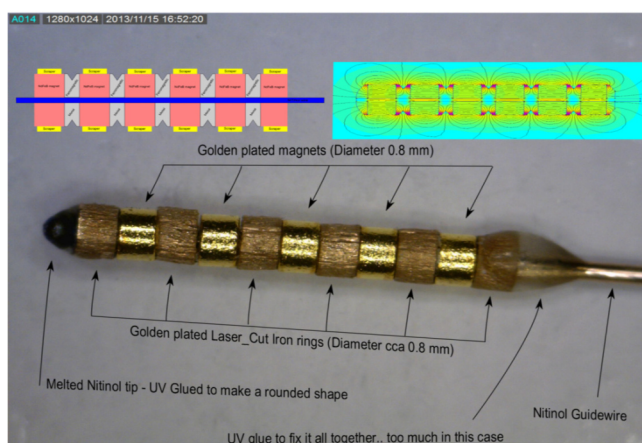


Identification, homing and monitoring of therapeutic cells for regenerative medicine

Touchable and visible results of the project cooperation

Prototype Magnetic Catheder

Contract Medical International SPOL (CMI) has developed and built the second prototype of magnetic catheter with biocompatible surface suitable to be tested in biological samples as Cell Select Device. The provided intensity of magnetic field was simulated via FEM model and measured as 0.2 Tesla in the distance of 0.2 mm perpendicular to the surface.

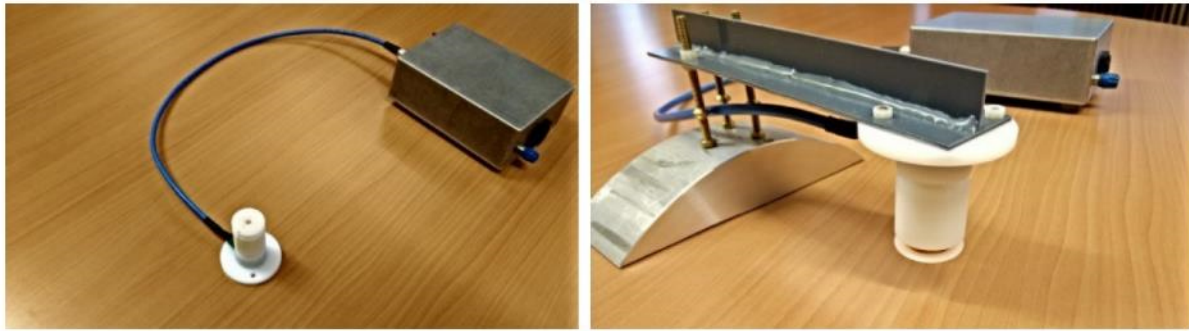


More information can be found in Deliverable D3.2.

MPS Scanner

The former Magnet Resonanz Bayern e.V. (MRB) and now Magnetic Resonance and X-Ray Department of Fraunhofer IIS developed and built a handheld Surface MPS Scanner with field at surface up to 100 mT. Additionally an optimized sensor for small animal experiments has been built as well as one for larger animals. The transmit system was changed to increased output power, allowing to generate high field strength up to 100mT for all built detectors.

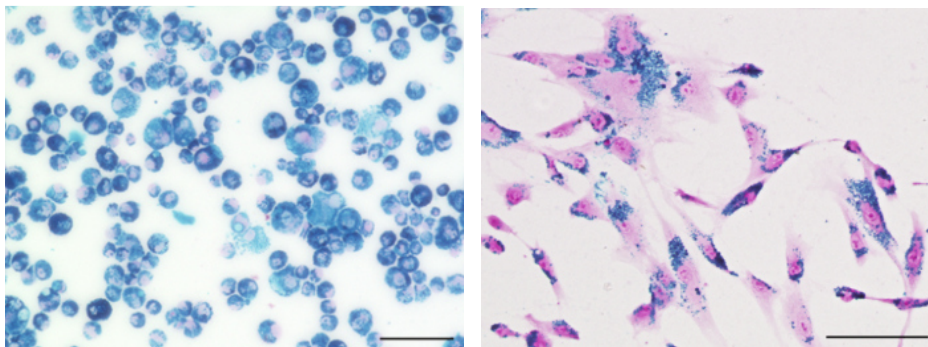
More information can be found in Deliverable D6.3.



