

College of Veterinary Medicine

Hari Om Goyal

Professor

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EDUCATION/TRAINING

Institution and Location	Degree	Graduation Year	Major
Punjab Agricultural University, Hissar, India	BVSc	1969	Veterinary Medicine
Haryana Agricultural University, Hissar, India	MS	1971	Veterinary Anatomy
University of Saskatchewan, Saskatoon, Canada	PhD	1979	Veterinary Anatomy

TEACHING

- Microanatomy 309 (Methodology, cytology and basic tissues)
- Microanatomy 310 (Organology) to undergraduate veterinary students and graduate students

RESEARCH INTERESTS

My laboratory in the past ten years has been studying mechanisms of estrogen-induced developmental male reproductive disorders because it is well known that exposure to estrogen or related xenobiotics during critical developmental periods can have lasting and often negative consequences for reproductive health and fertility later in life. We reported for the first time that adult male rats treated neonatally with estrogens, including the female contraceptive ethinyl estradiol (EE) or a known teratogen diethylstilbestrol (DES), were infertile and developed permanently malformed penis characterized by loss of smooth muscle cells and blood vessels and abnormal accumulation of fat cells. In light of these novel findings, my lab has been engaged in elucidating molecular, cellular, and/or hormonal mechanisms by which neonatal exposure to estrogens reprograms penile stromal cells such that they differentiate into fat cells instead of smooth muscle cells. This work is funded by NIH grants and has led to ten publications in peer-reviewed journals.

RECENT PUBLICATIONS

Selected Peer-reviewed Publications (Selected from a list of 47)

1. Okumu LA, TD. Braden, K Vail, L Simon, **HO Goyal** (2014) Low Androgen-Induced Penile Mal-development Involves Altered Gene Expression for Biomarkers for Smooth Muscle Differentiation and a Key Enzyme Regulating Cavernous Smooth Muscle Cell Tone. *J Urology* 192:267-273.
2. Okumu LA, Sequoia Bruinton, TD. Braden, L Simon, **HO Goyal** (2012) Estrogen-induced Maldevelopment of the Penis Involves Down-regulation of Myosin Heavy Chain 11 (MYH11) Expression, a Biomarker for Smooth Muscle Cell Differentiation. *Biol Reprod*: 87: 1-10.

3. Simon L, L Avery, TD Braden, CS Williams, L Okumu, JW Williams, **HO Goyal** (2012) Exposure of neonatal rats to anti-androgens induces penile mal-developments and infertility comparable to those induced by estrogens International Journal of Andrology 35:364-376.
4. Heath J, Y Abdelmageed, TD Braden , CS Williams, JW Williams, T Paulose, I Hernandez-Ochoa, RGupta, J A Flaws, **HO Goyal** (2011) Genetically-induced Estrogen Receptor Alpha mRNA (*Esr1*) Overexpression Does Not Adversely Affect Fertility or Penile Development in Male Mice. Journal of Andrology 32:282-294.
5. Mathews E, TD Braden, CS Williams, JW Williams, O Bolden-Tiller and **HO Goyal** (2009) Mal-development of the Penis and Loss of Fertility in Male Rats Treated Neonatally with Female Contraceptive 17 α -Ethinyl Estradiol (EE). A Dose-response Study and a Comparative Study with a Known Estrogenic Teratogen Diethylstilbestrol (DES). Toxicological Sciences 112:331-343.
6. **Goyal HO**, TD Braden, CS Williams and JW Williams (2009) Estrogen-induced developmental disorders of the rat penis involve both estrogen receptor (Esr)- and androgen receptor (Ar)-mediated pathways. Biol Reprod 81:507-516.
7. Mansour M M, **HO Goyal**, TD Braden, JC Dennis, DD Schwartz, RL Judd, FF Bartol, E Coleman and EE Morrison (2008) Activation of penile proadipogenic peroxisome proliferation-activated receptor γ with an estrogen: Interaction with estrogen receptor alpha during postnatal development. PPAR Research 2008: 651419 (10 pages).
8. **Goyal HO**, TD Braden, PS Cooke, MA Szewczykowski, CS Williams, P Dalvi and JW Williams (2007) Estrogen receptor- α mediates estrogen-inducible abnormalities in the developing penis. Reproduction. 133:1059-1069.
9. **Goyal HO**, TD Braden, CS Williams and JW Williams (2007) Role of estrogen in induction of penile dysmorphogenesis: a review. Reproduction. 134:199-208.
10. **Goyal HO**, TD Braden, C S Williams, P Dalvi, M M Mansour and J W Williams (2005a) Permanent induction of morphological abnormalities in the penis and penile skeletal muscles in adult rats treated neonatally with diethylstilbestrol or estradiol valerate: A dose-response study. J Androl. 26:32-43.
11. **Goyal HO**, TD Braden, C S Williams, P Dalvi, M Mansour and J W Williams (2005b) Estrogen-Induced abnormal accumulation of fat cells in the rat penis and associated loss of fertility depends upon estrogen exposure.

SERVICE ACTIVITIES

- Academic Advisory Committee, Member
- College Admission Committee, Member
- Reviewer, Scientific Journals
- Editorial Member, Journal of Andrology