Androgen and Estrogen Receptor in the Developing Human Penis and Clitoris
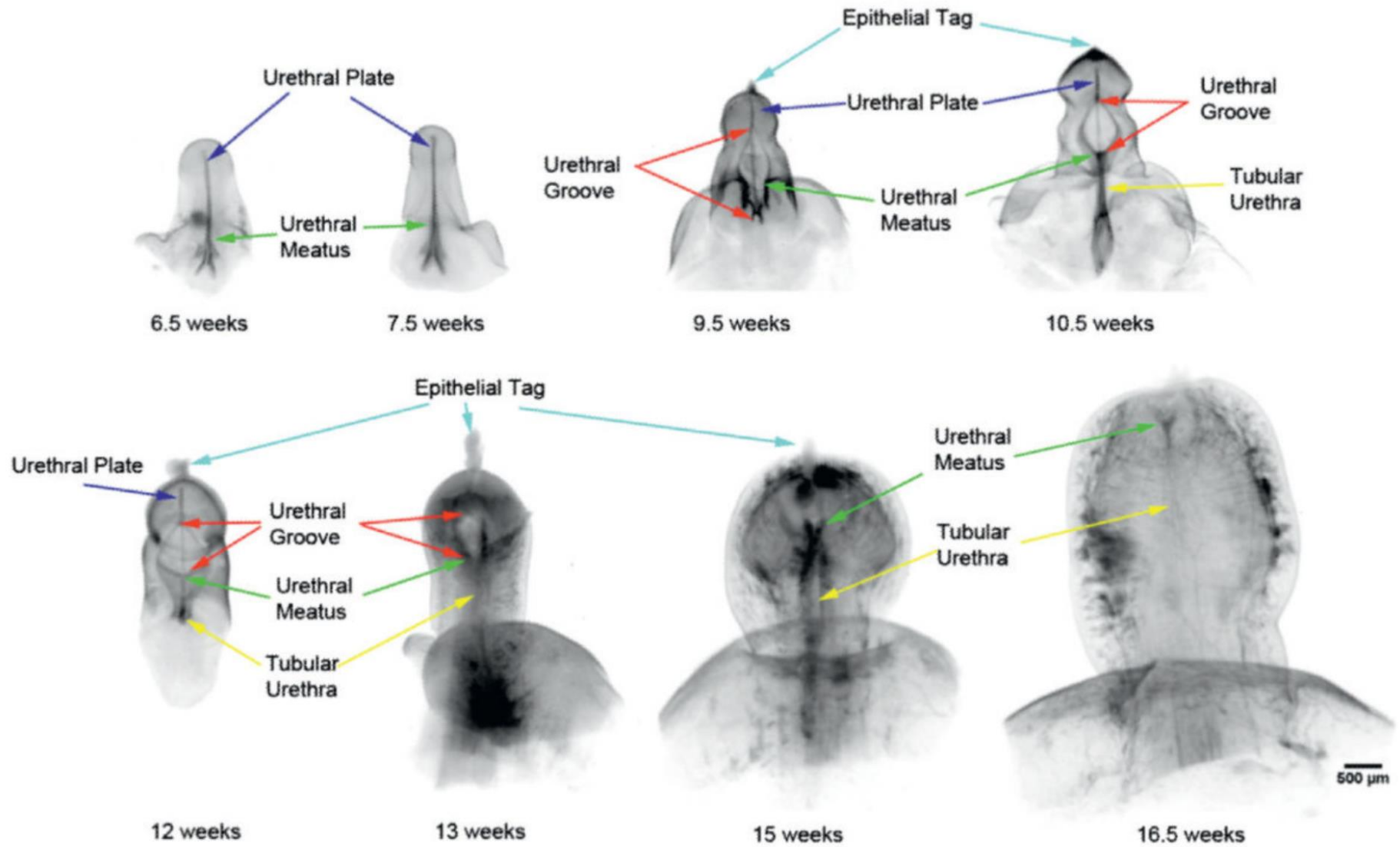
Society of Pediatric Urology

