BIOMEDICAL SCIENCES

Director prof. Fabrizio Chiti

PROGRAMME	Ecosistemi dell'Innovazione – THE Tuscany Healthcare Ecosystem (PNRR)	**CUP**	B83C22003920001
SCHOLARSHIPS	**2**		
TITLE OF THE SCHOLARSHIP	**Development of 3D collagen scaffolded stromalised microtissues**		
RESEARCH TOPIC	The 3Rs principle, encouraging alternatives to animal testing, is pressing research to find new models that may accompany or substitute animal experimentation. We aim at developing 3D cellular models closely mimicking native tissues, reconstructing a "quasi-vivo" complexity, responsive and amenable to high content imaging as well as biochemical endpoints. Strength points are: 1) the use of different cell populations to reconstruct the microenvironment (co-culture of cells from solid tumors, cancer associated fibroblasts, endothelial cells, etc). 2) the use of novel scaffolds, based on different types of native and denatured collagen microparticles, with different external dimensions and internal porosities, to favour 3D microtissue assembly and to shape its behaviour. We termed our products *microtissues* as the 3D configuration and the dynamic environment contribute to generate a milieu which closely reproduces the in-vivo scenario, allowing to perform complex studies of tissue-tissue interaction. We aim to obtain models useful to study tumor development and metastatic progression, drug and nutrients delivery and sensitivity, as well as the interplay with biochemical cues.		
Study/Research periods abroad	3 months		
TITLE OF THE SCHOLARSHIP	**Clonality analysis in cutaneous lymphoproliferative disorders through comparative study of different methods: effects on diagnostic accuracy and understanding of clinico-biological course**		
RESEARCH TOPIC	The evaluation of clonal rearrangement of T-cell receptor (TCR) and B-cell receptor (BCR) genes is an ancillary diagnostic method to differentiate neoplastic (primary cutaneous T-cell –CTCL and B-cell lymphomas –CBCL, respectively) from reactive lymphoproliferative disorders (pseudolymphomas –PSL). The method currently used is based on a primer kit (BIOMED II, short DNA fragments) for a Polymerase Chain Reaction (PCR), followed by separation of bands amplified by acrilamide gel or capillary electrophoresis. This method has limitations in terms of sensitivity, specificity and reproducibility, as well as being time consuming and technically complex. Recently, some research groups have started to replace PCR with TCR and BCR repertoire analysis by high-throughput sequencing (HTS) method, thus allowing a faster experiment performance and result standardization. Others have proposed using clonality analysis of tumour cell DNA somatic mutations rather than TCR and BCR repertoire analysis. No studies are so far available which definitely demonstrate the superiority of HTS over PCR methods regarding diagnostic accuracy The aim of this study is to validate HTS methods as gold standard in the molecular diagnosis of cutaneous lymphoproliferative disorders, and to evaluate their significance for understanding the clinical and biological course.		

Study/Research periods abroad	3 months

INTERVIEW				
LANGUAGE	**DATE**	**TIME**	**MODE**	**PLACE**
Italian	14th December 2022	09:30 a.m.	In person*	Auletta 1 Viale Morgagni 50 - Firenze

* In the application form candidates residing abroad may ask to conduct the interview remotely