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WP3

Drug adherence

Work package leader:
Conor O'Mahony

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Tyndall National Institute – Cork, Ireland

Conor O'Mahony
WP3 Lead

Fjodors Tjulkins
Researcher

Ryan Sebastian
Researcher

Eamonn Hawe
Country Coordinator

Paul Galvin
Group Head

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Tyndall National Institute

- Ireland's largest technology research institute
- 600 researchers, engineers, support staff, inc 125 PhD students
- Turnover of > €40M per year
- R & D infrastructure in excess of €200 million
- ~ 300 high-quality research publications per year
- > 200 industry partnerships and customers worldwide

- Very active in medtech R&D
- Particular interest in wearable & minimally invasive technologies
  - transdermal drug delivery
  - intelligent woundcare
  - physiological monitoring
  - diagnostics
- Working on transdermal drug delivery devices for >20 years

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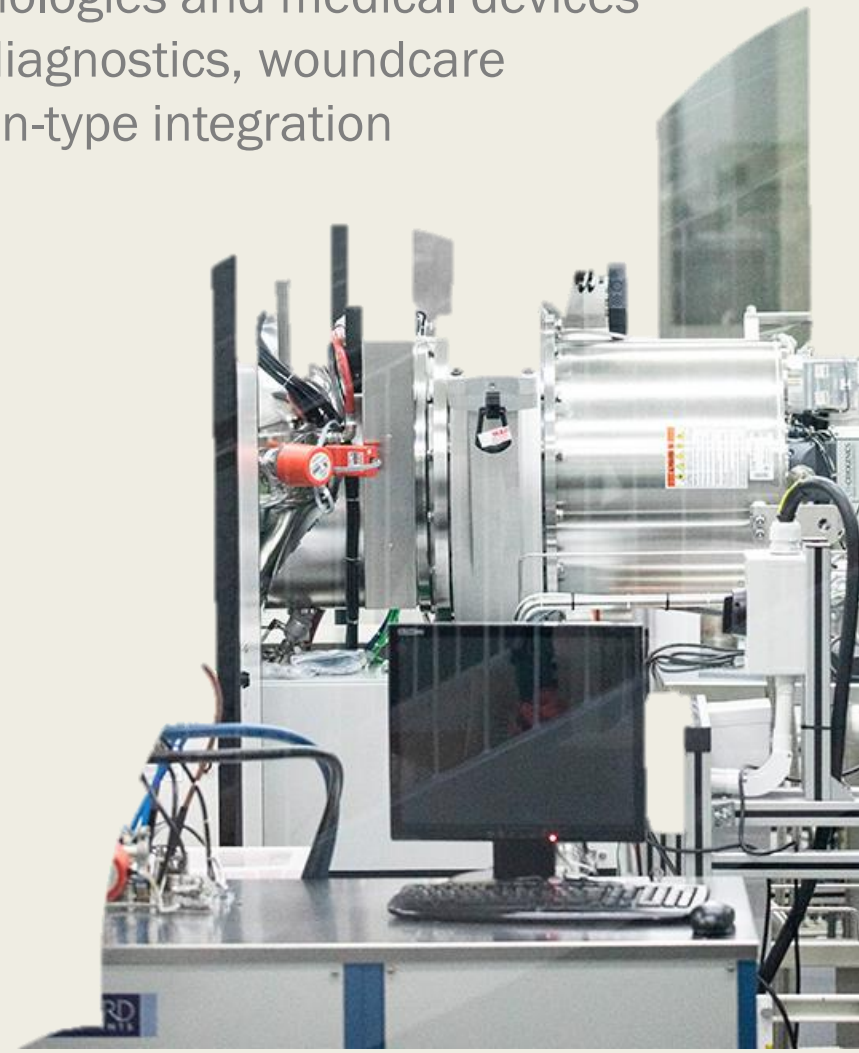
Tyndall National Institute

- Tyndall is leading WP3
- Significant experience in system integration for wearable technologies and medical devices
- Active in ‘smart patch’ development for transdermal delivery, diagnostics, woundcare
- In M4M, looking forward to using emerging technologies for pen-type integration
- Delivery of lyophilised formulations using:
  - High-performance pump from FEMFT/PEN;
  - Formulation analysis from KIT;
  - Microfluidics & flow sensors from MLQ/UPV/IHSW;
  - Use case guidance from AbbVie.
- Tyndall has significant experience in
  - System & sensor integration
  - Electronics & communications
  - Device characterisation and injectability testing