Scottsdale, AZ 2019

Yi Li, MD PGY5
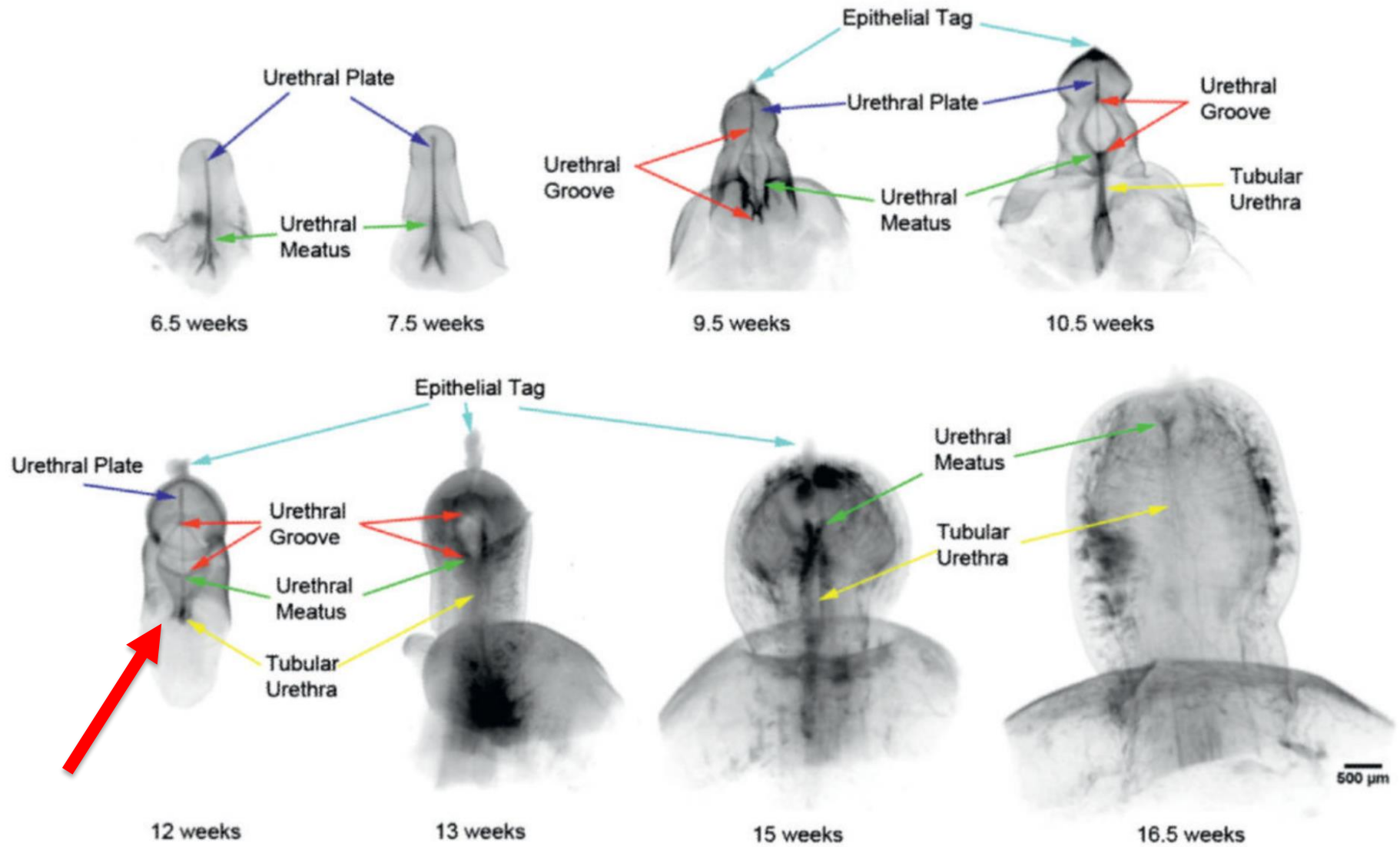UCSF Department of Urology

1/21/2020
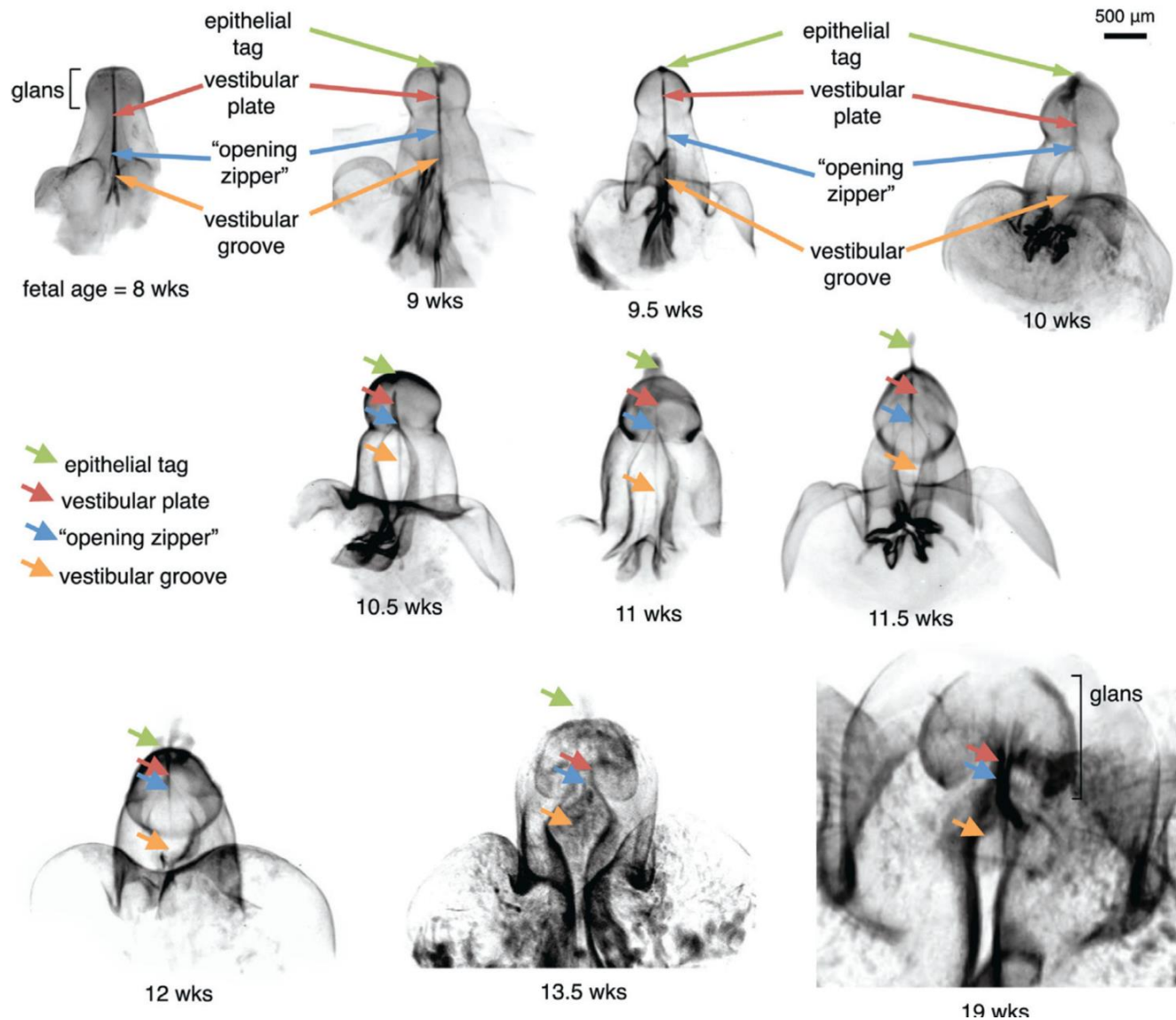
Development of the Human Male Urethra

