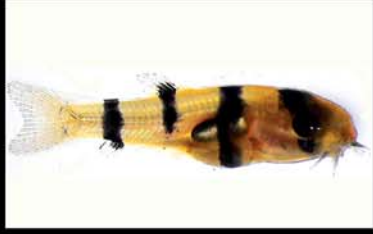


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databases—to explain the distribution of certain taxa according to factors such as climatic conditions and available resources, thus boosting insight into mechanisms underlying the formation of communities of organisms. These different approaches are essential for characterizing studied taxa and more accurately determining their evolutionary history, especially with respect to: (i) invasive species, (ii) pathogen reservoirs, and (iii) crop and stored food pests.

CBGP has developed a broad network of collaborations and scientific partnerships. In Montpellier (France), it is collaborating directly with other joint research units to develop research in the fields of evolutionary and ecological biology, and with ISEM, CEFE, AMAP and the Genetics and Evolution of

Infectious Diseases laboratory (GEMI). CBGP is a member of the *Montpellier, Environnement, Biodiversité* federative research institute. Finally, CBGP has set up a diversified national and international partnership (industrialized and developing countries) formalized by the French National Research Agency (ANR) as well as European and international projects.

### Molecular diversity central to host-parasite interactions

The scientific activities of the joint research unit (UMR) *Biologie et Écologie tropicale et méditerranéenne* (BETM, CNRS, UPVD) are focused on analysis of the diversity of interactions between parasites and their surrounding environment.

This latter environment encompasses host species that the parasites utilize depending on the environment in which they are transmitted.

Multiscale integrative approaches (from molecules to populations) are implemented by the research unit to analyse genetic and epigenetic mechanisms of phenotypic diversity/plasticity and thus the adaptability to environmental variations impacting these species.

One of the laboratory's key models is the metazoan parasite *Schistosoma mansoni* (schistosome) which causes schistosomiasis, a parasitic disease that affects over 200 million people in 74 intertropical countries. This parasite uses various freshwater molluscan species as intermediate hosts, in which the larval forms that infect humans are propagated asexually. ●●●

## EDEN and EDENext: understanding emerging diseases to enhance their prevention and control



▲ Top. Camargue horses.  
Left. *Culex pipiens*.  
Right. *Ixodes ricinus*.  
Bottom. *Phlebotome piquant* L.

An international conference held in May 2010, in Montpellier (France), marked the end of the Emerging Diseases in a changing European eNvironment (EDEN) project, which was launched by the European Commission (6th Framework Programme of Research and Technological Development). This large project (49 partners in 24 countries in Europe, the Middle East and Africa) was designed to assess the effects of environmental changes on the risk of human disease emergence and to characterize the most exposed ecosystems. Vector- (ticks, insects, etc.) and rodent-borne diseases were selected because they are highly sensitive to such changes. The results showed that social, economic and behavioural factors are often more important in explaining emergence than climate change. However, each epidemiological system is a special case and it is essential to have access to top quality field and public health data to be able to draw conclusions.

In addition to these results, the project led to the completion of some 60 university theses and the construction of a research network recognized by the European Community (EC) and public health agencies. The EC has also just launched the EDENext project, around the same scale as EDEN, and which can be considered as a follow up that also deals with animal health. EDENext is focused on gaining insight into the risks of introduction, installation and dissemination of vector-borne diseases, and on the systematic assessment of vector population control methods. The socioeconomic dimension is taken into account, with studies on stakeholder risk perception and management. EDENext, like its predecessor, is a developing country oriented project coordinated by CIRAD and IRD.

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