



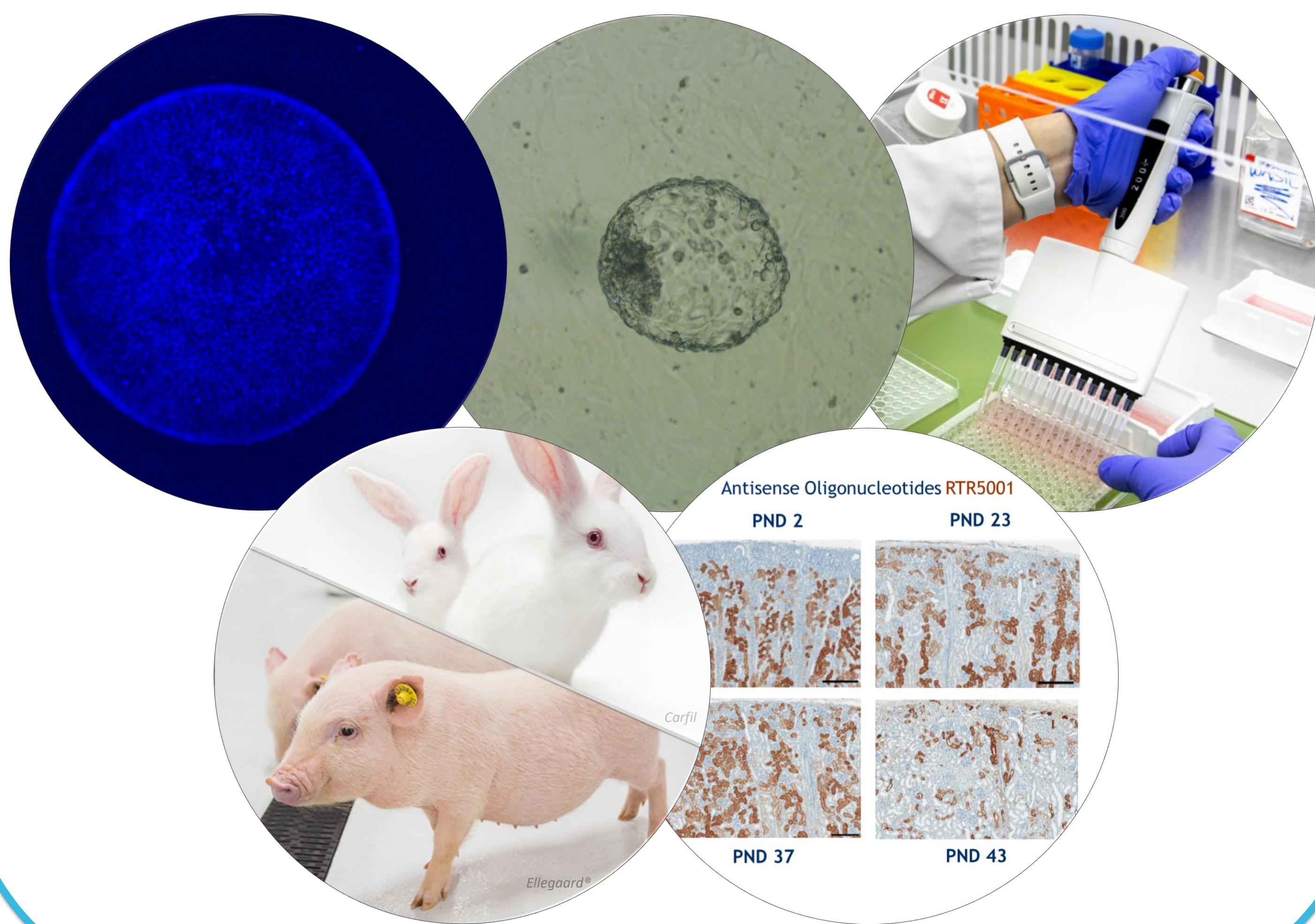
# Unravelling and protecting perinatal health using NAMs and animal models

