**Background**

While tissue fixation with formalin preserves morphology, it leads to crosslinking and modification of biomolecules. Such modifications cannot be completely reversed, biocomplexes isolated from FFPE tissue are of limited use for molecular analysis. The PAXgene™ Tissue System (PAXgene) is a non-crosslinking technology for fixation and stabilization of tissue specimens. PAXgene-fixed tissues can be used for structural and immunohistochemical staining as well as for extraction of unmodified biomolecules such as nucleic acids, proteins, and phosphoproteins (Figure 1).

**Material & Methods**

**Tissue Research Specimens**
- Human liver, cytaductoma (benign)
- Human prostate, breast and colon cancer (malignant)
- Diected and fixed in formalin, FFPE, or cryo-preserved (See Figure 2)

**Tissue Morphology Analysis of FFPE and PFPE Sections**
- H&E staining
- ER and PR immunohistochemistry (IHC) staining
- HER2 gene amplification determined by SPOT-Light™ HER2 CISH kit (Life Technologies)

**DNA Analysis**
- ITS-QPCR, TaqMan® Array Gene Signatures-96-well plates (Applied Biosystems)
- RT-Profiler™ PCR Arrays (Agilent Technologies)

**RNA Analysis**
- Agarose gel electrophoresis
- Long-range PCR Kit (DAI)
- Multiplex PCR Kit (QIAgen)

**Protein and Phosphoprotein Analysis**
- Western blot

**Results**

- Morphology was preserved in FFPE liver and breast cancer tissues similarly to PFPE (Figure 3).
- There was a high correlation of the HER2 CISH assay between FFPE and PFPE samples (Figure 4).
- The number and size of dots in the HER2 CISH assay were comparable between FFPE and PFPE samples (Figure 5).
- There was a high correlation between gene signatures of FFPE and cryo-preserved liver and breast cancer samples in two different TaqMan arrays (R²=0.97 and 0.92).

**Conclusions**

- Morphology and antigenicity is preserved in FFPE tissue and is comparable to morphology in freshly prepared FFPE samples.
- Unlike FFPE tissue, chemically unmodified DNA, RNA, and proteins can be isolated from PAXgene Tissue fixed samples.

**Summary**

Using PAXgene Totalis, multimodal biomarker analysis can be performed on the same sample used for morphological analysis.

**Acknowledgments**

Surgical resected tissue was collected by commercial providers with prior written informed consent by the patient. The work leading to this poster has received funding from the European Community’s Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 226940.