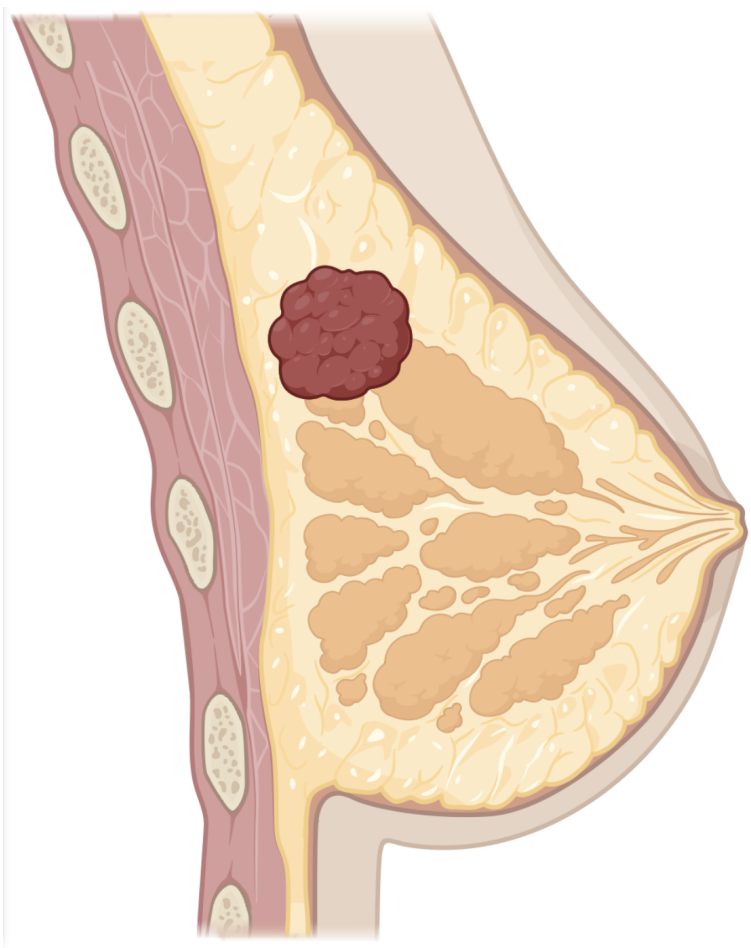


Response of breast cancer micrometastases to endocrine therapy



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- **70% of breast cancers** are characterized by cells expressing the **estrogen receptor (ER+)** and proliferate in contact with estrogen
- ER+ breast cancer patients suffer from **late metastatic relapse** (>10 years after diagnosis) due to disseminated tumour cells breaking away from the primary site, reaching other areas of the body
- We use **Mouse INtraDuctal (MIND) models** to better understand ER+ breast cancer progression (**Figure 1**) and how the metastatic cells respond to endocrine therapy

