LifeTec Group™

01 _ PRECLINICAL CRO

02 _ TECH & TRAINING

03 _ ACCELERATION

BIOLIVER
PLATFORM

## ADVANCING RESEARCH, DEVELOPMENT AND TRAINING

BIOLIVER PLATFORM

a perfused ex vivo liver model for assessment of hepatic devices, therapies and metabolic effects

The BioLiver is able to keep a porcine liver alive and functional outside the body. It works with blood that is supplied to the liver with physiological flows and pressures. The highly perfused tissue receives enough oxygen and nutrients to keep it alive and metabolically active while maintaining the complex cell structure, which is not possible with other methods as for example tissue biopsies. The system is compatible with a variety of imaging modalities, such as CT, MRI and ultrasound. The use of living tissue adds value to the studies, for example where the effect of physical treatments on the liver cells or the acute effect of drugs on the metabolic activity is important. With the BioLiver platform, it is for instance possible to determine the effect of an ablation procedure, while evaluating the feasibility and success of the needle placement and assess the effectiveness visually, hemodynamically, and histologically. The use of slaughterhouse livers reduces the need for animal research and the required ethics approval, ensuring short timelines and providing a smart and efficient preparation for animal and pre-clinical studies.

FEATURES & BENEFITS
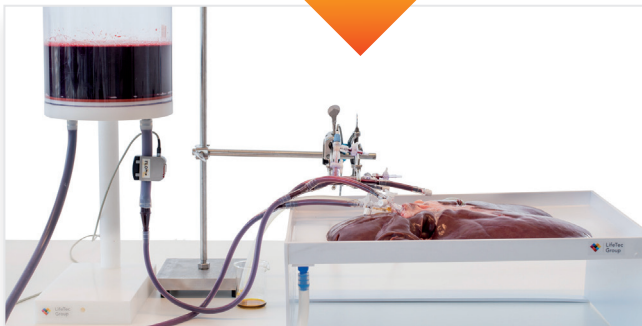
"Physiological blood perfusion of a porcine liver in our laboratory"

• The BioLiver is a valuable tool to assess the functionality and feasibility of hepatic surgery devices and procedures and to train users and surgeons on their use.

• The platform and protocols are adaptable to different applications and to mimic a variety of surgical situations.

• When using slaughterhouse tissues, the BioLiver is an ethically wellconsidered platform, partly reducing the necessity for animal research.
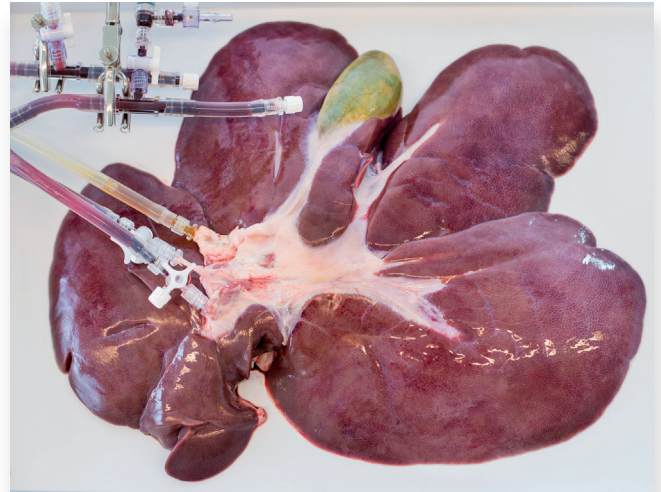
• The BioLiver is metabolically active and therefore it offers the possibility to test various metabolic effects of substances or treatments.

• Because the gall bladder is preserved and cannulated, bile production and composition can be utilized in experiments.

• Procedures specifically regarding the gall bladder or bile duct can be executed, different entrance ports provide means to test devices.

• By perfusing with whole blood, oxygen supply is provided, which is often a shortcoming in other models.

