DISCIPLIN	RESEARCH CORNERSTONE	DESCRIPTION	SCIENCE TARGET	POTENTIAL APPLICATION
BIOLOGY	Biotechnology	Investigate in weightlessness trans-membrane and intra-cellular flux of mediators that control cell differen-tiation.	Improve knowledge of the relation between material flux at the cell-me-dium interface and gene expression. Improve the properties of recom-binant products. Quantify interfacial transfer and especially interfacial turbulence and control of the membrane porosity.	Develop artificial functional tissue and targets for drug screening. Develop a bio-reactor for tissue en-gineering e.g. cartilage for implanta-tion. Develop novel micro-encapsulated drugs and cells.
	Plantphysiology	Study mechanosensory elements involved in gravitropism.	Identify mechano-sensory and signalling elements determining gravitropism. Identify gene interactions important in the gravi-stimulus response chain.	Improvement of plant growth and mechanical properties of plants. Develop techniques for plant sur-vival and growth in Space.
	Cell & Developmental Biology	Study the effect of gravity on cell and whole body development and reproduction.	Study altered gene expression in an altered gravitational environment e.g. micro-arrays. Improve understanding of the impact of the cytoskeleton architecture on the signal transduction e.g. func-tional genomics. Understand the effect of gravity on the development of the vestibular and sensory-motor system in verte-brates.	Design pharmacological substances relevant for animal and human applications relevant in the human development. Develop techniques and pharmaco-logical substances for cell and tissue regeneration e.g. neuronal repair.