We are experts for hematopoietic stem cell transplantations in murine animal models for the following applications:

- Testing of pharmacologically active substances:
  - “Biologics” (peptides, ligands, antibodies, growth factors, interleukins)
  - Cell therapeutics (e.g., MSCs [mesenchymal stem cells], regulatory T cells)
- Target:
  - Support of hematopoiesis after stem cell transplantation,
  - Minimising GvHD after stem cell transplantation
  - Induce of tolerance after organ- or stem cell transplantation
  - Development and testing of vaccination strategies
  - Development of therapeutic strategies for infectious, autoimmune, transplantation associated inflammatory diseases

Testing of pharmacologically active substances in hematopoietic stem cell transplantations can be realized by the use of wild type mice (Balb/c, C57Bl/6) or transgenic mice (huCD4+, huHLA-DR3+, muCD4- with C57Bl/6 background). Conditioning of animals is carried out with chemotherapy or irradiation, depending on the disease model.

Test substances or cell therapeutics can be tested in vivo and in vitro. Ex vivo pre-treatment of transplants is possible. In addition, we offer cultivation of supportive cells (Treg, MSC) for co-transplantations.
### Equipment available at Fraunhofer IZI

- Radio isotope laboratory
- FACS (8 channels)
- Cell sorter
- AutoMACS for cell separations
- Fluorescence microscope (automated)
- Histology:
  - Automated infiltration system for dehydration automated staining system
  - Embedding center
  - Cryostat / microtome
- Access to animal facilities and surgery
- Access to irradiation facility
- LightCycler® 480 System for real time PCR
- Elispot
- Three part differential hematology analyzer
- Proliferation assays

### Diagnostic support

**Analysed parameters:**
- Pharmacokinetics of compounds
- Composition of cell populations – organ repair
- Inflammatory markers
- Cytotoxicity
- Hematopoiesis
- Immune reaction markers

### In vitro studies

Using standardized single or mixed lymphocyte cultures (mitogen- / cytokine-allogenic stimulated) we can characterize the effects of test substances (e. g. antibodies, cytokines, therapeutics, food ingredients etc.) on immune cells (B- and T-lymphocytes, NK-cells).

The lymphocyte cultures can be either of human or murine origin. Typical proliferation assays with these cells are measured in Fraunhofer IZI’s own facilities by 3H-thymidine incorporation. The Fraunhofer IZI has a radioisotope facility for such studies. Other analytic applications are, for example, FACS, ELISA, measurement of cytokine release (cytometric bead array, Elispot) and also the study of gene expression levels (real time PCR).

Tests with lymphocyte culture are a reliable, commonly used and economic alternative for preliminary studies of the immune system. Assay formats and the readouts can be adapted to needs of our partners.

### Publications

- Fricke et al. FlowCytometryPart A (2012); in press