HIHR

Healthy Ideas
Healthy Returns

# Program
# &
# Summary propositions

HIHR 7th edition

by on line sessions

November 2020

Participating academic institutions in the Benelux, incl their UMC's

Amsterdam UMC
Erasmus MC
Ghent University
Hubrecht Institute
imec
KNAW
KU Leuven
Liège université
Luxembourg Institute of Health
Netherlands Cancer Institute
Oncode Institute
Radboud Universiteit
university of groningen
TU/e Eindhoven University of Technology
UCLouvain
Universiteit Antwerpen
Uhasselt
UMONS Université de Mons
Université de Namur
Université du Luxembourg
Universiteit Leiden The Netherlands
ULB Université Libre de Bruxelles
University of Twente.
Utrecht University
Universiteit van Amsterdam
VU Vrije Universiteit Amsterdam
VIB
VUB Vrije Universiteit Brussel

Preferred partner

Johnson & Johnson Innovation

Silver partners

inkef capital

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# Content

# Program online pitch sessions, 10 November

## Program

7th edition Healthy Ideas, Healthy Returns

Tuesday **10 November**

by on line sessions

To participate in the on line edition of HIHR, please go to our website and sign up !
Each participant has to register separately, to receive a unique access code to participate.

| | | | | |
|---|---|---|---|---|
| **9.25** | Please connect to our online facility, test your settings and join the last instructions. | | | |
| 9.30 | Welcome | Filip Goossens | HIHR | |
| 9.35 | Short intro | Speaker t.b.c. | JNJ-Innovation | |
| 9.45 | **Vascoscope** | Huibert Tjabbes | Utrecht Holdings | MedTech & Diagnostics |
| 10.00 | **XPECT-INX a bioink company*** | Jasper Van Hoorick | UGent | Therapeutics & Biotech |
| 10.08 | *5 min break* | | | |
| 10.13 | **DepistEye** | Fanny Stercq | ULB | MedTech & Diagnostics |
| 10.28 | **River BioMedics*** | Marcelo Ribeiro | UTwente | Therapeutics & Biotech |
| 10.36 | **2ndB** | Thom Frielink | TU Eindhoven | Therapeutics & Biotech |
| 10.51 | End session I | | | |
| | *One hour break* | | | |
| **11.55** | Please connect again to the session | | | |
| 12.00 | **Gelgraft Medical** | An Van Den Bulcke | UGent | Therapeutics & Biotech |
| 12.15 | **GOAL 3*** | Niek Versteegde | Amsterdam AMC | MedTech & Diagnostics |
| 12.23 | *5 min break* | | | |
| 12.28 | **REHAL-IT*** | Sébastien Serlet | ULB | Therapeutics & Biotech |
| 12.36 | **Phosphoenix** | Pieter Roelfsema | KNAW | MedTech & Diagnostics |
| 12.51 | Closing remarks | | | |
| 12.55 | End of program | | | |

Pitches will last for a maximum of 10 min presentation, followed by 4 min Q&A (+1 min change).
Elevator pitches* contain of a 5 min presentation plus 2 min Q&A (+1 min change).
Due to the density of the programme we must strictly adhere to the schedule. To compensate the loss of networking opportunities, quickfire sessions are scheduled for each pitch-presentation during one of the following days, see schedule on page 4.

Summaries of the pitch propositions can be found on page 5 and further.

# Overview Quickfire sessions

HIHR offers new entrepreneurial teams/KTOs venture ideas, not pitch ready yet, the opportunity to discuss their idea / concept with investors, entrepreneurs and corporates in a 45 minute on line session. In addition we now also offer these QF-sessions to pitchers, to compensate for the loss of networking opportunities in the online setting and to further discuss their investment opportunity more in depth.

Hereto the following schedule has been set up:

