



**Gianluca Tettamanti**

UNIVERSITY OF INSUBRIA



[Printable Version](#)

## Contact data

**Assistant Professor**

**Department of Structural and Functional Biology**

Via J.H. Dunant 3 - 21100 Varese - Italy

Tel: +39 (0)332 421312

Fax: +39 (0)332 421300

E-mail: [gianluca.tettamanti@uninsubria.it](mailto:gianluca.tettamanti@uninsubria.it)

## Biography

July 1997: BSC in Biology (University of Milano)

May 1998-July 1998: Randall Institute, King's College, London

November 1999-November 2002: PhD in Developmental Biology (University of Insubria)

January 2003-September 2004: Laboratory of Biology of Invertebrates, DBSF, University of Insubria

October 2004-December 2004: Randall Division of Cell and Molecular Biophysics/MRC Centre for Developmental Neurobiology, King's College, London

January 2005-: Assistant Professor (Zoology), University of Insubria

## Research interests

### 1. **Wound healing and angiogenesis in Hirudinea**

A variety of stimuli including surgical wounds, grafts and the administration of modulators of neovascularization (activators of vascular cell growth) can induce a prompt biological response in the leech *Hirudo medicinalis*, leading to the formation of an extensive blood vessel network. An increasing body of evidence indicates the involvement of botryoidal tissue cells (a peculiar tissue of Arhyncobdellids) in neo vessel formation. Leech angiogenic process shares a surprising degree of similarity with neovascularization in vertebrates, both at the cellular and at the biochemical levels: in fact, it involves similar growth factors/growth factor receptors (in particular we have characterized the existence of a VEGF-VEGF receptor system), and relies on analogous cell-cell and cell-matrix interactions.

### 2. **Host-parasite interactions**

Biodiversity can be a source of new natural products for the control of economically important pest insects. Parasitoid insects evolved an astonishing number of adaptations to develop inside their hosts. The

employment of molecules made by these insects as biological control agents could be an interesting alternative to the use of chemical insecticides. The model species chosen for this research is *Toxoneuron nigriceps*, an endophagous parasitoid of the tobacco budworm, *Heliothis virescens*. *T. nigriceps* injects in its host, together with the egg, a venom and a polydnavirus (CnPDV); this leads to a remarkable alteration of the immune response and of the neuroendocrine system of the host. Thus, the study of the molecular and physiological mechanisms of the host-parasitoid interaction represents an interesting opportunity to identify new genes and molecules with insecticide activity and with a high level of selectivity, reducing the risks to non-target organisms.

### 3. Helical muscle structure and development

The aim of this research is to investigate the organization, growth mechanism and differentiation of helical fibers, a peculiar type of striated muscle. Biochemical, structural and ultrastructural studies are performed to analyze circomyarian fibers (Annelida) and pseudocircomyarian fibers (Cephalopoda). The transcription factors involved in differentiation (MRFs expression and localization) and the regulation of muscle development by the morphogen Hedgehog are considered

## Teaching experience and appointments

- Course: Life Science 2 (Biology)
- Course: Evolutionary Biology (Biology)
- Course: General Biology (Environmental Sciences)
- Practicals: Zoology of invertebrates and vertebrates (Biology)

## Representative publications

1. **Tettamanti G.**, Grimaldi A., Pennacchio F. and de Eguileor M., 2007. Lepidopteran larval midgut during prepupal instar: digestion or self-digestion? ***Autophagy***, 3: 630-631
2. **Tettamanti G.**, Grimaldi A., Casartelli M., Ambrosetti E., Ponti B., Congiu T., Ferrarese R., Rivas-Pena M.L., Pennacchio F. and de Eguileor M., 2007. Programmed cell death and stem cell differentiation are responsible for midgut replacement in *Heliothis virescens* during prepupal instar. ***Cell and Tissue Research***, 330: 345-359
3. Hammond C.L., Hinitz Y., Osborn D.P.S., Minchin J., **Tettamanti G.** and Hughes S.M., 2007. Signals and myogenic regulatory factors restrict pax3/7 expression to dermomyotome-like tissue in zebrafish. ***Developmental Biology***, 302: 504-521
4. **Tettamanti G.**, Malagoli D., Benelli R., Albin A., Grimaldi A., Perletti G., Noonan D.M., de Eguileor M. and Ottaviani E., 2006. Growth factors and chemokines: a comparative functional approach between invertebrates and vertebrates. ***Current Medicinal Chemistry***, 13: 2737-2750
5. Grimaldi A., **Tettamanti G.**, Perletti G., Valvassori R. and de Eguileor M., 2006. Hematopoietic cell formation in leech wound healing. ***Current Pharmaceutical Design***, 12: 3033-3041

