

## In the operating room

for intraoperative separation and concentration of adipose derived stem cells

Q-graft® is used on the sterile OR instrument table in the operating/procedure room during liposuction, or in the research laboratory, for standardized separation and concentration of high numbers of viable SVF (stromal vascular fraction) cells in a sterile closed system.



### ●● Leading in water-jet technology

An innovator and leader in water-jet surgery, HUMAN MED® is the world's first and foremost manufacturer of water-jet assisted aesthetic devices. Building on a long history of success in the fields of general surgery, urology and neurosurgery, where gentle water-jet tissue dissection is essential, in 2004 HUMAN MED® turned its vision to the aesthetics field. The launch of the company's innovative body-jet®, a waterjet based infiltration, irrigation and aspiration system for removing unwanted body fat has helped to usher in a fundamentally new approach to lipoplasty and natural fat harvesting. The new unique Q-graft® system for the intraoperative harvesting of regenerative cells during liposuction will provide exciting options for adipose stem cell research and new therapies.

## Intraoperative separation and collection of adipose regenerative cells

### ●● Technical details

#### Q-graft® collector

Dimensions: 14,2 (ø) x 40 (H)cm  
Weight: 540g  
Aspirate volume/Lipocollector function: 75 ml  
Maximum fill volume upper chamber: 200 ml  
Volume of SVF cell suspension: 20 ml  
Vacuum supply: -500mbar  
Mixing Frequency: 15/min  
Rotation during cross-flow filtration: up to 480/min  
Control temperature during incubation: 38 °C

#### Q-graft® control

Dimensions: 25 (H) x 20 (T) x 15 (B)cm (without Q-graft® collector)  
Weight: 1600g  
Voltage: 100-240V (wide-band power supply)  
Protection class: II

### ●● Ordering information

REF	Product / Designation
300000	Q-graft® control
300001	Q-graft® collector
300002	Q-graft® disposable set
300003	Q-graft® centrifugation set

Q-graft® is a registered trademark owned by Human Med AG, Germany. Q-graft® technology is protected by U.S., European and other patents.

## In the research laboratory

for research purposes and production of mesenchymal stem cells

In the laboratory it can help simplify the open, labor-intensive manual tasks associated with laboratory-based SVF and adipose stem cell isolation, concentration and culture.



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#### QUALITY

Highly efficient SVF cell separation and concentration right on the sterile OR instrument table

#### QUANTITY

High yield of viable regenerative cells (SVF and ASC)

#### QUICK

Fast fat harvesting and SVF isolation in one single-use closed system



## • The unique advantages of the Q-graft®

### SVF cell harvesting at the point-of-care

#### • FAST AND EFFECTIVE

Separation, concentration and collection of high numbers of viable, lipid-free regenerative cells (SVF, ASC, MSC).

#### • SAFETY

SVF cell separation in a standardized process – in a closed system – on the sterile OR instrument table.

#### • POINT-OF-CARE

No laboratory and no centrifugation required. No transfer of tissue or cells outside the operating/procedure room, e.g. to a laboratory and back.

#### • STANDARDIZED, STERILE FAT HARVESTING

Aspiration and collection of viable fat tissue in the Q-graft® collector – in a closed system with body-jet®.

#### • OPTIMUM TISSUE DISSOCIATION

Heating of the lipoaspirate to 38 °C and effective mixing in the Q-graft® collector reduces the required amount of collagenase and the duration of collagenase digestion.

#### • STERILE SAMPLING OF REGENERATIVE CELLS

The lipid-free SVF cell suspension is directly extracted from the CELLS port of Q-graft® collector into a syringe via Luer connector.

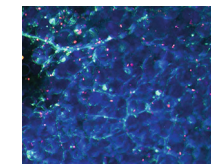
*Q-graft® can be used with and without collagenase.*



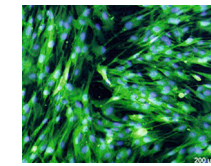
# Research and development

Extensive research work in collaboration with renowned medical universities has been the basis for the development of the Q-graft® system.

Through this, cutting-edge technologies for the separation and concentration of adipose derived regenerative cells in a compact closed system have been enabled, which are used on the sterile OR instrument table in the operating/procedure room.



