

## **Introduction of SAICO Biosystems**

**for  
3<sup>rd</sup> nanoSyn joint meeting**

Vienna, 14<sup>th</sup> of December 2020

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**Introduction by Dr. Rudolf Zinell,  
CEO of SAICO Biosystems**

**- INDEX -**

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. PROJECT BACKGROUND AND OBJECTIVES</b>	<b>3</b>
<b>3. REQUIREMENTS FOR COOPERATIVE R&amp;D</b>	<b>6</b>

## - INTRODUCTION -

**SAICO is a Vienna-based company founded in 2017 that focuses on the microfabrication of biosensors and lab-on-a-chip systems for biomedical applications.**

### APPROACHES

#### Mission Statement

- We consider clients first – we are aiming for long-term client partnerships
- We facilitate the rapid translation of academic innovations into industrial production of diagnostic tools for personalized medicine
- Our core competence is the rapid and cost-efficient generation of functional prototypes needed to reduce the development time from initial idea to market-ready devices
- We assure the confidentiality of all client's property

#### Selected References (2017 – dato)

- AKRIBES Biomedical GmbH
- DENZ Bio-Medical-GmbH
- University of San Francisco – Medical Center
- NutraSource Inc. – Toronto, Canada
- FARMAK JSC – Kiev, Ukraine
- University Leiden / Netherlands
- University Tübingen
- Orbillion Bio / USA
- Medical University, Graz - Austria

- INDEX -

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. PROJECT BACKGROUND AND OBJECTIVES</b>	<b>3</b>
<b>3. REQUIREMENTS FOR COOPERATIVE R&amp;D</b>	<b>6</b>

## - PROJECT BACKGROUND AND OBJECTIVES -

**SAICO provides in-depth microfluidics expertise, as well as access to our rapid prototyping technologies and patented technology platforms.**

### **BACKGROUND INFORMATION (1)**

#### **ADVISORY ON MICROFLUIDICS TECHNOLOGIES**

Consulting including the establishment of microfluidic concepts, evaluation of and improvement microfluidic layouts; hands-on training in microfluidic handling; training in microfluidics fabrication; and workshops on microfluidics, cell chips, organ-on-a-chip technologies.

#### **ORGAN-ON-A CHIP TECHNOLOGIES**

Integration of complex biology in microfluidic devices and prototyping of customized 2D/3D cell culture systems including multilayered, membrane-based and sensor-integrated microfluidic devices; miniaturization of bioassay, biocompatibility studies and material-biology interaction analysis; and small scale production of microfluidic devices.

#### **ESTABLISHMENT OF ON-CHIP DISEASE MODELS**

In collaboration with our clinical partners we are currently working on the establishment of a rheumatic arthritis-on-a-chip, an osteoarthritis-on-a-chip and a Parkinson's-on-a-chip platform.

#### **SCREENING SERVICES BASED ON AUTOMATED MINIATURIZED CELL CULTURE SYSTEMS**

Based on our proprietary membrane compression technology, we have established an automated microfluidic wound healing and cell migration assay for drug development and lead compound optimization studies or routine toxicological assessments.

#### **Consulting Tasks and Deliverables:**

- (A) advice on microfluidics-related issues
- (B) customized technology solutions ranging from initial proof-of-concept studies to medium/large-scale engineering designs
- (C) on-site training in microfluidics handling

## - TECHNOLOGY -

**SAICO closely cooperates with the Vienna University of Technology and has access to clean room facilities and a variety rapid prototyping technologies.**

### **BACKGROUND INFORMATION (2)**

#### **RAPID PROTOTYPING TECHNOLOGIES**

SAICO uses rapid prototyping technologies based on soft- and hard polymer replication techniques including various micromachining, casting, hot-embossing and micro-injection molding stations needed for the fabrication of microdevices and functional microfluidic components such as actuators,  $\mu$ -valves, micropumps and degassers.

