

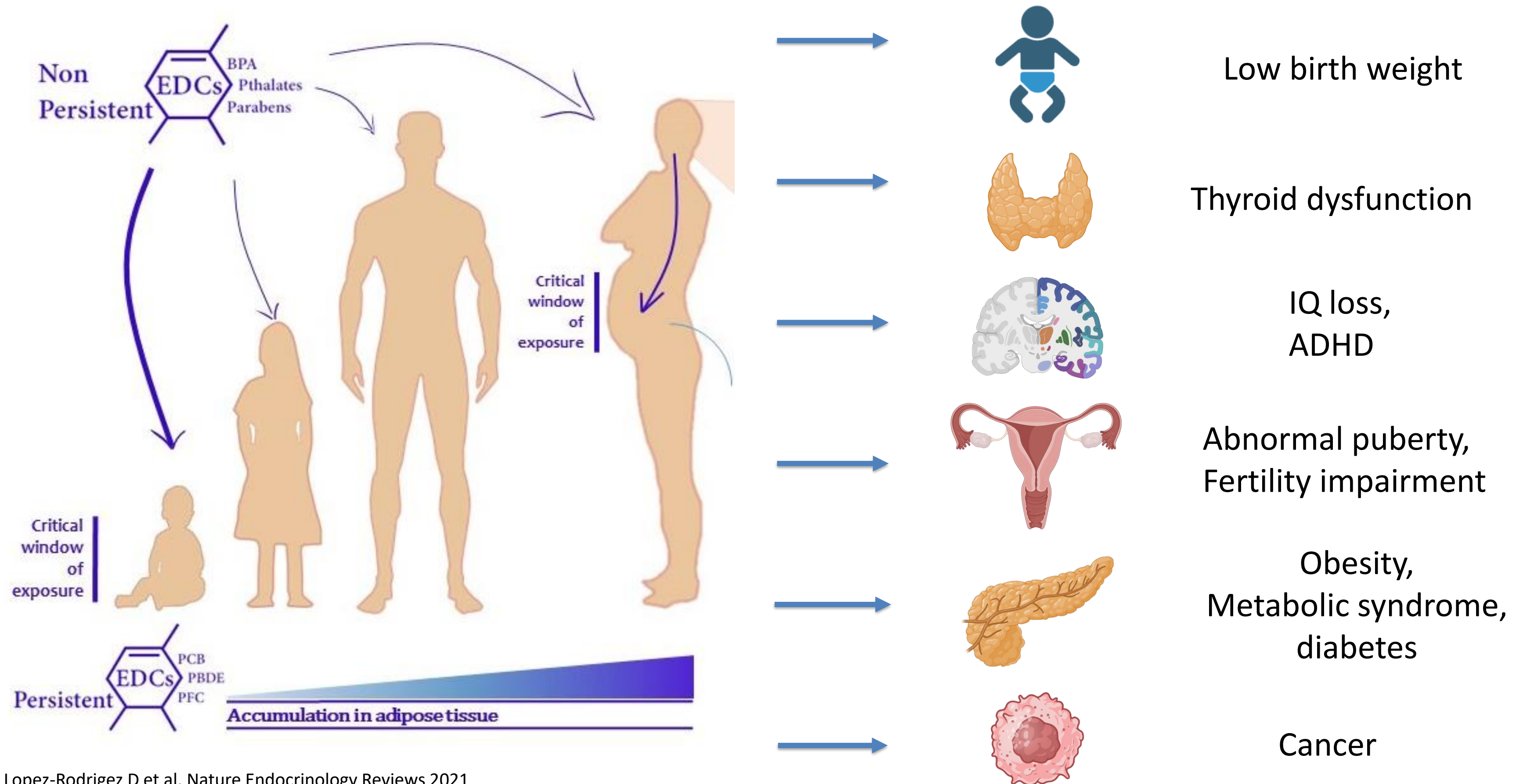
EDC STRATEGIES PARTNERSHIP

# EDCs & Female Reproductive Health: A growing health concern

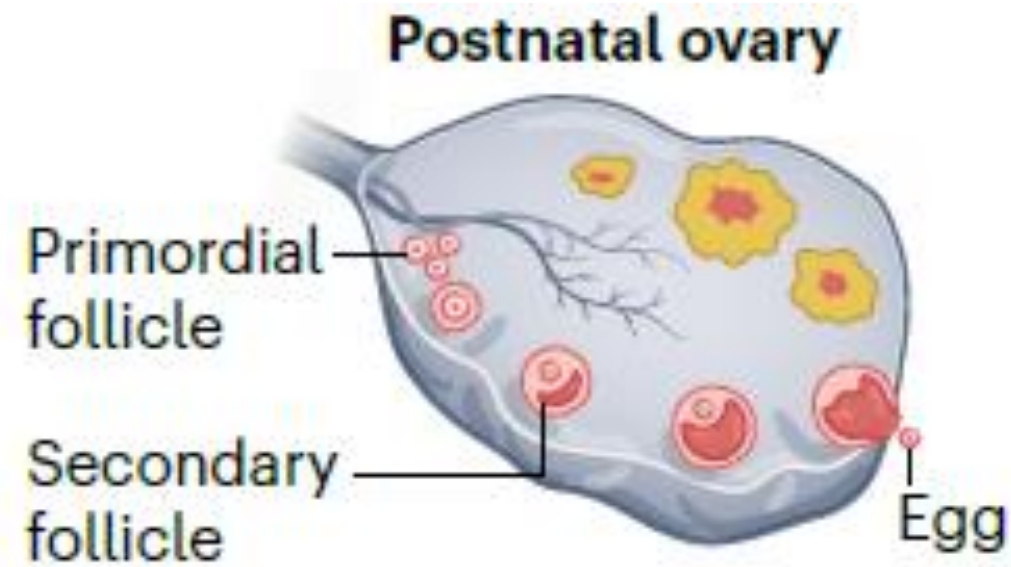
*with Dr. Anne-Simone Parent*



# EDC impact across life course

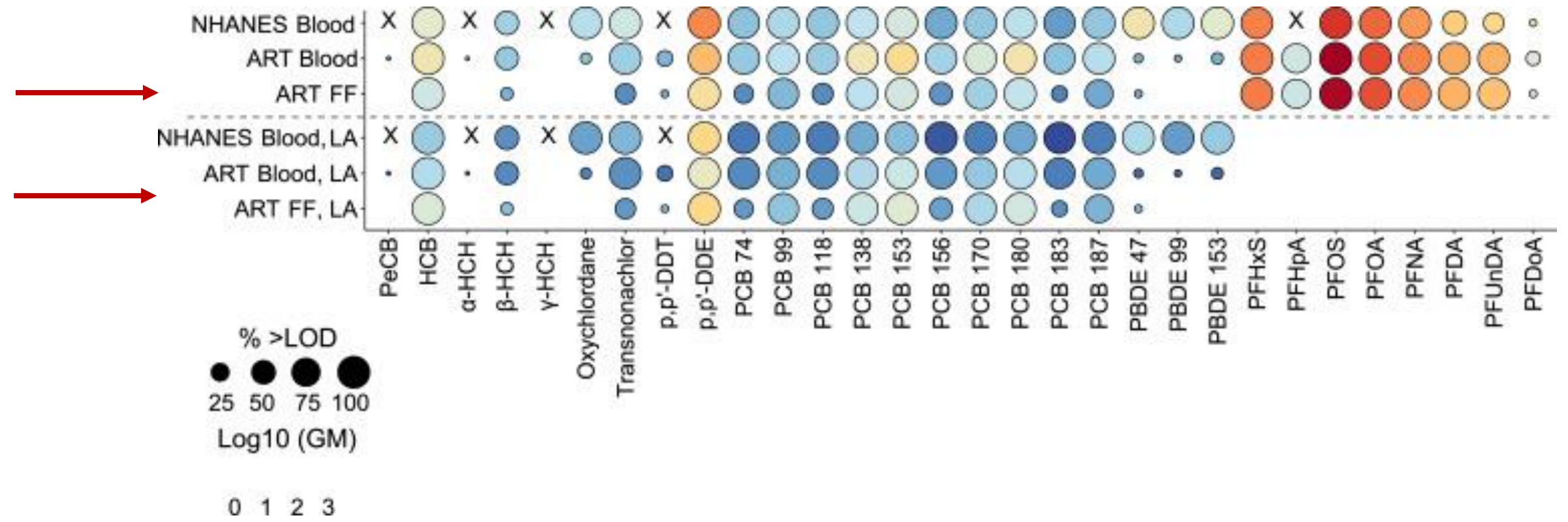


# EDCs found in follicles



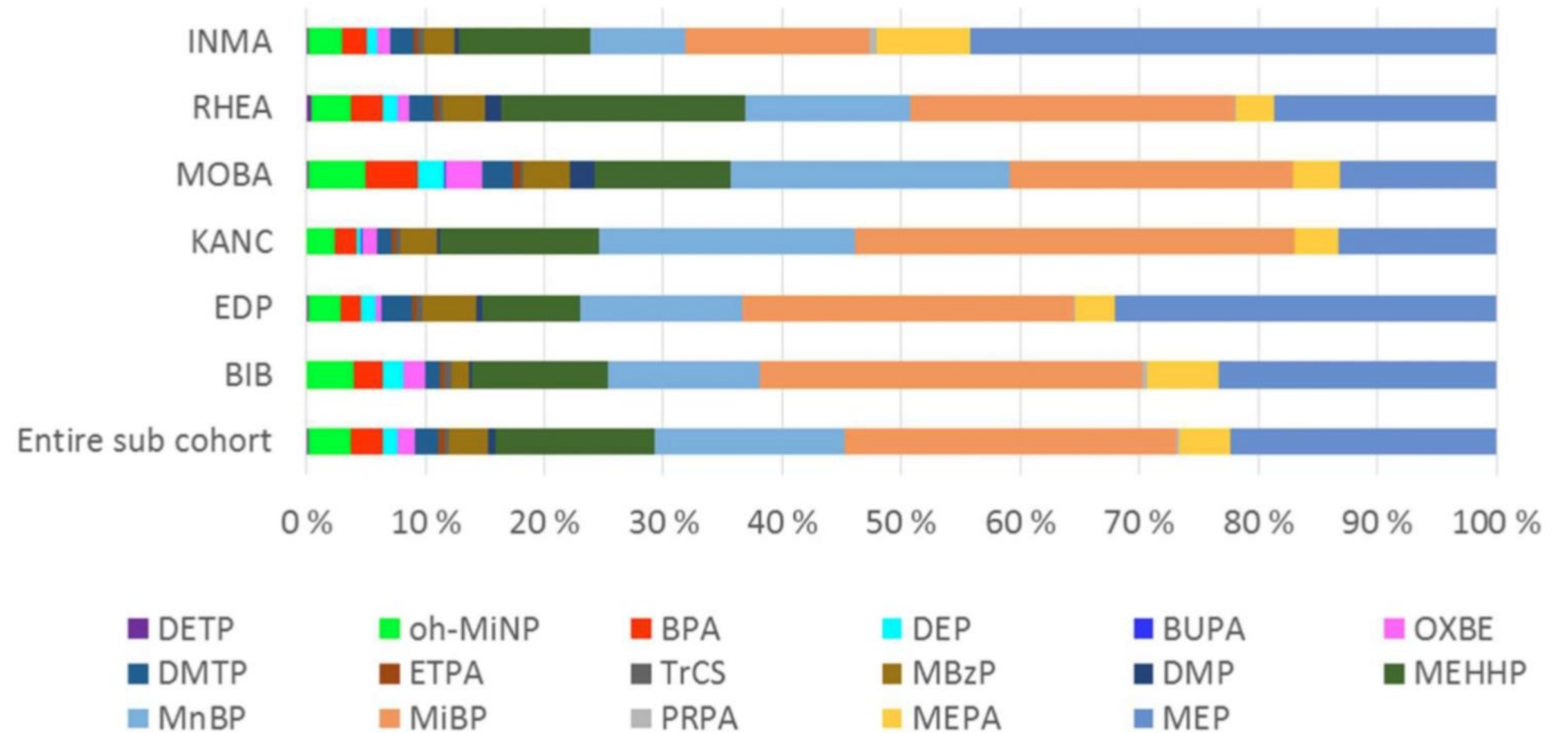