Li et al, 2015
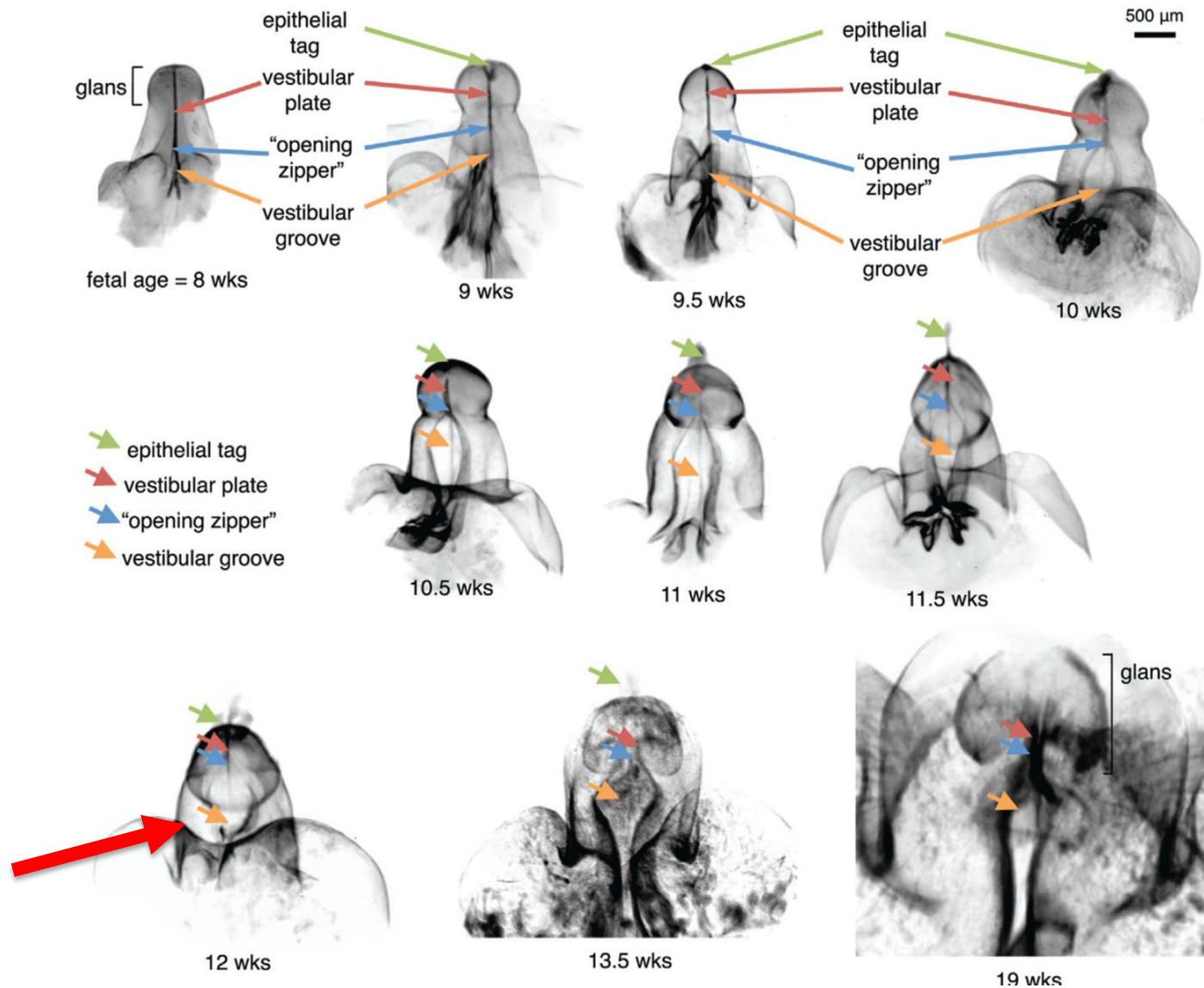
Development of the Human Male Urethra

