

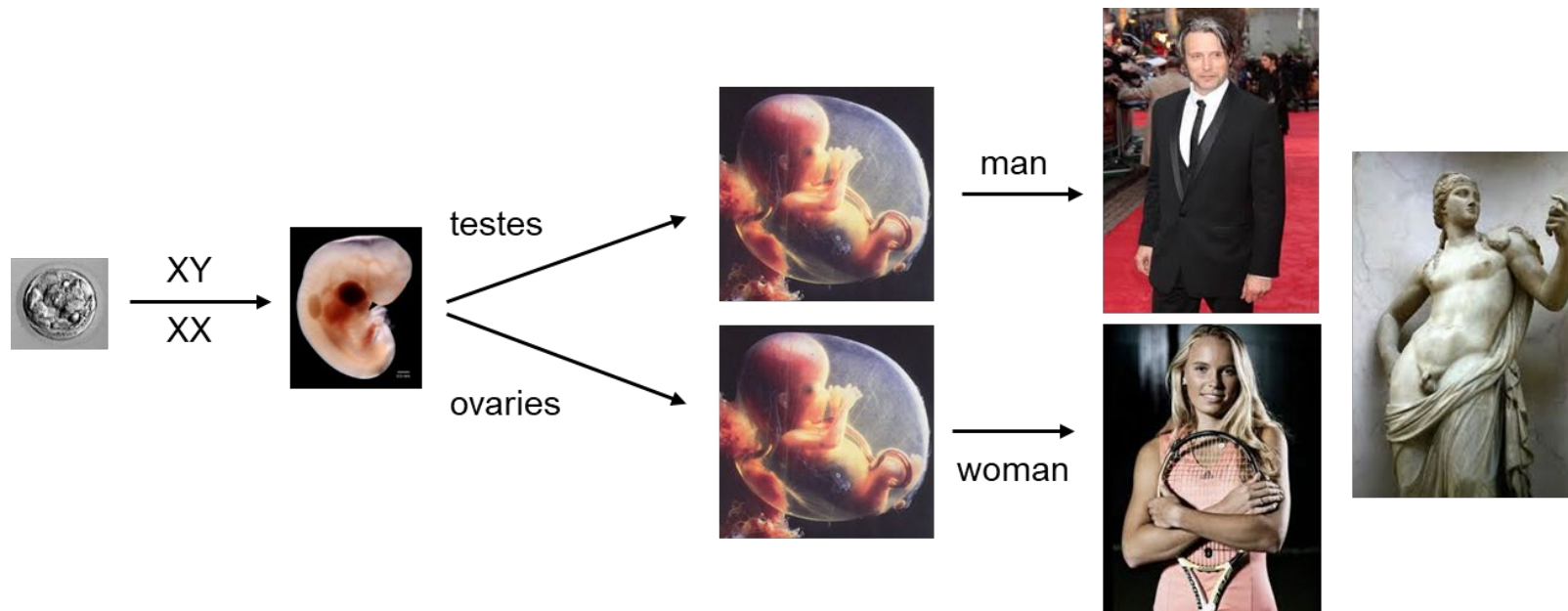
Endocrine disruptors:

How basic research in toxicology can help prevent reproductive disorders

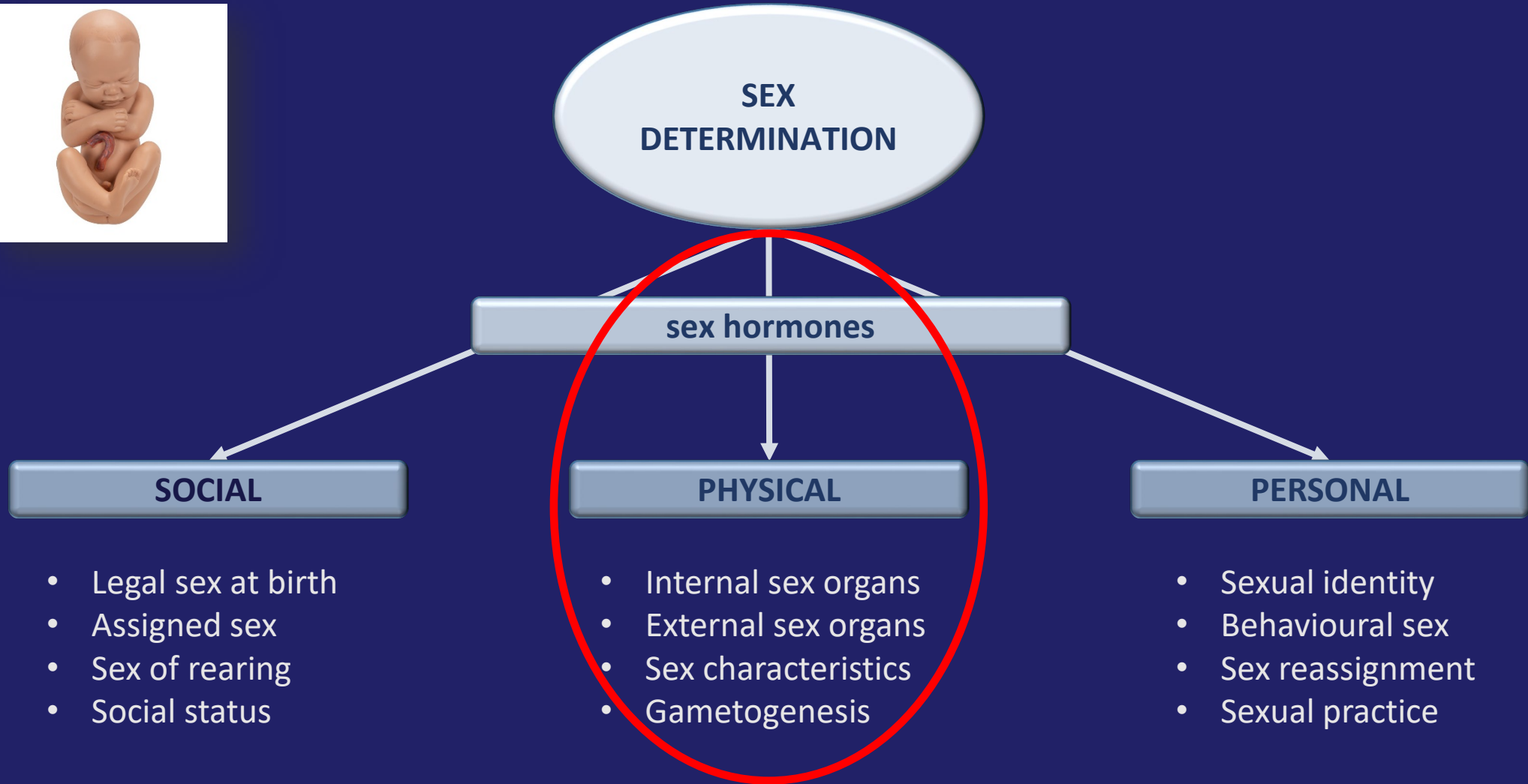


Terje Svingen
Associate Professor
DTU Food

Sexual development is dependent on endocrine signalling

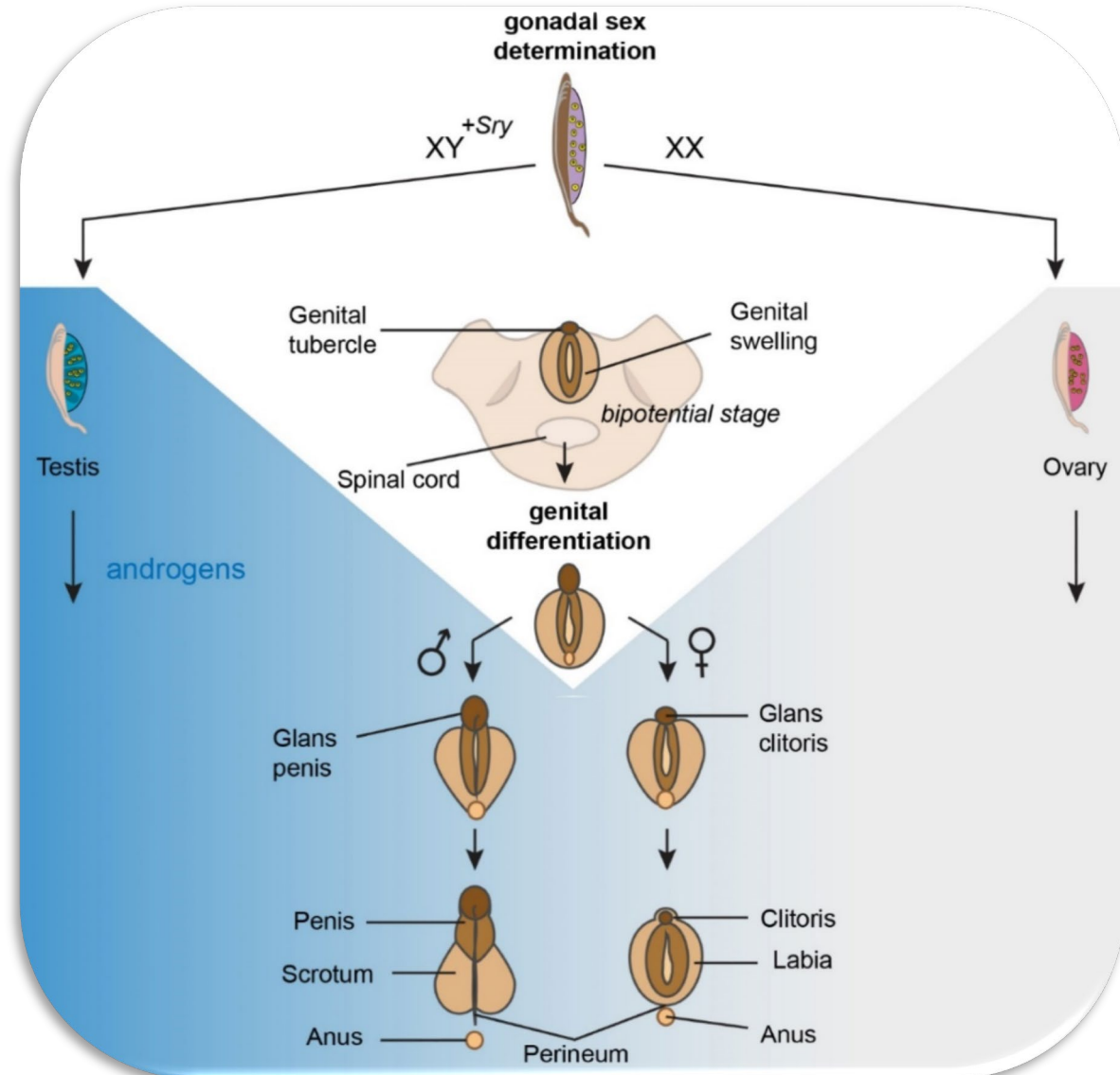


Sexual development is dependent on endocrine signalling



