NEWSLETTER
ISSUE 2
FEBRUARY 2023

the future of drug delivery

angie

In this issue:

Prof. Salvador Pané i Vidal
Project Coordinator

MAgnetically steerable wireless Nanodevices for the tarGeted delivery of therapeutIc agents in any vascular rEgion of the body

Dear Reader,

Welcome to the ANGIE project's second newsletter and thank you for your interest in our work!!

In the ANGIE project, we are developing a novel approach for treating strokes, by magnetically steering microrobots inside the brain to the stroke site. Have a nice reading and keep following us to receive all the updates of our work in the next months!

http://www.h2020-angie.eu

@angie_h2020

www.linkedin.com/company/angie-h2020

www.youtube.com/@angie_h2020

Programme: H2020-EU.1.2.2. – FET Proactive | Call for Proposal: H2020-EI-fETPROACT-2019 | Funding Scheme: RIA – Research and Innovation action | Grant number 952152 — ANGIE

MEET THE TEAM

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The Multi-Scale Robotics Laboratory is a highly multi-disciplinary group that integrates three distinct sub-groups individually focused on robotics and systems, materials and fabrication, and cellular biology.

ChemInFlow Group studies and guides covalent and non-covalent synthesis out-of-equilibrium combining chemistry with engineering and fluid mechanics.

Their growing team of world class educators, researchers, and innovators aims to revolutionize they way we understand the world and how we pass these lessons on to future generations.

Their technologies fuel therapeutic development based on molecular insights and bioinspired approaches. They decipher natural phenomena and deploy these insights including the generation of predicative algorithms for pharmaceutical challenges.

MagnebotiX, a spin-off of the Institute of Robotics and Intelligent Systems at the ETH Zurich, Switzerland, produces and markets magnetic field generators. These systems are capable of generating a wide variety of static or time-varying magnetic fields for research on magnetic field-dependent phenomena.

The Laboratory of Toxicology and Forensic Science of the University of Crete, serves education, research and clinical needs of modern toxicology while promoting the development of modern basic and applied research in the fields of Forensic Toxicology, Clinical Toxicology and individual branches of toxicology.

The voice of stroke patients and survivors in Europe, representing a range of stroke support organisations from more than 30 European countries.

Verhaert is an independent pioneering European innovation factory. They cross industries to help ambitious corporations and start-ups to boost their capacity to innovate successfully.

Experian is a research and consulting firm bringing together experts in health and engineering. Experts in modelling, numerical simulation and optimization

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BUILDING AN INTERDISCIPLINARY COMMUNITY

The ANGIE project is bringing together key experts from different sectors and fields to discuss aspects of targeted drug delivery in clinical environments that will arise from the development of the ANGIE technology application.

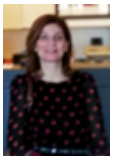
Four working groups have been created with focus on:

- **Bioethics, education & social implications**
- **Economics & long-term implications**
- **Health technology assessment**
- **Ecosystems & innovation**

Ion Copoeru
Babes-Bolyai University

Stefan Mühlebach
University of Basel

Maria Blanco-Prieto
University of Nava



Romina Fucà
University of Verona

Maria Rita Mancaniello
University of Florence

Manuela Joore
Maastricht University

Sabine Grimm
Maastricht University

Dina Pereira
University of Beira Interior

Andreea Somesan
Babes-Bolyai University

Camillo Porcaro
University of Padova

Gennaro Tartarisco
National Research Council of Italy

Ernesto Santibañez Gonzalez
Universidad de Talca

João Leitão
University of Beira Interior

The **ANGIE Working Groups** have meetings throughout the year where the members explore different issues around targeted drug delivery, exchange ideas, experiences and research results to increase the public understanding of our new technology via an interpretive social science and humanities perspective, which enables to highlight issues of justice, gender, power, and identity. Groups membership will be open during the project's lifecycle! If you wish to join us, please contact: **mvliora@discoveryfoundation.eu**

THE ANGIE ZENODO COMMUNITY

The **ANGIE Zenodo Community** gathers all public deliverables, scientific publications and publicly available results of the project under one place. All the documents included in the Zenodo Community are under open access status and are freely available. All dissemination material produced for the project are already available, including newsletters and infographics. The ANGIE Zenodo Community is being continuously updated with new publicly available content on targeted drug delivery and research results on microrobots targeting the brain. Find us at **www.zenodo.org/communities/angie-h2020eu**