Li et al, 2015

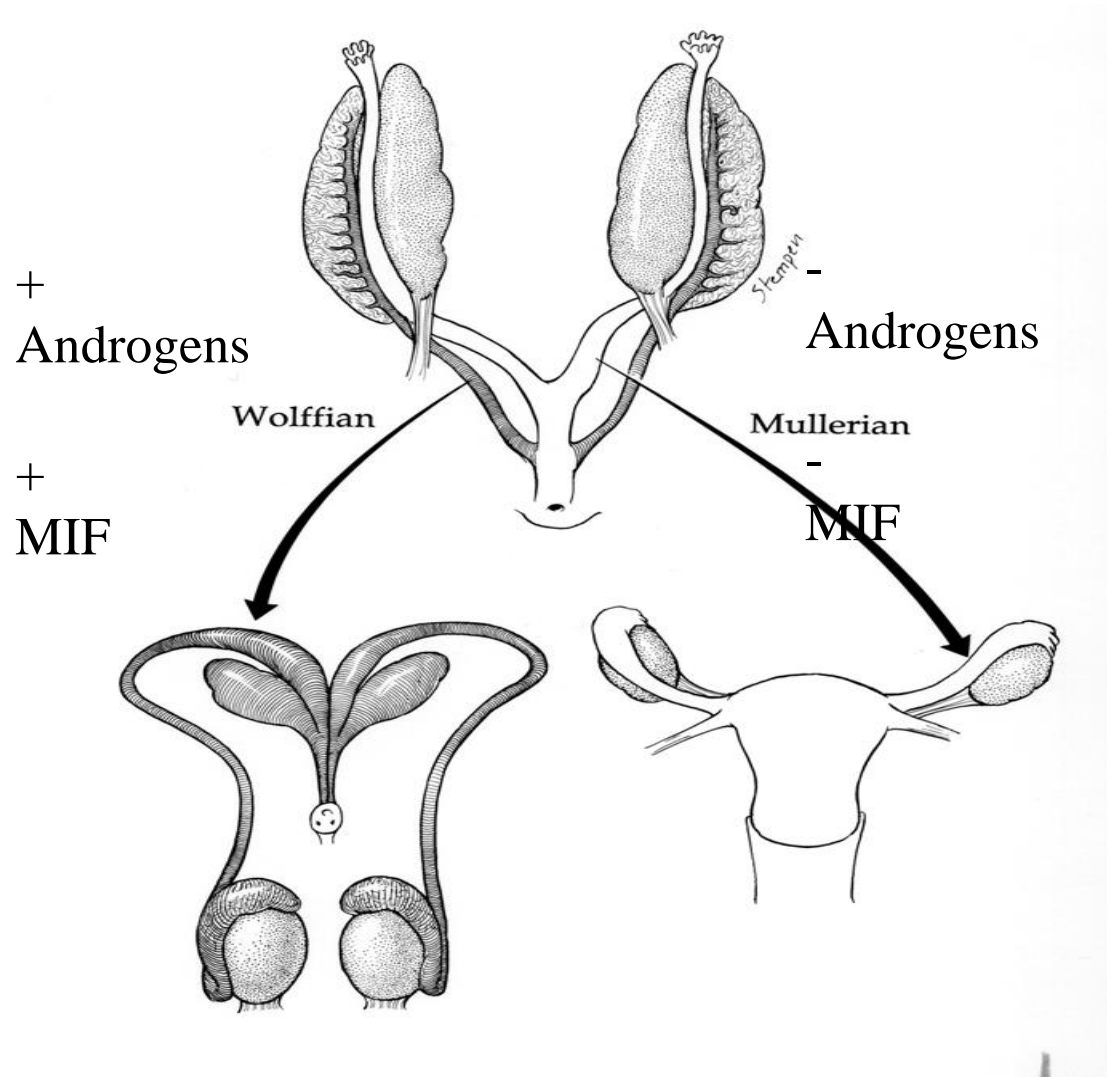# Development of the Human Female Urethra

Overland et al, 2016

Development of the Human Female Urethra

Overland et al, 2016

Jost Hypothesis

+
Androgens

+
MIF

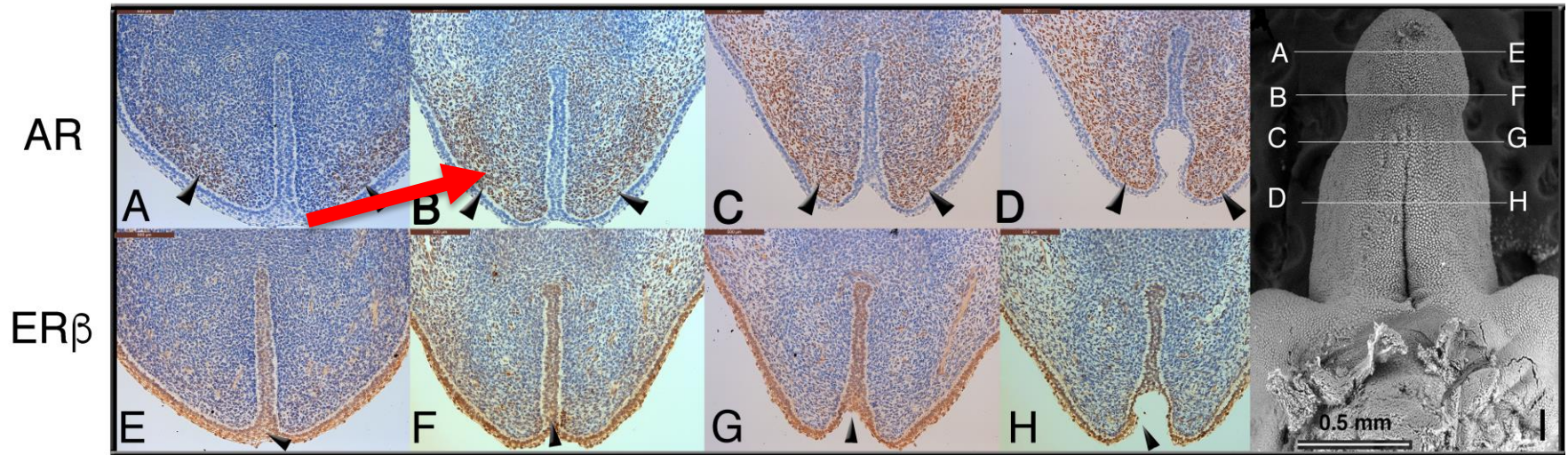Wolffian

-
Androgens

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MIF

Mullerian

Hypothesis:

