

# Bioreactor Technologies for Liver, Skin, Bone and Cartilage

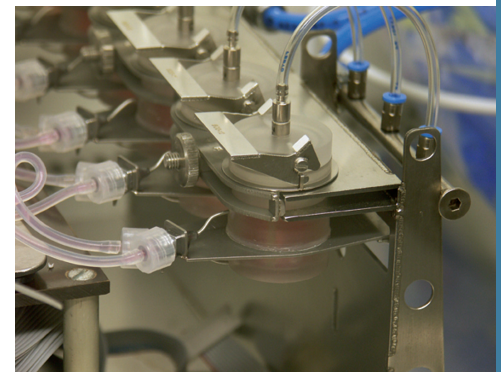
» Prof. Dr. Augustinus Bader

Regenerative medicine is leading to a new paradigm in medicine biotransferring heterologous concepts to the onset of autologous technologies that could lead to tissue regeneration in vivo. Currently the research group of Prof. Dr. Augustinus Bader is working in the fields of autologous bone replacements, liver regeneration, cardiovascular replacements and skin replacements. The focus is set on bioreactor technologies in the above field. The long-term goal of this new field is to lead to individualized therapy in patients. The group's field of competence includes technical systems, e. g. bioreactors, hybrid systems, e. g. bioartificial liver, fully biological implants, e. g. cardiovascular tissues and finally drug therapy to induce regeneration in vivo. The scientific basis is extended

to the relevance of the extracellular matrix, which regulates tissue differentiation in at least three ways: These include the biochemical composition of the matrix constituents, the 3-D organization or architecture and mechanical forces mediated to the cells by the matrix. The in vivo extracellular matrix constitutes the biopolymer which potentially plays a permissive role for tissue differentiation. The end point of the developments in regenerative medicine is tissue and organ regeneration rather than reparation.

## Keywords

- Bioreactors
- Stem Cells
- Regenerative Medicine
- Tissue Engineering
- Pharmacology



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