NanoBioCel - University of the Basque Country (EHU): Who is who and where

Jose L. Pedraz
Group Leader

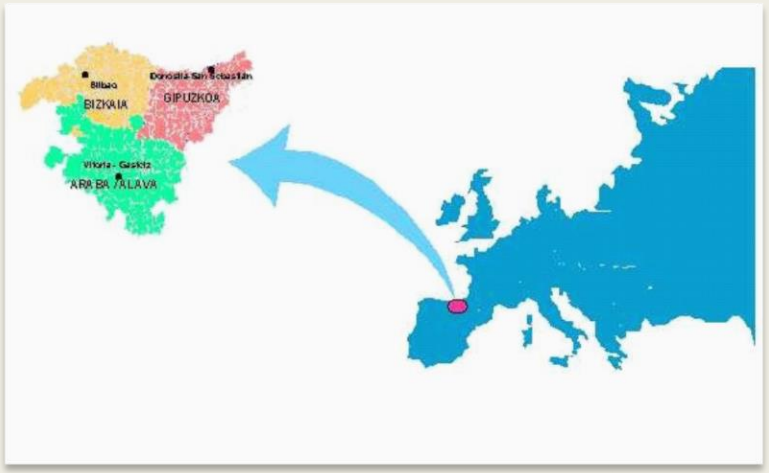
Jesús Ciriza
CIBER researcher

Laura Saenz del Burgo
EHU Professor

Gustavo Puras
EHU Professor

Gorka Orive
EHU Professor

Angela Losada
Lab Manager CIBER BBN



Location of Vitoria in Europe

Lascaray Research Centre

NanoBioCel is a leading research group in Spain, which belongs to the Faculty of Pharmacy of the University of the Basque Country.

Its facilities are the Faculty of Pharmacy and the Lascaray Research Centre in Vitoria.

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NanoBioCel (EHU): our capabilities

✓Teaching and research institution : employs over 7.000 people in 31 faculties and schools distributed in three different campuses, with more than 50,000 undergraduate and postgraduate students.

✓The micro and nano technologies, biomaterials and cells research group (NanoBioCel): relevant research projects on the field of pharmaceutical technology, cellular therapy, characterization of biomaterials, 3D-printing and, especially, on the development of new sustained and controlled delivery systems for drugs, peptides, proteins, DNA and cells.

✓The NanoBioCel group participates in:

- Basque Pharmalab 4 consortium, a collaboration between the EHU and Tecnalia
- Spanish CIBER-BBN consortium to promote the excellence in research.
- NANBIOSIS Drug Formulation Unit 10 (U10), one of the 29 ICTS (Singular Scientific Technological Infrastructures) in Spain. Such technological infrastructure will be used for the development of the research proposed in the present project.

Nanobiocel (EHU)
our planned contribution

✓Use input from the pharmaceutical end-user Abbvie (ABV) to arrive at a target specification for next-generation patch- or pen-based autoinjectors.