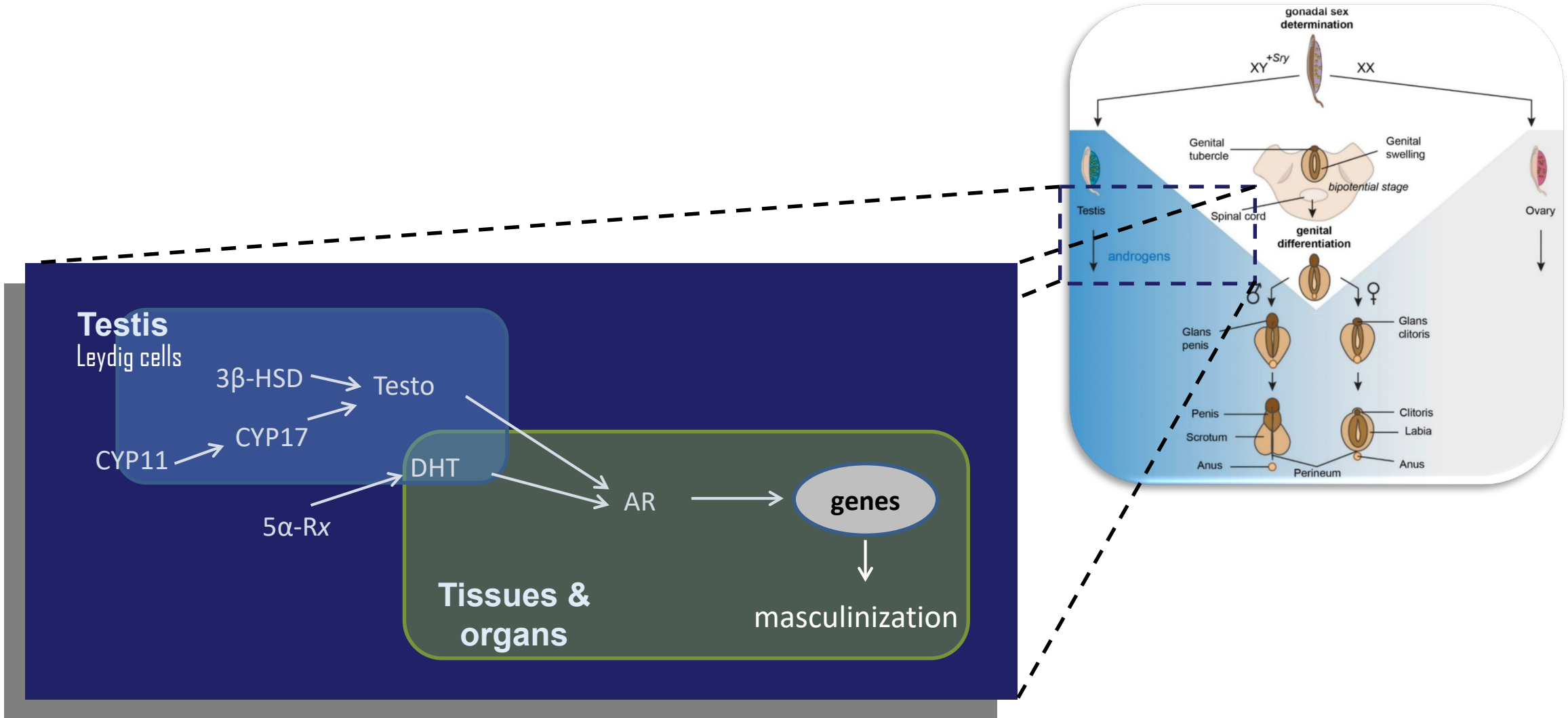
Svingen & Pelliniemi (2015), *Ref Mod Biomed Sci* 2015:347

From looking the same to differentby the action of androgens



Schwartz et al (2019), Arch Toxicol 93:253

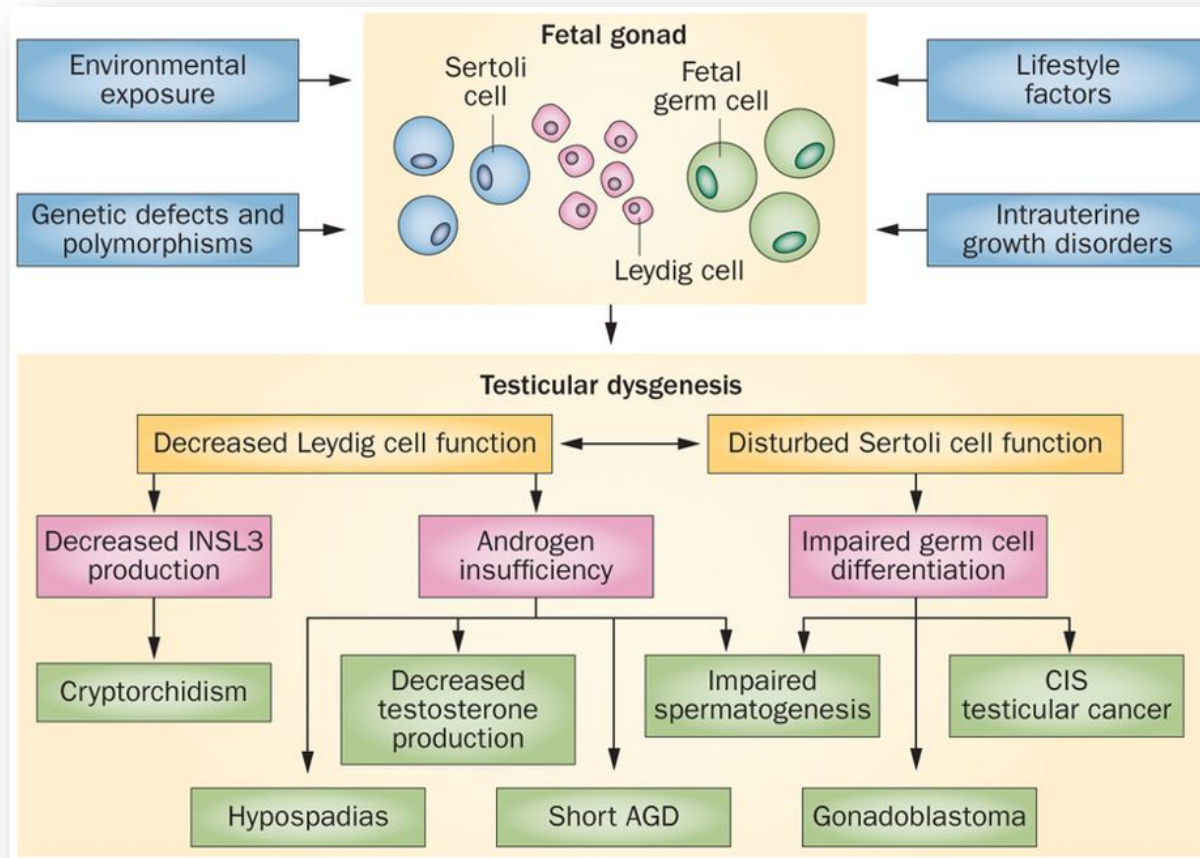
From looking the same to differentby the action of androgens