EDCs in follicular fluid

EDCs in follicular fluid



# We are all exposed to EDCs

6 european studies  
in children



For 33 of 45 contaminants, >90% of the samples were quantifiable

# EDCs and female reproductive health



INFERTILITY  
*1 in 6 couples*



POLYCYSTIC OVARY  
SYNDROME (PCOS)  
*5-15% of women*



BREAST CANCER  
*1 in 8 women*



IRREGULAR  
MENSTRUAL CYCLES  
*50 per 1000 women*



ENDOMETRIOSIS  
*10% reproductive-age  
women*

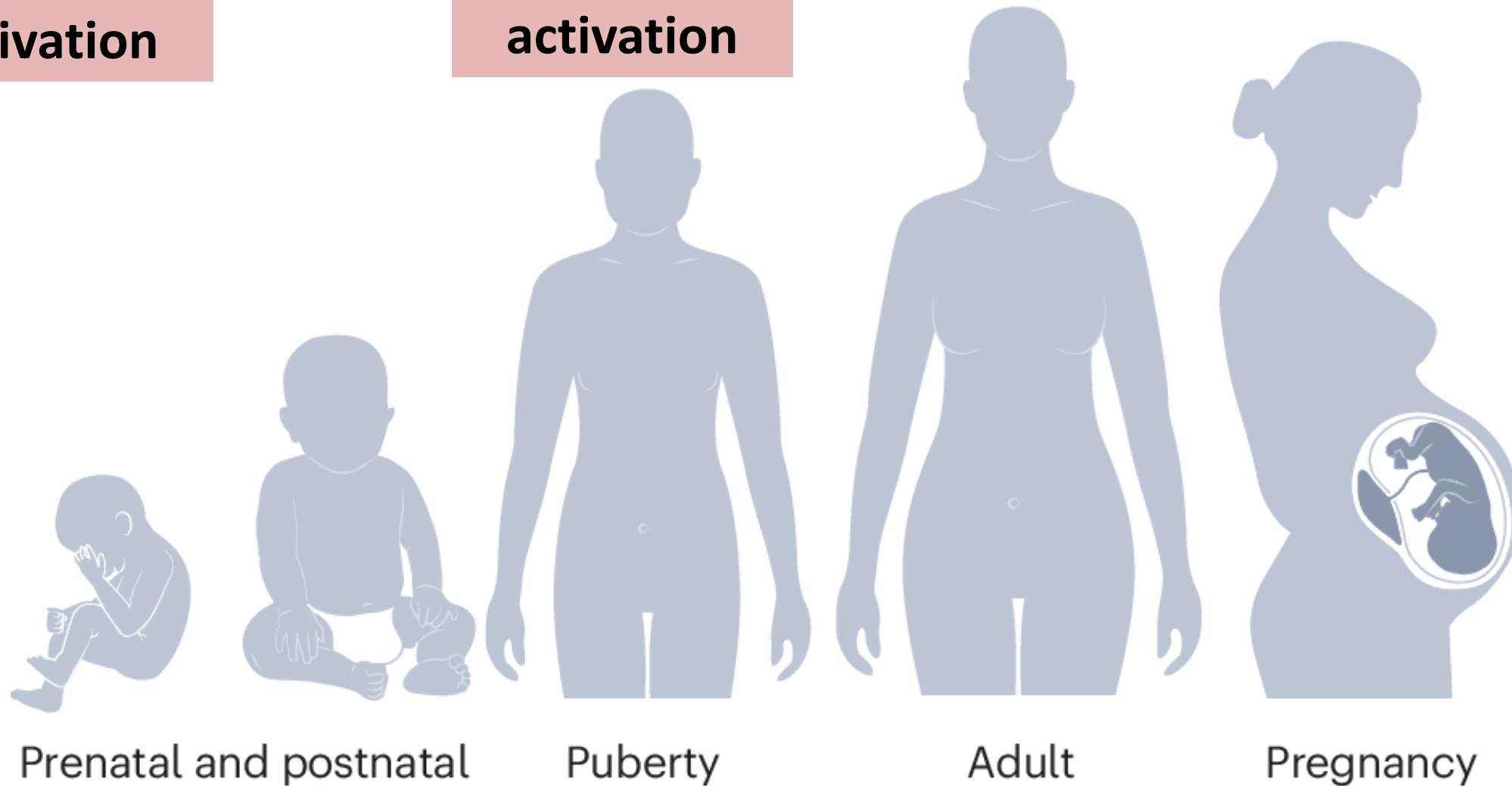


EARLY MENOPAUSE  
*1 in 250 women  
by age 35 years*

# EDCs and female reproductive health

**HPG  
activation**

**HPG  
activation**



**Development of  
the germ cells**

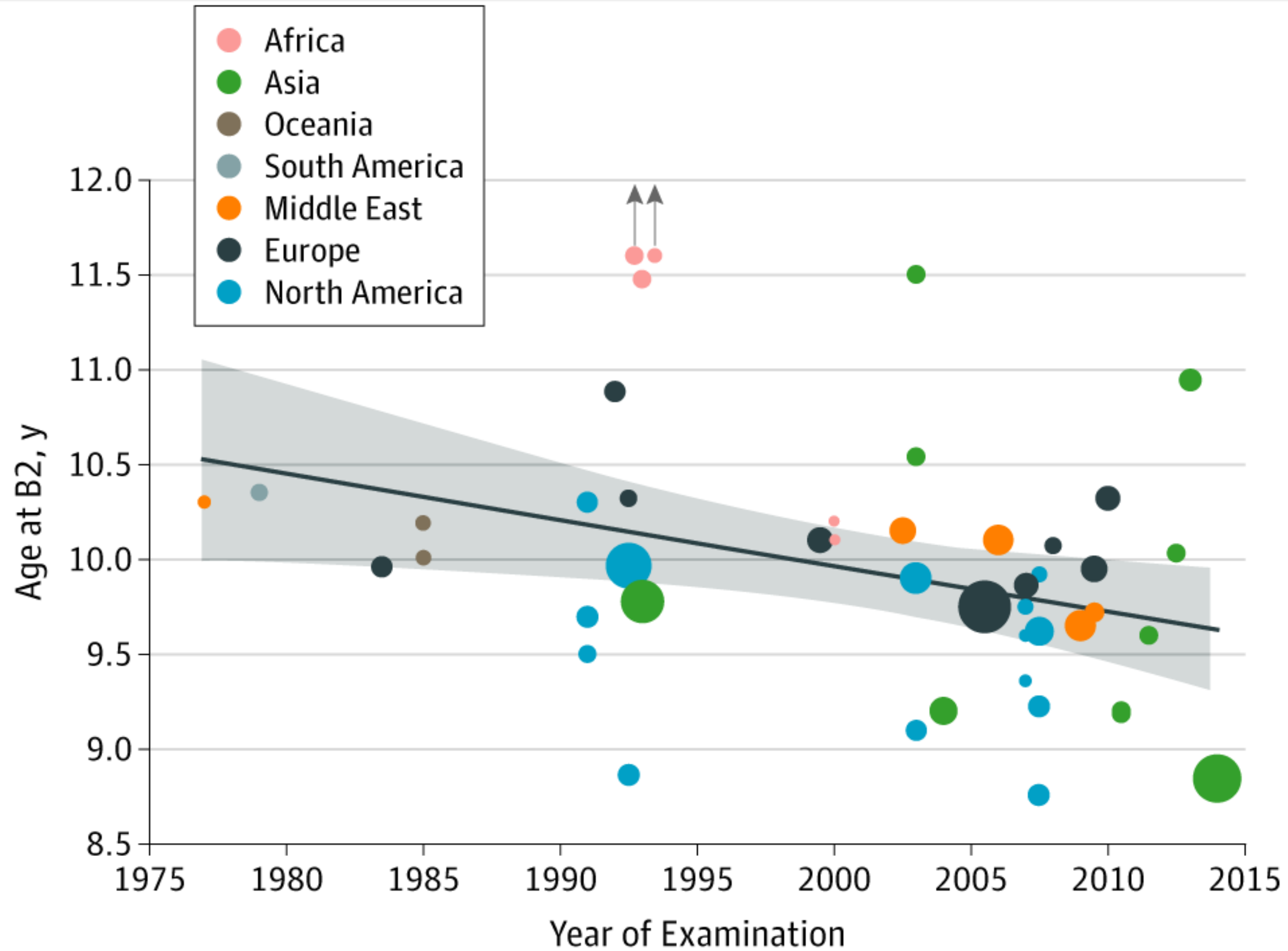
**Ovarian  
differentiation**