| Date | Time | Spin off initiative |
|---|---|---|
| Quick fire sessions without a pitch | | |
| Monday 9 November | 09.00 – 09.45 | Immuno-oncology spin-off company<br>*Targeted anti-cancer therapy via engineered antigen presenting polymers* |
| | 12.00 – 12.45 | Preimure, Automated antibacterial coatings to prevent implant related infection<br>*To progress different tuneable and bio-stable coatings that could be tailored based on patient demands.* |
| | 17.00 – 17.45 | Technology for drugging the 'undruggable' protein targets insid cells<br>*By using our bodies own natural nanocarriers.* |
| Tuesday 10 November | 17.00 – 17.45 | THERAtRAME, matching your drugs to patients<br>*Drug positioning, drug discovery optimization, clinical trial design* |
| Quick fire sessions in addition to their pitch | | |
| Thursday 12 November | 09.00 – 09.45 | GOAL 3 - automated monitoring solutions<br>*AI enhanced monitoring solutions for early detection of critical illness* |
| | 12.00 – 12.45 | Phosphoenix<br>*Prothesis in visual cortex of blind people to restore vision* |
| | 17.00 – 17.45 | REHAL-IT<br>*Help software for the diagnosis and rehabilitation of cognitive disorders* |
| Friday 13 November | 09.00 – 09.45 | River BioMedics<br>*We develop and provide advanced human 3D cardiac models for drug discove* |
| | 12.00 – 12.45 | Vascoscope<br>*Point-of-care vascular access made easy* |
| | 17.00 – 17.45 | XPECT-INX a bioink company<br>*Bioinks" are materials to enable 3D-printing of cells and tissues* |
| Monday 16 November | 09.00 – 09.45 | Gelgraft Medical<br>*The solution towards minimally invasive breast reconstruction* |
| | 12.00 – 12.45 | DepistEye<br>*Early screening test for Autism Spectrum Disorder* |
| | 17.00 – 17.45 | 2ndB<br>*The brain-on-a-chip company* |

Summaries of the Quickfire candidates can be found on page 14 and further. For additional information on the Pitch-candidate Quickfire sessions we kindly refer to their summaries directly hereafter.

Please mark your interest for QF-sessions at the registration-form **November 1 the latest**, for planning purposes. Registrations after November 1 are scheduled based on availability. We will tailor the audience as much as possible to the business area of the initiative at hand.
Seats will be assigned and communicated in week 45 (November 2-6).

# Summaries of the Pitch presentations

## 2ndB

*Problem and Solution*

Today, the field of neurodegenerative diseases (NDD – e.g. Alzheimer and Parkinson disease, amyotrophic lateral sclerosis, frontotemporal dementia) is characterized by a low success rate of new drugs that enter human testing and reach the marketplace (8% in comparison to 15% for drugs overall). A significant limitation in innovative drug discovery for NDDs is the lack of models that reflect human physiology, which leads to high clinical failure rates due to inefficient screening of potential drug candidates. A promising solution is the fabrication of 3D cell cultures in microenvironments that mimic the real situation, known as organs-on-chip (OoC). 2ndB is an innovative assay company that possesses a unique technology through which we have created a brain-on-chip (BoC). Our BoC aims to increase success rates in Phase II (efficacy) clinical trials. This will reduce the cost of NDD drug development and accelerate the approval of treatments that benefit these patients.

*2nB Technology*

2ndB Brain-on-a-Chip (BoC) is based on a ground-breaking microsieve that combines microfluidics with 3D cell culture and read-out assays addressing the individual neuron cell level (Figure 1). Our approach allows studying the healthy and diseased neuronal cell dynamics in great detail to increase the accuracy of drug screening and testing. We developed the technology of 2ndB through the extensive research of Dr. Luttge at the University of Eindhoven to offer a medium-throughput screening solution for drugs during pre-clinical testing that more accurately reflects the effects of drugs on humans, when compared to conventional cell cultures and mouse models. The central component of our BoC is a scaffold-assisted "bioreactor" (the microsieve) consisting of well-defined 3D capture sites at the length scale of individual cells that provides a 3D micro cell culture system. 2ndB's microsieve configuration promotes stable neuronal network behaviour to ensure drug testing is done in a physiologically accurate model.

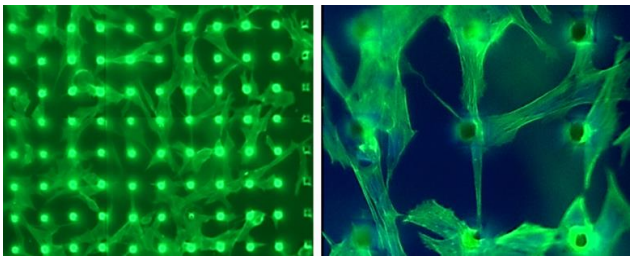


Figure 1. Cells in microsive wells (right) marked by fluorescent die. Close up of neuronal connections (left).

*BoC Market and Business Model*

The market for OoC and BoC technology is currently still in its infancy but expected to grow substantially in the upcoming years due to the unmet need in effective drugs for (neurodegenerative) diseases. The current OoC-technology market value of €31.5 million is expected to skyrocket to over €6 billion by 2025. Additionally, the drug development pipeline targeting neurodegenerative diseases including Alzheimer's disease, Parkinson's disease and ALS, has an estimated market value of over €130 million for pre-clinical drug testing. This market is expected to grow in the future, with novel compounds in the drug development chain. The ground-breaking approach of 2ndB plans of capitalizing on this market growth by providing a unique technology that closely mimics the brain and produces of high-resolution measurements for accurate preclinical drug screenings. Based on a comprehensive qualitative analysis of current OoC companies and potential end-users, we plan on a hybrid business model as the most sustainable approach for our technology area. Using this business model with a combination of product and consumable sales and CRO services, we will effectively collaborate and at the same time generate sales with all potential customers in the field (pharmaceutical companies and research institutes).

