



## General Information

**Module Title** *Introduction into Immune Responsiveness to devices, cells, tissues, and organs and development of biomarkers for monitoring clinical trials in Regenerative Medicine*

**Tutor Name(s)** *H-D Volk, M. Seifert*

**Location where module takes place** *Charité, Charité Campus Virchow Klinikum  
Berlin Brandenburg Center for Regenerative Therapies  
CVK, Südstraße 2  
Seminar room 0.19  
15 to 16 September 2009, 09:00 to 12:00 and 13:00 to 16:00*

**Suitable for the tracks**

- Biology/Biochemistry Track*
- Chemistry/Physics/Engineering Track*
- Clinical Scientist*

<b>Type</b>	<i>Lecture; Seminar</i>	<b>Level</b>	<i>beginner</i>
<b>Days</b>	<i>2</i>	<b>Max. Participants</b>	<i>10</i>

## Objectives this module

*This theoretical course gives an introduction into the challenges of Regenerative Therapies by immunogenicity and inflammations*

*background:*

*Mesenchymal stem cells (MSC) have been isolated from adult bone marrow, adipose tissue, cord blood, heart, skeletal muscle, placenta, and a number of fetal tissues. Although there is still some uncertainty regarding the in vivo phenotype, they appear to be CD34- CD45- CD14- CD73+ CD105+ CD106+ CD166+ CD90+ CD29+. These cells can produce a number of matrix proteins and differentiate into bone, cartilage, muscle, tendons, and bone marrow stroma etc. They would have significant potential just for their regenerative properties. However, they can induce also a state of "immunosuppression/anergy". In addition, the use of non-personalized (allogeneic, xenogeneic) stem cell products would improve their applicability compared to autologous approaches.*

*Furthermore, even autologous cells/tissues or bio-engineered material can induce inflammation or even adaptive immune response as result of ex vivo modifications. The succes of regenerative therapies is strongly influenced by the interaction with the immune responsiveness.*

*aims:*

- *basic informations on the principles of inflammation and induction of adaptive immunity*
- *principles of immune response to organ/tissue/cell transplants*
- *special issues of regenerative "grafts"*
- *immunogenicity and immunomodulatory acitivity of stem cells and stem cell derivatives*
- *test systems*
- *strategies to prevent undesired immune response*

*structure:*

*day 1+2: 4 h lecture, 2h seminar each day*

## Which course materials, software, or instruments do students use in this module?

- *hand outs of lecture material*



**What are the prerequisites for taking this subject?**

*basic knowledge in immunology*

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