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THE ANGIE PODCAST

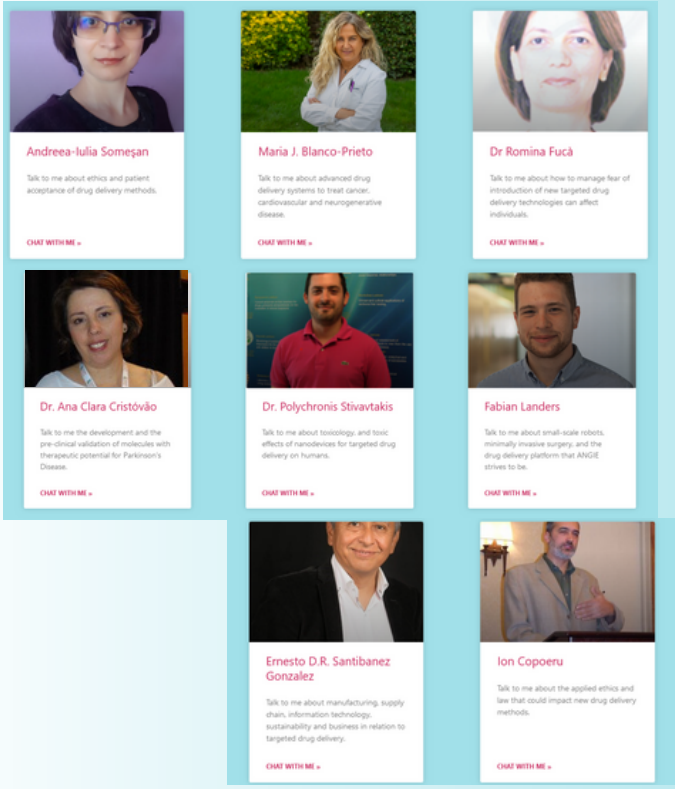
The **ANGIE podcast** aims to foster conversation about Issues on Targeted Drug Delivery in Clinical Environments. In the upcoming episodes, scientists and experts will be discussing topics on education, gender differences, long-term implications, and potential future returns in societal/economic innovation and market creation.

On our first episode, along with Mr Fabian Landers form ETH Zurich we introduce our project and have a very interesting conversation on Targeted Drug Delivery and how it is approached within our project. Listen to the **ANGIE Podcast** series in our **YouTube channel**. Subscribe and stay tuned for the next episodes!

Fabian Landers is a PhD student at ETH. His research puts a spotlight on the development, fabrication, and manipulation of small-scale robots for minimally invasive surgery and drug delivery. Within ANGIE, Fabian coordinates the development and manufacture of the drug delivery platform.

CHAT LAB: MEET THE EXPERTS

Chat Lab is a platform for everyone! Through this platform we aim to initiate conversations between experts on issues related to Targeted Drug Delivery and people from the public or other experts, entrepreneurs, researchers, start ups etc. Participants of our Working Groups as well as members of our Consortium can interact with anyone that is interested either on the project itself or about Targeted Drug Delivery topics.

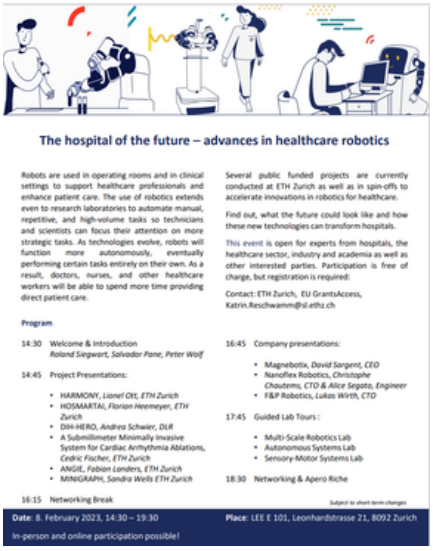


Experts from the **ANGIE project** as well as researchers and experts from all over the world, are ready to answer all of your questions. Visit the **Chat lab** page and learn more!
www.h2020-angie.eu/chat-lab

RECENT EVENTS

THE HOSPITAL OF THE FUTURE – ADVANCES IN HEALTHCARE ROBOTICS

In the frame of the **ANGIE Kick-start Programme** our project was presented at "**The hospital of the future – advances in healthcare robotics**" event on Wednesday, February 8th, organised by **ETH Zurich**. The **ANGIE Kick-start teams** had the chance to get insights from the several projects and companies about future technologies and the possible outcome of these developments. The event was open for experts from hospitals, the healthcare sector, industry and academia as well as other interested parties.
We are grateful for the opportunity and looking forward to further collaborations.