The Androgen Receptor along with Estrogen Receptor will be selectively expressed in strategic locations in the developing human fetal penis and clitoris

AR and ER in the Developing Human Penis and Clitoris
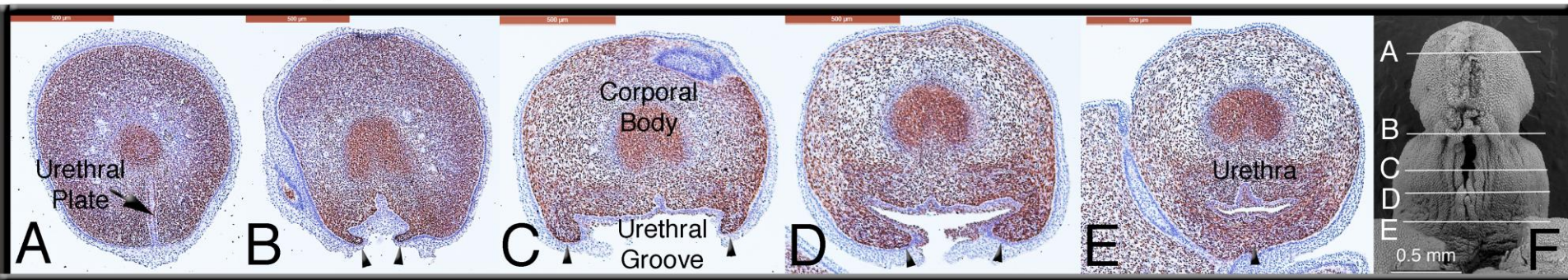
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Methods

- 36 human male and female fetal genital tubercle specimens, 8 to 17-week fetal age were evaluated for scanning electron microscopy, optical projection tomography and immunohistochemical staining.

- Transverse and sagittal sections six microns in thickness were immunostained with antibodies to Androgen Receptor (AR), Estrogen Receptor (ERα and ERβ).
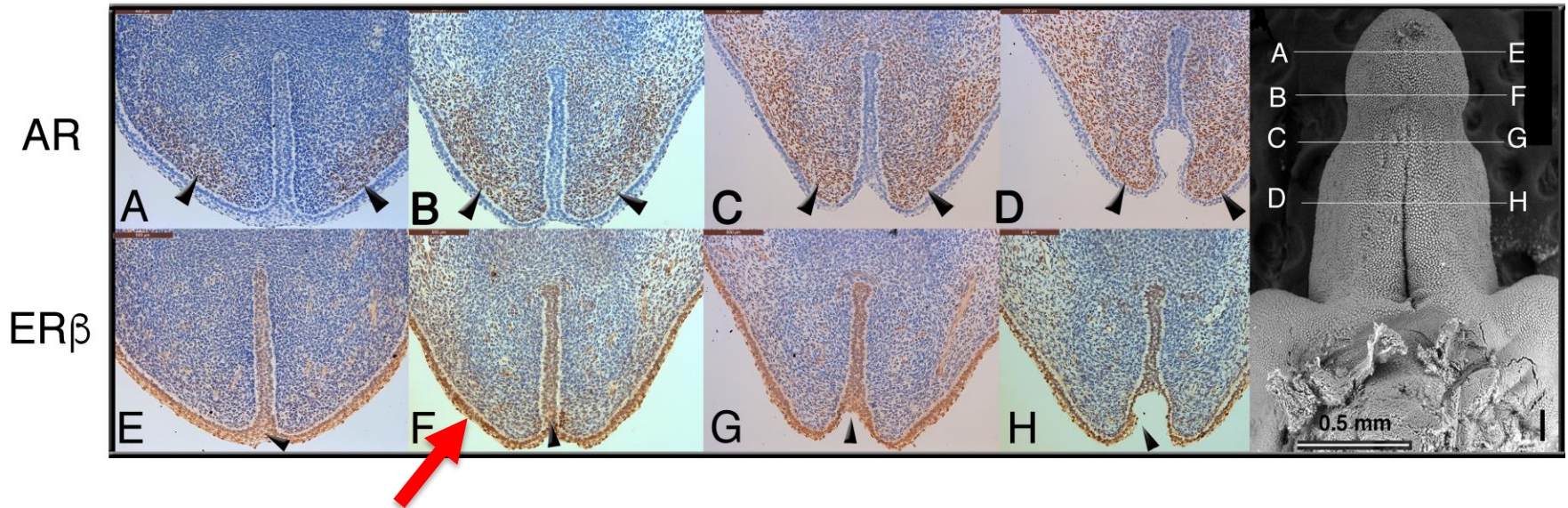
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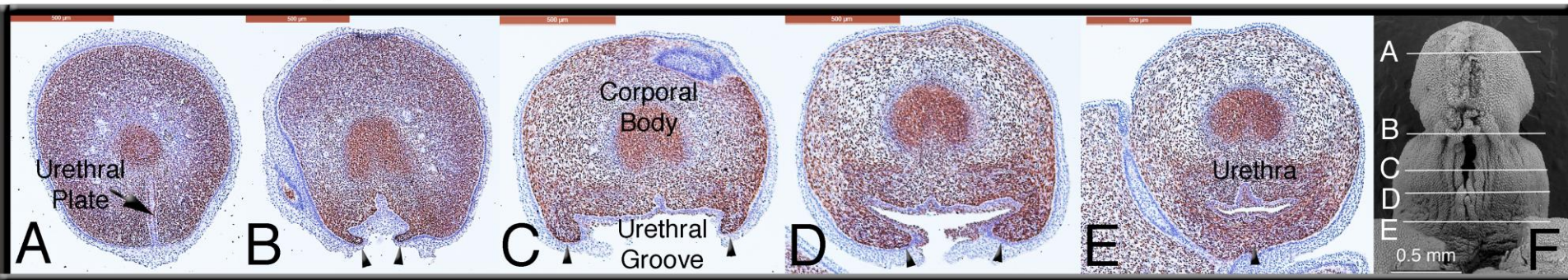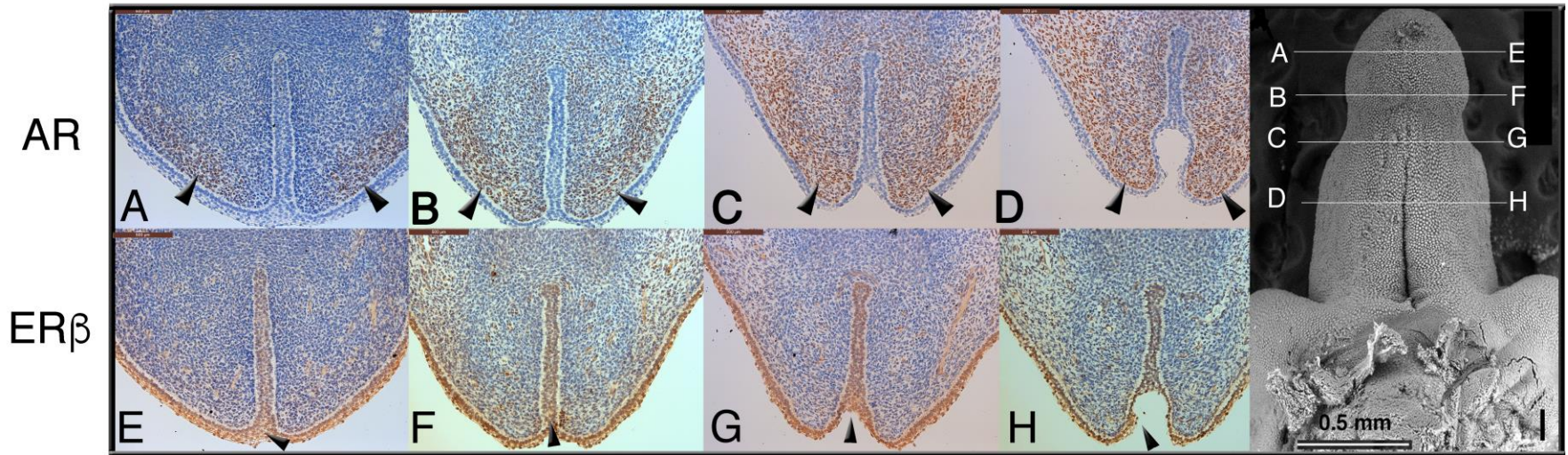# Human Genital Tubercle: Indifferent Stage 8 Weeks Gestation

