A European Training Network in Safety Pharmacology creating opportunities for 15 PhD-students.

➢ Background

Historically, cardiovascular toxicity has been the most prevalent safety reason for failure during preclinical drug development. Moreover, cardiovascular toxicity remains a key reason for drug attrition during clinical development and post-approval. This indicates current safety pharmacology screens still fail to detect a number of functional and structural cardiovascular toxicities, often characterized by a late-onset presentation. Additionally, safety pharmacology studies use a significant number of laboratory animals, thereby creating opportunities for better implementation of the 3Rs.

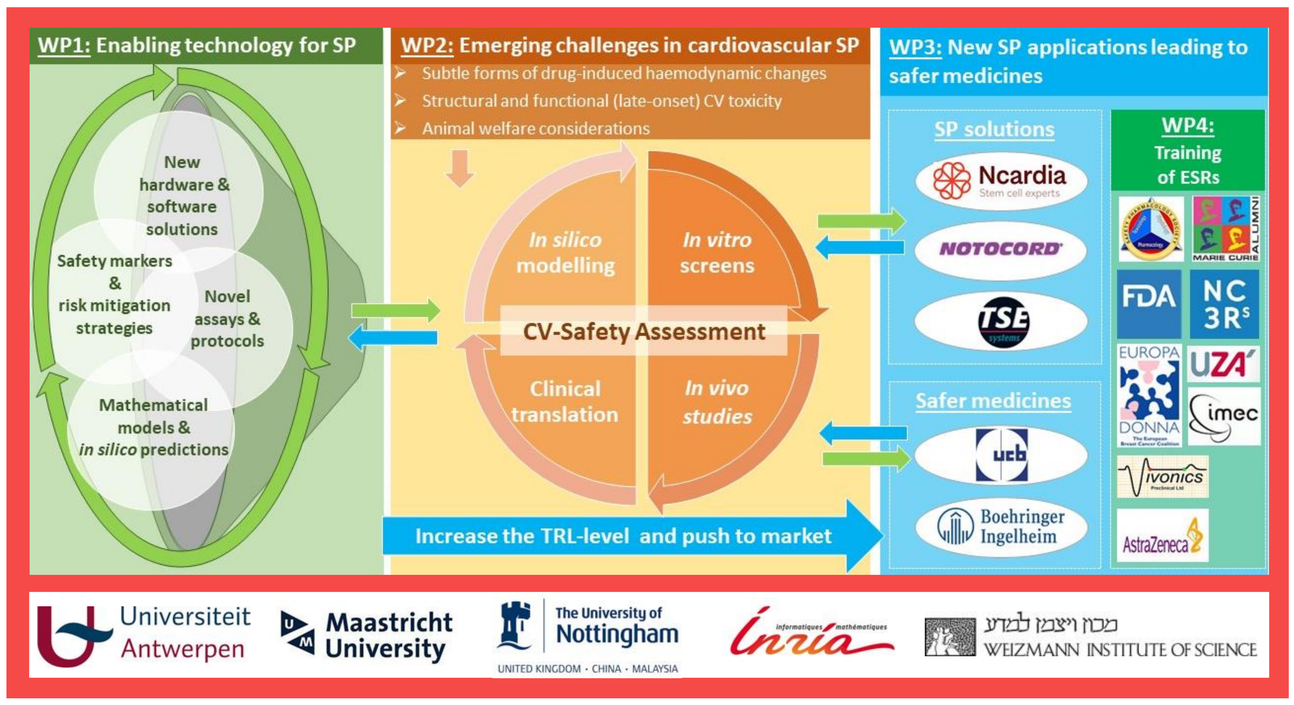
➢ Objectives

The vision of INSPIRE is to advance and "inspire" cardiovascular safety pharmacology by:

- **exploring new technological capabilities (work package 1, WP1),**
- **addressing newly emerging cardiovascular safety concerns (WP2) and**
- **delivering novel validated solutions for cardiovascular safety screening (WP3).**

Overall, INSPIRE constitutes a multidisciplinary and intersectoral training program (WP4) with a balanced combination of hands-on research training, intersectoral secondments, local courses and network-wide events on scientific and transferable skills, enabling future R&I collaborations.

This way, INSPIRE will equip the future generation of safety pharmacologists with a wide range of scientific knowledge and the ability to adapt to a dynamic industry.