**Ovarian reserve  
Oocyte quality  
Folliculogenesis  
Steroidogenesis**

## **Potential reproductive outcomes from EDC exposure**

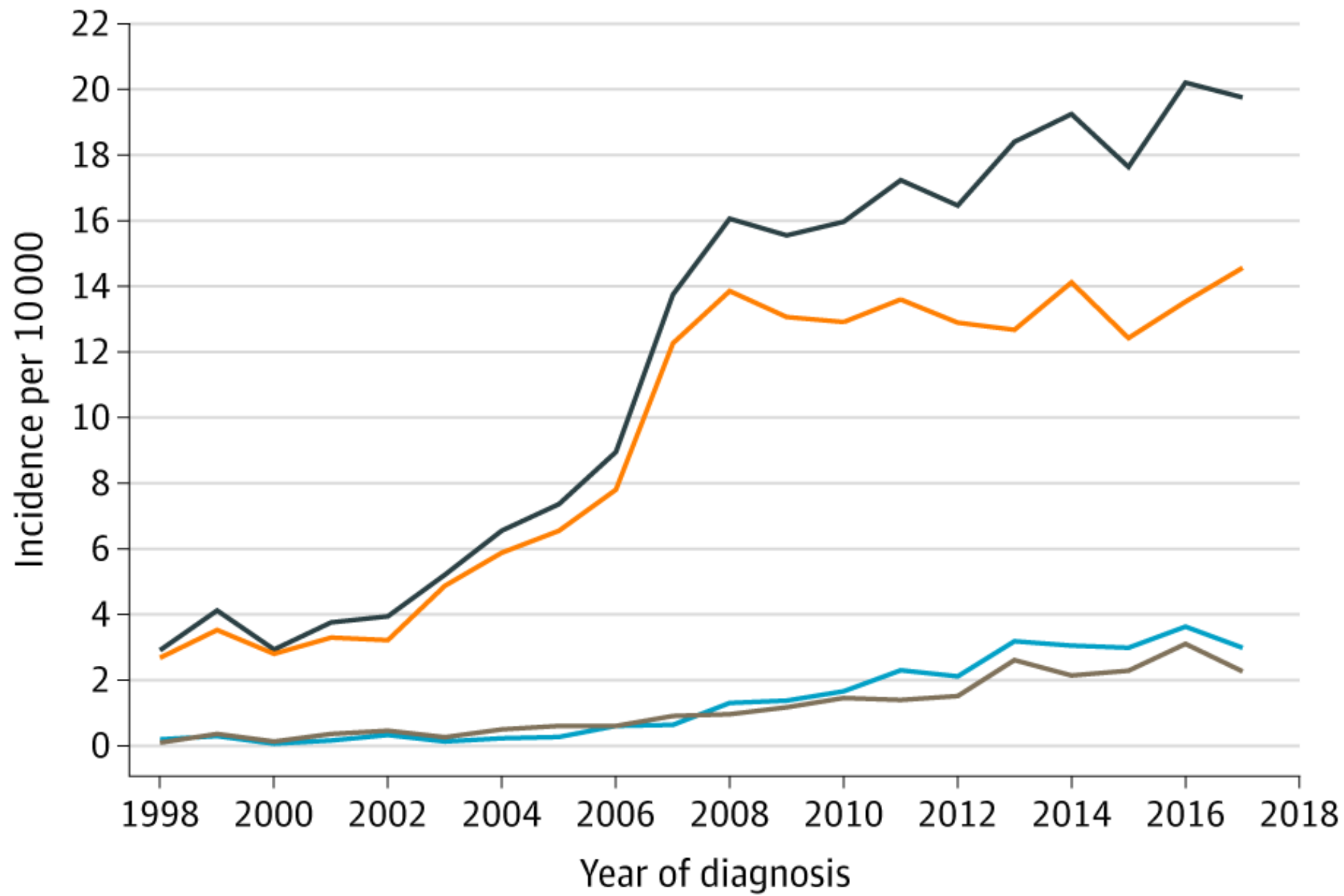
- Early or late puberty onset
- Irregular cycling
- Infertility
- Premature ovarian insufficiency
- Polycystic ovary syndrome (PCOS)
- Early menopause
- Reproductive cancers