*Our differentiating factor and required investment*

Unlike other similar technologies under development, 2ndB can produce individual cell read-outs for uniquely detailed results that increase precision of every analysis. Our results are simple and comprehensive, creating an easy-to-use, fast, and accurate tool for clinical drug success prediction. 2ndB was incorporated in December 2019. We have focused on the scientific development of our BoC and finalising a proof-of-concept (PoC) for our technology. We are looking forward to an investment of €2,000,000 to validate the technology, incorporate the latest stem cell methods, and prepare for medium throughput by our pharmaceutical customers.

*Contact* Thom Frielink, Founder / CSO - thom.frielink@gmail.com

Pitch session: Tuesday 10 November, 10.36

Quick fire session: Monday 16 November, 17.00 – 17.45

# DepistEye – Early Screening Solution for Autism

DepistEye is a screening test that assists first line practitioners (pediatricians and GPs) in assessing wether a child is at risk of developing Autism Spectrum Disorder (ASD) and wether this child should be redirected toward a specialized center for diagnosis.

### *Need and opportunity*

ASD has an estimated prevalence of 1 to 2%, and has recently received growing public and political attention, driving a rapidly growing market. Researchers have reached a widespread consensus on the crucial importance of early intervention on improving a child's communication, learning, and overall autonomy, making screening and diagnostic a top priority at the scientific and political levels.

To date, the most commonly used screening test is a questionnaire addressed to parents, which has been shown to have problematic false positive and false negative rates. As a result, the median age of diagnosis is estimated to be 4 y.o., with several months, if not years, of waiting before accessing specialized evaluation and therapy, due to a massively engorged bottleneck in the care pathway.

### *Our solution*

Combining eye-tracking data and our expertise in linguistics and neuropsychology, DepistEye assesses a child's early linguistic development and provides doctors with an objective complement to their clinical observations. This fully automated process only requires the child to look at videos for a few minutes during routine well-child visits, and can flag a child as early as 18 months old. As a result of this gain in precision, the care pathway is optimized and children access more rapidly the therapy they need, maximizing their chances of a better outcome.

### *Investment opportunity*

After a first study towards validating our solution, we are planning the creation of a spin-off company to take over the project in the first semester of 2021. Its first goals will be to conduct a larger clinical investigation and to prepare for market entry at the national and international levels. For this aim, we are seeking 2M € of funding for the first five years.

ACTE
Autism in Context
Theory and Experiment

This project is currently conducted within ACTE, a ULB research group dedicated to the study of language and communication in Autism Spectrum Disorder (ASD), and is laureate of the FIRST Spin-Off program of the Walloon Region, and receives the generous support of the ROGER DE SPOELBERCH Foundation.

### *Contact*

Fanny Stercq, project manager - fanny.stercq@ulb.be +32 (0)477 41 96 37

**Pitch session:** Tuesday 10 November, 10.13

**Quick fire session**: Monday 16 November, 12.00 – 12.45

# Gelgraft Medical

## The solution towards minimally invasive breast reconstruction

*Founding date*
2022 (Gelgraft Medical is a spin-off project of Ghent University)

*Equity funding to date*
Up until now, no equity funding has been raised, we are still incubated at University

*Short description of product/service including value proposition*
Nowadays, breast implants, lipofilling and microsurgical free tissue transfer are the most popular procedures to repair soft tissue defects resulting from mastectomies/lumpectomies following breast cancer. With breast cancer being the most common cancer affecting women worldwide, there is a clinical need for reconstructive strategies addressing current drawbacks and limitations. F.e. although lipofilling is performed by a great number of plastic surgeons, the resorption of the fat graft is a huge problem and reason for the need for multiple interventions (up to 5-10 procedures).

Given the clinical need along with great valorization potential, Gelgraft Medical want to prepare for an innovative spin-off company that will target the breast reconstruction market. Gelinject, constructed from a gelatin-based biomimetic material, will act as a support, promoting cell survival as an addition to lipofilling procedures. The full procedure is shown below (Fig 1).