The hospital of the future – advances in healthcare robotics

Robots are used in operating rooms and in clinical settings to support healthcare professionals and enhance patient care. The use of robotics extends even to research laboratories to automate manual, repetitive, and high-volume tasks so technicians and scientists can focus their attention on more strategic tasks. As technologies evolve, robots will function more autonomously, eventually performing certain tasks entirely on their own. As a result, doctors, nurses, and other healthcare workers will be able to spend more time providing direct patient care.

Several public funded projects are currently conducted at ETH Zurich as well as in spin-offs to accelerate innovations in robotics for healthcare.

Find out, what the future could look like and how these new technologies can transform hospitals.

This event is open for experts from hospitals, the healthcare sector, industry and academia as well as other interested parties. Participation is free of charge, but registration is required:

Contact: ETH Zurich, EU GrantsAccess, Katrin.Reschwamm@sl.ethz.ch

Program

14:30 Welcome & Introduction
Roland Siegwart, Salvador Pane, Peter Wolf

14:45 Project Presentations:
- HARMONY, *Lionel Ott, ETH Zurich*
- HOSMARTAI, *Florian Heemeyer, ETH Zurich*
- DIH-HERO, *Andrea Schwier, DLR*
- A Submillimeter Minimally Invasive System for Cardiac Arrhythmia Ablations, *Cedric Fischer, ETH Zurich*
- ANGIE, *Fabian Landers, ETH Zurich*
- MINIGRAPH, *Sandra Wells ETH Zurich*

16:15 Networking Break

16:45 Company presentations:
- Magnebotix, *David Sargent, CEO*
- Nanoflex Robotics, *Christophe Chautems, CTO & Alice Segato, Engineer*
- F&P Robotics, *Lukas Wirth, CTO*

17:45 Guided Lab Tours :
- Multi-Scale Robotics Lab
- Autonomous Systems Lab
- Sensory-Motor Systems Lab

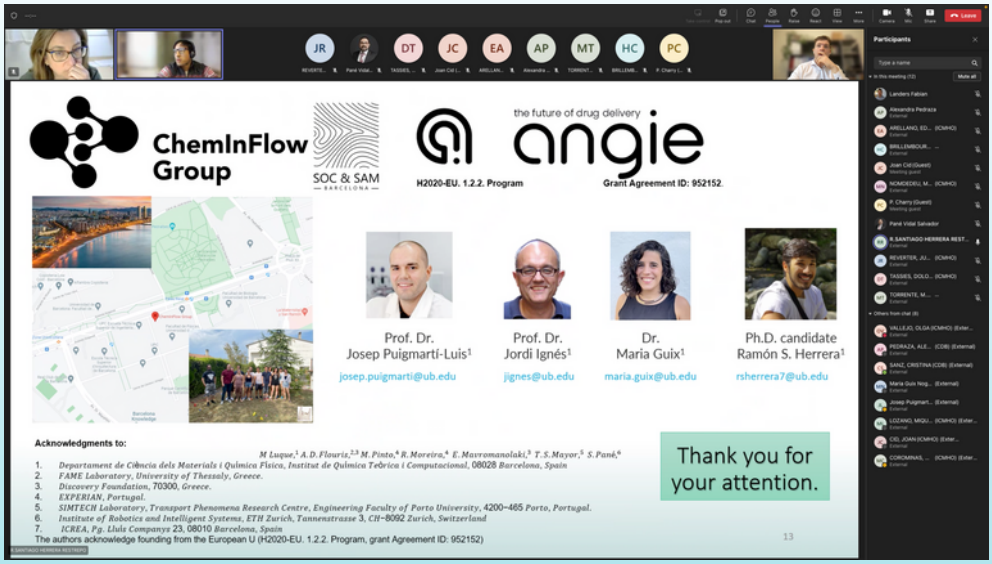
18:30 Networking & Apero Riche

Subject to short-term changes

Date: 8. February 2023, 14:30 – 19:30
Place: LEE E 101, Leonhardstrasse 21, 8092 Zurich
In-person and online participation possible!

HOSPITAL CLÍNIC DE BARCELONA IN -HOUSE SEMINAR

The **ANGIE project** was presented at the Hospital **Clínic de Barcelona in -House Seminar**. The seminar was held on line on February 8th, 2023.



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