AR Expression Human Penis: 9 Weeks Gestation

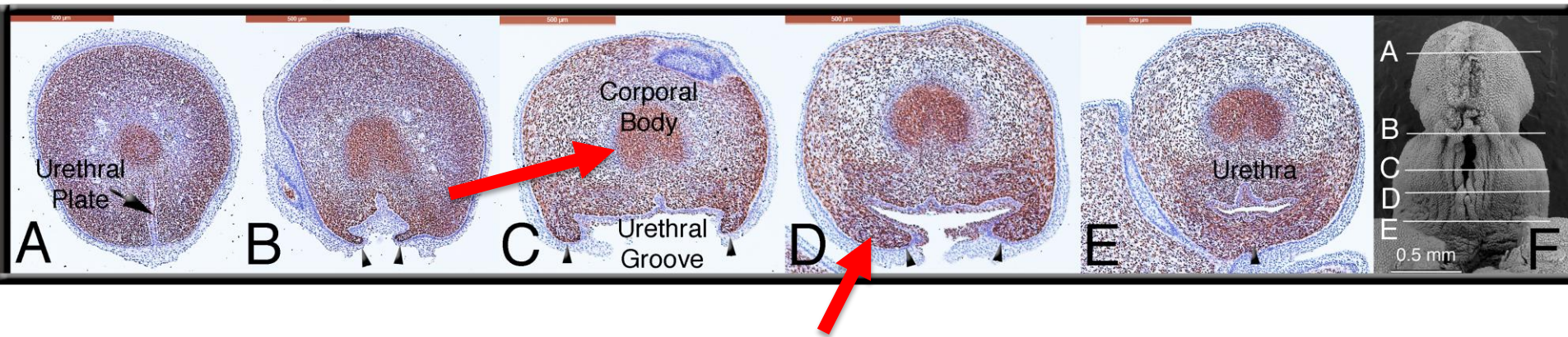# Human Genital Tubercle: Indifferent Stage 8 Weeks Gestation

