



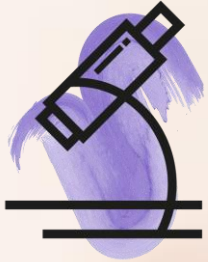
EURION final event, 13-14.6 in Brussels

FREIA achievements



The FREIA project is dedicated to safeguarding women's reproductive health against endocrine disrupting chemicals.

We have..



...gained new understandings and insights into adverse effects of endocrine disruption on women's health, described in scientific papers.



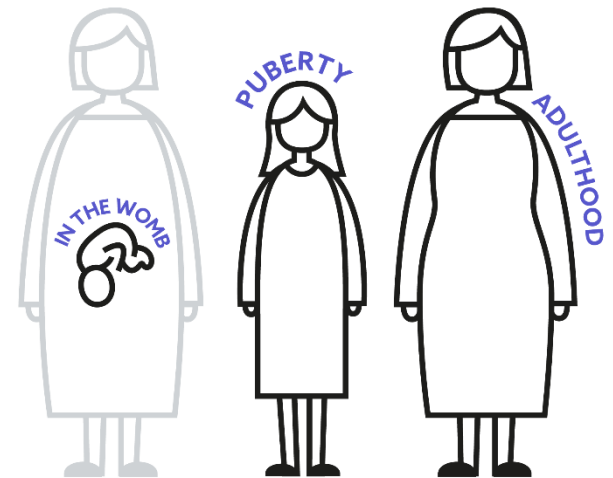
...developed new test methods and improved existing ones to detect EDCs that are toxic to women's reproduction and support protective chemical regulation.



...provided recommendations to promote a healthy society and improve the health of women world-wide.

FEMALE REPROTOXICITY: HUMAN FOCUS

- Very limited mechanistic understanding was available on female reproductive disorders
- FREIA uniquely provided the opportunity to investigate hormonal processes in **human ovaries from fetal to adult age** to improve scientific knowledge on the causes of female reproductive toxicity
- **Compared findings** in primary human cultures and studies with outcomes in commercial cells and rodents



FREIA RESEARCH ON FEMALE FERTILITY

FREIA Research showed that:

- **Mammary gland development** and **neuropeptide release** in the brain are more sensitive endpoints in rodent studies
 - than the those currently used to study EDC effects on female reproduction
- Fatty acid metabolism and **steroid hormone biosynthesis** are sensitive targets for EDCs across life stages
 - May be captured by expanding the current steroidogenesis assay (OECD TG 456)

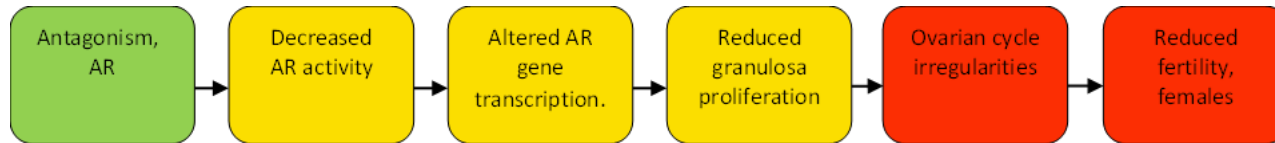


FREIA CONTRIBUTION TO EDC ASSESSMENT

FREIA published **16 putative AOPs, 2 submitted for review in AOP wiki**

Only 1 AOP (#7) on female reproduction was available at the start of FREIA

#345 Androgen receptor (AR) antagonism leading to decreased fertility in females

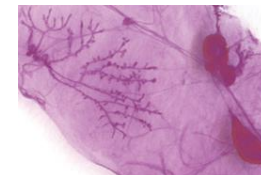


#398 Inhibition of ALDH1A (RALDH) leading to impaired fertility via disrupted meiotic initiation of fetal oogonia of the ovary

- 4 QSAR models (PPAR-gamma, aromatase inhibition, ER-beta activation and inhibition)
- Several molecular biomarkers of EDC-mediated female reproductive toxicity

FREIA CONTRIBUTION TO EDC ASSESSMENT

- FREIA on **OECD workplan** - improvement of existing guidelines, with sensitive endpoints:
 - Future include the mammary gland as a sensitive endpoint in vivo
 - Expansion of H295R steroidogenesis assay (OECD TG 456)
- **New methods** *for further validation*
 - Screening assay for changes in the number of corpora lutea
 - Hypothalamic neuropeptide release in rodent studies
- **Promising cell models**, incl. ER-beta assay, KGN ovarian assay, bovine oocytes – *scientific proof of concept*



FREIA FOR A HEALTHY SOCIETY

- Raised **awareness** of the effects EDCs may have on female reproduction.

For various target groups via factsheets, infographics, webinars, keynote lectures, ...

- Provided science-based, **actionable recommendations** for citizens on how to reduce exposure

Based on own results and scientific literature

- Identified barriers and **opportunities** for a successful health promotion strategy





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