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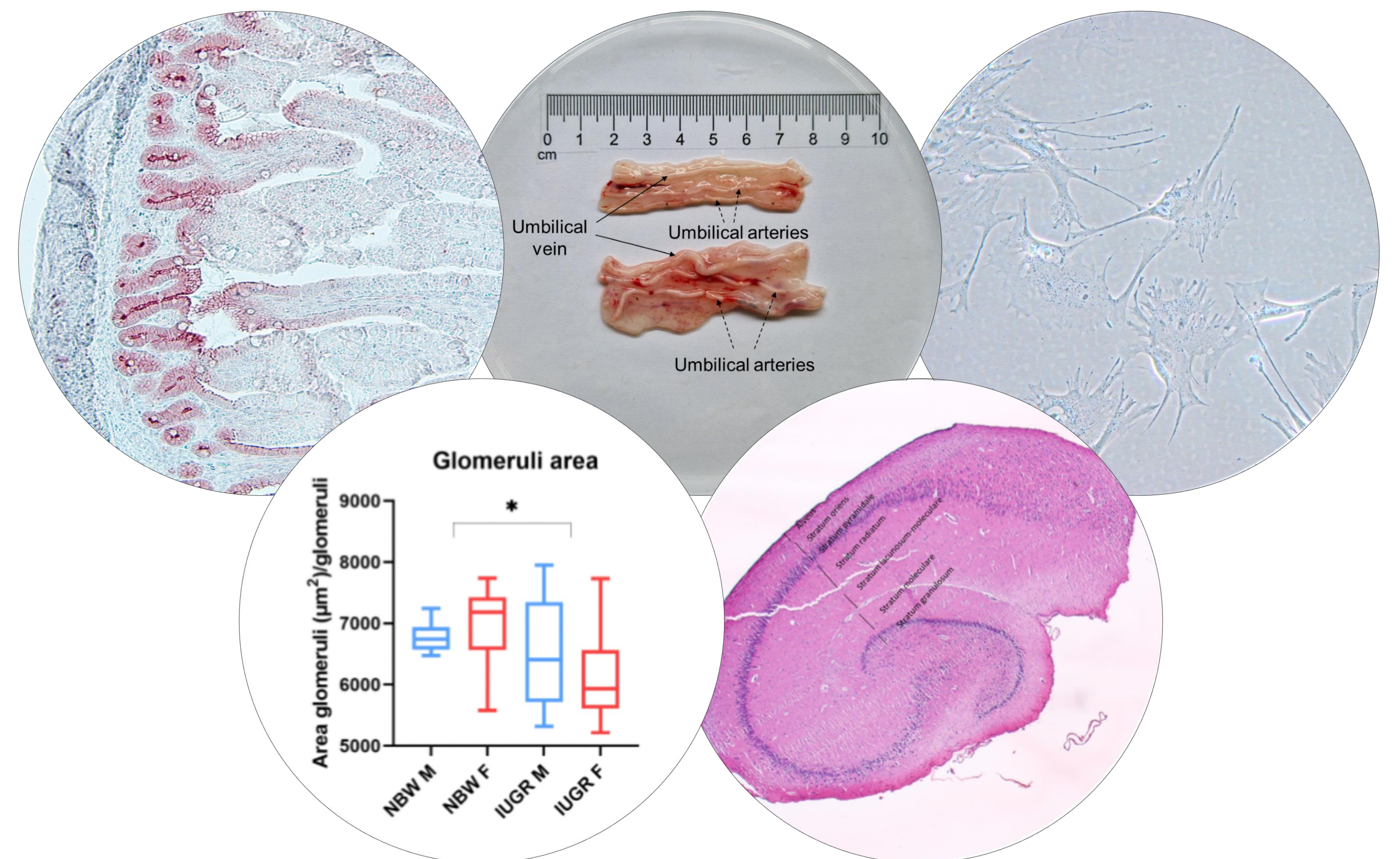
## Safety testing of pharmaceuticals: Protecting unborn and neonatal health

### Main research questions:

- **New approach methodologies (NAMs):**
  - Can **embryonic stem cell-based assays** replace *in vivo* developmental **toxicity testing** for pharmaceuticals?
  - Can *in vitro* **biomarkers** reduce animal use in **nonclinical safety studies** of drug candidates?
- Can we validate and identify **biomarkers** for **safety and efficacy** in **minipigs** with human translatability?



