THE FATE OF LUCIFERASE-LABELLED MYOBLASTS INJECTED IN THE RAT

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INTRODUCTION
One of the causes of stress urinary incontinence is intrinsic urethral sphincter deficiency. A minimally invasive technique to repair the sphincter involves the injection of cultured myoblasts. To fully understand and optimize this method, it is necessary to identify and track the transplanted cells.

MATERIAL AND METHODS
Myoblasts isolated from striated muscle biopsies from a luciferase expressing Lewis transgenic ‘firefly’ rat were injected into the quadriceps, the tail vein and the urethral sphincter of host animals. A total of 500.000 or 1,500.000 cells in 33 or 50 µl were injected using a 0.3 ml insulin syringe with a 30G needle. Animals received an intraperitoneal injection of luciferine (30 mg/2 ml DPBS) and were then placed in the non-invasive bioimaging IVIS200™ system under isoflurane inhalation anesthesia. Signal intensity was quantified and average flux was calculated on the day of myoblast injection and 1,2,4,7,11,14,18 and 25 days after injection.

RESULTS

CONCLUDING MESSAGE
Myoblasts injected into the quadriceps were visible for 2 days only. Cells injected into the tail vein disappeared from view. For the rat urinary sphincter the injection method was to crude and needs to be refined using a smaller volume syringe and needle. Any treatment involving the injection of myoblasts needs to be monitored in detail to investigate the survival and spread of the injected cells.

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Figure 1
IVIS image of a rat injected with labelled myoblasts in the left quadriceps. Flux in region of interest (ROI) and background (BKG) on day 0.

Figure 2
Average flux on day 0 – 25 for quadriceps, tail vein and urinary sphincter injected animals.