

## **Interstitial cells of Cajal in the mouse reproductive tract**

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The pacemaker mechanism activating spontaneous contractions in the uterus and hence the expulsion of the foetus remains poorly understood. A recent finding that could advance understanding of this has been the discovery that cells resembling pacemaker cells in the gastrointestinal tract termed Interstitial Cells of Cajal (ICCs) are also present in the uterus. However, it is not yet clear whether these cells play a role in uterine pacemaking. The present research addresses this issue by comparing the presence and functional properties of ICCs-like in the uterus to that in the cervix and vagina of non-pregnant mice. Female Swiss mice (6-10 weeks) were euthanased by overexposure to the inhalation anaesthetic isoflurane (5-10%), a procedure approved by the Animal Care and Ethics Committee at the University of Newcastle. ICCs-like and smooth muscle cells were labelled by fluorescence immunohistochemistry using a rat anti-CD117 antibody visualised with donkey anti-rat FITC and an alpha-smooth muscle actin conjugated with Cy3, respectively. Contractions were measured from tissues mounted under 0.5g tension in baths containing physiological solution at 37°C. The uterus, which always exhibited spontaneous contractions, contained a layer of ICCs-like and the well-reported relatively thick muscle layers (n=7). The cervix was only spontaneously active in approximately 40% of tissues (n=5); it did not exhibit a significant amount of ICCs-like and had a relatively low density of smooth muscle cells. Vaginal tissue, while exhibiting ICCs-like, was not spontaneously active and had only a thin bundle of smooth muscle (n=5). These results indicate that the presence of ICCs-like might not necessarily correlate with spontaneous activity but cell density may be a factor here.