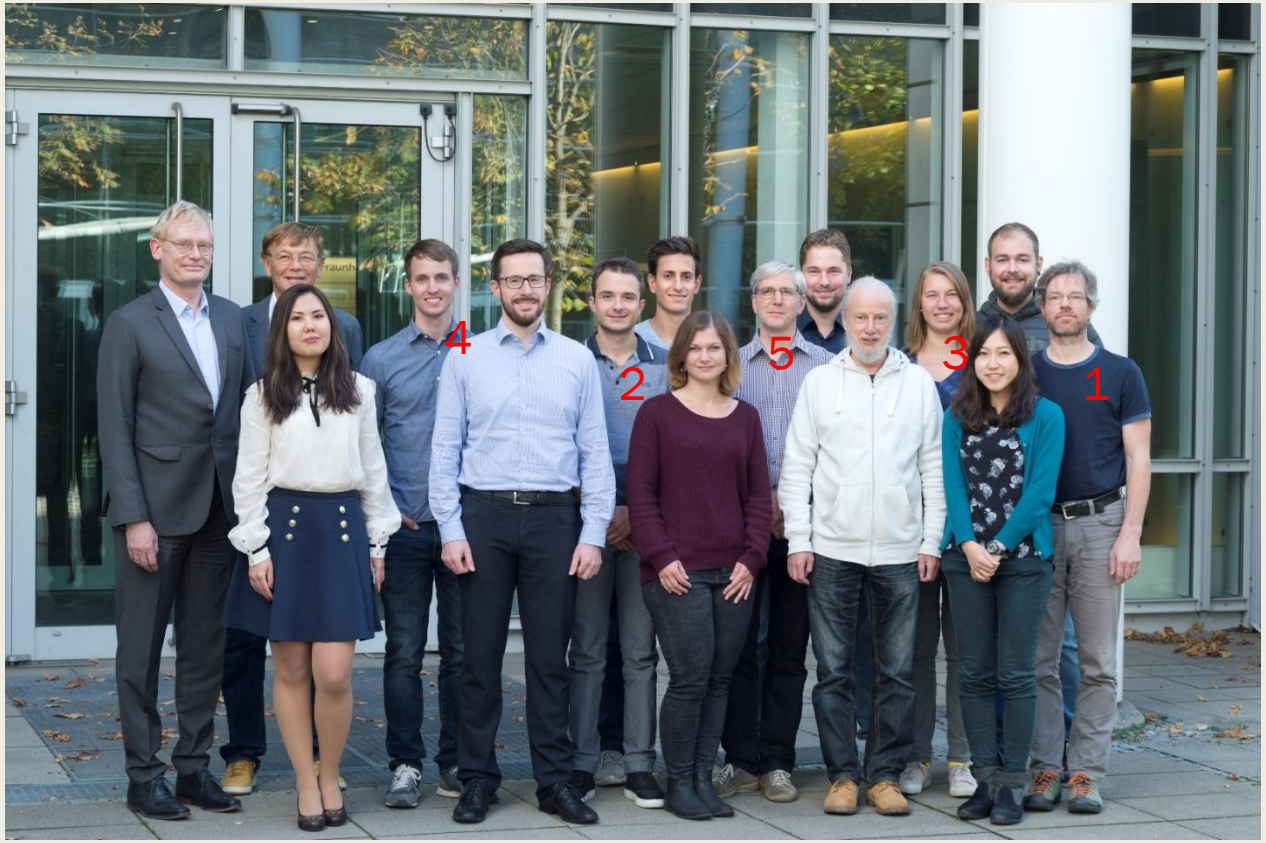
✓Optimized lyophilization conditions reproducible in microfluidic system intended for insulin and biologic delivery respectively

✓In collaboration with Microliquid (MLQ) integrate high-spec micropumps, capable of achieving the flowrates (0.25-1.5 mL/min) and pressures (10's-100's kPa) needed for subcutaneous delivery.

✓Add polymer based disposable flow sensors to establish closed-loop fluidic control in close collaboration with Microliquid (MLQ).

✓Use an Innovation Track to create microfluidic modules for delivery of lyophilized drug formulations and validate it.

Fraunhofer EMFT, who is who and where?



1. Axel Wille (WP Coordinator)
2. Henry Leistner (Fab Transfer and Lead)
3. Agnes Bußmann (Interaction btw. Pump and Drug)
4. Thomas Thalhofer (Demonstrator)
5. Martin Wackerle (Safety Valve)

Fraunhofer EMFT at Hansastraße 27D in in Munich with over 100 employees, close to Fraunhofer HQ

EMFT our capabilities

- Team
  - *Martin Wackerle*
  - *Henry Leistner*
- Consulting microfluidics / micro dosing
- Design and demonstrator production of micro pump