When endocrine signalling is disrupted....

....sexual development is also disrupted

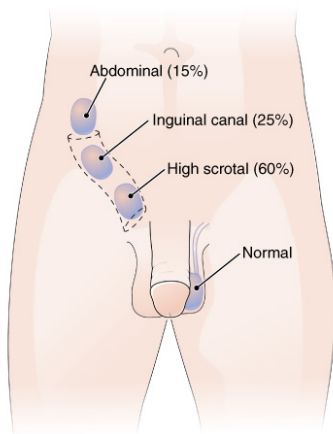
TESTICULAR DYSGENESIS SYNDROME



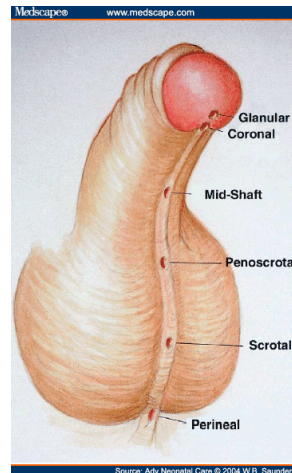
Juul *et al* (2017), *Nat Rev Endocrinol* 10:553

Exposure to endocrine disruptors can thus:

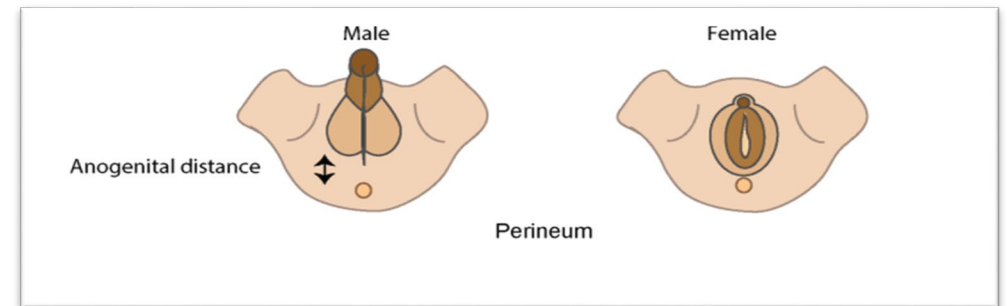
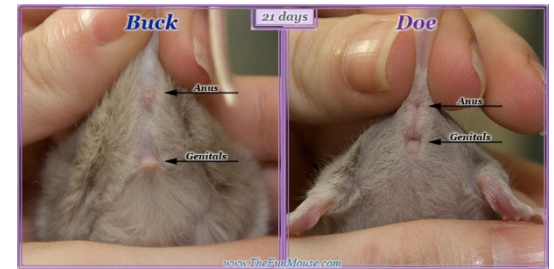
- disrupt endocrine signalling, *which can....*
- disrupt sexual development, *which can....*
- cause reproductive disorders



