
ROSEMEB: Integrating Chemical Ecology Research in Europe

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ROSEMEB aims at developing and applying novel and ecologically relevant methodologies to studies of allelopathy, antipredation, anifouling, antimicrobial, and other possible functions of marine secondary metabolites. The project is designed so as to exchange information about metabolites in terms of structure, function, and biosynthetic pathways within the RMP participants. The project involves 8 MarBEF institutes, representatives of which met at the kick-off meeting in Ischia on 3-4 November 2005. At the meeting we decided that a better integration of research activities on chemical ecology within Europe could be achieved through a series of training courses and workshops as well as other activities such as the writing of position papers and exchange of biological samples and standardization of chemical and bioassay methods.

There are several research projects involving MarBEF participants, two of which will be described at the Lecce meeting. The first involves studies on diatom-copepod and diatom-diatom interactions. Traditionally, diatoms have been regarded as providing the bulk of the food that sustains the marine food chain to top consumers and important fisheries. However, this view has recently been challenged on the basis of laboratory and field studies showing that these small, unicellular algae possess anti-mitotic properties similar to the cytotoxic compounds isolated from numerous marine and terrestrial higher plants. In fact, when copepods, the principal predators of diatoms, are fed certain diatom diets, they produce abnormal eggs that either fail to develop to hatching or hatch into malformed nauplii that die soon afterwards. The compounds responsible for this anti-cell growth and teratogenic activity are short chain unsaturated aldehydes. Recently these compounds have also been shown to have allelopathic effects on diatoms and other phytoplankton leading to growth reduction and cell death (apoptosis).

Another research project within ROSEMEB is the study of secondary metabolites in molluscs, one of the richest marine phyla for the production of these metabolites. Studies currently under way are addressing the natural function of these compounds that include feeding deterrence and growth inhibition of potential predators.

ROSEMEB is also involved in the training of young scientists and the first of a series of training courses on bioassay methods in chemical ecology is planned for September 2006 in Tjärnö, Sweden. A second course on chemical isolation methods will be organized in association with the European Conference on Natural Product Chemistry which will be held in Naples next year in September 2007.