

# Biomaterials: a broader and broader field of interest

According to the definition adopted in Chester (March 1986) at the Consensus Conference on 'Definitions on Biomaterials', a biomaterial is a non-living material designed to interact with biological systems.

Such a definition allows the inclusion under the biomaterial concept, of many materials other than those involved either in implantable prostheses or in extra-corporeal devices, for functional assistance. It also allows the opening to other experts, the 'closed circle' of biomaterials science specialists, whose concepts and methodologies need to be renewed. They can expect many benefits from unexplored exchanges with researchers having different points of view about problems created by material-biological systems interactions, the understanding and solving of which are progressing very slowly. This relative failure can probably be related to the complexity of the contexts surrounding such interactions. Classically this context is represented by the prosthesis-host couple, but there are many advantages to studying it through much more elementary couples, i.e. the material-isolated tissue couple (blood can be quoted as an example of such isolated tissues) material-cell couples, or material-biological molecule couples, the latter corresponding to the more generally accepted understanding of the term biomaterial.

Observations made on such models by researchers who may have various objectives, other than surgical applications, are of paramount importance to understanding the phenomena occurring in more complex situations, i.e. those created by the confrontation between an implant and the organism of a recipient.

Starting from this analysis, the organizers of BIOMAT\* 90 chose scientific topics which were able to stimulate the participation of specialists working in research areas which are apparently far from the biomaterials field, but sharing a common interest for the need of understanding interactions between a material and a biological system, should the latter be a simple proteins or biomolecules solution. These researchers design new concepts and new materials, allowing the control and the use of interactions between the latter and molecular and cellular components of living tissues, whether these components are isolated or integrated in a living being. More concretely, discussions during this BIOMAT 90 meeting have been concerned with studies aimed at the achievement of materials which are able to interact positively with living tissues. Such materials are useful for the development of implantable or extracorporeal medical devices, but also for the development of bioartificial functional units which may be used either as experimental models in Physiology and in Pharmacology, or as biotechnological production instruments.

In addition, it must be noticed that researchers consider compounds of biological origin with an increasing interest, in so far as they may be used as raw materials to design new biomaterials.

Studies which have been discussed during this colloquium are also open to other fields of application: design of new affinity matrixes useful either for the purification of biological molecules or for cell sorting; design of biosensors which could be useful for biological analyses as well as for *in vivo* monitoring of biological parameters; design of drug delivery systems able to modulate the bioavailability of drugs and their pharmacokinetics.

In conclusion BIOMAT 90 has brought, as expected by the organizers, the opportunity for exchanges between researchers interested in various topics, but sharing a common interest in

\* BIOMAT is a Scientific Society (which meets in Bordeaux, France). Its aim is to promote research and development in the field of Biomaterials. Since 1984, BIOMAT organizes an annual meeting which is indexed by the related year.

interactions between materials and biological media. It has also highlighted the fact that researchers want to overcome the diversity of their respective approaches and feel prepared to go on exchanging in order to promote fruitful cooperation.

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