*Vital adipose tissue from body-jet® lipoaspirate with blood vessels (vital staining)*



*Vital adipose stem cells from body-jet® lipoaspirate (vital staining)*

### Intraoperative separation and collection of adipose regenerative cells on the sterile OR instrument table in the operating/procedure room

The new compact Q-graft® System for the intraoperative separation and collection of adipose regenerative cells – stromal vascular fraction (SVF) and adipose stem cells (ASC) or adipose derived mesenchymal stem cells (MSC) – will enhance and facilitate the research and clinical applications of adipose derived regenerative cells in many therapeutic indications.

#### The Q-graft® system consists of:

- the single-use Q-graft® collector and
- the device Q-graft® control.

The Q-graft® collector enables you to collect and concentrate the lipoaspirate, and to separate the regenerative cells (SVF and ASC/adMSC) in one sterile closed system, directly on the sterile OR instrument table in the operating/procedure room, or in the research laboratory. The corresponding control unit Q-graft® control regulates the functions of the single-use Q-graft® collector. The Q-graft® collector is placed on top of Q-graft® control, directly on the sterile OR instrument table. Q-graft® control regulates the warming and mixing of the lipoaspirate during incubation, and the cross-flow filtration during the concentration of the SVF cell suspension. The lipid-free SVF cell suspension is directly extracted from the sterile Q-graft® collector into a syringe via the CELLS port.

### Harvesting adipose regenerative cells in the operating/procedure room

#### Duration of SVF cell separation

The whole process of fat harvesting, SVF cell separation and concentration requires approximately one hour.

#### Use of collagenase (Humanase®)

Q-graft® can be used with or without collagenase digestion. Without collagenase the SVF cell yield will be reduced.

#### Recommendation

The use of a centrifugation device, like e.g. Hettich Rotofix 32 A, increases the concentration of SVF cells. The quantity and viability of nucleated SVF cells can be documented quickly with a cell counting device like e.g. Chemometec NucleoCounter 200.



### Phase 1 Preparation of the Q-graft® with body-jet®

Q-graft® collector and Q-graft® control are placed on the sterile OR instrument table. Q-graft® control is covered by a sterile cover. The tubings are connected between Q-graft® collector, Q-graft® control and body-jet® as designated.



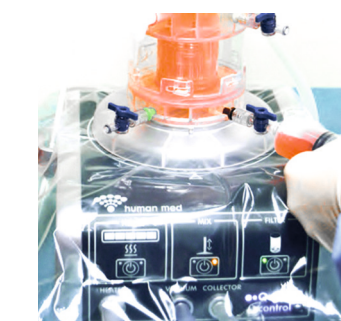
### Phase 2 Collection of lipoaspirate in a closed system

Liposuction with the body-jet® starts and the lipoaspirate is directly collected and concentrated in the upper chamber of the Q-graft® collector. Waste fluid is removed automatically by the body-jet®.



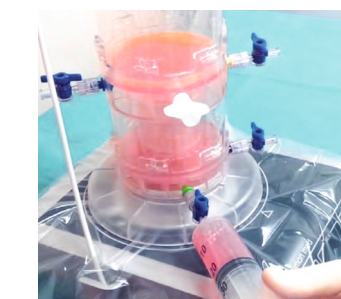
### Phase 3 Incubation and mixing of the lipoaspirate with Q-graft® control

By activating the appropriate Q-graft® control buttons, the lipoaspirate is mixed and incubated at 38 °C for 45 minutes. Q-graft® can be used with or without collagenase. Human med offers a specially designed GMP grade enzyme mixture (Humanase®) with the exact dosage for this application.



### Phase 4 Cell separation under cross-flow filtration, concentration of SVF cells

Immediately afterwards, the SVF cells are isolated mechanically by fractional cell separation and cross-flow filtration. The residual collagenase (if used) is removed by consecutive washing steps. The waste filtrate is removed from the Q-graft® collector WASTE port via Luer connector into a syringe.



### Phase 5 Sterile collection of the lipid-free SVF cell suspension via CELLS port

After concentration in the radial filter, the lipid-free SVF suspension is extracted from the Q-graft® collector CELLS port via Luer connector into a syringe.