DENDRIMER CHEMISTRY

The project (**SUPRAGENE**) focuses on the development of novel cyclodextrin end-functionalized triazine dendrimers as potent systems for application in *supramolecular chemistry* and *gene transfer* as well (in collaboration with the Biology department of our Institution).

Dendrimers is a subject of immense academic and industrial interest. Amongst their evaluation in several concepts, they have highly been involved in supramolecular chemistry, and since they have unique architectures and unusual properties, it has been very clear that rich additional and more refined findings are likely to emerge within the future. There is no doubt that chemistry, and notably supramolecular chemistry is strongly related to biology. Dendrimers, which are systems with unique features upon self-assembly and host-guest properties, have been shown to self-assemble with plasmid DNA, and the formation of this complex appears to be critical for nonviral gene delivery. This expanding and highly competitive research field requires more and more efforts with respect to gene therapy.

More specifically, the main scientific objectives of the project are the following:

- > Development of a procedure for the synthesis of cyclodextrin-based dendrimers.
- Information on the feature of the titled dendrimers upon supramolecular chemistry (self-assembly, host-guest complex, molecular recognition, transition-metal catalysis).
- Evaluating the effects of the titled dendrimers against those of other carriers on the phenotype of cells representing different stages of the multistage cancer progression model with respect to gene transfer, in collaboration with Dr. V. Zoumpourlis (Institute of Biological Research and Biotechnology of the NHRF).

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