



General description: Number of employees: about 600 ; Number of researchers: about 70 ;
Date of creation: 1979, Annual Turnover: about € 60.000.000

Website: www.istge.it

Expertise: The Laboratory of Regenerative Medicine directed by Prof. Cancedda is located in Genova at the Istituto Nazionale per la Ricerca sul Cancro-Advanced Biotechnology Center, within the area of the city/university S. Martino Hospital (one of the biggest at European level) where also the Faculties of Medicine and Pharmacy of the University of Genova have their seat. This location guarantees a steady interaction between researchers involved in different fields, the clinicians and their patients. The Laboratory extends is fully equipped for experimental work in cell and molecular biology. The research group in Genoa was the first in Europe in 1986 to treat burned patients with epidermis cultured in vitro starting from a small biopsy of the patient skin, the first in the world in 1994 to reconstitute, using the patient's own limbal stem cells, the corneal epithelium of a patient who had his cornea badly damaged, and the first in the world to repair in 1998 a long bone defect with a porous ceramic loaded with mesenchymal stem cells derived from the patient's bone marrow

Facilities: Cell culture facility, Animal Facility, DNA sequencing, FACS-Sorter Facility, MicroArray

Other European projects: ANGIOSCAFF contract agreement n. 214402, PURSTEM (223298)

Role in the project: The Laboratory of Regenerative Medicine directed by Prof. Cancedda is fully equipped for experimental work in cellular and molecular biology. The research group in Genoa was the first in the world to repair in 1998 a long bone defect with a porous ceramic loaded with mesenchymal stem cells derived from the patient's bone marrow. In cartilage field,

the group has a big experience and many studies were conducted on avian and human to describe the differentiation pathway of articular and growth plate cartilage. Recent studies are focused on the inflammatory pathways that play a role during the development and pathology of the chondrocytes. The present research work is now mainly focused on the study of characteristics and properties of mesenchymal stem/progenitor cells and the repair of skeletal tissues (bone, cartilage, tendons and ligaments).

Workpackages responsibility: In vitro and in vivo analysis of bone formation

[WP02](#) , [WP03](#) , [WP04](#) , [WP05](#) , [WP06](#) , [WP07](#) , [WP08](#) (bold = WP leader; WP = Workpackage)

Key personnel

[Ranieri Cancedda](#) : P.I MD, Prof : M - Head of the IST Cell therapy laboratory /Role in the project Cellular Therapy. Prof. Cancedda is a leader in bone marrow stem cell biology and culture with a focus on orthopaedic and cartilage applications. He has 25 years experience in the fields with seminal publications and directed work, which led the first clinical use of stem cells in orthopedics.

[Chiara Gentili](#) : Co.P.I. PhD (F) Scientist - Role in the project: Genomic technologies, Cartilage biology and BMSC application. She has 15 years of experience in the cartilage biology and 5 years in stem cells research for cartilage repair.

[Ulivi Valentina](#) : Ph.D (F) Scientist Uni GE - Role in the project: Cartilage Biology. She is a post-Doc researcher with 10 years of experience in cell biology and cartilage differentiation.

[Monica Scaranari](#) : (F) Position: Technician CBA / Role in the project: Cell technologies

[Rui Pereira](#) : (F)

Publications

1. Quarto R, Mastrogiacomo M, Cancedda R, Kutepov S, Mukhachev V, Lavroukov A, Kon E, Marcacci M: Repair of large bone defects with the use of autologous bone marrow stromal cells. *New Engl J Med* 344:385-386, 2001
2. Banfi A, Bianchi G, Notaro R, Luzzatto L, Cancedda R, and Quarto R: Replicative aging and gene expression in long term cultures of human bone marrow stromal cells. *Tissue Engineering* 8:801-910, 2002
3. Muraglia A, Corsi A, Riminucci M, Mastrogiacomo M, Cancedda R, Bianco P and Quarto R: Formation of a Chondro-osseous Rudiment in Micromass Cultures of Human Bone Marrow Stromal Cells. *J. Cell Sci.* 116:2949-2955, 2003 3230-7, 2006
4. Gentili C., Tutolo G., Pianezzi A., Cancedda R. and Descalzi Cancedda F. "Cholesterol secretion and homeostasis in chondrocytes: liver X receptor and retinoid X receptor heterodimer mediates apolipoprotein A1 expression". *Matrix Biology* 24 (2005) 35-44
5. Valentina Ulivi, Paolo Giannoni, Chiara Gentili, Ranieri Cancedda, and Fiorella Descalzi "p38/NF-kB dependent expression of COX-2 during differentiation and inflammatory response of chondrocytes". *Journal of Cellular Biochemistry* 2008 Jul 1; 104 (4): 1393-406