# Secular trend in age at breast development

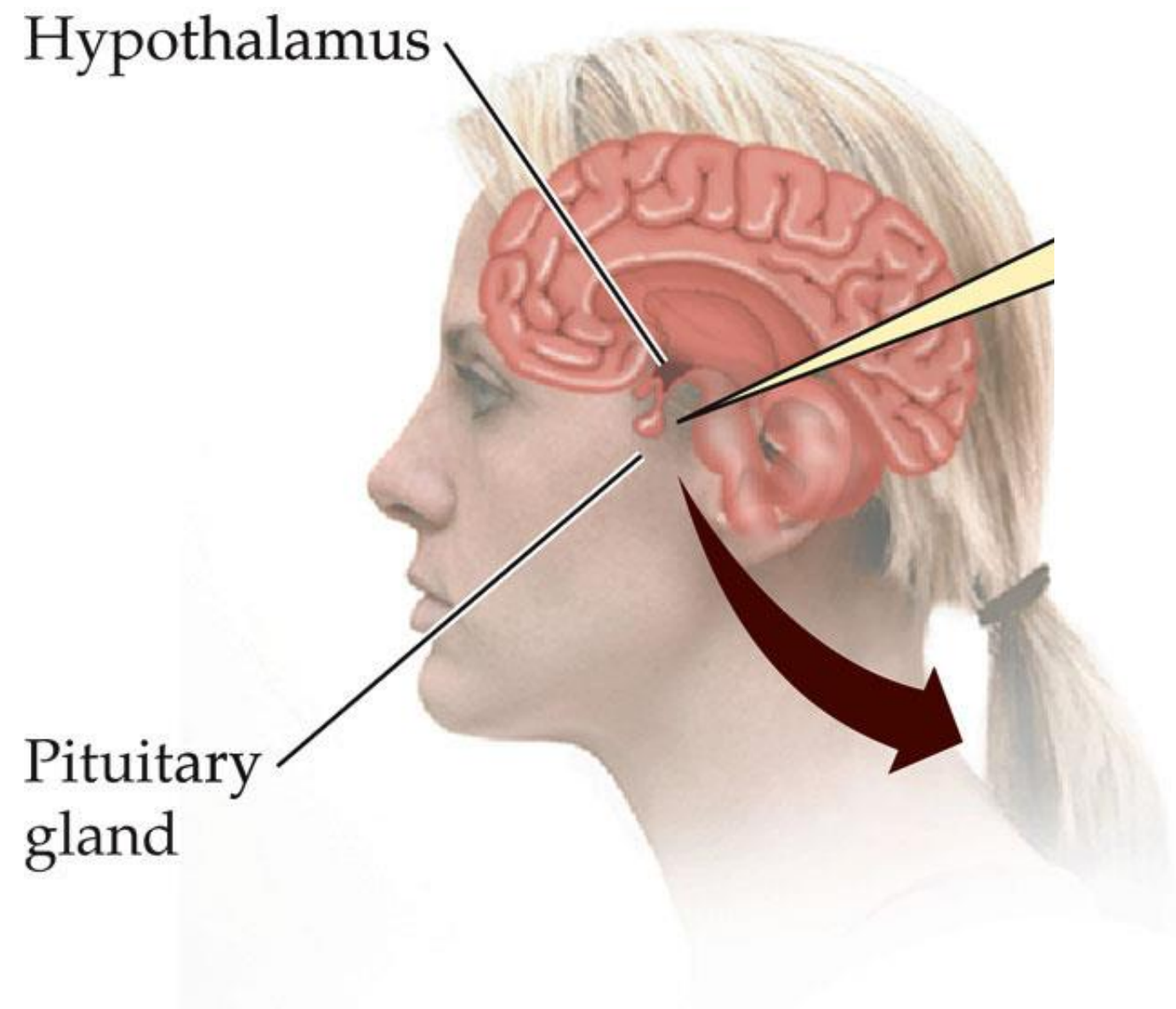


# Increase in central precocious puberty incidence

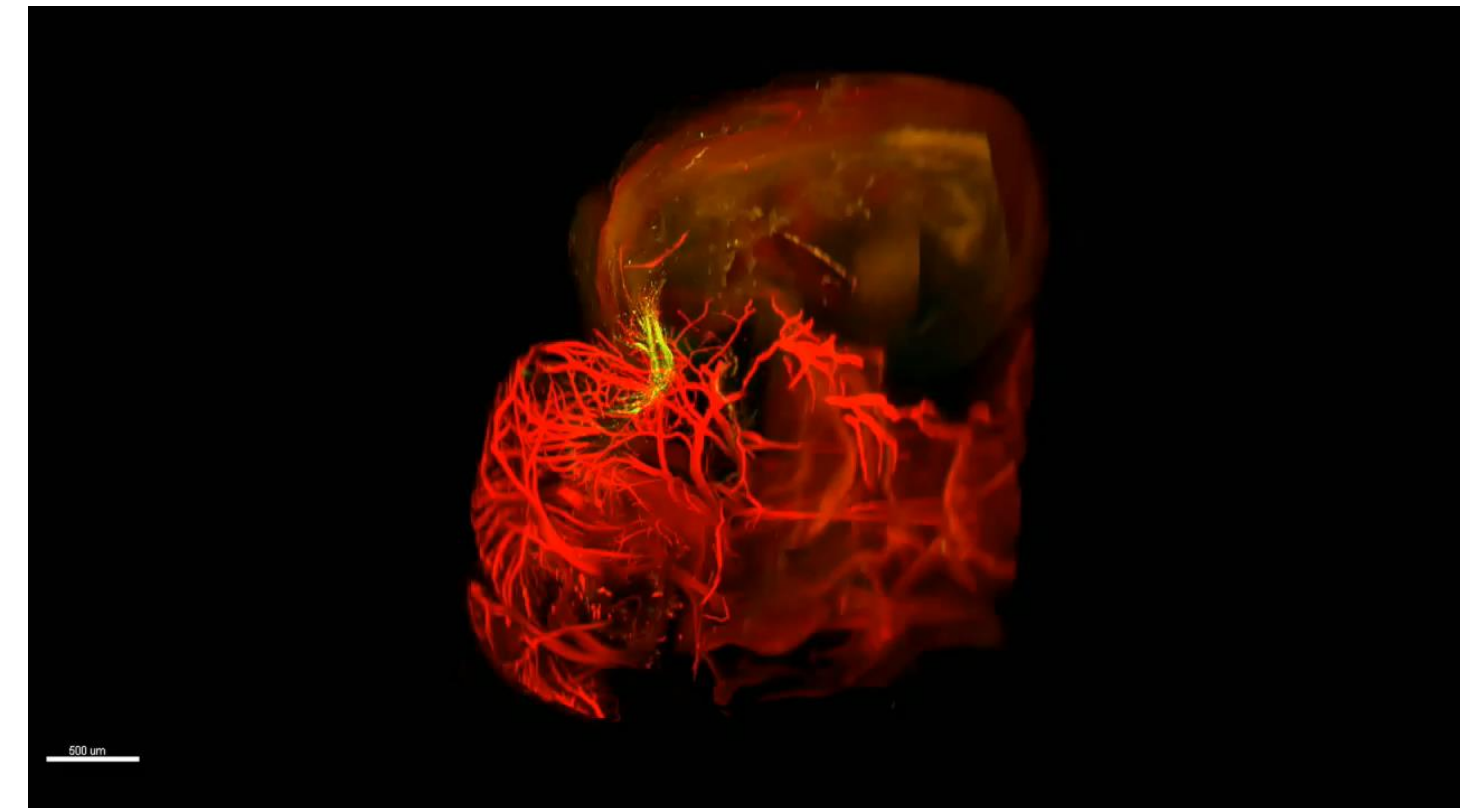
— All diagnoses    — Central precocious puberty    — Premature adrenarche    — Premature thelarche



