



Biomaterials: Challenges for the 21st Century. The Erlangen Consensus (September 2010)

Summary of the “brain storming” session carried out in the framework of the Erlangen Symposium on Biomaterials held on 3rd September 2010 at the Institute of Biomaterials, University of Erlangen-Nuremberg, Germany.

List of Challenges and Opportunities for Biomaterials Research

- Stem cell technology
- Gene activating biomaterials
- In-situ analysis of cell / material interaction
 - “Cell side”
 - “materials side”
- Engineering of soft tissues, e.g.:
 - wound healing
 - incontinency
- Personal diagnostic
- Standardization, metrology, cell biology protocols
- BIOmaterials (2000-today)? (current emphasis on BIO)
- More biomimetic materials ?
- Why “old” biomaterials do not always work?
- Why some current biomaterials do work?
- Do we need “more” biomaterials?
- Bioreactor technology
- Materials for imaging
- Protein adsorption (understanding and controlling)
- Tissue engineering and drug delivery
 - Tissue engineering therapeutics
 - Ion release effects, role of inorganic ions in ECM?
- Nano is not equal Nano (size matters, shape matters!)
- 3D vs. 2D (emphasis should be placed on 3D models, e.g. for tissue engineering)
- New processing methods for “established materials”
- More emphasis on induction of angiogenesis
- New materials: issues to consider: Yield / Cost / sterilization ability / clinical relevance
- Surgical concepts
- Biomaterial interactions with the recipient side / Macrophages?
- Bone osteoclast / biomaterials link (Osteoblast – Osteoclast cells)
- Reduction of large animal models
- Consider papers published in J. Long Term Clinical Results (relevant studies)

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