6. Grimaldi A., Caccia S., Congiu T., Ferrarese R., **Tettamanti G.**, Rivas-Pena M., Perletti G., Valvassori R., Valvassori R., Giordana B., Falabella P., Pennacchio F. and de Eguileor M., 2006. Structure and function of the extraembryonic membrane persisting around the larvae of the parasitoid *Toxoneuron nigriceps*. ***Journal of Insect Physiology***, 52: 870-880
7. **Tettamanti G.**, Malagoli. D., Marchesini E., Congiu T., de Eguileor M. and Ottaviani E., 2006. Oligomycin A induces autophagy in the IPLB-LdFB insect cell line. ***Cell and Tissue Research***, 326: 179-186
8. Rinaldi L., Basso P., **Tettamanti G.**, Grimaldi A., Trova G., Saroglia M. and de Eguileor M., 2005. Oxygen availability causes morphological changes and a different VEGF/Flk-1/HIF-2 expression pattern in sea bass (*Dicentrarchus labrax*) gills. ***The Italian Journal of Zoology***, 72: 103-111
9. **Tettamanti G.**, Grimaldi A., Congiu T., Perletti G., Raspanti M., Valvassori R. and de Eguileor M. , 2005. Collagen reorganization in leech wound healing. ***Biology of the Cell***, 97: 557-568
10. Ferrarese R., Brivio M., Congiu T., Falabella P., Grimaldi A., Mastore M., Perletti G., Pennacchio F., Sciacca L., **Tettamanti G.**, Valvassori R. and de Eguileor M., 2005. Early suppression of immune response in *Heliothis virescens* larvae by the endophagous parasitoid *Toxoneuron nigriceps*. ***Invertebrate Survival Journal***, 2: 60-68
11. **Tettamanti G.**, Grimaldi A., Ferrarese R., Rinaldi L., Bortolotto A., Di Guardo G. and de Eguileor M., 2004. A comparative study of *sporta perimedullaris muscolosa* in the reniculus of six species of cetaceans. ***The Italian Journal of Zoology***, 71: 115-121 (Errata 71: 271-273)
12. **Tettamanti G.**, Grimaldi A., Rinaldi L., Arnaboldi F., Congiu T., Valvassori R. and de Eguileor M., 2004. The multifunctional role of fibroblasts during wound healing in *Hirudo medicinalis* (Annelida, Hirudinea). ***Biology of the Cell***, 96: 443-455
13. Grimaldi A., **Tettamanti G.**, Rinaldi L., Valvassori R. and de Eguileor M., 2004. Role of cathepsin B in leech wound healing. ***Invertebrate Survival Journal***, 1: 36-48
14. Grimaldi A.\*, **Tettamanti G.\***, Martin B.L., Gaffield W., Pownall M.E. and Hughes S.M., 2004. Hedgehog regulation of superficial slow muscles fibres in *Xenopus* and the evolution of tetrapod trunk myogenesis. ***Development***, 131: 3249-3262 (\* equal contribution)
15. de Eguileor M., **Tettamanti G.**, Grimaldi A., Perletti G., Congiu T., Rinaldi L. and Valvassori R., 2004. *Hirudo medicinalis*: avascular tissue for clear-cut angiogenesis studies? ***Current Pharmaceutical Design***, 10: 1979-1988
16. Grimaldi A., **Tettamanti G.**, Brivio M.F., Valvassori R. and de Eguileor M., 2004. Differentiation of slow and fast fibers in tentacles of *Sepia officinalis* (Mollusca). ***Development Growth & Differentiation***, 46: 181-193
17. Perletti G., Osti D., Marras E., **Tettamanti G.** and de Eguileor M., 2004. Generation of VSV-G pseudotyped lentiviral particles in 293T cells. ***Journal of Cellular and Molecular Medicine***, 8: 142-143
18. Grimaldi A., **Tettamanti G.**, Rinaldi L., Brivio M.F., Castellani D. and

