

# Training the next generation of scientists for Maternal and Fetal Health

iPLACENTA is a major doctoral programme in Maternal and Fetal Health funded by the European Union. The 15 early-stage researchers (ESRs) in the programme are working with world-leading academics, clinics and industry partners in 10 European countries, forming a new network of international expertise.

The iPLACENTA fellows collaborate within and across three work packages with the following aims:

- 1) in vitro placenta modelling to develop state-of-the-art models to mimic the placenta in vitro
- 2) integrative placenta modelling to integrate multidimensional, multi-omics data derived from placental tissues to establish an evidence-based cause and effect relationship for early/late onset pre-eclampsia (PE) and intra-uterine growth restriction (IUGR)
- 3) imaging placenta to characterise and validate new methodologies for in vivo placenta modelling and clinical prediction of early/late onset PE and IUGR

























#### **Partners**













#### Coordinator

Project coordinator: **Dr Colin Murdoch**Project manager: **Mirren Augustin** 



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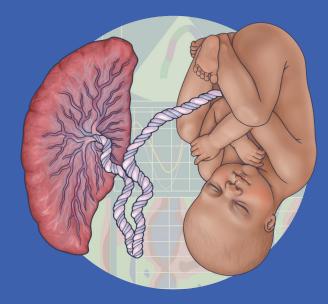


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## **S**iPlacenta



Innovation in modelling placenta for Maternal and Fetal Health





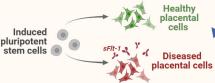
### Innovation in modelling placenta for Maternal and Fetal Health

### ESR1: Gwenaëlle Rabussier



Placenta barrier on-a-chip modelling for high-throughput drug transport studies & drug discovery

### ESR4: Agathe Lermant



Generation of cell models mimicking pre-eclampsia to unravel new molecular mechanisms

### ESR2: Camilla Soragni



Development of high-throughput assays to characterize placenta barrier on-a-chip models

ESR8: Camino Ruano San Martin

### ESR7: Samprikta Manna



\_\_ Normal \_\_\_

signatures mediating premature ageing in pre-eclampsia and Mitochondrial intra-uterine growth restriction

> Identify senolytic agents as a therapeutic strategy

Elucidate molecular

### ESR13: Carolina Di Fabrizio



### doppler ultrasound

To improve prediction of hypertensive disorders in pregnancy and Small for Gestational Age fetuses

### ESR11: Yolanda Correia

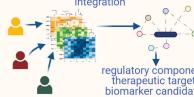
Long-term maternal hemodynamic changes in murine models of
Pre-eclampsia: Pre- and Post-partum
assessment of cardiovascular function



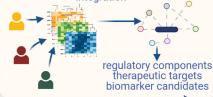
sFLT-a overexpressing model: AdsFlt-1



### ESR9: Julia Scheel



Systems Biology approaches for data integration



### ESR14: Gabriela Loscalzo







Integrative Placenta Modelling

Imaging Placenta

Placental

Tissue

Amniotic

Fluid

Samples

🛂 Data (OMICS, Imaging)

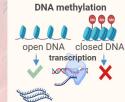
Cell



### ESR12: Ignacio Valenzuela



Short and long-term consequences of Fetal Growth Restriction in the rabbit model



**DNA** methylation level is influenced by the environment and can be transmitted from parents to offspring

ESR6: Clara Apicella

Identify expression Quantitative Trait Loci: changes in sequence correlate with gene

expression changes, highlighing potential

regulatory regions in placenta

### ESR15: Veronica Giorgione

Peripartum maternal cardiovascular assessment in women affected by hypertensive disorders of



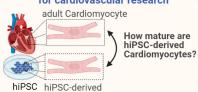




### Outcome: persistent hypertension and cardiac impairment in postpartum

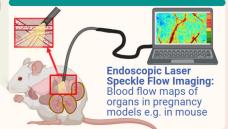
### ESR5: Jana-Ch. Hegenbarth

Characterise in vitro models for cardiovascular research



Cardiomyocyte

ESR10: Lukas Markwalder



### ESR3: Natalia Gebara

Role of extracellular vesicles derived from amniotic fluid in normal and pre-eclamptic pregnancies



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