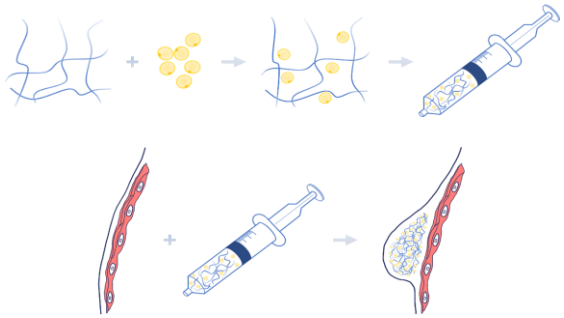


*Figure 1: Schematic overview illustrating the use of Gelinject in combination with lipo-aspirate containing adipose tissue-derived stem cells, as a novel strategy for breast reconstruction procedures.*

Due to an increase in cell survival compared to the standard lipofilling technique, the number of operations can be significantly reduced, not only benefiting the patient, but, furthermore, thanks to a reduction in costs, there will be a great benefit for society.
Currently we are developing a pilot production (via a scalable method) of minimum 100 vials that can be used for further preclinical studies, as well as for the first-in-human testing. We are building a regulatory dossier for this Class III medical device and a clinical study plan to obtain permission for clinical trial studies.
The new venture GELGRAFT MEDICAL will focus on bringing this unique **regenerative GELINJECT product** towards clinical trial, CE-mark and market introduction. The spin-off company will give rise to the possibility of developing a pipeline of follow-up products, expending towards aesthetic surgery and cosmetic filler market.

*Amount of Funding sought*
Assumptions of 1% share of the total addressable market, 5 years after market introduction, can lead to a turnover of approx. 40 million €. Based on these initial calculations a series A investment of 8 to 10 million EUR would be required to prepare for a CE marked medical device with a strong sales & marketing team, to create a broad market introduction.

*Contact*
An Van Den Bulcke, Business Developer - An.vandenbulcke@ugent.be +32 474 81 23 81
Lana Van Damme, Gelgraft projectleader - Lana.VanDamme@UGent.be

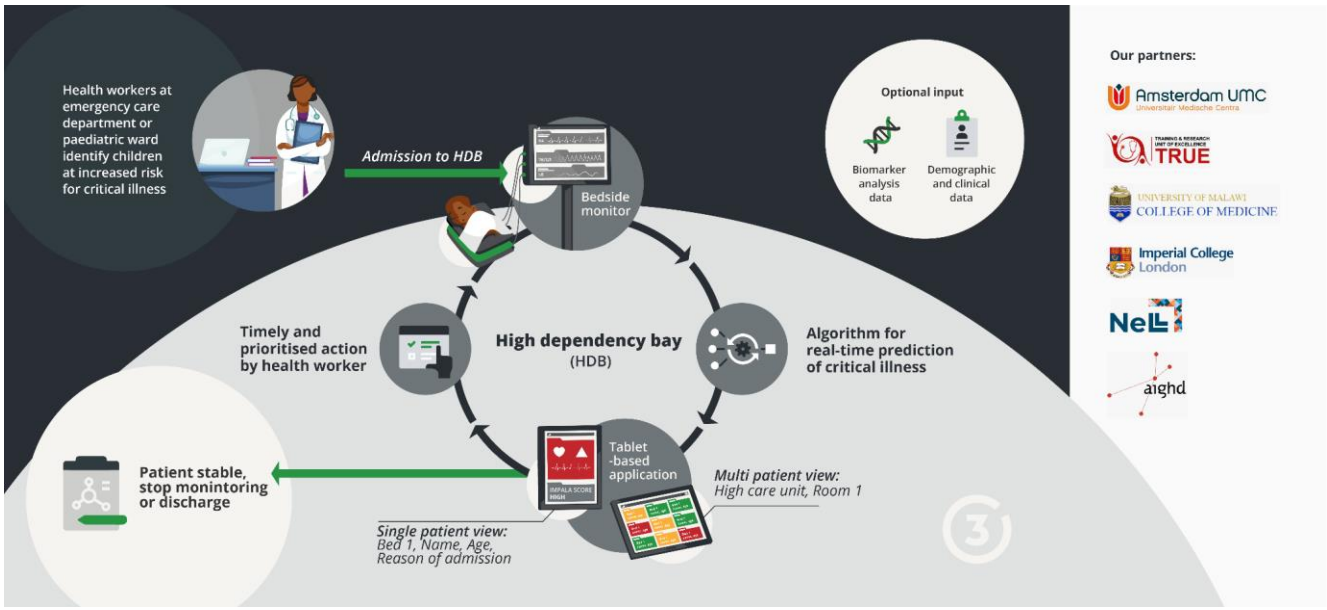
**Pitch session:** Tuesday 10 November, 12.00

**Quick fire session**: Monday 16 November, 09.00 – 09.45

# GOAL 3 – automated monitoring solutions

***Who:*** GOAL 3 is a social enterprise erected in 2019, named after sustainable development goal 3 - early stage and pre-seed, currently funded through its founders and small scale subsidies.