cryptorchidism



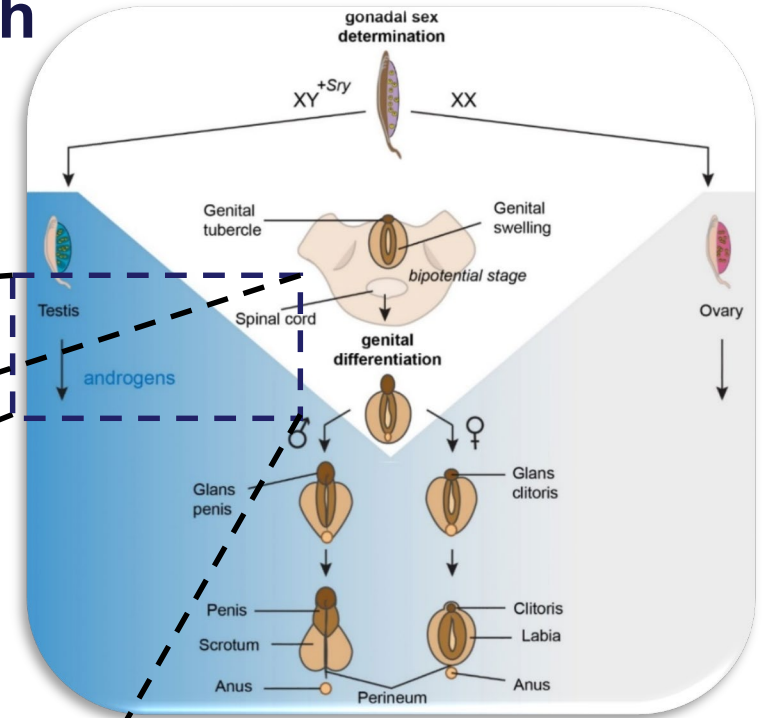
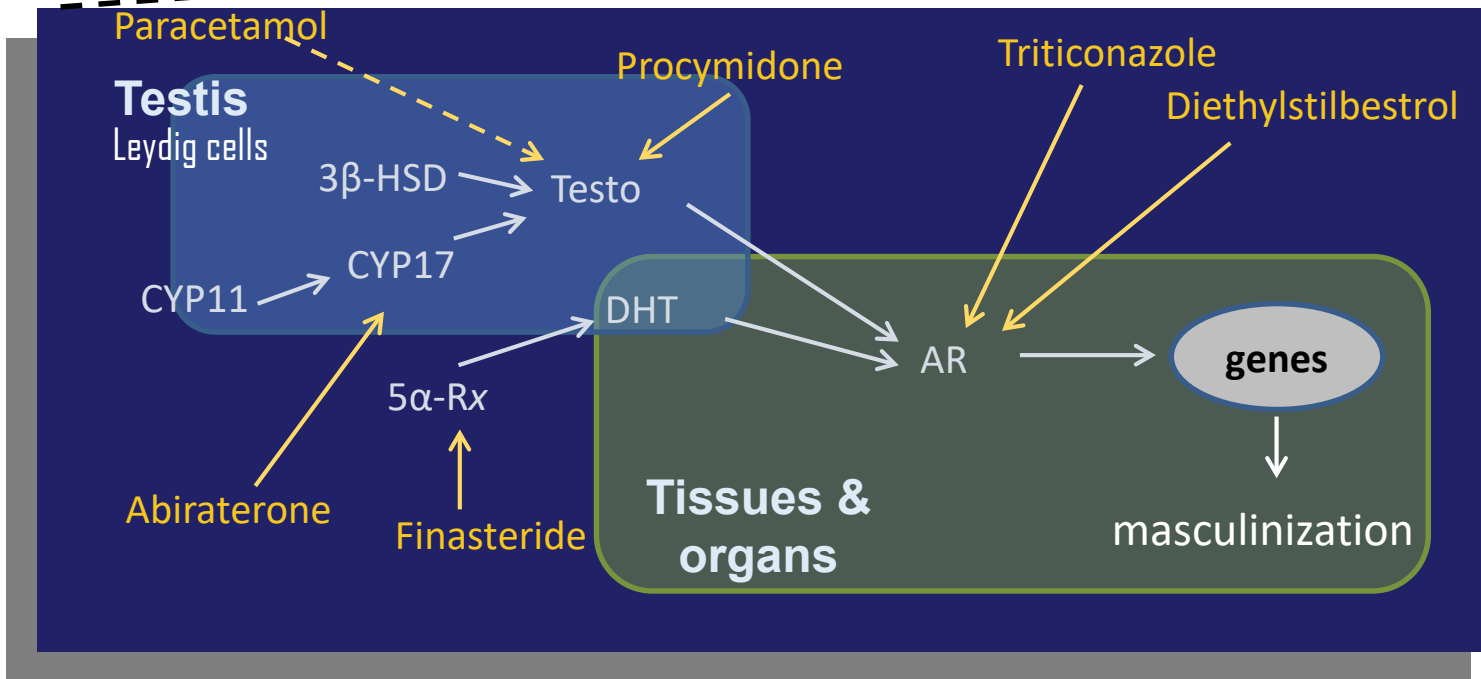
hypospadias



altered AGD

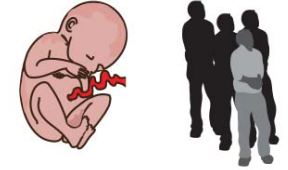
Endocrine disruptors:

- using what we know to protect human health



Why basic research in toxicology?

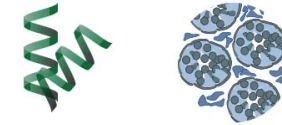
➤ When we observe effects in humans, it is already too late for those affected



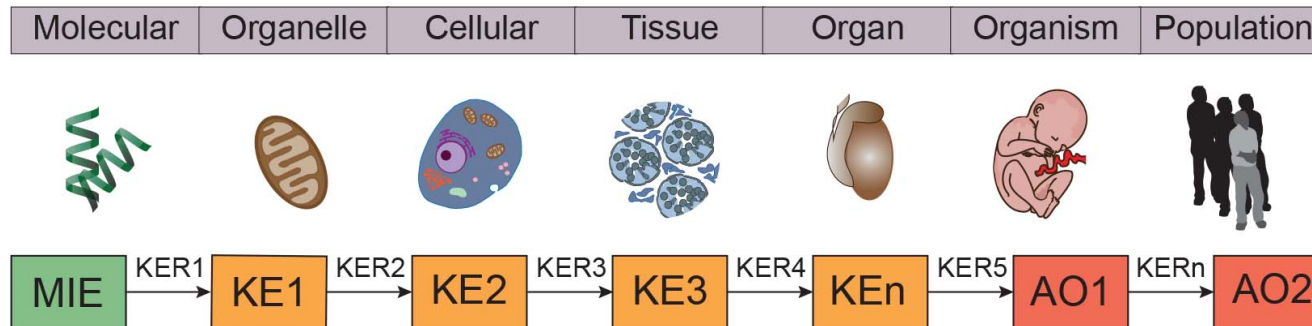
➤ Animal studies can establish causality