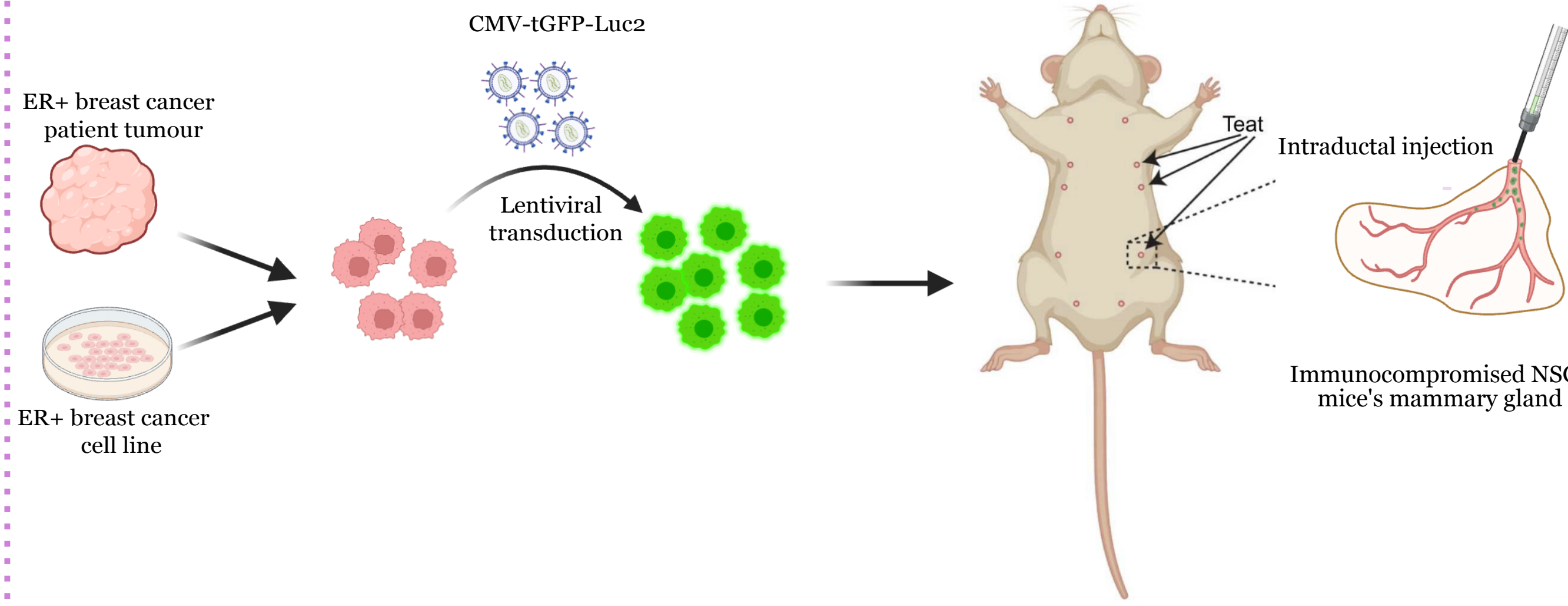
Methods

Analysis **comparing two conditions:**
mock and mimicked **endocrine therapy**



1. Culture of MCF7 cells in vitro exposed for 4 days to estradiol
2. In vivo imaging analysis (IVIS) of luminescent marked cancer cells
3. Immunohistochemistry (IHC) staining analysis of Ki-67 in primary tumours in mammary glands and metastatic cells in lungs

Figure 1. Scheme of MIND model



RESULTS

Figure 2. RT-qPCR showing **proliferation gene** expression of **metastatic MCF7 cells decreases upon estrogen deprivation**

