatics

22 – 25 Sep • EMBO Workshop
Creating is Understanding: Synthetic Biology Masters Complexity

23 – 27 Sep • EMBL Course
Next Generation Sequencing Bioinformatics

23 – 28 Sep • EMBL Course
Liquid Biopsies

29 Sep – 2 Oct • EMBO | EMBL Symposium
Systems Genetics: From Genomes to Complex Traits

30 Sep – 4 Oct • EMBL Course
Whole Transcriptome Data Analysis

OCTOBER

7 – 9 Oct • EMBO Workshop (Hamburg)
Tools for Structural Biology of Membrane Proteins

8 – 10 Oct • EMBL Course
Exploring Biological Sequences

9 – 12 Oct • EMBO | EMBL Symposium
Seeing is Believing – Imaging the Molecular Processes of Life

16 – 18 Oct • EMBL Course
Computing Skills For Reproducible Research: Software Carpentry

16 – 19 Oct • EMBO | EMBL Symposium
The Non-Coding Genome

20 – 25 Oct • EMBL Course
Volume Electron Microscopy by Automated Serial SEM

21 – 25 Oct • EMBL Course
Genomic Data for Surveillance of Communicable Disease

24 – 25 Oct • EMBL Science and Society Conference
Science as Storytelling: From Facts to Fictions

29 – 30 Oct • EMBL Course
Microinjection into Adherent Cells

NOVEMBER

3 – 8 Nov • EMBO Practical Course
Humanized Mice in Biomedicine: Challenges and Innovations

3 – 9 Nov • EMBO Practical Course (Hamburg)
Practical Integrative Structural Biology

4 – 6 Nov • EMBL Conference
Cancer Genomics

11 – 14 Nov • EMBL Course
Bioinformatics and Functional Genomics in Zebrafish

11 – 15 Nov • EMBO Practical Course
The Fundamentals of High-End Cell Sorting

13 – 16 Nov • EMBO Workshop
Precision Health: Molecular Basis, Technology and Digital Health

17 – 22 Nov • EMBO Practical Course
Methods for Analysis of Circular RNAs: No Tautology

18 – 22 Nov • EMBL Course
Bioinformatics for Plant Biology

20 – 23 Nov • EMBO | EMBL Symposium
Metabolism Meets Epigenetics

28 – 30 Nov • EMBL Conference
21st EMBL PhD Symposium

DECEMBER

2 – 5 Dec • EMBL Course
Enzymatic Methyl-seq: Bisulfite-Free Methylation Analysis

8 – 10 Dec • EMBL–Wellcome Genome Campus Conference
Target Validation Using Genomics and Informatics

For further details visit our website:
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