

# EMBLetc.

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## Uncovering a microbe's inner life

Researchers at EMBL are combining their expertise to observe the inner workings of an unusual bacteria at an unprecedented level of detail. →

*Mycoplasma pneumoniae* is among the smallest free-living microorganisms on Earth. A group of scientists at EMBL are now using this unique organism to interrogate the fundamental processes that underlie the biology of a living cell. Spearheaded by the research group of Julia Mahamid, and enabled by collaborations with multiple groups both within and outside EMBL, the researchers are attempting to 'see', at unprecedented resolution, the mechanisms of life inside one of the smallest complete cells.





## From coast to coast and beyond

EMBL researchers conducted a pilot project in Iceland as the final preparatory step before commencing their journey traversing European coastlines →

EMBL researchers and their collaborators visited three different locations in Iceland – Reykjavik, Westfjords, and Akureyri – with unique climatic and environmental conditions. They collected marine organisms, soil, seawater, and sediments, and tested out experimental protocols that would become critical for the large-scale expedition that EMBL will run in 2023 and 2024 for the TREC project. The expedition was the final pilot for Traversing European Coastlines (TREC), a flagship project of the new EMBL programme that aims to study life in context. TREC is a way to bring together environmental research and molecular and cellular biology to address urgent societal challenges.





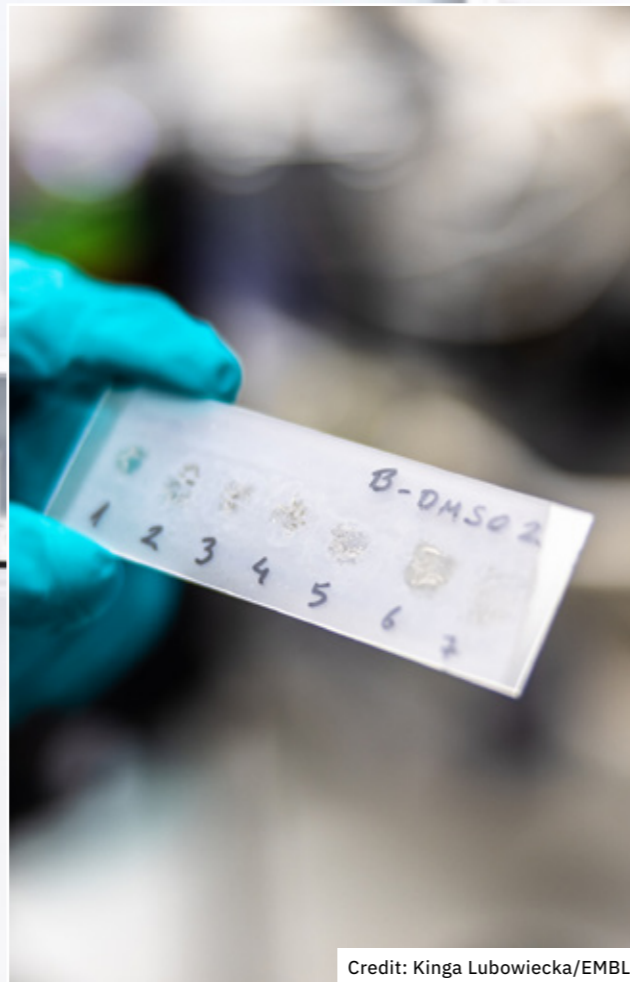
# The power of a pesticide library

EMBL research groups apply molecular biology and its research tools to better understand agricultural pesticides. →

The work of several EMBL researchers has intertwined in myriad ways to bring molecular biology insights into understanding the impacts of pesticides, their degradation, and ways to accelerate that degradation. This kind of fundamental research can inform approaches to pollution clean-up and potentially guide a new generation of agro-chemicals – chemicals that could still be potent enough for their intended objectives, but quickly able to degrade and disappear.



Credit: Yi-Jie Li/EMBL



Credit: Kinga Lubowiecka/EMBL



Credit: Kinga Lubowiecka/EMBL

## ALUMNI SPOTLIGHT: SARA COURTNEIDGE

### From academia to industry and back



Sara A. Courtneidge, Lennart Philipson Award recipient, reflects on the fundamental and translational research aspects to her career in cancer research →

Sara A. Courtneidge has always been driven primarily by an innate compulsion to discover how things work. Now the Associate Director of Translational Sciences for the Knight Cancer at Oregon Health and Science University, Courtneidge's work over a number of decades has significantly contributed to understanding cancer cells and what makes them thrive.







Credit: Adobe Stock

## Molecular solar panels can help scientists control brain cells

**Kirill Kovalev, an EMBL Hamburg researcher, is studying the structure of an ancient bacterial molecule to help scientists control brain cell activity.**



Kirill Kovalev, an EIPD postdoc in the Schneider Group at EMBL Hamburg, is fascinated by rhodopsins, ancient molecules that in aquatic bacteria act as cellular 'solar panels'. Trained as a physicist, he uses cutting-edge structural biology techniques to create molecular movies showing – on an atomic level – how rhodopsins change their molecular structure to capture solar energy. Using this knowledge, he designs new, more powerful rhodopsins that neuroscientists could apply as tools to control neuronal activity.







Credit: Jeff Dowling/EMBL

## Building bioinformatics capacity in Latin America

The CABANA project was born out of a desire to strengthen [bioinformatics capacity and accelerate data-driven biology in Latin America](#).

Having one bioinformatician on a research team used to be enough, but as biology becomes more data driven, bioinformaticians are in high demand. This is certainly the case in Latin America, where the data revolution is well underway in the life sciences. But one thing still missing is a critical mass of bioinformaticians to manage, analyse, and share data more widely. The CABANA project was born out of a desire to strengthen bioinformatics capacity and accelerate data-driven biology in Latin America, and nine research organisations in the region and the EMBL-EBI Training team made it a reality.



Credit: Jeff Dowling/EMBL

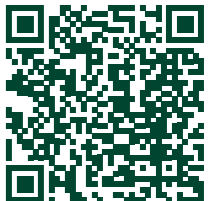
## ALUMNI SPOTLIGHT: MARIA TOSCHES

### Studying brain evolution: from worms to newts



Maria Tosches, John Kendrew Award winner, uses newts as model organisms to further explore the cellular makeup of invertebrate brains.

EMBL alumna Maria Tosches pursues the principles that drive evolution of neuron types and brain circuits. Her foray began with frogs, then moved onto *Platynereis* worms, then turtles and lizards, and now, Spanish ribbed newts (*Pleurodeles*). At Columbia University, Tosches is exploring these newts' simple neural networks as models for more complicated ones.







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