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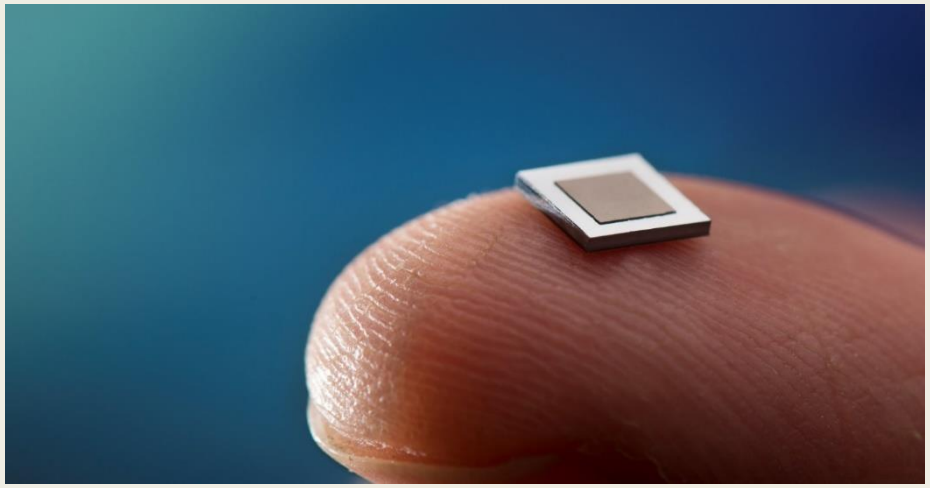
EMFT our planned contribution

- Supply of micro pumps
- Consulting regarding micro fluidics



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MICROLIQUID Who is who and where

Luis Fernandez

CTO
Microliquid coordinator

Andreu Llobera

Head of Innovation
Technical lead

Borja Barredo

CEO
Administrative

microLIQUID
experts in microfluidics

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MICROLIQUID: our capabilities

microLIQUID

experts in microfluidics

Bioassay translation

- Immunoassay
- Molecular diagnostics
- Cell culture
- Organ-on-a-chip
- Single cell analysis

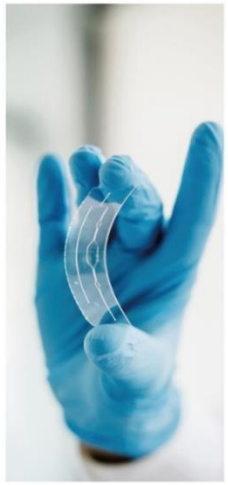
Custom design products

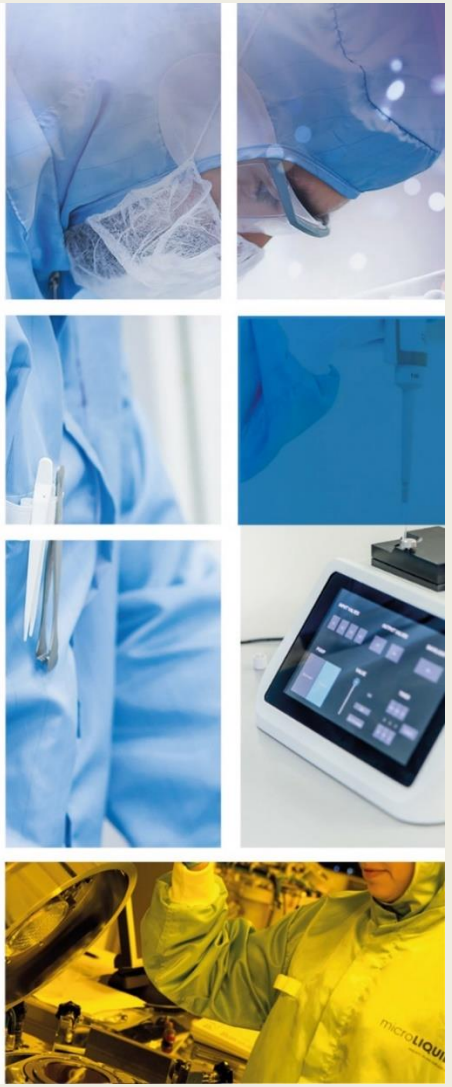
- Point-of-care
- Automated bioassay
- Point-of-need: Vet, agro & environment