# The GnRH neurons in the hypothalamus initiate puberty

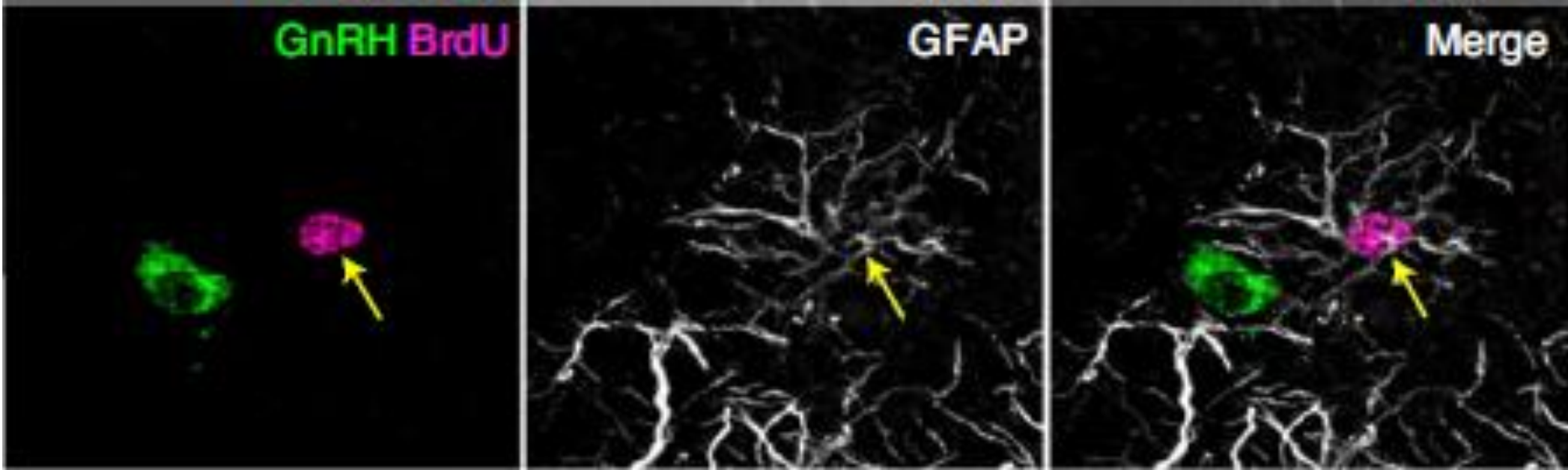
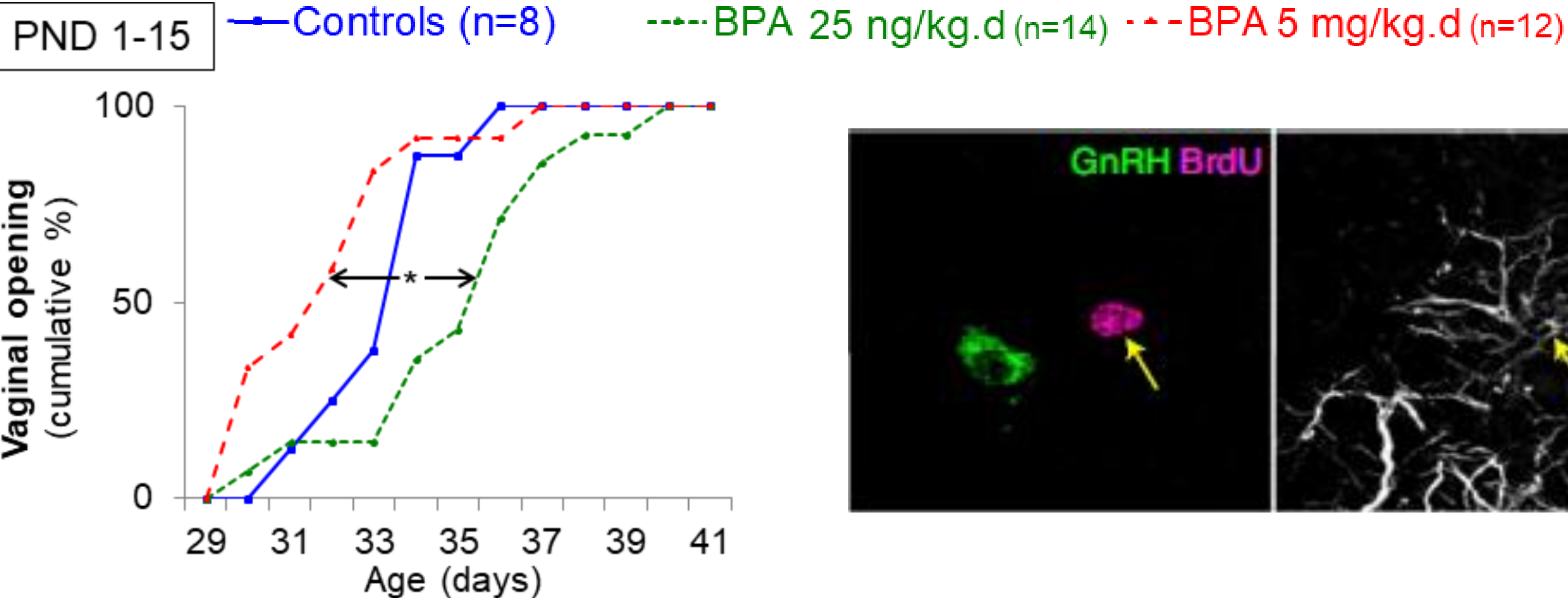


