

Biomedical Studies

Teresa Pinheiro

The Ion Beam Laboratory of ITN has been successful in obtaining funds to establish a research group on Biomedical studies using ion beams to analyse biological tissues. The work performed is carried out exclusively under research contracts that associate several national and international research centres and researchers of various backgrounds, such as those from Biochemistry, Biology, Medicine, and Physics.

These associations and funding have created the necessary driving force to strengthen the research activities in Biology and Medicine mainly on human physiological aspects such as those related to important environmental factors affecting human health and those related to human diseases highly prevalent in the western population. Skin exposure to commercial products containing nanoparticles of Ti, Zn, and Si oxides among others, and their trans-epidermal diffusion, respiratory diseases and atherogenesis are the prime areas of research. Other aspects related to the metabolism of essential trace elements, such as those occurring in human haemochromatosis are also being considered.

The common objective of these studies is to seek for alternative indicators to assess tissue response, whether this response is caused by external or systemic factors.

The multidisciplinary characteristic of the joint teams also permit to attract young scientists to carry out their BSc., MSc., and PhD. thesis, which programmes of study are often within the activities of financed projects.

Apart from research activities, technical services are provided to private institutions, mainly on the characterisation of raw materials for the pharmaceutical industry.

Presently the instrumental capabilities for elemental determination using ion beams are becoming fully explored and rapidly overwhelmed by qualified instruments developed in the past decade. Thus, some efforts are being done to diversify the analytical possibilities, such as to explore the combination of nuclear microscopy with other microscopy techniques and histochemical methodologies to assess cell/tissue response. The recently approved FCT projects of the programme for infrastructure modernisation, in particular those that will enable the acquisition of modern tools on the analysis of chemical elements and their species will open novel possibilities to broaden research activities on current issues.

The main achievements of the research developed during 2004 are summarised in the following pages.

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Research Team

Researchers

- T. PINHEIRO, Aux. Researcher, Group leader
- L.C. ALVES, Aux. Researcher
- A. VERÍSSIMO, Research Fellowship

External collaborators

- A.B. ALMEIDA, Full Prof.; FM-UL/SMH
- M.C. SANTOS, Aux. Prof., FC-UL
- A.M. VIEGAS-CRESPO, Aux. Prof., FC-UL
- R. SANTOS, MD, St. Maria Hospital (SMH)
- P. FILIPE, MD, FM-UL/SMH
- J. N. SILVA, MD, FM-UL/SMH
- R. FLEMING, MD, SMH
- P. MONTEIRO, MD, SMH

Students

- C. MARQUES, PhD student, FC-UL
- M. AMIN, MSc. Student, UM
- P. NAPOLEÃO, FCT grant (BIIC)
- S. GABRIEL, FCT grant (BIIC)
- I. BATISTA, Last Year BSc. Student

Technical Personnel

- R. PINHEIRO

Funding (€)

Research Projects:	0
Services:	0
Total:	0

Publications

Books:	0
Journals:	2 and 5 in press
Proceedings:	5
Conf. Communications:	
Other publications:	
Theses:	