

PRESS RELEASE

European project searches for tick-borne disease antidote

- *CIC bioGUNE is taking part in the European project ANTIDotE, which aims to find components in the arthropod's saliva that would help to prevent diseases caused by its bite.*
- *Ticks transmit various kinds of bacteria, viruses and parasites, causing diseases such as tick-borne encephalitis, tick typhus, human babesiosis, Lyme disease and tick-borne encephalitis.*
- *Centres, universities and companies from different European countries are taking part in this initiative, which has a budget of three million euros and will last five years.*

(Bilbao, June 2013).- Ticks transmit various types of bacteria, viruses and parasites with their bites and can cause diseases, among which tick-borne encephalitis (TBE), babesiosis and Lyme disease. There is still no vaccine for some of these diseases.

In order to find a solution to this problem, a European initiative was started up recently, in which the Basque Center for Cooperative Research in Biosciences **CIC bioGUNE** is taking part. The project aims to identify compounds in ticks' saliva that may be used as active ingredients to develop a vaccine for multiple tick-borne diseases.

Universities, companies and research centres from different European countries are taking part in this project, called ANTIDotE. It will last five years and has a budget of three million euros funded by the EU through the Seventh Framework Programme.

In recent years it has been proven that ticks have spread to latitudes where they did not live before, partially because of an increase in temperature. This fact and the changes in the landscape and human habits have increased the number of tick bites. In fact, the number of cases of tick-borne diseases in humans in Europe has been on the increase since the eighties. The European Union is very keen to prevent these

infections because in some European countries (especially in Central and Eastern Europe) they are highly endemic.

Scientific research carried out on animals and human beings has found that after a certain number of bites the body becomes more resistant to ticks: ticks do bite, but are unable to feed. Based on this observation, the starting point for the research will be the identification of compounds in ticks' saliva that are involved in this reaction. Once such tick proteins have been identified, their capacity to serve as an anti-tick vaccine will be studied. In addition, components that could be used in vaccines will be identified with advanced transcriptomics techniques. The ultimate step would be to assess whether such vaccines could be implemented in public health systems in EU member states.

CIC bioGUNE's job is to determine the immune response to antigens that are potentially useful for being used as a vaccine, and to produce the candidates that are found. Tests on mice will also be conducted to verify the capacity of candidate antigens to interfere with tick feeding.

According to Juan Anguita, head of research at CIC bioGUNE, “this multidisciplinary project will enable us to integrate different perspectives for developing vaccines with a very high potential value that will enable us to fight very harmful infectious agents that affect both people and animals”.

“We hope to find proteins in tick saliva that help these parasites to remain latched onto the host for many days,” Anguita explains. “We know that some of these proteins have anti-inflammatory, immunomodulatory and anticoagulant properties, but we also hope to find some whose functions have not yet been defined. These proteins will be prove to be useful in our research,” he concludes.

The consortium

As well as CIC bioGUNE, other organisations that are taking part in the research consortium are the Academic Medical Center of the University of Amsterdam (coordinator), the Biology Centre of the Academy of Sciences of the Czech Republic, the Free University of Berlin, the National Institute for Public Health and the Environment of Holland, the Institute of Virology of the Slovak Academy of Sciences, and the German company GenXPro.