➢ 15 Innovative PhD projects

INSPIRE is an EU-funded (H2020-MSCA-ITN) European Training Network (ETN) for **15 Early Stage Researchers (ESRs)** aimed to exploit innovative techniques for better assessment and prediction of cardiovascular safety liabilities. The 15 PhD projects will be announced by Jan 2020. Visit the website for more information: www.inspire-safety-pharmacology.eu

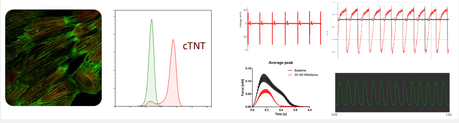
Development and validation of improved hiPSC CM assays to study cardiac safety (ESR1)

More mature iPSC-derived cardiomyocytes

- Adjusting culture medium composition
- Co-culture with other cell types
- Culture in tissue aggregates

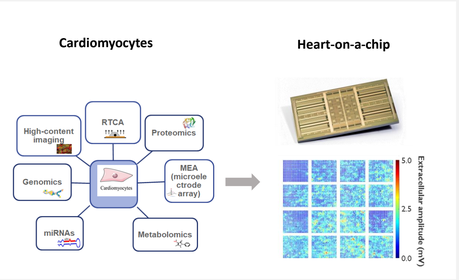
Validated safety assays

- Electrophysiology
- Impedance
- Calcium-transient
- Contractile force
- Metabolism



Ncardia Stem cell experts

Evaluation of a hiPSC CM model as a predictive assay to assess functional and structural cardiac liabilities (ESR2)



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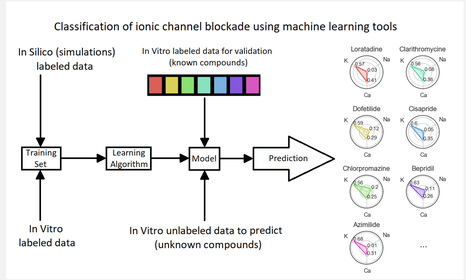
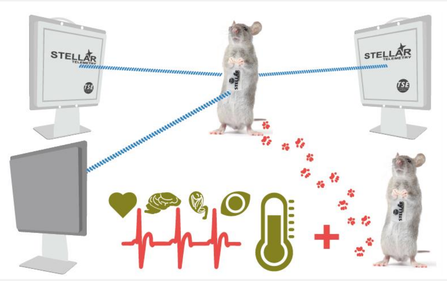
Empowering predictivity and speed of hiPSC CM assays by machine learning approach (ESR3)



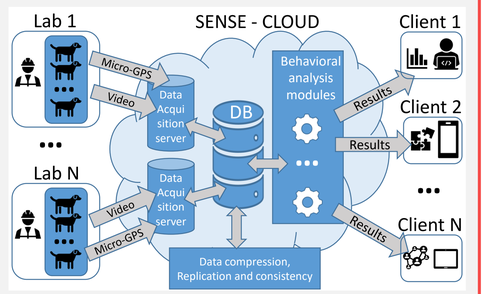
An Qinstem company NOTOCORD Speeding up Research, Empowering Science

Development of novel telemetry implants with added 3D micro-GPS functionality (ESR4)



TSE systems

Extending NOTOCORD-Sense™ with behavioural analysers in a cloud-based architecture (ESR5)



Inria inventors for the digital world · An Qinstem company NOTOCORD Speeding up Research, Empowering Science

Development of a software to analyse and quantify social interactions and behaviour (ESR6)

WEIZMANN INSTITUTE OF SCIENCE

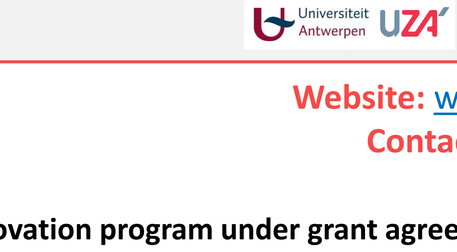
Validation and use of novel telemetry implants with added 3D micro-GPS functionality (ESR7)

Boehringer Ingelheim

An *in silico* approach to monitor and predict haemodynamics during SP studies (ESR8)

Inria inventors for the digital world

Development of MSI tools to study drug distribution and associated tissue-specific effects (ESR9)