#### **ORGAN-ON-A CHIP TECHNOLOGIES**

SAICO's organ-on-a-chip labs contains eight measurement stations equipped with various optical and electroanalytical detection systems, heating and pumping units and his cell culture laboratory is equipped with necessary instrumentation including laminar flow hood, microscope and incubators to maintain, culture and analyzes mammalian cell cultures.

#### **MEDICAL APPLICATIONS OF CHIP TECHNOLOGIES**

The chip technology is implementable in a wide range of medical fields:

- Pharmaceutical development and the optimization of active substances
- multi-parametrical cell analytics
- (Nano-)toxicology
- individualised conception and optimization of therapies
- clinical diagnostics and point-of-care diagnostics

- INDEX -

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<b>2. PROJECT BACKGROUND AND OBJECTIVES</b>	<b>3</b>
<b>3. REQUIREMENTS FOR COOPERATIVE R&amp;D</b>	<b>6</b>

## - AMI NETWORKING -

**From SAICOs point of view basic requirements for networking are crucial.**

### **NETWORKING REQUIREMENTS**

- Spin-offs and start-ups need new clients – not so much new know-how / patents / technology
- Per definition spin-offs are the establishment of new companies in the context of universities, a by-product or incidental result of a larger project, something that is imitative or derivative of an earlier work, product, or establishment
- A start-up is a corporation looking for a business model, a market and customers, tries to innovate, relies on strong and rapid growth in emerging markets with high competition and just a few winners. A start-up needs external capital (strong correlation between being a start-up and having investors)
- Focus on cash-flow financing, therefore need for turnover (clients, projects), fee for service or delivery
- the aim of the companies is to attract and to keep excellent human resources – competitive salaries are to be paid
- Overhead is still small – but spin-offs and start-ups are not cheap because of ongoing R&D activities. Customers have to be aware, that they have to stick to a market oriented remuneration



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## - COMPANY -

**Management – Chief Executive Officer****Mag. Dr. Rudolf Zinell****EDUCATION:**

Handelsakademie, Spittal/Drau  
 Magister in Economics at the Wirtschaftsuniversität Wien  
 Dr. oec. at the Hochschule St.Gallen  
 Research scholarship at the Haas School of Business,  
 Berkeley, University of California  
 Promotion to Dr. oec. at the Hochschule St.Gallen  
 Certified Management Consultant, Accredited for Credit Assessment and Controlling

**PROFESSIONAL CAREER:**

Assistant at the Institute for Economics, Hochschule St.Gallen, Leitung der Abteilung Kurse und Tagungen  
 ECCE Environmental Consulting-Chemical Engineering GmbH, Wien, Partner  
 SUTER+SUTER Management Consulting, Project manager  
 DIEBOLD Management u. Technologieberatung GmbH, Project manager  
 FOCUS Management Consulting: Managing director  
 FOCUS Management Advisory: Managing director

**MAIN FOCUS:**

Marketing, Strategy, Feasibility Studies, Technology Rating, Reorganisation and Cost Cutting, Environmental Management

**SECTORS:**

Industry, Health Care, Commerce, Forestry, Public Government, Tourism

## - COMPANY -

### Management – Chief Technology Officer

Prof. Dipl. Ing. Dr. Peter Ertl

#### EDUCATION:

2014 Visiting Scientist at Medical Center, University of California at San Francisco, USA  
2013 Visiting Scientist at Visiting Scientist at Nanyang Technological University, Singapore  
2012 Fulbright Scholar at University of California at Berkeley, USA  
2011 Habilitation (Assoc. Prof.) in Nanobiotechnology at BOKU, Vienna, Austria  
2002 Post-doctoral Assistant – UC Berkeley, US & University of Waterloo, CAN  
2001 Certificate in University Teaching at the University of Waterloo, Canada  
2000 PhD in Chemistry at University of Waterloo, Ontario Canada  
1997 MSc. in Food Sciences und Biotechnology, BOKU, Vienna



#### PROFESSIONAL CAREER:

2016 Professor for Lab-on-a-Chip Systems for Bioscience Technologies  
2006 Senior Scientist at the Austrian Institute of Technology (AIT)  
2003 Co-founder & Head of Product Development at RapidLaps Inc., Kitchener, Canada

#### MAIN FOCUS:

Development of advanced lab-on-a-chip systems for application in biotechnology and medicine. An important aspect of my research is concerned with the heterogeneous integration of micro- and nanosensors, miniaturized fluid handling systems and electronic components to establish higher level system architectures needed for automated microanalysis systems.

