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Title: Environmental toxicants and cell polarity in the testis

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**Revised MS: RTX-2018-252-R1****Environmental toxicants and cell polarity in the testis**Bai-ping Mao,<sup>1,2</sup> Linxi Li,<sup>1,2</sup> Ming Yan,<sup>1</sup> Qingquan Lian,<sup>2</sup> Renshan Ge<sup>2</sup> andC. Yan Cheng<sup>1</sup>

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**Running Title:** Toxicants and cell polarity in the testis<sup>4</sup>Address correspondence to this author:

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**Conflicts of Interest:** Nothing to declare.

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**Highlights**

- Sertoli cell and spermatid polarity are conferred by cell polarity and planar cell polarity (PCP) proteins.
- Apico-basal cell polarity in the testis is modulated by the Par-, the Crb3- and the Scribble-based polarity protein complexes.
- PCP in the testis is conferred by the Vangl2/Prickle and Frizzled/Disheveled PCP protein complexes.
- Studies have shown that environmental toxicants perturb cell polarity and PCP in the testis prior to germ cell exfoliation from the testis.
- Mechanistic insights regarding the role of actin- and microtubule-based cytoskeletons in mediating toxicant-induced defects in cell polarity and PCP in the testis are discussed.

**Abstract**

During spermatogenesis, head-tail polarity, apico-basal cell polarity and planar cell polarity (PCP) are remarkably noted in the seminiferous epithelium in which the heads of developing haploid

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