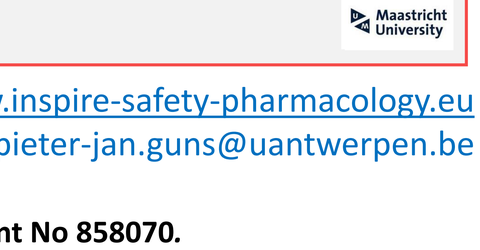


Maastricht University

Measuring arterial stiffness at different scales: a new toolbox for SP? (ESR10)

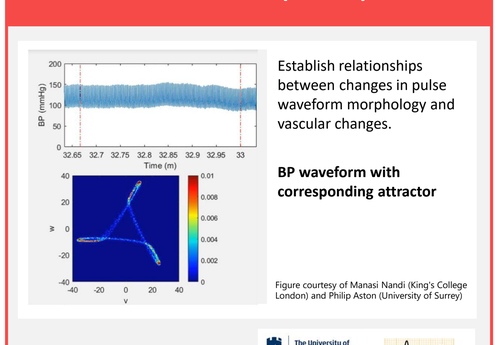
Pulse Wave Velocity (PWV) by tonometry and ultrasound imaging

Rodent Oscillatory Tension Setup for Measuring Arterial Compliance



Universiteit Antwerpen

New preclinical screen in SP assessment: detection of CV effects in "failed" NCE (ESR11)



Establish relationships between changes in pulse waveform morphology and vascular changes.

BP waveform with corresponding attractor

Figure courtesy of Manasi Nandi (King's College London) and Philip Aston (University of Surrey)

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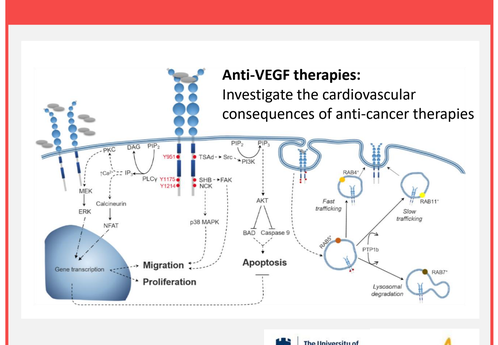
Assessing the CV safety liabilities of growth factor inhibition (ESR12)



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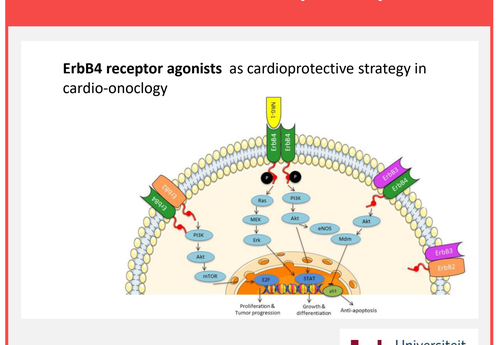
Optimize risk analysis and preventive measures to mitigate cardiovascular adverse effects (ESR13)

ErbB4 receptor agonists as cardioprotective strategy in cardio-onoclogy



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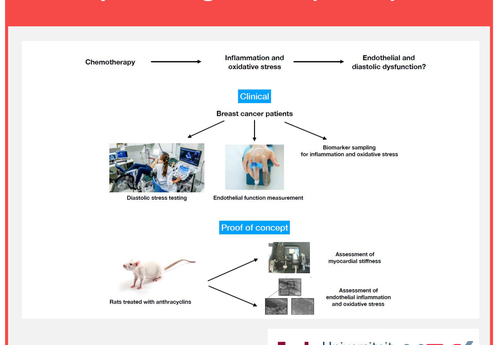
Chemotherapy-induced functional myocardial alterations: is a HFpEF stage preceding HFrEF? (ESR14)



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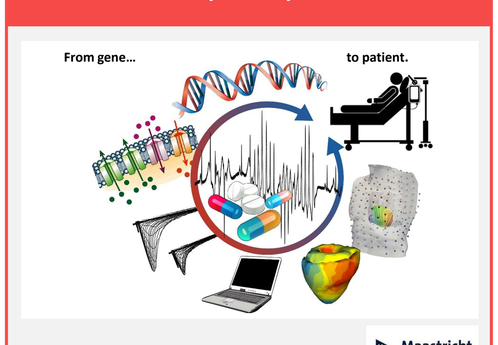
Personalized safety pharmacology against drug-evoked proarrhythmia (ESR15)



Maastricht University

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Of note: within the H2020 MSCA framework, there are also calls for post-docs (MSCA-IF) and staff exchange (MSCA-RISE).