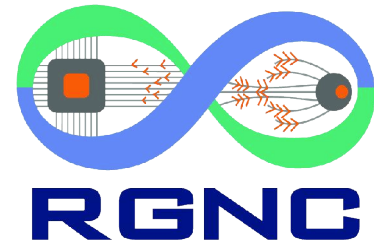


Research Group on Natural Computing

PAIDI TIC-193 – www.gcn.us.es



Description

The **Research Group on Natural Computing** (RGNC, www.gcn.us.es) belongs to the Department of Computer Science and Artificial Intelligence of the University of Seville. The RGNC consists of *12 members*. *Mario de Jesús Pérez Jiménez* (marper@us.es) is the head of the group, a full-professor in Computer Science and Artificial Intelligence, and a numerary member of the Academia Europaea (The Academy of Europe), section Informatics.

The research activities of the RGNC focus on the interplay between Computer Science, Mathematics and Biology. Specifically, it focuses on the development of *enabling technologies* based on bio-inspired formal methods, more precisely *Membrane Computing*, a recent branch of Natural Computing that provides an abstraction of the living eukaryotic cell.

Research lines

Bio-inspired Models of Computation

Application of new computational paradigms inspired on living Nature to the stablishment of *novel frontiers* in efficiency. Characterization of the conjecture $P \neq NP$ in these unconventional models of computation.

Ecological Modelling

Development of probabilistic and multi-environment models of *real ecosystems* based on the bio-inspired models of computation. Development of software tools that allow ecologists to easily use our models.

High Performance Computing based on Graphics Processing Units (GPU)

Development of *high-throughput* simulation tools for bio-inspired models by using massively parallel architectures such as *GPUs*. Management of a GPU cluster inside the group.

Computational Systems Biology

Application of bio-inspired models to the modelling of *cellular systems* such as signalling pathways involved in the uncontrolled proliferation of tumour cells and in the communication between bacterial cells.

The Research Group on Natural Computing has a long experience in the development of international, European and national projects. To contact the RGNC please email the head of the group Prof. Mario de Jesús Pérez Jiménez at marper@us.es.