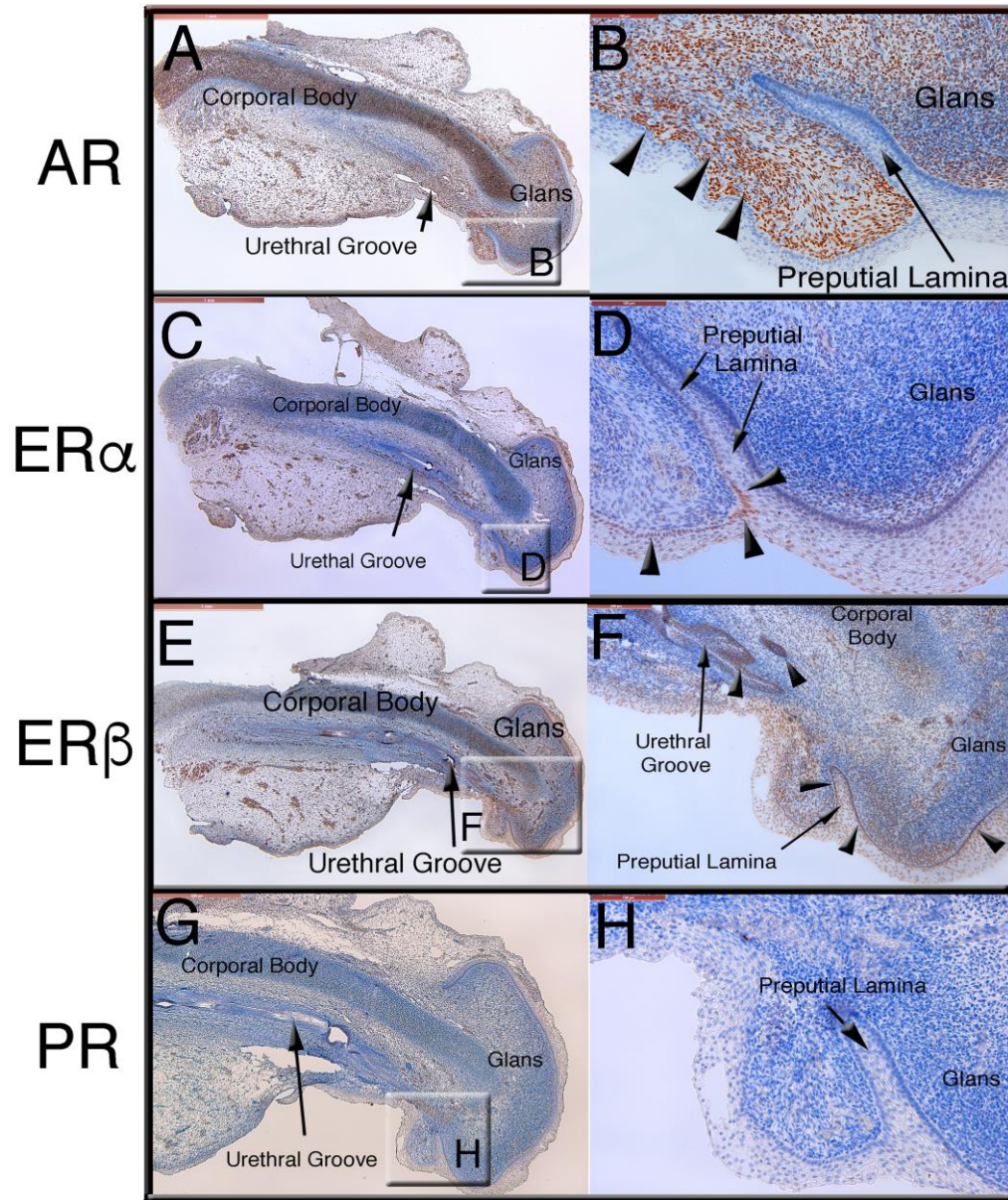# AR Expression Human Penis: 9 Weeks Gestation