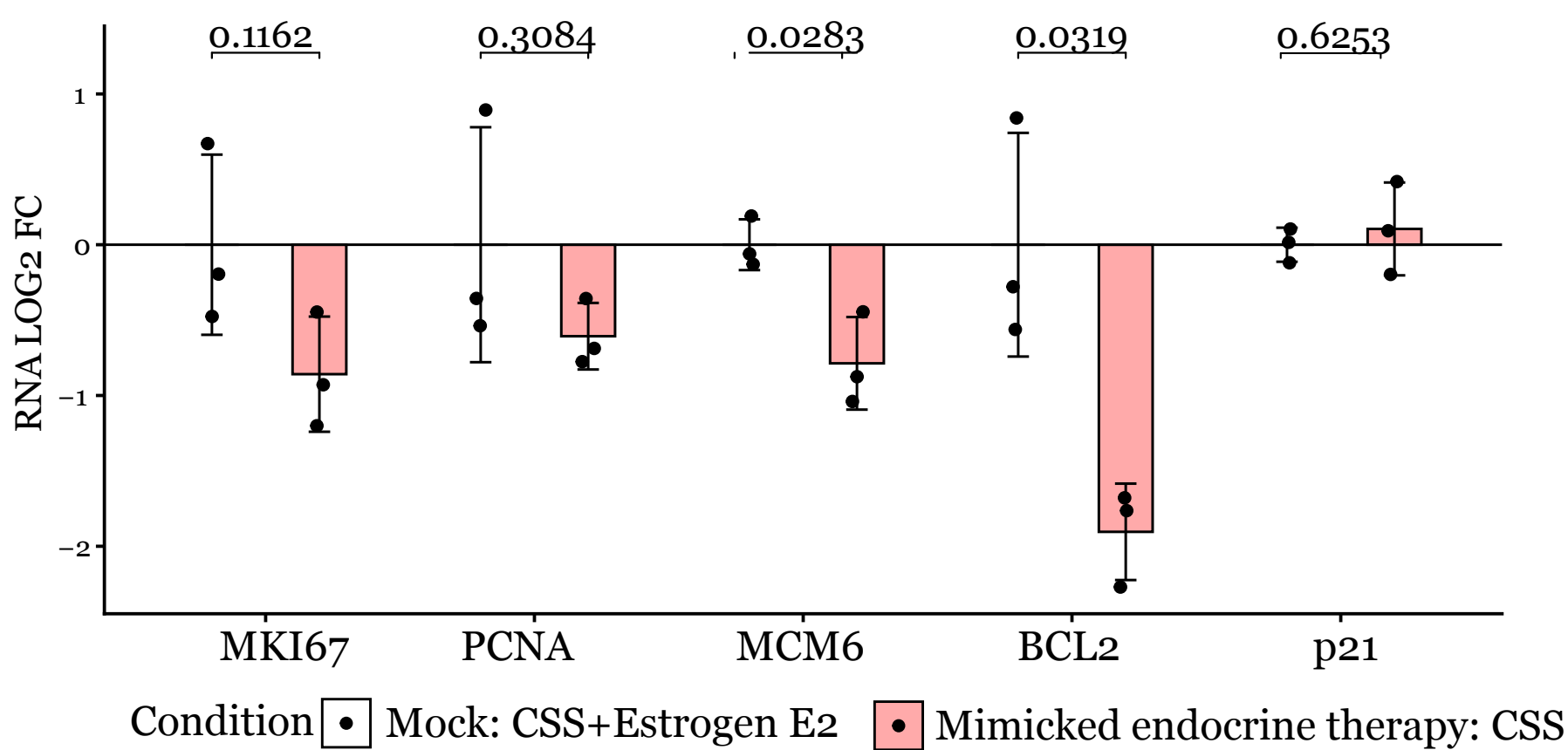


Figure 3. **Endocrine therapy partially reduces the metastatic burden**
Box plot of the ex-vivo **IVIS** signals showing the lung metastasis