## From pigs to pediatrics: Bridging the gap in IUGR research



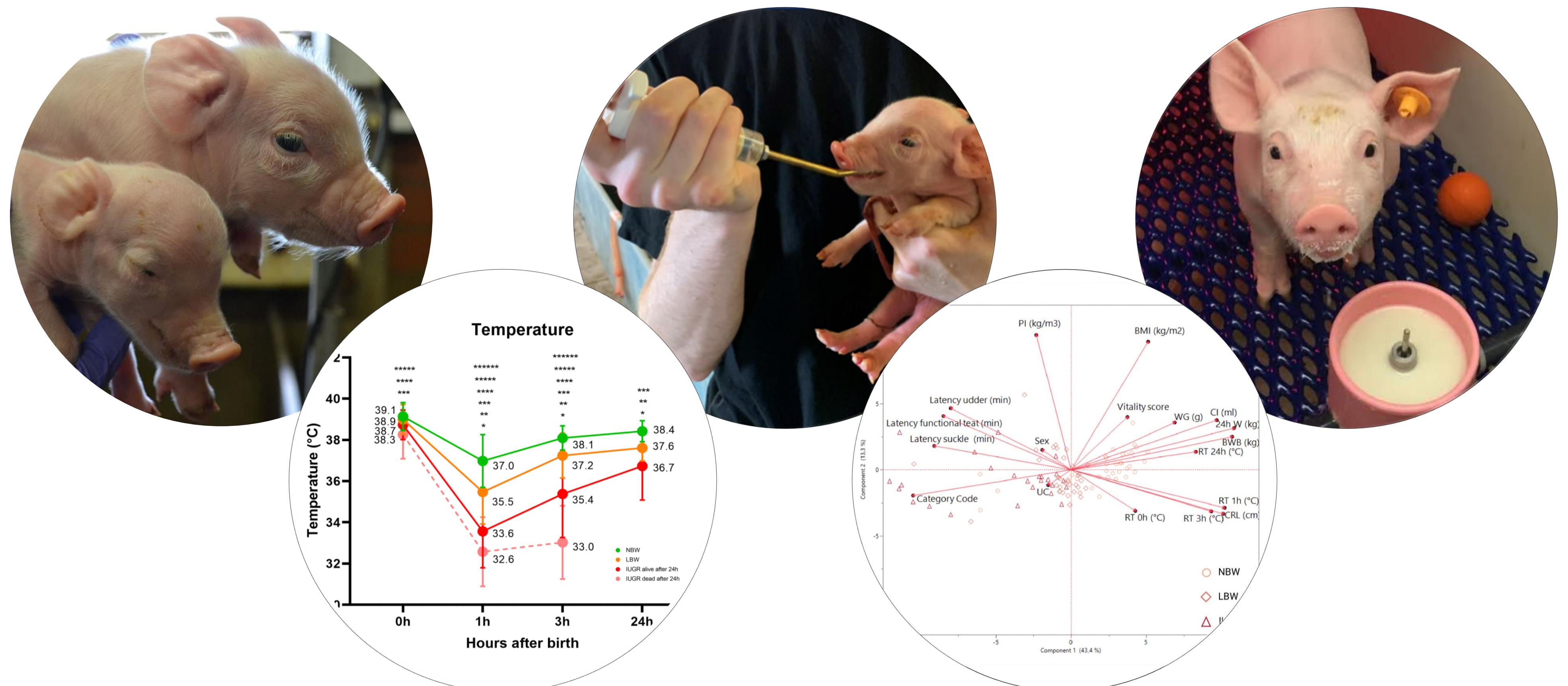
### Main research questions:

- Does **biological sex** determine the effect of **early-life stress** on the **intestinal barrier function**?
- Do **intra-uterine growth restricted (IUGR)** piglets phenotypically mimic **IUGR infants**? How does this condition affect the morphology and functionality the **brain**, the **kidney** and **liver**? Influence of sex?
- Is the **angiogenetic potential** of **pig umbilical cord** endothelial cells different in IUGR animals? Influence of sex?

## Small piglets in pig production: Thriving or striving?

### Main research questions:

- Are there differences in **early life survival potential** between IUGR piglets, low birth weight (LBW) piglets and their normal birth weight littermates? Does **sex** play a role?
- What is the impact of **artificial rearing** on the development of the IUGR piglet?



## Frequently used techniques

- *In vivo* and *ex vivo* functionality assays, gut permeability measurements, etc.
- Field studies: observations, (longitudinal) sampling (blood, feces, urine, saliva, tissue), etc.
- Immunohistochemistry, image analysis, stereology, western blot, ELISA, shotgun and targeted LC-MS/MS, etc.
- Cell culture: primary cell culture (PUVEC), embryonic stem cells, cell lines (IPEC-J2, Caco-2), etc.
- PCR, qPCR, enzyme activity, etc.