***Our Mission*:** To enable and empower health workers through smart technologies that address their needs. Through our mission we strengthen health systems and improve access to care.




***The Need and Opportunity:*** Every year more than 3 million children in low- and middle income countries die due to conditions that are easily treatable. Treatment is available, but the conditions are recognized too late to be treated effectively. In order to timely detect these conditions in hospitalized children it is essential to monitor vital signs. However, this is not possible in these settings due to shortage of staff and lack of suitable equipment. Current monitoring systems widely used by clinicians in high-resource settings are not suitable for low resource settings due to their high costs and poor compatibility. Our IMPALA monitoring system addresses these problems by combining innovative sensors, an intuitive and flexible system design and machine learning algorithms. This way we create a smart, yet simple, monitoring system that enables health workers to timely detect and predict critical illness. We are finalizing our second prototype for clinical testing in Malawi from January 2021 – March 2021 together with the Amsterdam Medical Centre and have additional studies planned with the partners mentioned in the figure below. Every monitoring system will improve care for 50 children per year and save the life of at least one child every year.

***Market*:** Our initial target market are organizations in (Eastern) Africa providing paediatric care. There are 5000 hospitals in Africa that need an estimated 20 monitoring devices per hospital. Our aim is to offer monitoring as a service at 2$ per day, bringing the annual market value at $73 million. We expect to launch our first products at the start of 2023. There are currently no integrated monitoring systems offering comparable functionality or services. Following and during development we will actively explore business opportunities in Western settings.

***The Team:*** Our CEO Niek Versteegde is a specialist in international health. In addition we have a complementary team of 8 people with technical, business, finance and Ux. Experience and a strong multidisciplinary advisory board.

***Financials:*** By 2027 we expect to have positive revenue stream with an estimated 2000 systems running and an annual revenue of €1.660.000. **Funding need 2021** €750K, **2022** €2.000K, **2023** €2.500k.

***Contact*:** Niek Versteegde, CEO | niek@goal3.org | +31627192818 | www.goal3.org

**Pitch session:** Tuesday 10 November, 12.15

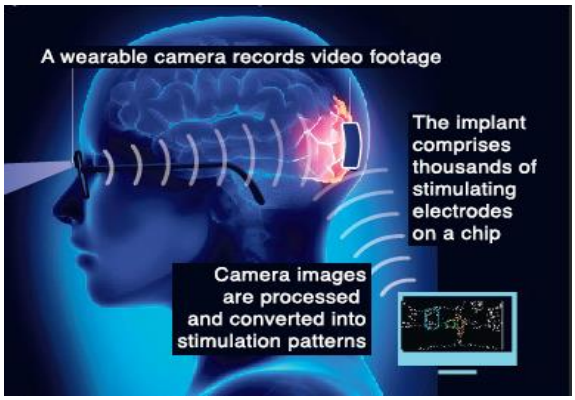
**Quick fire session**: Thursday 12 November, 09.00 – 09.45

# Phosphoenix B.V.

## Restoring a rudimentary form of vision for the blind

Phosphoenix will improve the quality of life and independence of people who are profoundly blind, through the partial restoration of vision. Phosphoenix develops a neuroprosthetic device that is implanted in the visual cortex and interfaces directly with the brain, bypassing the malfunctioning eyes. This implant would allow the user to go from being completely blind to having low vision.

Phosphoenix goes beyond what has been achieved so far to create a visual cortical prosthesis. The blind person wears a camera integrated in glasses and footage is processed in a small device to create brain stimulation patterns that are sent to the brain with a wireless link. Phosphoenix will use tens of thousands of microelectrodes that are inserted into the visual cortex and activate brain cells with high precision to elicit visual perception of the patient's surroundings. Phosphoenix develops (1) the wireless interface, (2) electrodes in the brain, (3) methods for the implantation of the device in surgery, (4) algorithms to transform camera images into brain stimulation patterns and (5) a fully integrated and patient-friendly product. A patent describing the foundations of the technology has been awarded in 2019.




The user will be able to carry out his/her activities with reduced support of other aids, e.g. a guide dog. He/she will recognize objects and people and be able to navigate in unfamiliar environments. The device thereby profoundly enhances the autonomy of the users. The prosthesis will decrease demands on the health care system and increase the employability of the users.