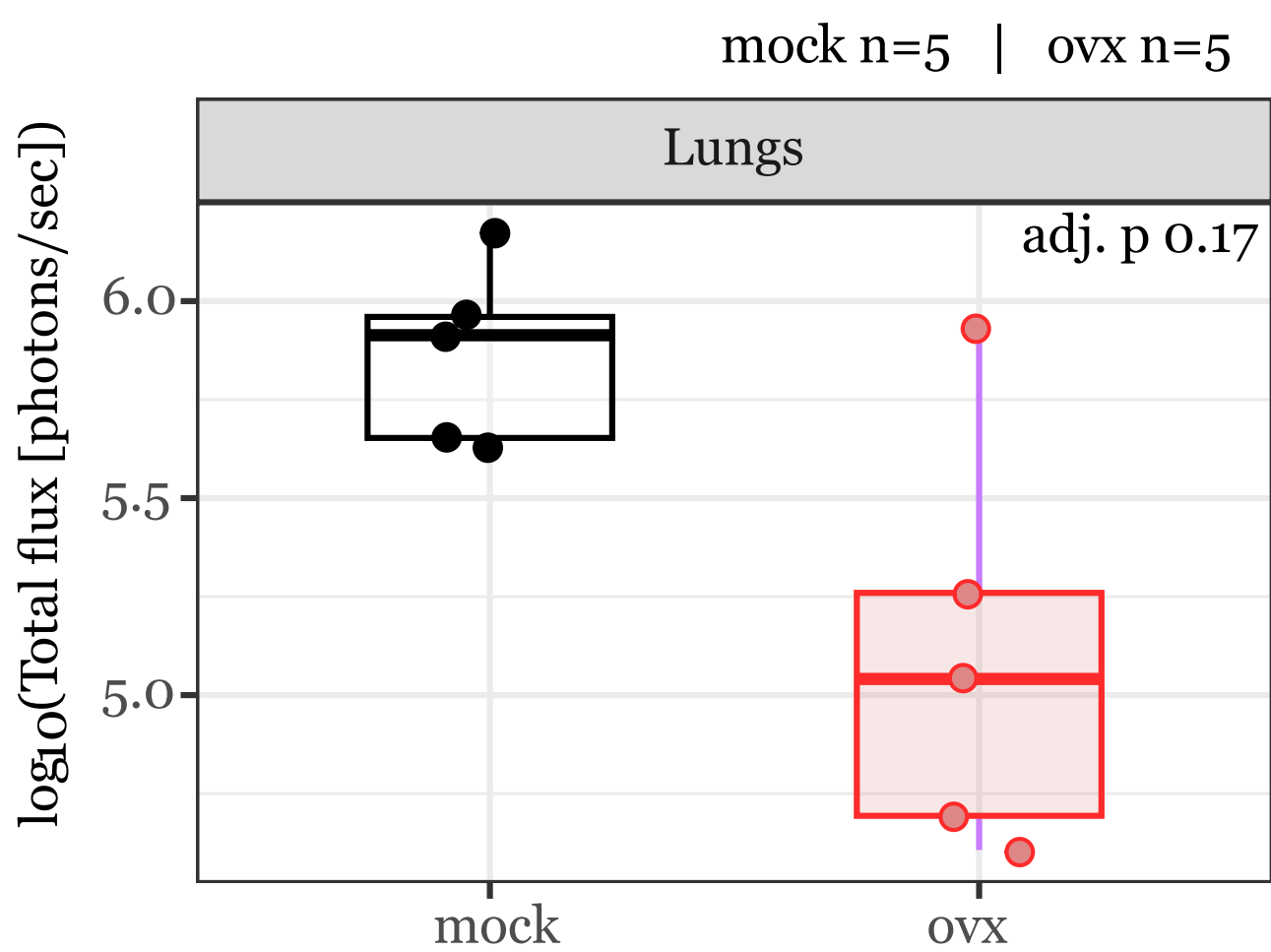
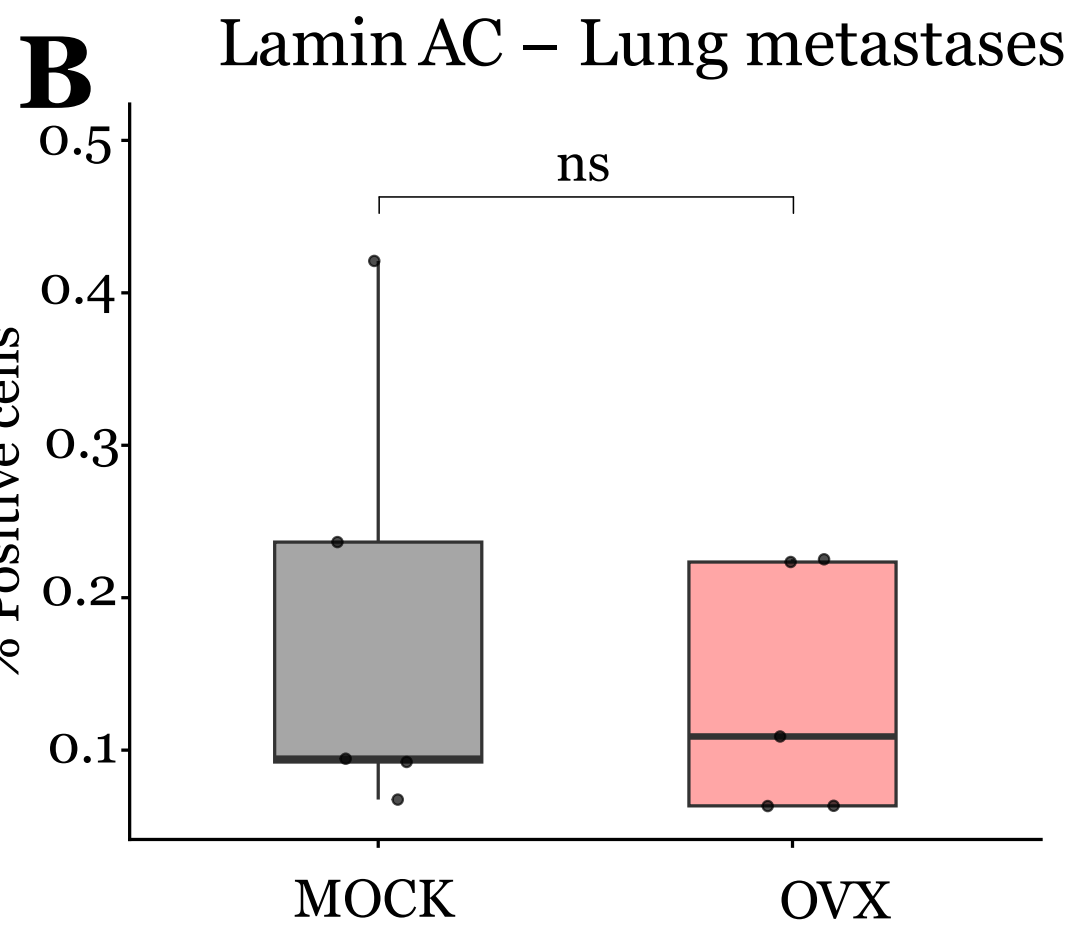
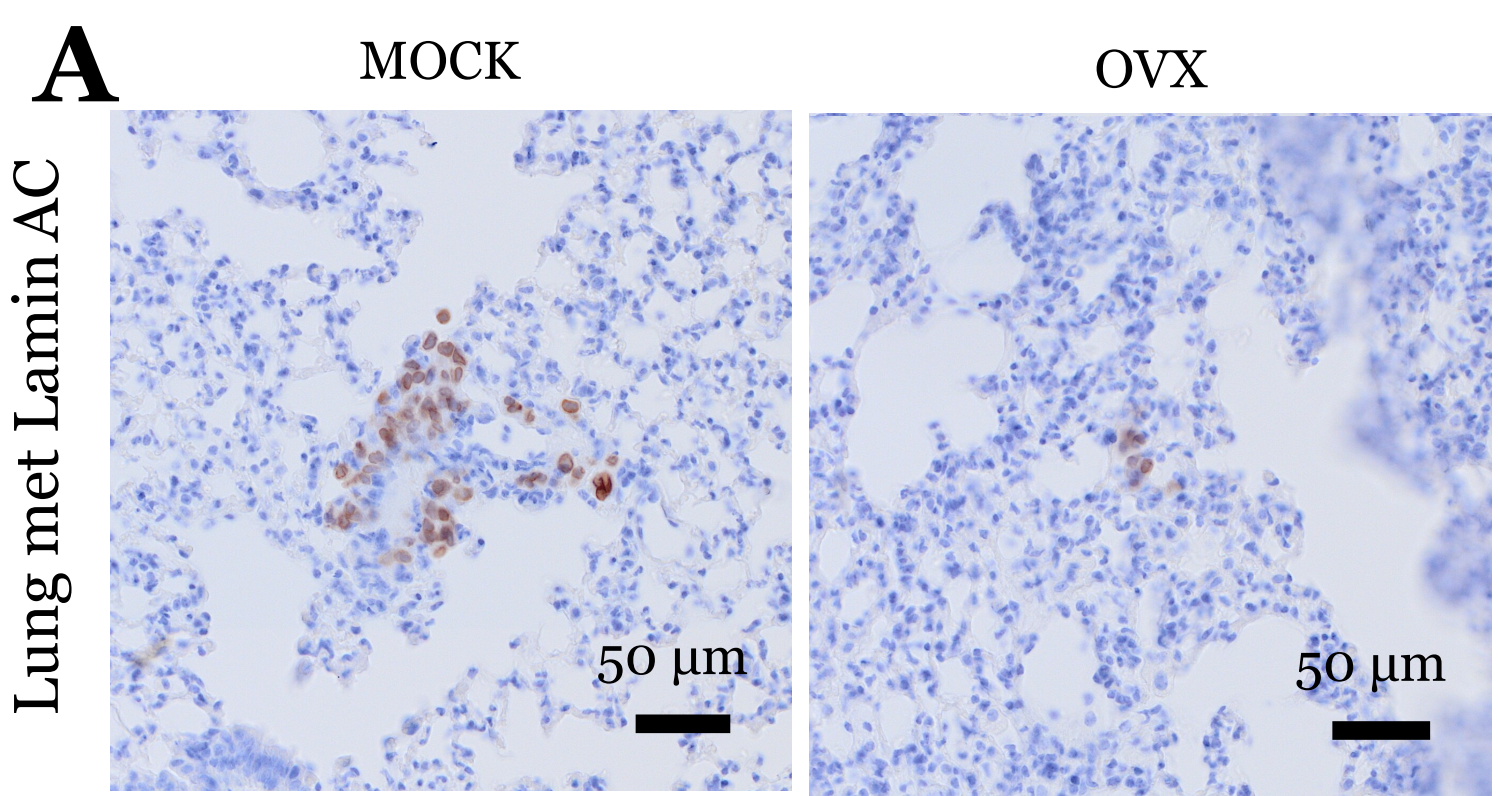


Figure 4. Amount of Lamin AC: indication of slightly **fewer human metastatic cells with endocrine therapy**
A. IHC H-DAB staining images **B.** Proportion of cells with Lamin AC



Endocrine therapy reduces primary tumour growth and metastatic burden, but some micrometastases persist

Results vary via **Estrogen Receptor mutations** and validation in other patient-derived **xenografts** is crucial

To find **new effective combined therapies**, we can use the **MIND model** to further understand how metastatic cells survive and **identify targetable pathways** to eradicate them