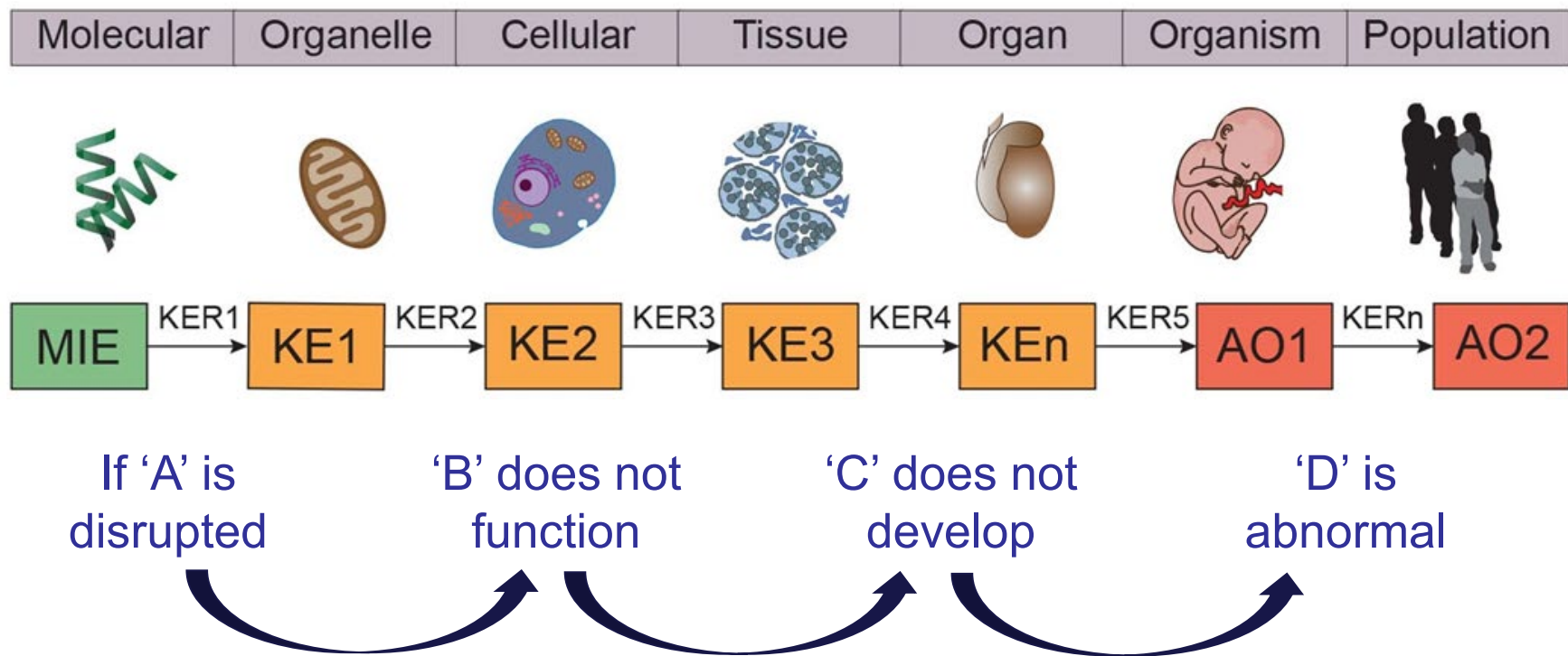
➤ In vitro / in silico studies can establish mechanisms of action



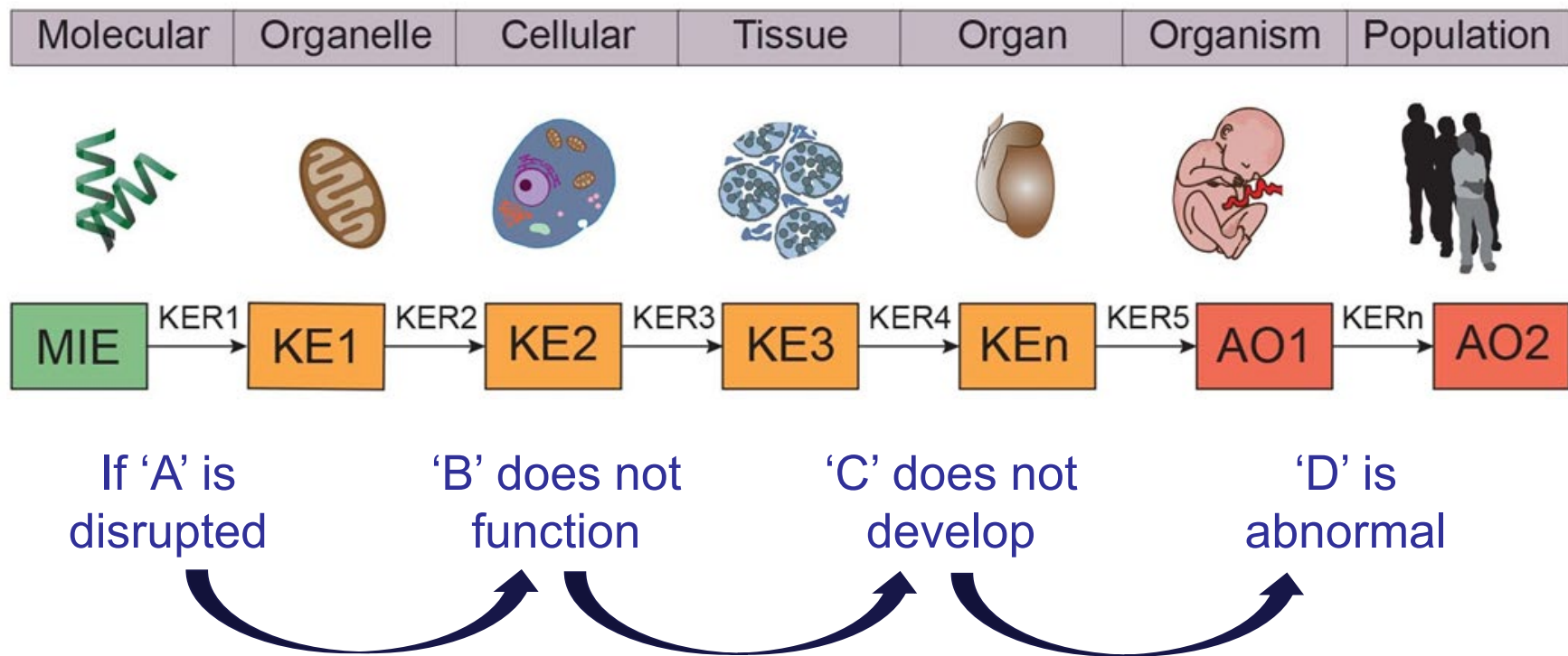
➤ **Causality, with mechanistic knowledge, can be used for predictive toxicology**



