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JOURNAL ARTICLE

Immortalized testis cell lines from estrogen receptor (ER) alpha knock-out and wild-type mice expressing functional ERalpha or ERbeta

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The surprising findings that male mice lacking the estrogen receptor (ER) alpha (alphaERKO) have atrophic testis and are infertile proved that ERalpha is involved in normal testicular function. To obtain compatible in vitro model systems for alphaERKO male mice, we immortalized different cell lines from the testis of alphaERKO and wild-type (C57BL/6) mice with the human papilloma virus E6/E7 genes. The established cell lines were characterized for Sertoli, Leydig, and peritubular cell markers by means of messenger RNA expression and functional assays. One wild-type-derived cell line showed Leydig cell-specific marker gene expression and produced testosterone after stimulation with cyclic adenosine monophosphate. Most wild-type cell lines expressed androgen receptor and a functional ERalpha as shown by high estrogenic activity in a luciferase-based transactivation assay. Most notably, the wild-type-derived WL3, and the ES4 cell line derived from alphaERKO mice expressed ERbeta and showed ER-mediated transcriptional activity, but no ERalpha protein expression. These cell lines with and without functional ERalpha or ERbeta enable the analyses of ER subtype-specific responses and their function in testicular cell signaling, morphogenesis, and neoplasia.

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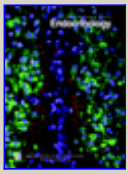
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