

## **GENERAL INFORMATION**

### **Venue**

Institute of Cardiology Hall - Pav. 21  
St. Orsola - Malpighi Hospital  
v. Massarenti 9  
40100 Bologna

### **Official language**

English and Italian

### **Free registration, including:**

Congress bag, certificate of attendance,  
coffee break, lunch.  
Participants, regularly registered,  
will receive the certificate of attendance  
only at the end of the Meeting

### **CME accreditation**

The request for CME credits has been forwarded  
to the Italian Ministry of Health for Medical Doctors and Surgeons.

### **Scientific Secretariat**

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INSTITUTE OF CARDIOLOGY  
BOLOGNA UNIVERSITY



National Institute of Biostructures  
and Biosystems (N.I.B.B.)

# MOLECULAR TO CLINICAL CARDIOLOGY 2006

**TALKING WITH STEM CELLS  
PERCEPTIONS AND PERSPECTIVES  
FOR CARDIOVASCULAR REPAIR**

**Bologna, June 14<sup>th</sup>, 2006  
Institute of Cardiology Hall - Pav. 21  
St. Orsola - Malpighi Hospital**

## BACKGROUND AND RATIONALE

Stem cell therapy has been increasingly proposed as a major destination in translational medicine dedicated to the rescue of damaged tissues. Stem cells are self-renewable elements that have not taken up the identity of any specific cell type but may be committed to targeted cell lineage specification. Stem cells not only offer scientists a tool for the molecular dissection of early developmental patterning, they also may hold promise for a regenerative medicine. In the cardiovascular system, loss of cardiomyocytes due to myocardial infarction or hereditary cardiomyopathies may represent a major causative factor in the progression towards heart failure. So far, both successful cardiac repair and lack of transdifferentiation into cardiomyocytes have been reported following bone marrow cell transplantation into injured animal hearts. A number of randomized, controlled clinical studies based on intracoronary injection of unfractionated mononuclear cells or bone marrow-derived mesenchymal stem cells have yielded a significant increase in ejection fraction, without a clear-cut indication that the transplanted cells may contribute to remuscularization rather than neovascularization or release of factors contributing to increased myocardial inotropy. These considerations remind that the promise for stem cell-based rescue of damaged hearts in humans is still for the future and our knowledge on stem cell biology must await more molecular and functional approaches before being thrust forward into translational medicine.

Stem cell commitment is a story of signaling and perception-generated responses that may coax cells to adopt a given structure and function. Within this context, the specification of a myocardial lineage is fashioned at multiple interconnected levels and is controlled by a complex interplay between cell signaling, nucleosomal assembly, the establishment of multifaceted transcriptional motifs and the temporal and spatial organization of chromatin in loops and domains. These perceptions prompt the needs to find suitable progenitor cells for cardiac repair and identify growth factors, signaling and gene expression patterning that orchestrate stem cell renewal, migration, and differentiation into cardiac myocytes and vascular elements. Since cardiogenesis is typically a low-yield process, we also expect to uncover mechanisms affording a high-throughput yield of cardiac lineage commitment.

The currently proposed Meeting aims at bringing together a selected group of world-renowned scientists in the fields of heart failure, cell differentiation and stem cell biology, morphogenetic molecules, and gene manipulation. We will discuss on the current status of clinical experiences based on stem cell transplantation into injured hearts. We will also focus on the development of newly-designed differentiating agents as a potential tool that may pave the way for novel approaches in tissue engineering and myocardial regeneration.

## **PROGRAM**

**9.00 Registration**

**9.20 Opening welcome**

### **1<sup>st</sup> Session**

#### **STEM CELL PLASTICITY: MOLECULAR DISSECTION OF CARIOGENESIS**

Chairman: C. Ventura

**9.30 Mesenchymal stem cells: Isolation, in vitro expansion and characterization**

F. Alviano, G.P. Bagnara

**9.55 Stem cells. Extensive ex vivo expansion: do they get old?**

W. Piacibello

**10.20 Hematopoietic stem cells plasticity**

S. Ferrari

**10.45 Autocrine and Intracrine Signaling in ES cell Cardiogenesis**

C. Ventura

**11.10 Discussion**

**11.30 Coffee Break**

### **2<sup>nd</sup> Session**

#### **STEM CELLS AND CARDIOVASCULAR REPAIR**

Chairman: A. Branzi

**11.45 Cardiovascular ageing: a risk factor for cell therapy?**

E.G. Lakatta

**12.10 Stem cells: a promise for cardiovascular rescue?**

C.L. Mummery

**12.35 Stem cells: Lessons from clinical trials**

C. Ceconi, R. Ferrari

**13.00 Discussion**

**13.15 Lunch**

### **3<sup>rd</sup> Session**

#### **NOVEL DIFFERENTIATING LOGICS: IN MEMORY OF ALBERTO PERBELLINI**

Chairman: G.P. Bagnara

**14.15 Novel glycoconjugates affording a high-throughput of cardiogenesis in embryonic and adult stem cells Statin-induced precursor cell mobilization and improvement of cardiac performance in infarcted hearts**

C. Ventura

**14.40 Deployment of retroviral vectors to conditionally modify primary mammalian cells and their application to stem cells**

K.B. Marcu

**15.05 Discussion**

**16.00 Closing of the meeting and CME test**

## FACULTY

- Francesco Alviano** Department of Histology, Embryology and Applied Biology,  
University of Bologna, Italy
- Gian Paolo Bagnara** Department of Histology, Embryology and Applied Biology,  
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- Angelo Branzi** Institute of Cardiology, University of Bologna, Italy
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