(BLI) were performed to detect GFP and fLUC positive cells, respectively. For in vivo tracking, wounds created on the hind paws of rats received either a single injection of ASCs systemically into the tail vein (2x10^6 ASCs) or locally into each wound (105 ASCs). ASC distribution was followed in animals by BLI 3h and 48h post ASC injection.

RESULTS: In vitro experiments demonstrated that ASCs were successfully transduced to express both GFP and fLUC without influencing their phenotype (CD90+, CD29+, CD31- and CD45-). In vivo, 3h post-injection, ASCs were detected in the lungs of animals treated systemically with a decrease in signal seen from 3h to 48h, but no luminescent signal was detected in the wound. However, locally administered ASCs remained strongly detectable after 48h at the wound site.

CONCLUSIONS: Using a physiological wound repair model we show that GFP/fLUC labelling allowed ASC to be tracked in vivo. However, as the majority of ASCs are filtered out in the lungs, further studies using a model of severe wounds (e.g. ischemia and hyperglycemia) should be performed to determine whether ASC homing is affected by strong inflammatory cues.

12.40 IN SITU ADIPOSE TISSUE ENGINEERING WITH OLEIC ACID LOADED BIOSPHERES

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INTRODUCTION: Currently autologous fat transfer is considered as a gold standard procedure for soft tissue augmentation. However, this technique presents some disadvantages: unpredictable results, need for multiple-surgery or need for fat donor site. Therefore, we developed a new injectable that would permit in situ fat augmentation. The concept is that biodegradable microspheres are going to be loaded with oleic acid that will be released over a few months. Once outside of microspheres, oleic acid is internalized by the adipocytes, and the adipose tissue volume will increase locally. In this preliminary study, we evaluated the safety and efficacy of our product in comparison to current soft tissue fillers.

MATERIALS AND METHODS: Synthesis of the poly-lactic glycolic acid (PLGA) microspheres with and without oleic acid loading was carried out by the oil-in-water emulsion. The microspheres were sized between 10 to 50 microns. We injected in the inguinal fat pad of 36 mice, 0.1.ml of loaded microspheres and compared to non-loaded microspheres, hyaluronic acid and industry-available PLGA filler. We compared the efficacy of our product by 3D Ct-scan, assessed inflammatory cytokines and free fatty acids presence in animal sera at different experimental time points (from DAY 0 to DAY 90).

RESULTS: 3D computerized tomography evidenced fat pad volume enhancement after 15 days of injection, remaining stable after one month. Circulatory inflammatory cytokines assessed by the ELISA-Multiplex, demonstrated that microspheres did not increase systemic inflammatory reaction, neither the blood free fatty acids.

CONCLUSIONS: We demonstrated a volume increase of the inguinal fat pad after oleic acid loaded microspheres injection. In our future experiments, we will assess the quality of the soft tissue increased by our product: local inflammation reaction, vasculogenesis, size and number of adipocytes. Furthermore, we will assess the long-term effect to confirm that our product is completely desorbed after 3 months.

12.50 ADIPOSE CELL DERIVED REGENERATIVE THERAPY (ACRT): A NEW APPROACH OF LIPOTRANSFER IN SCAR TREATMENT

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INTRODUCTION: Regenerative properties of autologous lipotransfer are recently described in patients with atrophic and painful scars. In this regard preliminary results of an European multicentre study (Germany, Netherlands) underline the aspect of regeneration and possible reconstruction of the subcutaneous layer using a certain lipotransfer technique (ACRT = adipose cells derived therapy) in symptomatic scars and post-traumatic soft tissue defects.