

Paxgene; A beneficial formalin alternative to study lung cancer

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Background The STRATfix project is an InnovateUK funded project between University College London, seven NHS Trusts and Qiagen – a leading manufacturer of molecular diagnostic reagents.

Most diagnostic pathology laboratories rely on formalin for the fixation of tissue samples sent for histopathological examination.

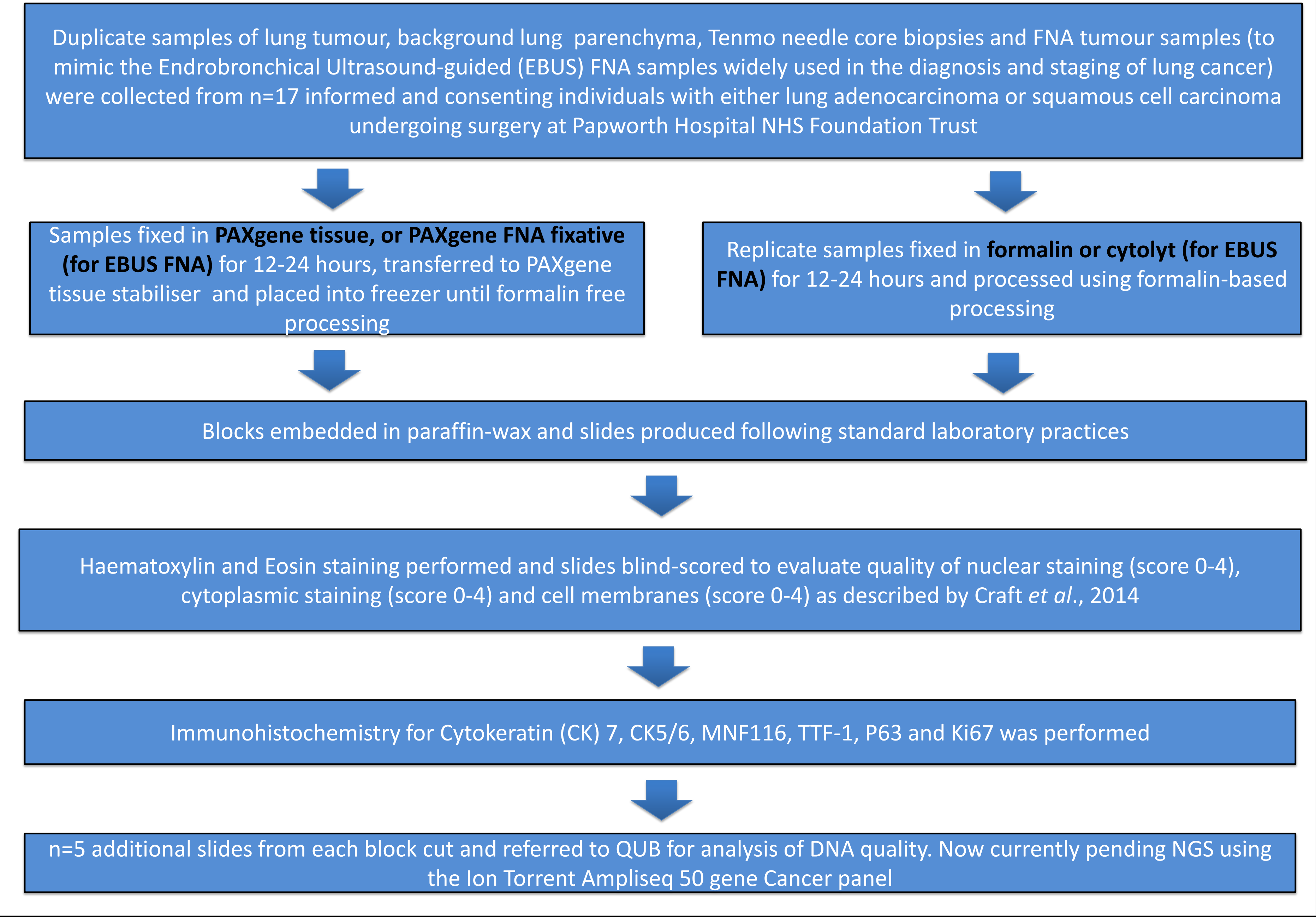
Whilst adequate for most existing pathological tests, formalin fixation is detrimental to DNA/RNA quality and carries with it significant health and safety considerations.

Next generation sequencing (NGS) of tumour material from lung cancer patients to identify actionable mutations is emerging as a key strategy in the treatment of lung cancer and is highly dependent on DNA/RNA quality.