Causality, with mechanistic knowledge, can be used for predictive toxicology

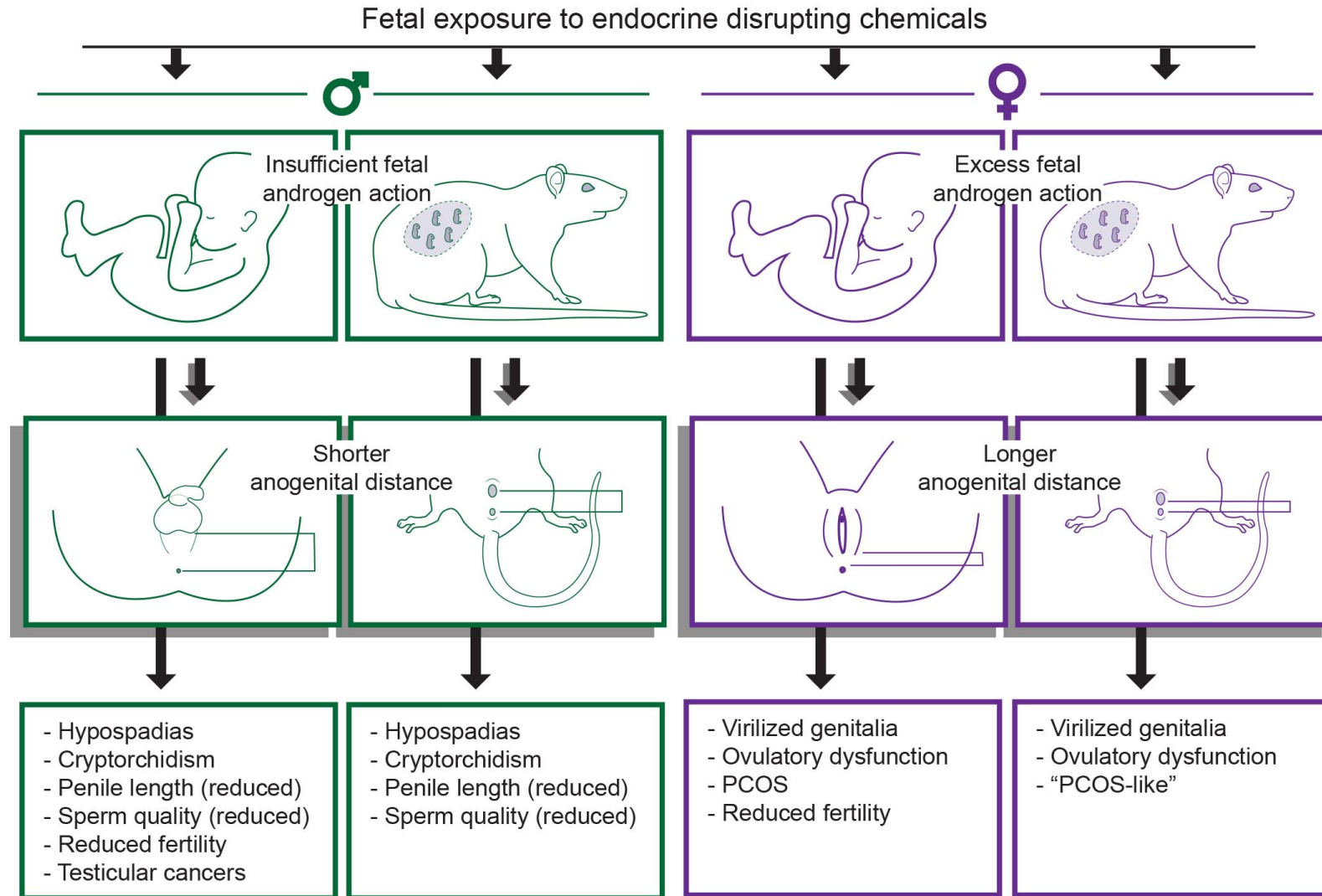


Causality, with mechanistic knowledge, can be used for predictive toxicology



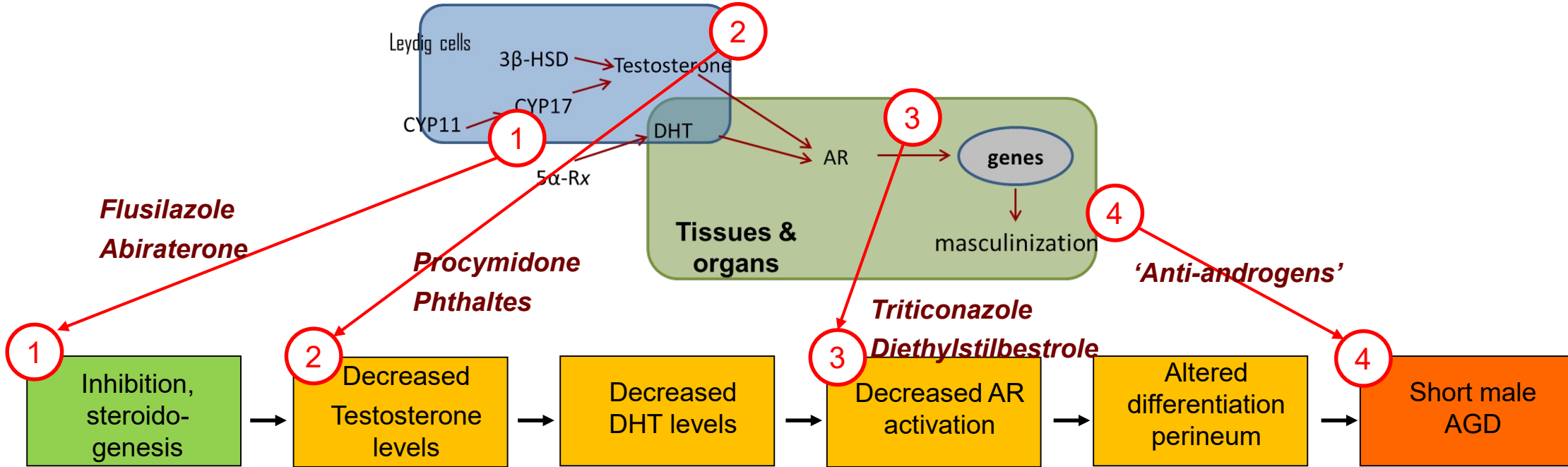
Predictive Toxicology: If 'A' occurs, it is likely that 'D' manifest

Example: anogenital distance (AGD)

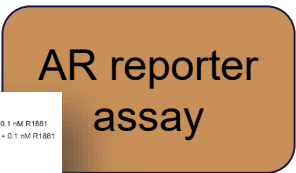
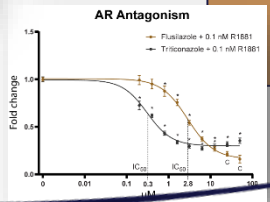
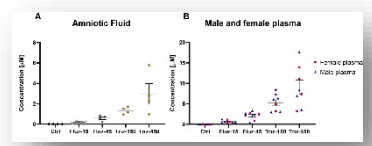