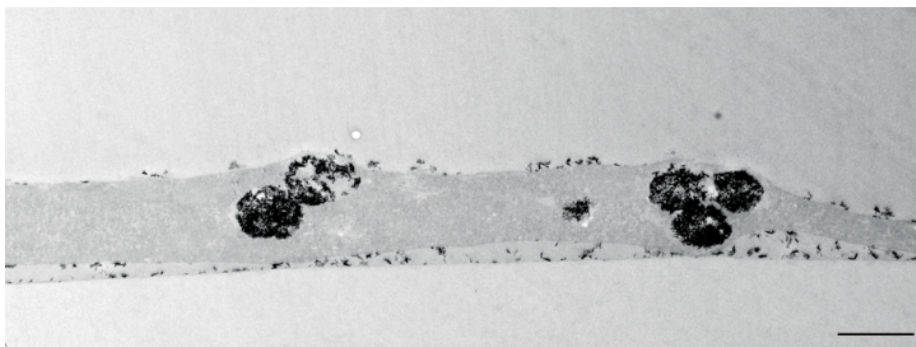
Handheld surface scanner with Transmit/Receive Adapter (left). Surface scanner with adjustable Holder (right).

Stem cell labeling with iron oxide nanoparticles

The cooperation of the IDEA partners University Würzburg, Micromod and nanoPET Pharma finally led to concrete results that allow to identify the actually invisible nanoparticles M4E and their effects. “In the field of regenerative medicine, researchers focus on repairing damaged tissue using appropriate cells that have healing capacities, such as mesenchymal stem cells (MSCs). Long-term in vivo monitoring of MSCs in their target tissue could help determine the success and efficacy of stem cell therapy and, thus, facilitate tissue healing. A promising strategy is to label MSCs with superparamagnetic iron oxide nanoparticles..”. (Kilian, Fidler).



Prussian blue staining of human mesenchymal stem cells labeled with M4E particles (perimag®, Micromod GmbH)



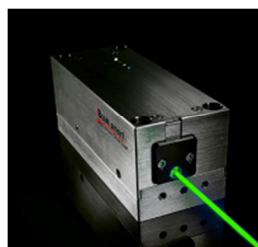
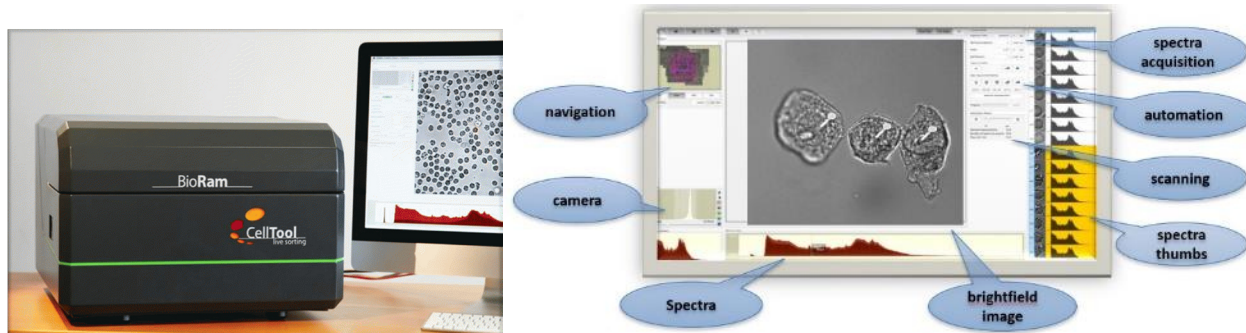
Human mesenchymal stem cells labeled with M4E particles (perimag®, Micromod GmbH), transmission electron microscopy

More information can be found in Deliverable D2.3 and in the publication Nanomedicine (Lond.) 10.2217/nnm-2016-0042, Teresa Kilian, Florian Fidler, et.al.

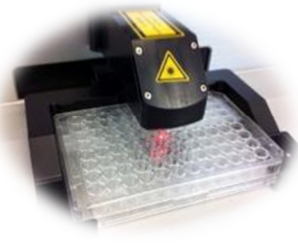
BioRam® confocal trapping Raman microscope

Celltool GmbH developed and built an unique digital microscope platform dedicated for biomedical applications with:

- inverted microscope set-up allows contamination free cell analysis;
- motorized microscope stage enables highly automated spectra acquisition;
- sophisticated laser coupling provides simultaneous optical trapping.



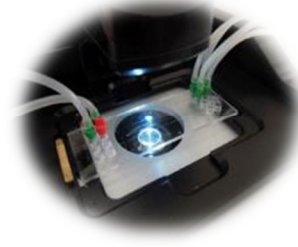
Laser Unit



Holder for microtiter plates



Holder for multiwall-slides



Holder for microfluidic cell sorting

More information can be found in Deliverable D2.1 and D2.4 or via the Internet presentation on <https://www.youtube.com/watch?v=4ek2k0LGzS8>