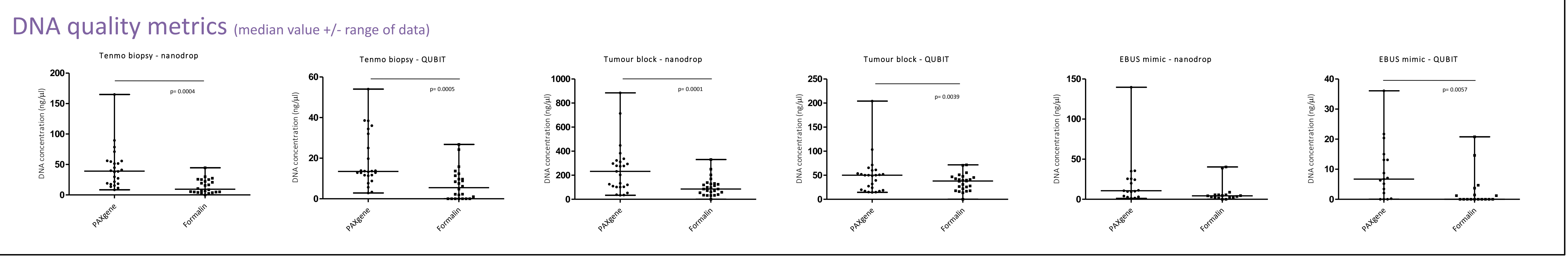
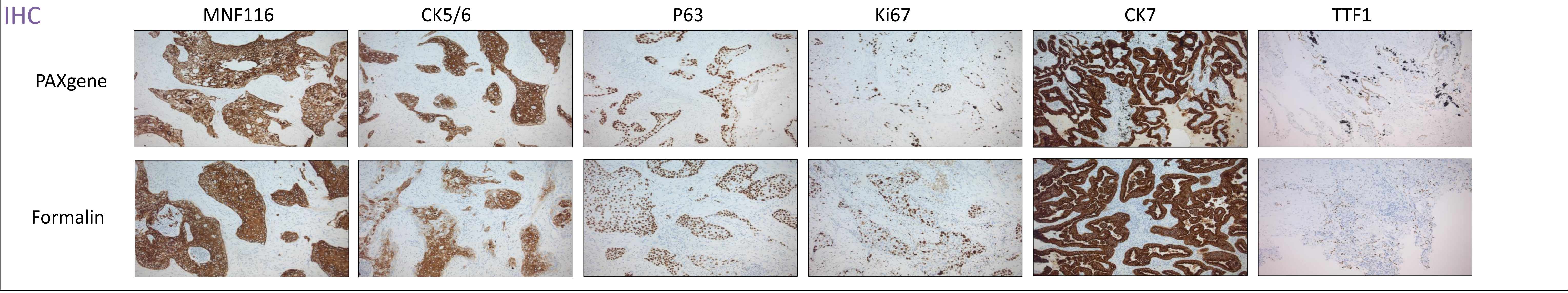
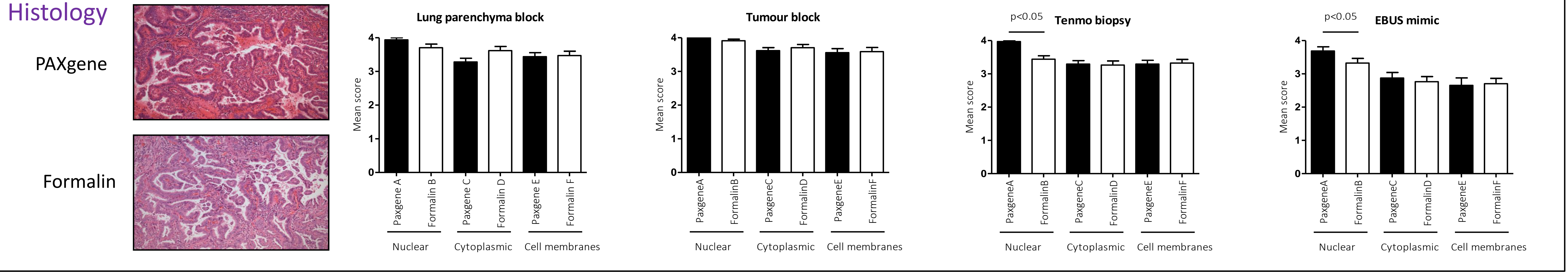
Here we compare PAXgene fixation to formalin fixation in:-

1. Block-sized pieces of lung parenchyma
2. Block sized pieces of lung tumour
3. Tenmo needle core biopsies of lung tumour
4. Fine needle aspirates (FNA) of tumour

Methods



Results



Conclusions: PAXgene is comparable to formalin for histopathological study and in some sample types preferential for demonstration of nuclear detail. Equivalent immunohistochemical findings were observed in PAXgene and formalin-fixed samples. Crucially, within the context of preserving DNA/RNA quality and integrity, key for the molecular study of lung cancer driver mutations, superior results were observed in PAXgene fixed samples compared to formalin.