*History and funding*

Phosphoenix was founded on May 16th 2019. Conversations with venture capital funds are ongoing but capital has not yet been raised. Phosphoenix is valorisation partner of the NWO cross-over grant INTENSE and the EU FET-Open grant NeuraViper, and is exploring credit facilities (e.g. Innovatiekrediet).

*Amount of funding sought*

Phosphoenix aims to raise 8M€ for the "first-in-human" demonstration, which will be reached within three years from the start of the funding.

*Contact information*

Website: www.phosphoenix.nl

*Founders*

Dr. Bert Monna bert@phosphoenix.nl
Prof. Dr. Pieter R. Roelfsema pieter@phosphoenix.nl
Dr. Xing Chen xing@phosphoenix.nl

**Pitch session:** Tuesday 10 November, 12.36

**Quick fire session**: Thursday 12 November, 12.00 – 12.45

# REHAL-IT

www.rehal-it.com

*Founding date*
The REHAL-IT company could be created in November 2021.

*Short description of product/service including value proposition*
R.O.G.E.R (Realistic Observation in Game and Experiences in Rehabilitation) is a virtual reality software. It is developed by a video game company (Fishing Cactus), by neuropsychological researchers (University of Brussels) and clinicians (ERASME Hospital) that allows the creation of cognitive assessment scale and observation and the creation of game scenarios for cognitive rehabilitation purposes.

We now find a virtual home on a computer accessible to all, the graphic quality allowing a complete immersion. Virtual reality is accepted as a therapeutic tool and allows a better transfer of rehabilitation in everyday life.
The software integrates a scenario editor (simple creation without knowledge of codings beforehand). Subsequently, a platform of buying and selling scenarios will enrich the catalogue of this serious game. The possibility of standardization of the data in real time for each scenario with an evaluation aim as well as scales of evaluations for the rehabilitation scenarios will also be found.

R.O.G.E.R promises a graphic quality, a grip accessible to all, a constant updating and in real time. It also makes it possible to work on all the cognitive functions and to bring new data for the clinic and the research.
With the data and the development of an AI, we will be able to set up a system of evaluation of the precursor signs of pathologies (Parkinson, sclerosis, Alzheimer ...). We can use the data to build an intelligent model (machine learning) that will become more and more powerful.

*Amount of funding sought*
The REHAL-IT project and R.O.G.E.R need to raise funds to enable them to effectively modify the software, protect it and make it more accessible. They will then be able to benefit from the advantages of a medical device. We need 500k€ to start the first year.

Numerous field tests have highlighted its many advantages and have also allowed us to correct the software's errors. We are ready to move to the marketable version.

*Contact*
Sébastien Serlet - sebastien.serlet@rehal-it.com

**Pitch session:** Tuesday 10 November, 12.28

**Quick fire session**: Thursday 12 November, 17.00 – 17.45

# River BioMedics

*Founding date*
23-01-2020

*Equity funding to date*
No equity funding to date. We have received the 40.000 euros from Take-off1, 250.000 euros loan from Take-off2 and a 200.000 euros subsidy from an EFRO project.

*Short description of product / service including value proposition*
River BioMedics is a biotech company that develops advanced 3D human cardiac in vitro models for drug discovery. Although cardiovascular disease is still the number 1 cause of death worldwide, pharmaceutical companies have been struggling to develop new compounds for cardiovascular diseases during the last two decades. This is largely due to the lack of human translational value of the currently used preclinical animal and 2D cell models. This leads to tremendously high failure rates of novel drugs in clinical trials, even up to 75% in phase 2. River BioMedics provides two revolutionary assays based on human induced pluripotent stem cell (hiPSC)-derived cardiac cells, which we assemble in a 3D architecture to mimic the native human heart tissue. The high human predictivity level of our models de-risks the entry of compounds into clinical trials and improves the drug discovery output of our pharmaceutical customers.

*Amount of funding sought*
We are seeking for a seed fund of 800.000 euros in order to finalise the development of our assays and reach the market in 2 years.

*Contact*
Marcelo Ribeiro, Co-Director/CSO - marcelo.ribeiro@riverbiomedics.com T +31623609933

**Pitch session:** Tuesday 10 November, 10.28

**Quick fire session**: Friday 13 November, 09.00 – 09.45

# Vascoscope

## VASCOSCOPE

### SHUNT CANNULATION MADE SIMPLE

### HEMODIALYSIS

Patients whose kidneys fail need 3 times per week hemodialysis to clean their blood externally.

This requires access to the blood stream via cannulation of the shunt, which is the patient's lifeline.

Miscannulation is painful for the patient, increases the risk for complications, like haematoma, infection, or damage to the shunt; and reduces confidence in the nurse.