An introduction to behavioural neuroendocrinology 2011, Sinauer Associates Inc

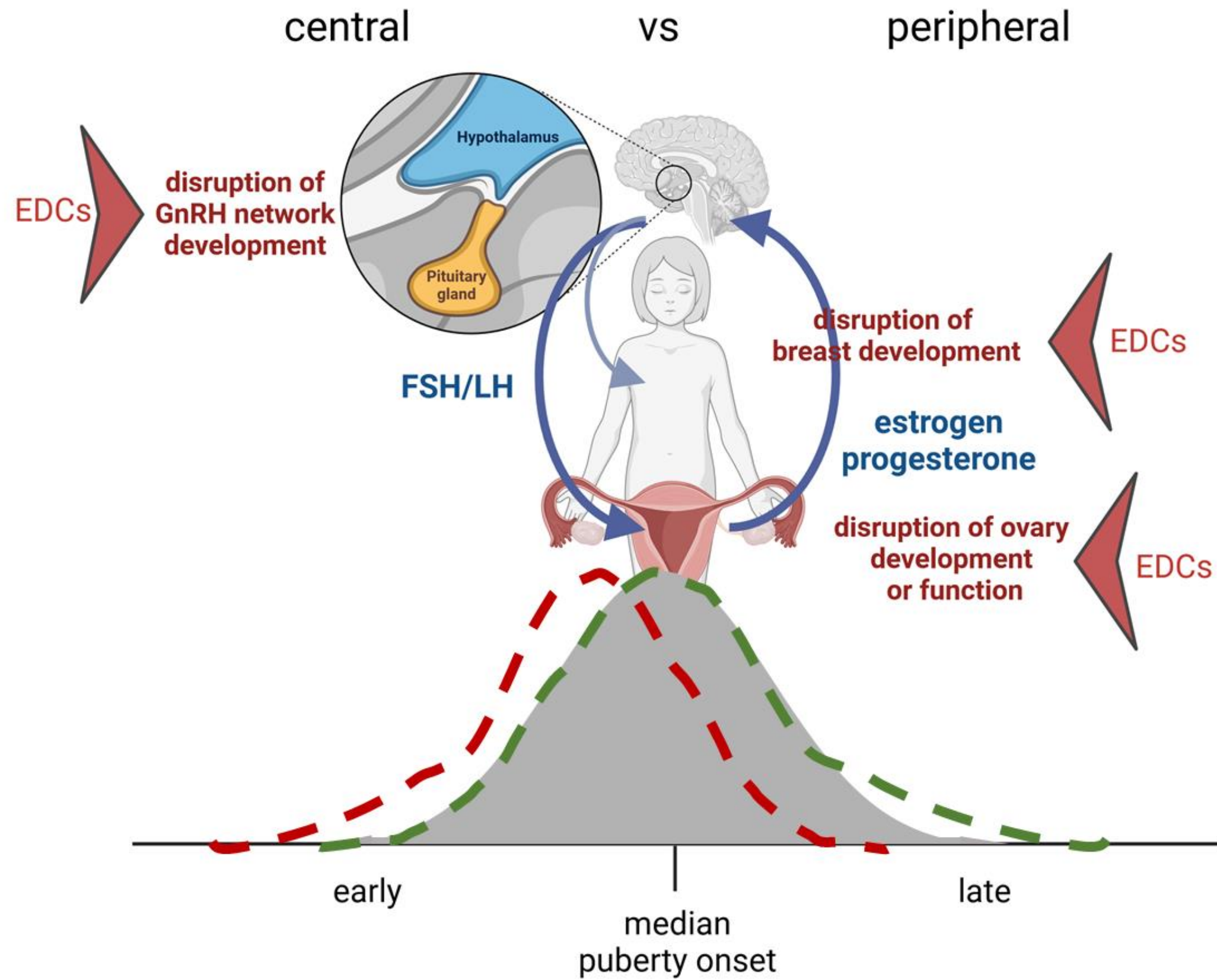


F Casoni et al. Development, 2016

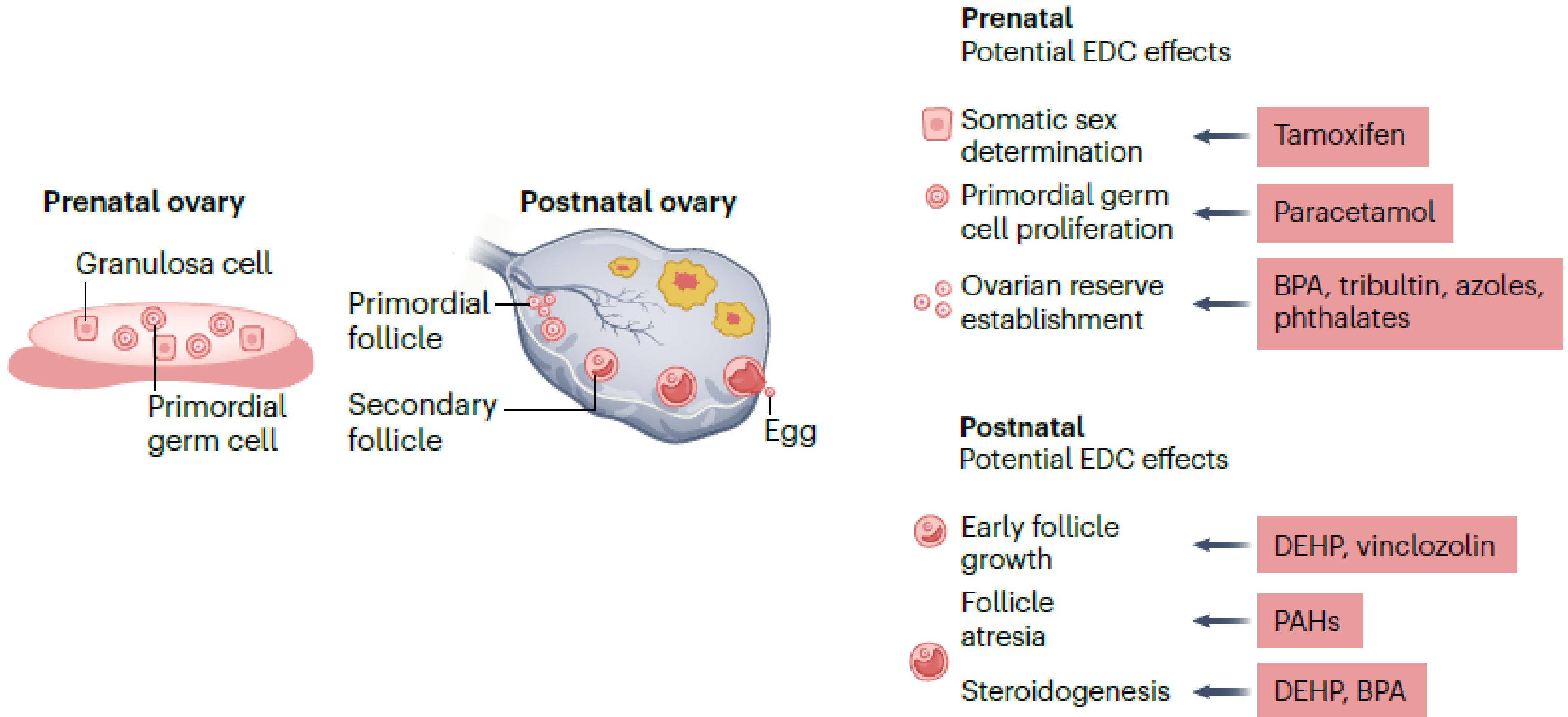
# EDCs disrupt development of GnRH neurons