• Different modalities of perfusion can be offered, such as portal and hepatic perfusion or only a single inflow and perfusion at different temperatures depending on the research question.

• Pathophysiological conditions can be created.

• Multiple pressure and flow sensors allow for hemodynamic monitoring before, during and after an intervention.

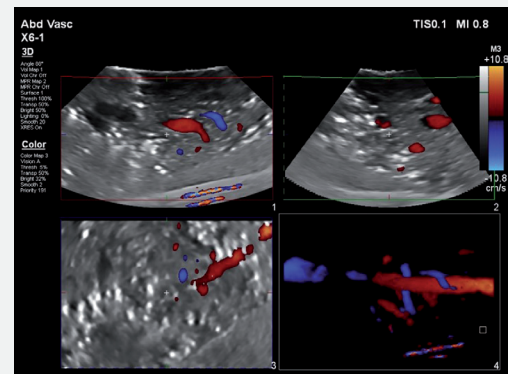• Highly skilled operators support you during your studies and training sessions.

" Preparation of clinical blood tests for hepatic markers and metabolic activity"

"Cannulated BioLiver with intact gall bladder"

EXAMPLES OF USE

- Assessment and feasibility of (intra-)hepatic device delivery, deployment and functionality, for example for minimally invasive devices.

- Assessment of liver cancer treatment by for example radiofrequency, high frequency ultrasound, or microwave ablation.

- Application of chemotherapy to an isolated liver.

- Bile duct stent application.

- Acute metabolic or toxicity studies to assess the effect on the liver through for example a drug or procedure.

- Applying a lifelike setting to train physicians with efficient protocols under image guidance such as 3D Doppler visualization.
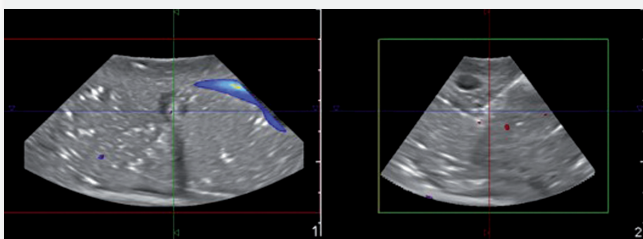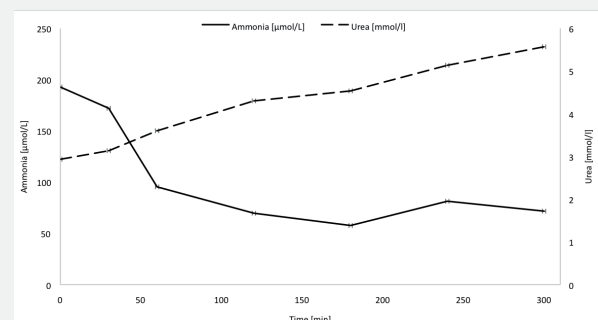

" Liver perfusion of large veins visualized by 3D Doppler within the BioLiver platform "

" Ablation needle inserted under ultrasound guidance in the BioLiver"

" Visualization of the ablation needle and zone by ultrasound for precise positioning"

" The BioLiver is metabolically active and converts ammonia to urea"

BIOLIVER

"The BioLiver is a platform as a service."

WHAT'S IN IT FOR YOU?

• Obtaining relevant data in a realistic and highly-controlled test environment, time and cost efficient and without the need for animal testing.

• Combination of clinical and non-clinical measurements and a well-controlled test environment will lead to better understanding of the therapy and the potential shortcomings in its early development stage.

• Steep learning curve with safer and better prototype assessment will significantly speed up development and lead to improved success rate in further pre-clinical research.

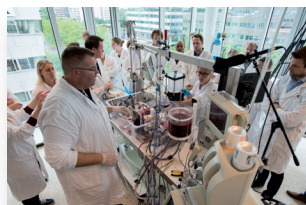For further information please contact:

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