Many patients suffer from stress and are anxious before every cannulation.

### ULTRASOUND GUIDED CANNULATION

Ultrasound Guided Cannulation is golden standard for complex cannulation, especially in difficult-access patients.

Using ultrasound decreases the number of miscannulations and improves mutual trust between the nurse and patient.

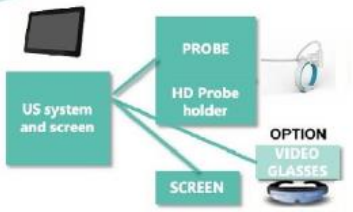
Unfortunately, ultrasound is too often not used even in difficult-access patients.

Reasons for still not using ultrasound include:

- Need for "third hand" to hold the probe
- Difficult eye-to-hand coordination with screen far from cannulation location
- Long and difficult learning curve

There is a real need for solutions that lower the barriers for ultrasound guided cannulation.

### SOLUTION: VASCOSOPE




'Drag & drop' probe fixation: both hands available for cannulation procedure.

In line view: image on screen, tablet, or video glasses with 20–40% vision field

Ultrasound system dedicated for vascular access.

Portable, easy to use and affordable.

### MARKET

There are over 2 million haemodialysis patients worldwide. Vascular access is essential.

In the Europe and US alone, there are over 14,000 of these centres, worldwide 40,000.

The Vascoscope has important other use-cases:

- Home haemodialysis by patient self, caregiver, or home care nurse
- Peripheral cannulation by non-specialists in and outside the hospital (most common invasive procedure)

First letters of intent to buy

### Where do we stand

We plan to have the Vascoscope on the market within a year.

Company has been founded July 2019 by Huibert Tjabbes and has been funded mainly by Early Phase Financing from Dutch Research Council.

Current team consists of Huibert Tjabbes, founder and CEO; and Jori Verbeek CTO.

Partners include UMC Utrecht, Dutch Kidney Foundation and Holland Innovative

Huibert Tjabbes
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tjabbes@vascoscope.com

**Pitch session:** Tuesday 10 November, 09.45

**Quick fire session**: Friday 13 November, 12.00 – 12.45

# XPECT-INX a bioink company

*Founding date*
Expected: Q2 2021 (XPECT-INX is a spin-off project of Ghent University)

*Equity funding to date*
Up until now, no equity funding has been raised, we are still incubated at University

*Short description of product/service including value proposition*
Currently, a lot of people are suffering from issues related to tissue defects and organ shortage. To overcome these issues, a shift is necessary from replacing damaged tissue with donor tissue towards regeneration of the damaged tissue. This field is known as regenerative medicine.

Biofabrication is the science using additive manufacturing (AM) for tissue engineering and regenerative medicine. The field is undergoing a shift from fundamental to applied research, resulting in a rapidly growing market segment (CAGR:17.6%).

There are a lot of formulations described in literature. However, complicated or unreliable material feeds result in very low market penetration. Consequently, potentially breakthrough research is rarely transferred from bench to bedside.

Current commercial resins and bioink formulations remain limited. In the light-based AM segment, there are no biodegradable and only few biocompatible or cell-interactive resins. Additionally, formulations for the general biofabrication market often exhibit poor resolution or difficult processing.

Here, our patented technology platform allowing for solid state-curing of polymers can open up unprecedented opportunities. Our IP portfolio not only allows for improved printing speed of hydrogel resins, but can also improve the resolution and architectural complexity of constructs using light-based AM. For example, we reported on the highest resolution for gelatin-based materials (1 µm) and for biodegradable materials in general (150 nm).

By offering these innovative materials in a commercial setting, bottom-up innovation can occur. By ensuring a reliable/reproducible range of bioinks, including cGMP grade, the move of biofabrication towards the clinic is within reach.

*Amount of Funding sought*
We are looking for around 2.5 million euro to spin out from university.

*Contact*
Jasper Van Hoorick, Scientific Founder/Project Lead - jasper.vanhoorick@ugent.be

