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Biography

Degree in Biology at the University of Milan (1972/73). Since 1992 Associate Professor (Zoology). 2005 Full Professor. Member of the teaching staff of the PhD in Developmental and Evolutionary Biology. Since 1972, Magda de Eguileor actively takes part in the research carried on in the Electron Microscopy laboratory of the Department of Biology of the University of Milan and more recently of the Department of Structural and Functional Biology of the University of Insubria.

Research interests

The broad goal of my laboratory is to understand the mechanisms that underlie angiogenesis and fibroplasia phenomena during wound healing responses by using the leech *Hirudo medicinalis* as a new in vivo model. It is very important to study the formation of new vessels and extracellular matrix (ECM) in "non-vertebrate" sharing a high degree of similarity with the same processes occurring in humans, both under the structural/functional and biochemical points of view. In addition, the leech, characterised by a relative anatomical simplicity, has the unique advantage of having a virtually avascular muscular body wall allowing unambiguous, clear-cut studies on the angiogenic mechanisms. Angiogenesis and fibroplasia are finely controlled by growth factors and cytokines. In fact during these phenomena cell communication is an important mechanism that involves the transduction of information from one cell to others or from cells to ECM.

A second project in the lab addresses the processes which regulate the pathologic alterations induced by parasitoid insects in their hosts: besides their general scientific interest, these studies can lead to the identification of new molecular systems displaying potent and selective insecticide activity.

During oviposition, entomophagous hymenoptera can inject in their hosts specific venoms, frequently associated with symbiotic viruses belonging to the polydnaviridae (PDV) family. Both venom and PDV can be a natural source of new agents able to induce marked alterations in the neuroendocrine and immune systems of phytophagous insects, like lepidopterans and aphids. The high specificity of the mechanisms allowing parasites to regulate the physiology of their hosts, strongly suggests that both proteins and

genes displaying insecticide activity in these systems can be highly selective. Thus, the general aim of our research is the identification and characterization of genes and proteins displaying selective and specific insecticide activity. Moreover, it must be underlined that the potential insecticides must be characterized by high biosafety and low toxicity towards humans, animals, plants.

A third project is about the development of obliquely striated muscles, a peculiar type of striated muscles, typical of soft-bodied animals. We use the cuttlefish *Sepia officinalis* as a model system to identify and characterize the molecules involved in the muscle development. In particular the role for MRFs in promoting muscle development (during embryonic development) is suggested by the location and timing of their expression: The first MRF protein detected in cuttlefish tentacle is Myf-5 followed by MyoD. Initially, Myf-5 and MyoD expression is mutually exclusive and later overlaps (even if in different cell types). In addition we focus on the role of Hedghog, and its receptor during muscle fibre differentiation and spatial organization in cuttlefish organogenesis. The proposed activity is of great importance not only to understand the differentiation of obliquely striated muscles but also it is obviously interesting from evolutionary point of view.

Teaching experience and appointments

I teach these undergraduate courses: Morpho-functional zoology, Structural and Functional Biology, Experimental animal models, In vivo models. I teach also these graduate courses: Origins and modulation of structures, Environmental tests. In addition, I mentor several undergraduate students for their independent studies in the lab and their theses, as well as several PhD students for their Lab and theses.

Member of the teaching committee of the Faculty
Member of the Technical Scientific Committee of Central Instrument Facility for Biomedical Research (CSGARB)
Member of the International PhD course on "Insect Biotechnology"
Member of the editorial board of Current Pharmaceutical Design
Member of the editorial board of Invertebrate Survival Journal
Coordinator of research unit in national research projects and scientist in charge of research units in national programs

Representative publications

de Eguileor M., Grimaldi A., Tettamanti G., Valvassori R., Cooper E. L. and Lanzavecchia G., 2000, Different types of response against foreign antigens by leech leukocytes. *Tissue & Cell*, **32**: 40-48

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Perletti G., Marras E., Dondi D., Grimaldi A., Tettamanti G., Valvassori R., **de Eguileor** M., 2003, Assessment of the biological activity of an improved naked-DNA vector for angiogenesis gene therapy on a non-mammalian model. *Inter. J. Mol. Med.* **11**: 691-696.

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Tettamanti G., Grimaldi A., Valvassori R., Rinaldi L., **de Eguileor** M., 2003, Vascular Endothelial Growth Factor is involved in neoangiogenesis in *Hirudo medicinalis* (Annelida, Hirudinea), 2003, *Cytokine* **22**: 168-179.

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