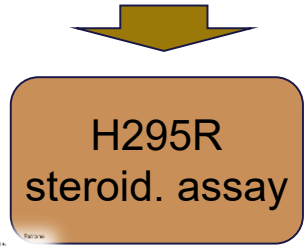
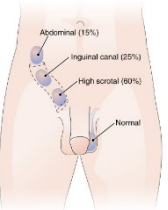
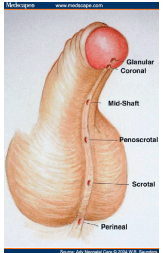
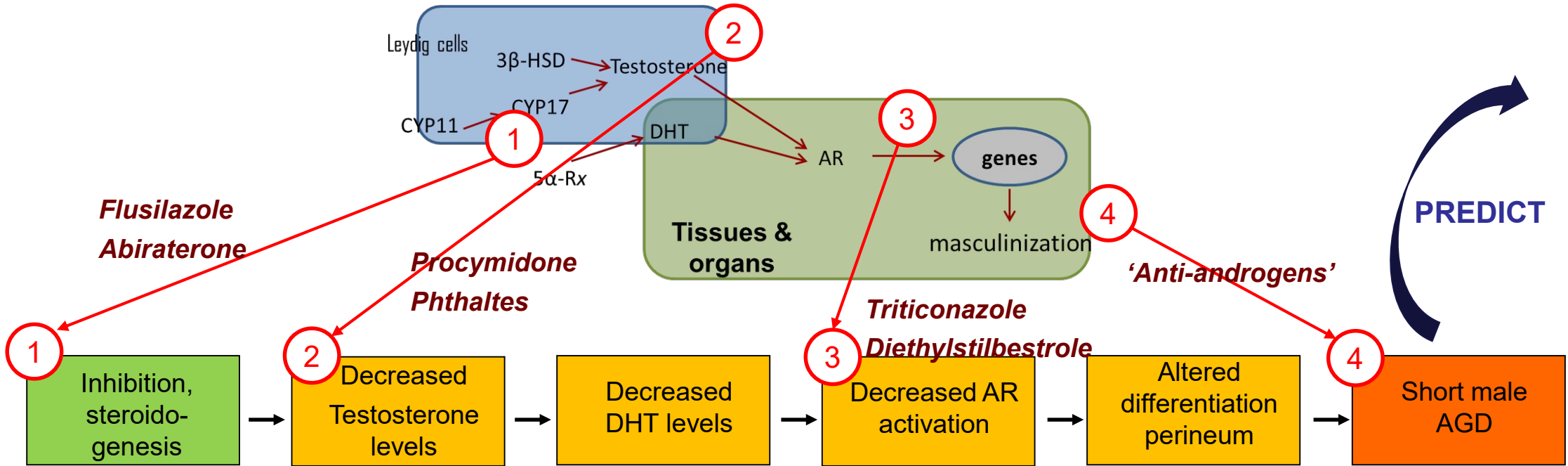


Svingen et al (2022), *Biomarkers in Disease*

Example: anogenital distance (AGD)



Example: anogenital distance (AGD)



PREDICT

PREDICT

Thank you for your attention!

RESEARCH GROUP FOR
MOLECULAR & REPRODUCTIVE TOXICOLOGY



Funding:



Miljøministeriet
Miljøstyrelsen

DANISH CENTRE ON ENDOCRINE DISRUPTERS