# Puberty and EDCs



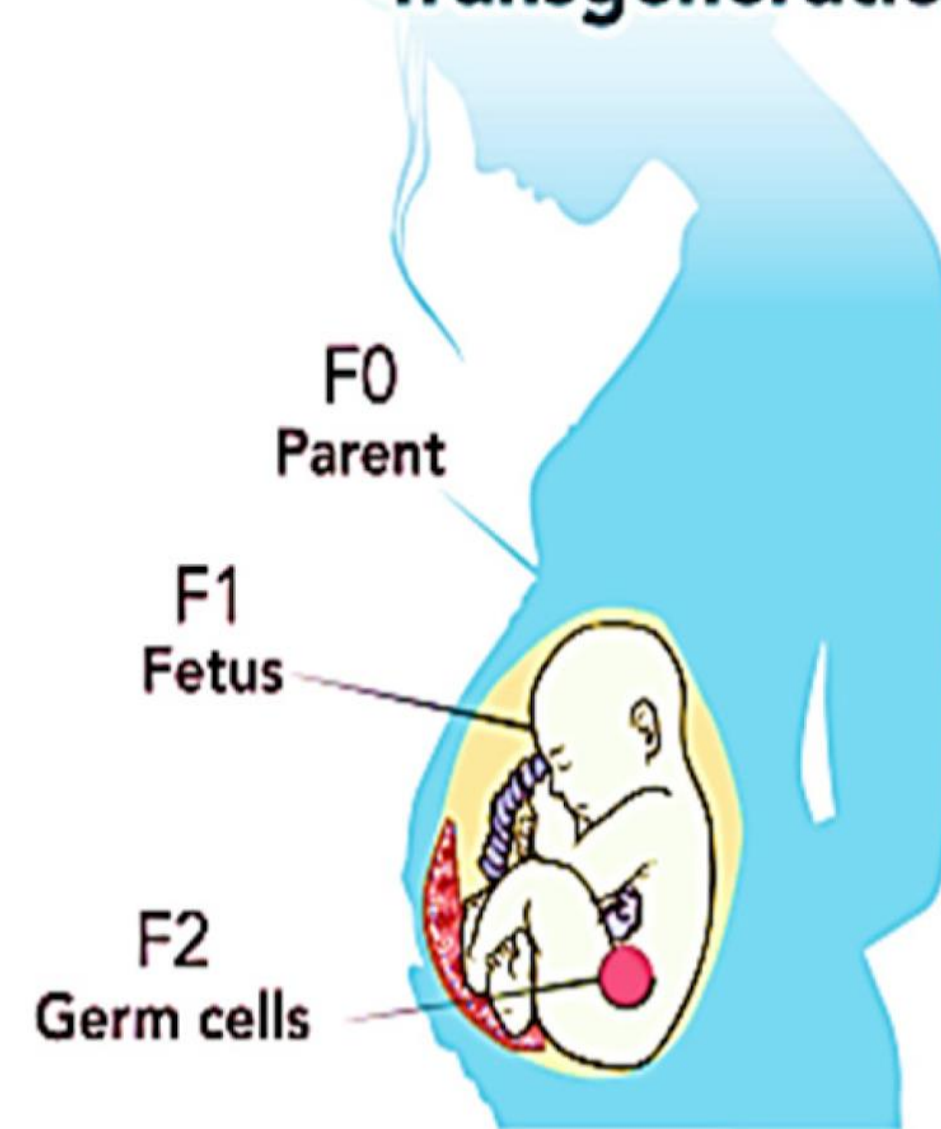
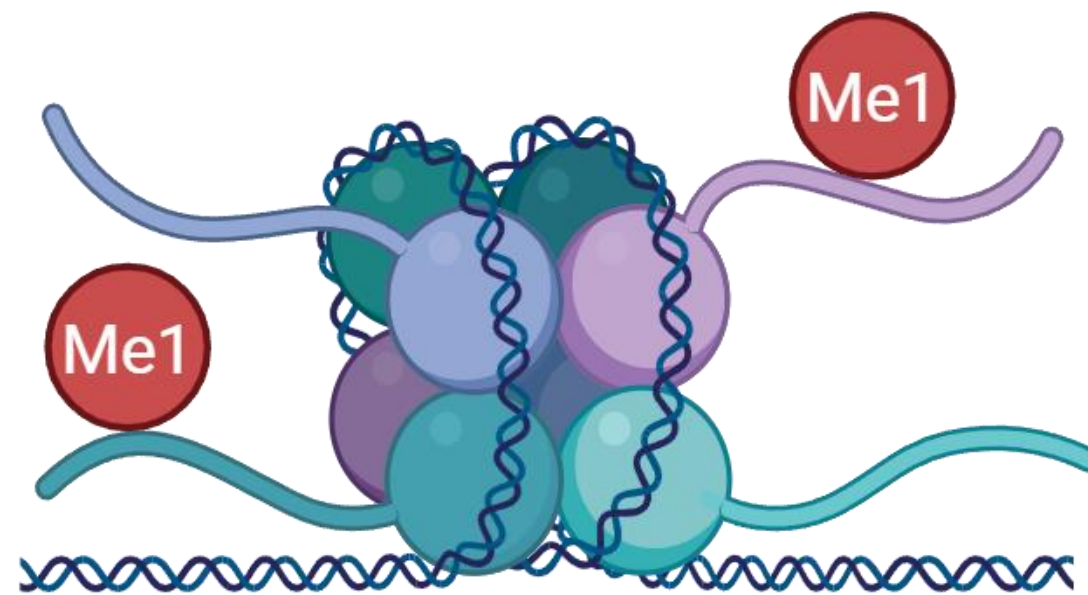
# Ovaries and EDCs



# Polycystic ovarian syndrome and EDCs

Diagnosis	Exposure at residency	Cases	Person years	HR (95 % CI)	p
PCOS (20–50years)	Never-high <sup>a</sup>	87	87,677	1	
	Ever-high <sup>b</sup>	45	32,461	1.43 (0.99, 2.05)	0.05
	Never-high <sup>a</sup>	87	87,677	1	
	Early-high <sup>c</sup>	14	18,982	0.82 (0.46, 1.44)	0.49
	Late-high <sup>d</sup>	31	13,479	2.18 (1.43, 3.34)	0.0003

# The transgenerational effects of endocrine disruptors



# Tackling Endocrine Disrupting Chemicals

## A Strategic Approach

### 3-Pillar Approach to EDCs

- Minimize exposure to EDCs
- Stimulate research to guide decisions
- Foster stakeholder dialogue & collaboration

### Regulatory Progress & Concerns

- Under way: Classification, Packaging & Labeling Regulation
- Delayed: REACH Regulation
- Stalled: EU ban on EDCs



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# Project goals and objectives



Explore the link between exposure to endocrine disrupting chemicals and impaired human sexual development and reproductive health



Develop and improve tools for chemical risk assessors and policy makers to better identify and ultimately regulate EDCs



Raise awareness of EDCs and their health impacts among policymakers and citizens



# Any questions or comments?

Merlon research project  
[merlon.dtu.dk](http://merlon.dtu.dk)

Follow us on LinkedIn: Merlon research project



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