

SCIENTIFIC NEWS

Editorial. A look back at the laboratory's open house

'I didn't know how a laboratory looked like.' On October 10th and 11th, the LBBE opened its doors as part of the 2025 Science Festival. Two days rich in exchanges and discoveries allowed hundreds of visitors, both schoolchildren and the general public, to take a behind-the-scenes look at research in ecology and evolution.

Several schools took part: Lycée Jacques Brel (Vénissieux), Lycée Robert Doisneau (Vaulx-en-Velin), Collège des Iris (Villeurbanne), Collège du Cinéma Bertrand Tavernier (Villeurbanne) and Lycée Colbert (Lyon 8).

Visitors were able to explore the many facets of the laboratory through a varied programme of conferences and immersive workshops.

The conference 'Genes, Culture and Human Evolution' kicked things off by revealing how human evolution is shaped as much by our genetic heritage as by our cultural behaviours, offering a cross-disciplinary perspective between biology, anthropology and social sciences.

With 'What DNA reveals about our evolutionary history,' the audience discovered how advances in genomics now make it possible to trace our past.

'The Alpine Marmot Project: A Scientific Adventure in the Heart of the Alps' presented a behind-the-scenes look at a long-term ecological monitoring project, where each observation contributes to a better understanding of how marmots adapt to environmental disturbances.

The conference 'The secret of oak forests in the face of climate change' immersed the audience in the astonishing strategies of these trees, revealing how genetics, ecophysiology and forest management intertwine to anticipate their future responses.

Finally, with 'How is AI revolutionising biology?', visitors were given a glimpse of the profound transformation of scientific practices.

Workshops included 'Symbiosis: a story for two', 'Bedbugs: catch them all (or not!)' and 'Science in Bubbles', the doctoral students' comic strip. Two workshops directly related to the laboratory's themes attracted particular attention: 'Dynamics of wild boar populations,' devoted to wildlife management, and 'The marmot fresco,' a participatory activity illustrating the links between ecology, animal behaviour and climate change. Finally, the escape game 'Almasty', designed by Sasha Darmon and the Dèmesures association, immersed participants in a scientific investigation inspired by evolutionary biology.

These two days mobilised many members of the laboratory, who lent their voices and enthusiasm to bring science to life. They illustrate the growing importance of scientific mediation, which connects research and society and fuels collective reflection on life and the future of our ecosystems.

Julie De Coucy (Communication officer)

Tracing ghost species through gene transfer

A new approach to exploring the hidden diversity of life. Much of the biodiversity of the past remains invisible: entire lineages have become extinct without leaving any fossils or genomic data behind. These "ghost species", comprising extinct, unknown or never-sampled taxa, are thought to be far more numerous than those represented in the tree of life. This lack of data skews the reconstruction of evolutionary history and the detection of horizontal gene flow. In this study, researchers tested the potential of phylogenetic methods for detecting horizontal gene transfer (HGT) to track down these missing lineages. *'What we show is that we can detect the statistical trace of species that have left no known fossils or genomes,'* explains Enzo Marsot. By combining evolutionary modelling and cyanobacteria data analysis, the team shows that certain horizontal transfer signals can indicate the presence and phylogenetic position of ghost species. In other words, genes circulate between visible and invisible species, leaving a scientifically exploitable imprint in current genomes.

This proof of concept suggests that it is possible to explore past diversity based on the traces left in current genomes: *'The scarcity of fossil records and the unknown nature of the microbial world do not mean a lack of information: genomes themselves preserve the memory of past interactions,'* emphasises Damien de Vienne. This approach paves the way for a profound reinterpretation of the history of life, where extinct species cease to be silent and leave traces of their existence in the DNA of the living species that coexisted with them.

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Authors : Enzo Marsot, Damien de Vienne ([COEVOL Department Multi-Scale Coevolution](#)) et al. Source : *NAR Genomics & Bioinformatics*

A meta-analysis evaluates clinical data on spa treatments in rheumatology

What do the data say about the potential effects of spa treatments ? A team of researchers conducted a systematic review and meta-analysis on balneotherapy in rheumatology, published in *BMJ Open*. The study compiled dozens of European clinical trials to assess the potential efficacy and safety of treatments on pain, quality of life and patient tolerance.

The researchers urge caution: although the average of the studies is consistent with a positive effect, this effect remains highly uncertain due to methodological biases and heterogeneous protocols. For Guillaume Grenet, lead author of the study, *'just because the estimate is statistically significant does not mean it is reliable.'* Among the better-controlled trials, the effect of treatment becomes less significant. *'The question is not to say that balneotherapy has no effect, but that it has no greater effect than other interventions such as rest or physiotherapy,'* insists Jean-Christophe Lega. This meta-analysis showed that there is no credible evidence of a favourable risk-benefit balance for the specific potential effects of European balneotherapy in rheumatology.

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Authors : Guillaume Grenet, Jean Christophe Lega ([Department of Statistics and Modelling for Health Sciences](#)) et al. Source : *BMJ Open*