## - COMPANY -

### Scientific Project Staff

#### DI Christoph Eilenberger, MSc.

##### EDUCATION:

Since 2017 Doctoral studies of Technical Chemistry, TU Vienna  
2017 MSc. in Biotechnology, BOKU Vienna  
2014 BSc. in Food Science and Biotechnology, BOKU Vienna



##### PROFESSIONAL CAREER:

2017 TU Vienna, scientific staff member and research assistant  
2015 TU Vienna, Scientific staff member  
2013 Donau University Krems, scientific staff member  
2013 BOKU Vienna, scientific staff member

##### MAIN FOCUS:

Development of advanced lab-on-a-chip systems for application in biotechnology and medicine. Master thesis topic: "Generation of individual spheroids with tissue-like features on a nano biointerface".

## - COMPANY -

### Scientific Project Staff

#### DI Silvia Schobesberger

##### EDUCATION:

Since 2017 Master program Technical Chemistry with focus in biotechnology and bioanalytics at Technical University of Vienna

2014 -2017 Bachelor program Technical Chemistry at Technical University of Vienna

##### PROFESSIONAL CAREER:

Bachelor thesis in The Süßmuth Group at the Technical University of Berlin

“Studies Towards the Synthesis of New Albicidin Derivatives”

09|2018 – 01|2019 Exchange semester at the Technical University of Denmark

11|2018 – 01|2019 Internship in the group of Martin Dufva at the Technical University of Denmark

“Investigating Techniques for Amplifying Fluorescent Signals for Single Molecule Detection.”

##### PROFESSIONAL EXPERIENCE

03 – 07|2018 and Tutor in the laboratory exercise “Instrumental and Bioanalytical

03 – 07|2019 Laboratory” at Technical University of Vienna

##### MAIN FOCUS:

Engineering of biomedical systems including systems periphery needed to operate lab-on-a-chip and biosensors. With focus on Biomechanics and Biomaterials and the Diploma thesis “Physical characterization and rapid prototyping of functional biomedical adhesives for membrane- and electrode-integrated cell-based lab-on-a-chip system”



## - COMPANY -

### Scientific Project Staff

Dr. DI Sebastian Kratz, MSc.

#### EDUCATION:

2020 Promotion PhD Technical University Vienna  
2015/2018 Master of Science Biomedical Engineering TU Wien Austria  
2015 Exchange Semester for Biomechanics (MSc) Justus Liebig University, Ger  
2011/2015 Bachelor of Science Mechanical Engineering Swiss Federal Institutes of Technology  
Zurich Switzerland



#### PROFESSIONAL CAREER:

2014/2015 Crew member at Burger-Restaurant, Gutburgerlich Gießen Germany  
2015 Assistant for brunch preparation Schwaetzer & Söhne Gießen Germany  
2010/2011 Internship for development and Wind Park Management Cube Engineering GmbH Kassel Germany // Eunivy  
Resources Ltd. Nairobi Kenya  
2010 Internship for basics in Mechanical Engineering, Gesellschaft für Wirtschaftskunde e.V. Hanau Germany

#### MAIN FOCUS:

Engineering of biomedical systems including systems periphery needed to operate lab-on-a-chip and biosensors. With focus on Biomechanics and Biomaterials and the Diploma thesis "Physical characterization and rapid prototyping of functional biomedical adhesives for membrane- and electrode-integrated cell-based lab-on-a-chip system"