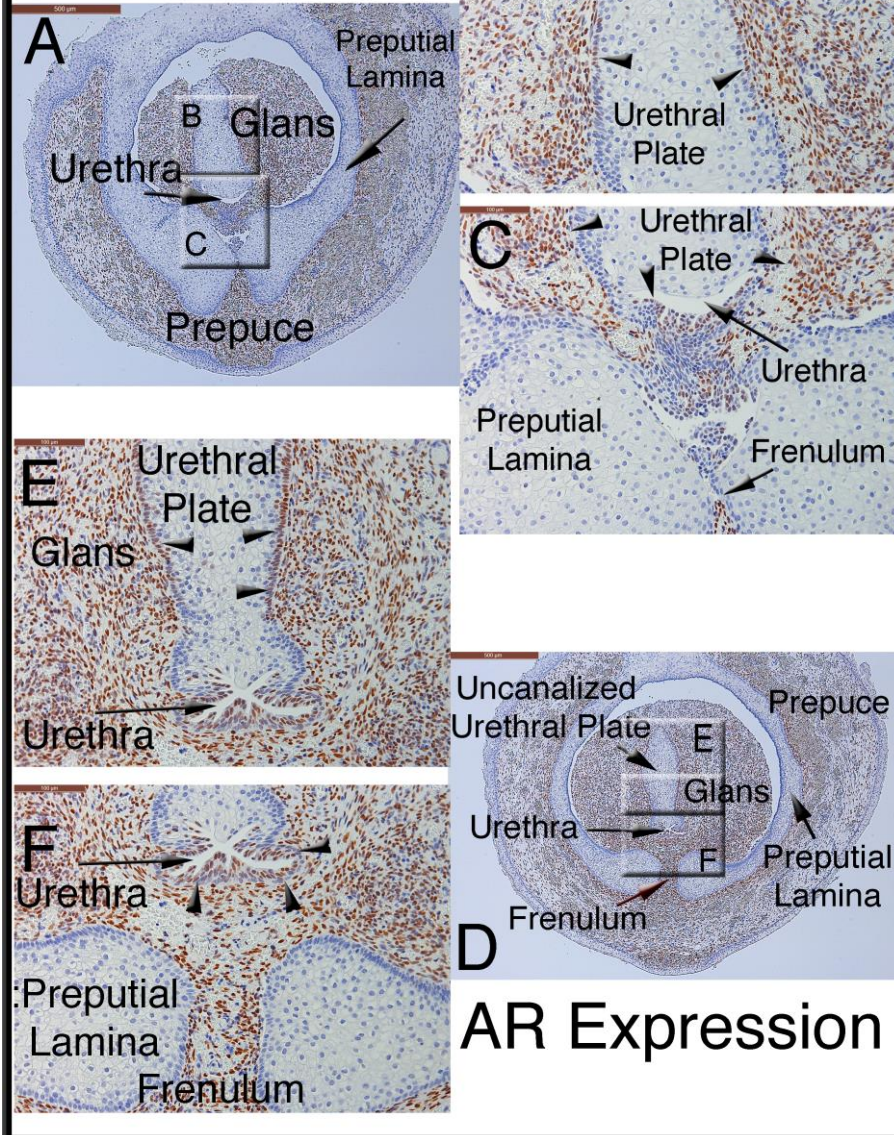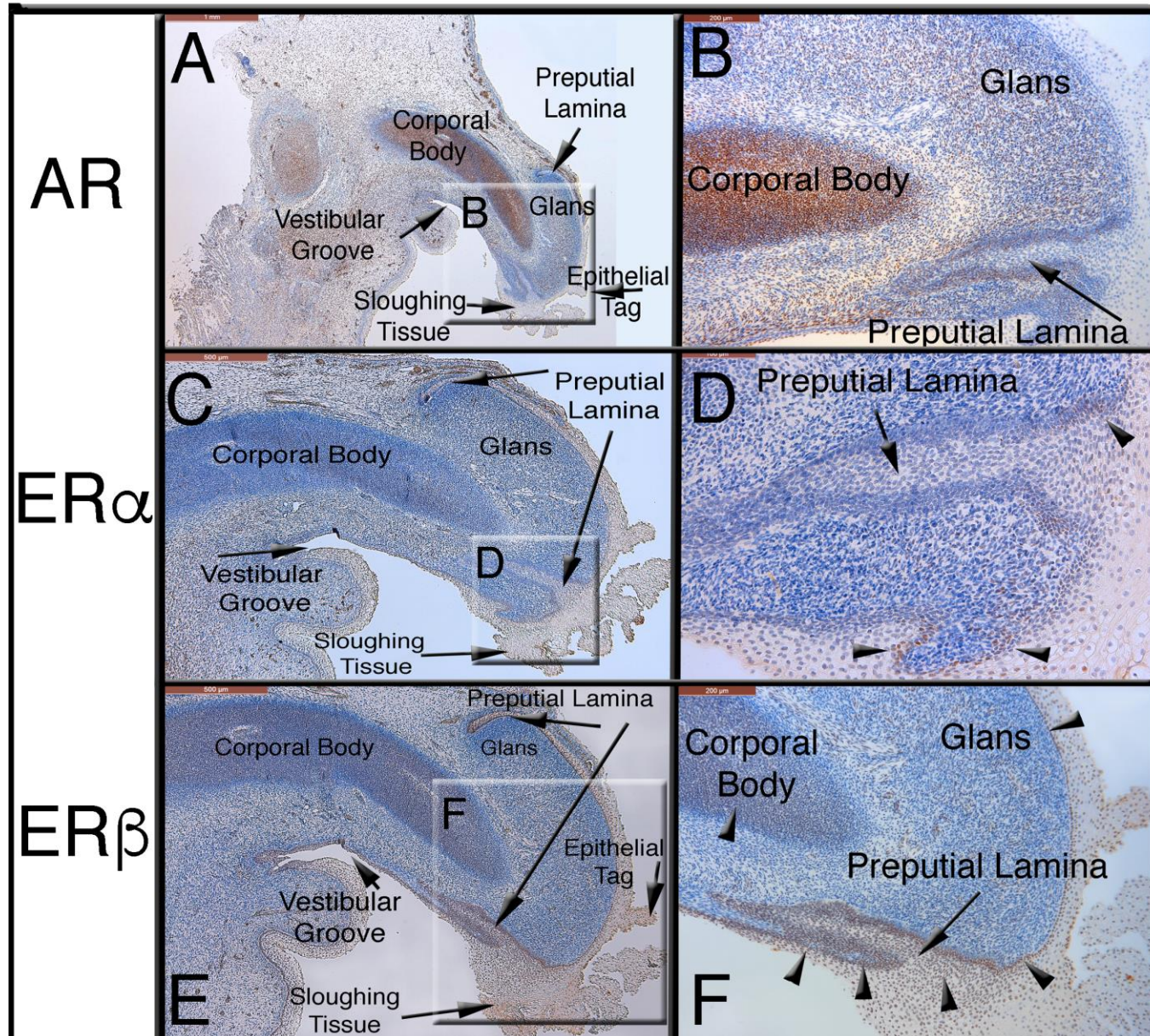# Human Genital Tubercle: Indifferent Stage 8 Weeks Gestation

AR Expression Human Penis: 9 Weeks Gestation

Human Fetal Penis: 11.5 Weeks Gestation

Penis: 15 Week Gestations

AR Expression

Clitoris: 12.5 weeks Gestation

Conclusions

- AR, ERα, and ERβ are all expressed to varying degrees in strategic locations in the developing penis and clitoris.

- AR is expressed in close proximity to the urethral groove, consistent with its role in penile urethral formation

- ERα and ERβ are expressed in epithelium of preputial lamina and other areas of remodeling, suggesting role in both normal development and hypospadias

Thanks!

- Special thanks
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