Microfluidic consumables

- NPI
- Contract manufacturing
- ISO 13485

microLIQUID brings microfluidics to your life science products (in-vitro and in-vivo applications)





www.microLIQUID.com

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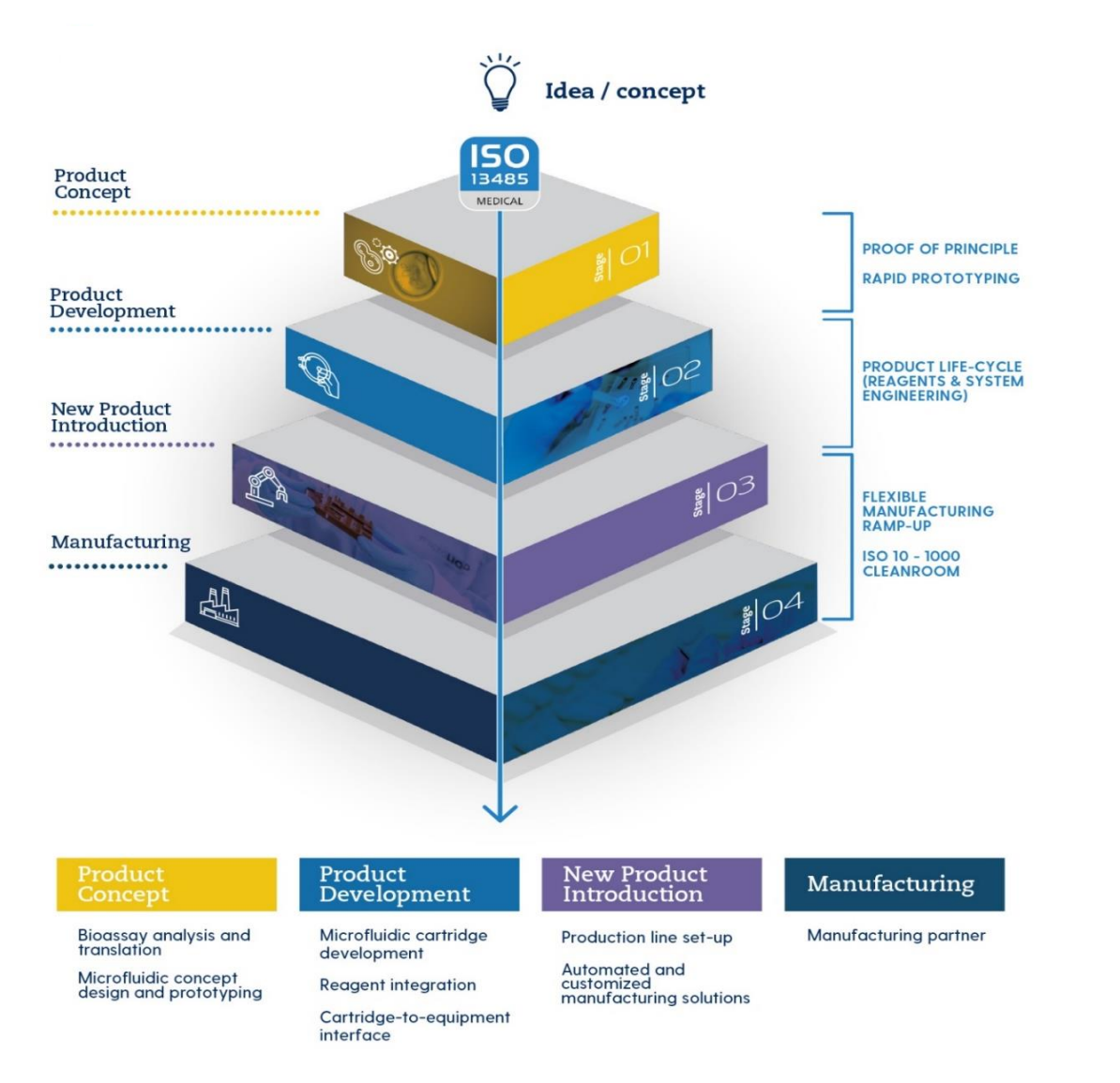
MICROLIQUID: our capabilities



Our Services

We work side-by-side with our customers

- Microfluidic contract design and manufacturing
- Capability to start working on a project **at any stage**
- Biomedical assay transfer and reagent integration
- Transfer to manufacturing and Flexibility in ramp-up

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