- de Eguileor M., 2004. Muscle differentiation in tentacle of *Sepia officinalis* (Mollusca) is regulated by muscle regulatory factors (MRFs) related proteins. ***Development Growth & Differentiation***, 46: 83-96
19. **Tettamanti G.**, Grimaldi A., Valvassori R., Rinaldi L. and de Eguileor M., 2003. Vascular Endothelial Growth Factor is involved in neoangiogenesis in *Hirudo medicinalis* (Annelida, Hirudinea). ***Cytokine***, 22: 168-179
  20. **Tettamanti G.**, Grimaldi A., Ferrarese R., Palazzi M., Perletti G., Valvassori R., Cooper E.L., Lanzavecchia G. and de Eguileor M., 2003. Leech responses to tissue transplantation. ***Tissue & Cell***, 35: 199-212
  21. Perletti G., Marras E., Dondi D., Grimaldi A., **Tettamanti G.**, Valvassori R. and de Eguileor M., 2003. Assessment of the biological activity of an improved naked-DNA vector for angiogenesis gene therapy on a non-mammalian model. ***International Journal of Molecular Medicine***, 11: 691-696
  22. de Eguileor M., **Tettamanti G.**, Grimaldi A., Congiu T., Ferrarese R., Perletti G., Valvassori R., Cooper E.L. and Lanzavecchia G., 2003. Leeches: immune response, angiogenesis and biomedical applications. ***Current Pharmaceutical Design***, 9: 133-147
  23. de Eguileor M., Grimaldi A., **Tettamanti G.**, Ferrarese R., Congiu T., Protasoni M., Perletti G., Valvassori R. and Lanzavecchia G., 2001. *Hirudo medicinalis*: a new model system for testing activators and inhibitors of angiogenesis. ***Angiogenesis***, 4: 299-312
  24. de Eguileor M., Grimaldi A., **Tettamanti G.**, Valvassori R., Leonardi M.G., Giordana B., Tremblay E., Digilio M.C. and Pennacchio F., 2001. Larval anatomy and structure of absorbing epithelia in the aphid parasitoid *Aphidius ervi* Haliday (Hymenoptera, Braconidae). ***Arthropod Structure & Development***, 30: 27-37
  25. de Eguileor M., Grimaldi A., **Tettamanti G.**, Congiu T., Protasoni M., Reguzzoni M., Valvassori R. and Lanzavecchia G., 2001. Ultrastructure and functional versatility of hirudinean botryoidal tissue. ***Tissue & Cell***, 33: 332-341
  26. de Eguileor M., Grimaldi A., **Tettamanti G.**, Boselli A., Valvassori R., Cooper E.L. and Lanzavecchia G., 2000. Lipopolysaccharide-dependent induction of leech leukocytes that cross-react with vertebrate cellular differentiation markers. ***Tissue & Cell***, 32: 437-445
  27. 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
  28. de Eguileor M., **Tettamanti G.**, Grimaldi A., Boselli A., Scari G., Valvassori R., Cooper E.L. and Lanzavecchia G., 1999. Histopathological changes after induced injury in leeches. ***Journal of Invertebrate Pathology***, 74: 14-28
  29. de Eguileor M., Grimaldi A., Boselli A., **Tettamanti G.**, Lurati S., Valvassori R. and Lanzavecchia G., 1999. Possible roles of extracellular matrix and cytoskeleton in leech body wall muscle. ***Journal of Microscopy***, 196: 6-18
  30. de Eguileor M., Grimaldi A., Lanzavecchia G., **Tettamanti G.** and

Valvassori R., 1998. Dimensional and numerical growth of helical fibers in leeches: an unusual pattern. *The Journal of Experimental Zoology*, 281:171-187