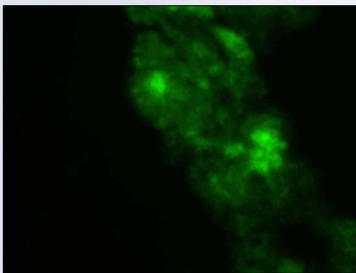
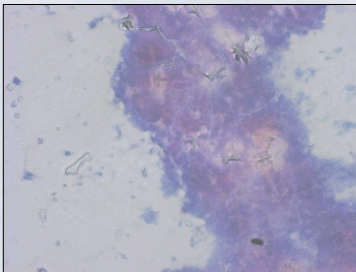


*Licensing Opportunity* (BioT-0663-UMG)

## Universal Regeneration System Somatic Stem Cell System for Regeneration, Therapy and Tissue Repair

**URS cells bed into mice injured pancreas starting the regeneration process.**



URS cells obtained from transgenic mice expressing Green fluorescent protein (GFP) were **injected intraperitoneal** after pancreas injury. Pancreas cryosection HE staining and evidence of green GFP expressing cells.

Stem cells promise to be key for a multitude of therapeutic approaches. Due to their pluripotency, they might be used in processes such as tissue repair, particularly in diseases like diabetes mellitus, damages of the liver, kidney or of the myocardium, stroke or in neurological diseases like Parkinson's disease or Alzheimer disease.

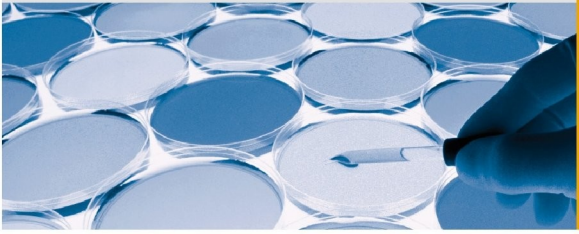
**The present invention comprises a universal biological regeneration system based on adult somatic stem cells, which has been tested *in vivo*.**

Unfortunately most of present work with stem cells relies on two steps: (1) generation/isolation of stem cells (2) *in vitro* differentiation into target tissue following complicated protocols, which try to mimic physiological conditions, but which are in fact artificial *in vitro* conditions. This might result in the end product or subfractions thereof not being completely physiological either, especially with respect to these cells's tumorigenicity.

Researchers at the Georg-August-University Göttingen identified a new **universal regeneration system** (URS) for therapy and tissue repair, which is based on somatic stem cells. The ethical implications of embryonic stem cells are avoided.

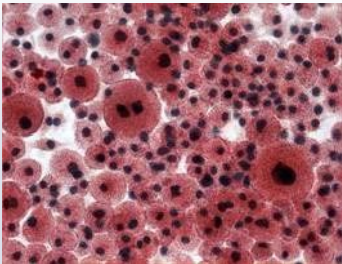
**Most importantly, these somatic cells *in vitro* and *in vivo* spontaneously differentiate into tissue-specific cell types without adding specific/artificial differentiation factors.** Additionally, the cells needed for the production of the URS are **easily accessible**. They can be transplanted autologously **without** inducing profound **transplant rejections**.

The URS is thus an *in vitro* equivalent of the physiological repair system.

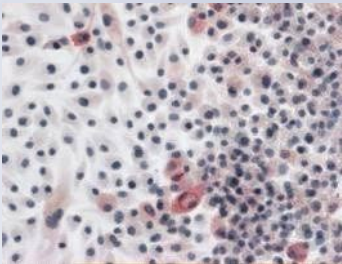


So far spontaneous differentiation into tissue-specific cell types of all three basic germlines has been observed *in vitro*, e.g. into **neurones, chondrocytes, osteocytes, dendritic cells, macrophages, astrocytes, epithelial cells, endothelial cells and endodermal cells.**

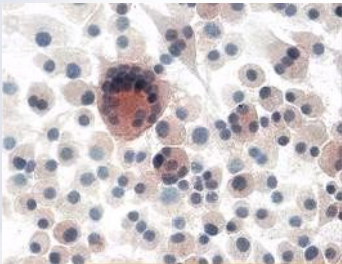
**Differentiating potential of the URS as shown among other specific markers into:**



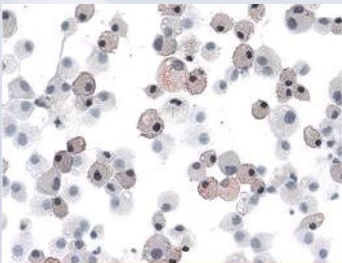
Neuronal cells (Nestin)



Endothelial cells (CD31)



Chondrocyte (Collagen II)



Liver cell (Albumin)

The *in vivo* regeneration capacity of our Universal Regeneration System (URS) was investigated by transplanting GFP-labeled URS cells into mouse after pancreatic injury. URS cells were able to bed into the injured pancreas starting the regeneration process. In another animal model, GFP-labeled URS cells bed into brain of mice after parietal cryo-lesion. Additionally GFP-expressing cells were observed in bone marrow, spleen, skin and lung, demonstrating that URS cells are able to migrate into different organs. Transplanted mice have not developed tumors after 10+ months.

**The main features of our Universal Regeneration System are:**

- Easily accessible and cultured.
- Adult Somatic origin without ethical implications.
- Autologous low transplantation refection risk.
- High pluripotency
- Spontaneous differentiation into all tissues.
- *In vivo* proof achieved with pancreas, brain and skin mice models.
- Physiological repair system for a wide range of tissues
- Functional neurons achieved.

We filed a patent application covering e.g. the generation of the URS, a pharmaceutical composition comprising these cells and use of this system.

Our patent application is **available e.g. for exclusive, worldwide licensing.** We are looking for companies, which are interested in licensing, developing and commercializing our approach.