**Pitch session:** Tuesday 10 November, 10.00

**Quick fire session**: Friday 13 November, 17.00 – 17.45

# Short summaries of single **Quickfire session** initiatives

## Immuno-oncology spin-off company

### Targeted anti-cancer therapy via engineered antigen presenting polymers

Adoptive cell treatment such as TIL or CAR-T therapy require T cells from the patient to be removed, engineered ex vivo and re-infused into the patient in order to stimulate the immune system to recognize tumor cells. While this has emerged as a powerful and potentially curative therapy for certain cancers, the approach suffers from issues such as only being effective in a subset of patients, is an autologous therapy, has therapy-associated toxicity and high production and administration costs. The Figdor lab at RUMC has created a modular, polymer-based, off-the-shelf antigen presenting cell that can be loaded with key signalling molecules in order to stimulate the immune system to generate immune cells primed against tumor antigens of choice, rather than the broad non-specific (anti-CD3/CD28) signals used thus far to expand T cells.
While this novel technology can be used ex vivo as the T cell activating agent in CAR-T therapy, the real novelty lies in its ability to be administered in vivo, completely removing the need for any ex vivo manipulation. The Figdor lab has demonstrated proof of concept, showing the polymer can induce proliferation of T cells in vivo and data showing biocompatibility. The technology not only has potential for activating tumor-reactive T cells, but also for activating other immune cells such as B-cells, NK cells, TILs and DCs.

**Contact**: ian.bell@oncode.nl
**Quick fire session**: Monday 9 November, 09.00 – 09.45

## Preimure, automated antibacterial coatings to prevent implant-related infection

### To progress different tuneable and bio-stable coatings that could be tailored based on patient demands.

Implant-associated infections are one of the most important challenges of orthopedic and trauma implant surgery. It can be devastating for the patient with high chance of morbidity and impose extremely high cost for health care. The decision of the type or size of this implant is often made by the surgeon in the operation theatre at the very last moment, particularly at the revision surgeries performed in infected cases or in cases of trauma. This makes it difficult to perform a coating process on an implant before the operation takes place, as the final implant is chosen per operative. Ideally, having a simple but efficient coating set-up in the operation theatre that can be easily handled at a short notice before implantation would solve this problem. Here, we are trying to bring a coating set-up into the operation theatre which will allow the surgeon to choose a commercial implant that fits the need of the patient and subsequently have it coated per-operative.

**Contact :** S.AminYavari@umcutrecht.nl
**Quick fire session**: Monday 9 November, 12.00 – 12.45

## Technology for drugging the ‘undruggable’ protein targets inside cells

### By using our bodies own natural nanocarriers.

Nearly all commercially available proteins have been developed against extracellular targets, i.e., drug targets outside the cell. However, there are many diseases where protein therapeutics need to be functional inside the cells (= intracellular targets). Protein delivery into cells is a potentially transformative tool for treating "undruggable" targets in various diseases.

*Problem*

Upon protein injection into circulation, protein therapeutics are cleared rapidly from the body, have a low cell permeability, volatile structure, low bioavailability, and risk inducing an immune response. We can solve these limitations by introducing them into an envelope, i.e., a nano delivery system. By doing so, protein therapeutics cannot be recognized by the immune system, have a longer half-life, and can cross the cell membrane more effectively while keeping their structure. However, conventional nano delivery systems that are already on the market, i.e., liposomes and polymers, are synthetic nano delivery systems that are ineffective for protein loading and delivery inside the cells. Especially since their synthetic nature can compromise the biological structure and function of the protein. Hence, there is an opportunity to develop a novel drug delivery system.

*Value proposition*

We are developing nanotechnology, which harnesses our body's own nautral envelopes to enable safe and effective delivery of therapeutic proteins. It is a highly versatile nanotechnology platform to load and deliver therapeutic proteins via these natural envelopes. Various therapeutic proteins, including gene-editing proteins, can be delivered, which can mitigate disease progression or restore gene function permanently. Hence, this platform can be used to develop novel biopharmaceuticals associated with protein deficiencies or mutations, e.g., hypercholesterolemia, cystic fibrosis, hemophilia, Huntington's disease, lysosomal storage disorders.

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**Quick fire session**: Monday 9 November, 17.00 – 17.45

## THERAtRAME, matching your drugs to patients

### Drug positioning, drug discovery optimization, clinical trial design

Drug development is an extremely inefficient and costly process. The high failure rates of new therapeutic agents are the consequence of the poor validity of pre-clinical models and of the inadequate patient selection in clinical trial. Therefore, there is a need to better design pre-clinical and clinical protocols. Our innovative solution, THERAtRAME, is able to uncover new druggable targets for diseases (disease positioning) and new patients that could benefit from old drugs (drug repositioning) decreasing time and cost of new treatments.

THERAtRAME integrates a holistic vision of disease establishment with mathematical predictive models and artificial intelligence. Our innovative analysis pipeline is based on the pioneer research work done at the University of Liege on the impact of proteome rewiring and tRNA modifications in disease. THERAtRAME pipeline will deliver custom solutions for a drug, disease or molecular target of immediate business relevance to our customers and partners.

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**Quick fire session**: Tuesday 10 November, 17.00 – 17.45

# Contact

For additional information and inquiries please contact:

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