# Mass Spectrometry Analysis of Proteins from FFPE Tissue

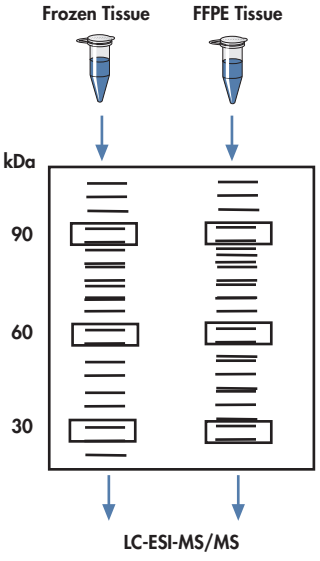
The standard method for histological tissue preparation is production of Formalin-Fixed Paraffin-Embedded (FFPE) samples. However, formalin fixation creates chemical crosslinks, rendering any further analysis impossible.

- The Qproteome FFPE Tissue Kit enables efficient extraction of full-length proteins from FFPE tissues
- Proteins are suitable for western blotting and protein arrays, even allowing identification of posttranslational modifications

This study investigates the suitability of proteins isolated using the Qproteome FFPE Tissue Kit for mass spectrometric (MS) analysis.

**Method summary:**

- FFPE tissue (150 mm²) and frozen rat brain tissue (20 mg) processed in parallel using Qproteome FFPE Tissue Kit
- Resulting proteins separated on a 10% SDS-PAGE 1D gel
- Bands at 90, 60, and 30 kDa excised and subjected to tryptic digest
- Resulting tryptic digests analyzed by LC-ESI-MS/MS (Ultimate nanoHPLC/QTOF2)
- Proteins identified by MS/MS ion search using Mascot search engine



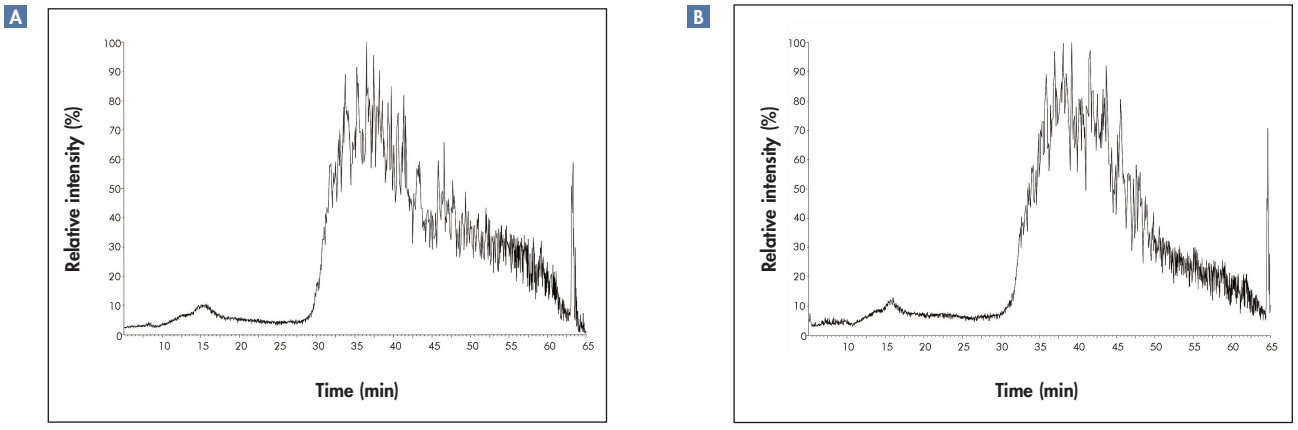




**Figure 1. FFPE tissue delivers similar TIC profile as frozen tissue.** Total ion current chromatograms from the LC runs of the 30 kDa tryptic digests from A frozen tissue and B FFPE tissue.

## Results

- A total of 635 unique peptides (frozen sample) and 567 unique peptides (FFPE sample) were isolated and identified by MS/MS.
- From the 30, 60, and 90 kDa bands a total of 53 proteins could be identified in the fresh snap-frozen sample and 48 proteins could be identified in the FFPE sample.
- A large proportion of identified proteins were found in both the frozen and FFPE sample digests.
- Analysis of the cellular origin and function of the identified proteins demonstrated that isolated proteins reflected the normal distribution of proteins in tissue.

## Conclusions

- Proteins recovered from FFPE tissue and separated by SDS-PAGE can be efficiently analyzed and identified by mass spectrometry.
- Formalin fixation had little influence on the recovery of proteins.
- Quantitative protein isolation from FFPE tissue meant that identified proteins were representative of normal cellular distribution.

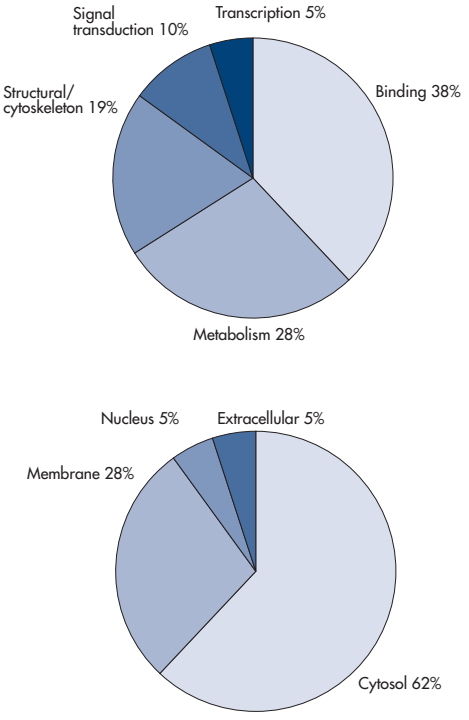



**Figure 2. The distribution of function (upper panel) and cellular location (lower panel) of proteins isolated from the FFPE tissue 30 kDa band reflects normal cellular conditions.**

## Ordering Information

| Product | Contents | Cat. no. |
|---|---|---|
| Qproteome FFPE Tissue Kit (20)* | For 20 protein preparations from formalin-fixed paraffin-embedded tissue samples: Extraction Buffer, collection tubes, collection tube sealing clips | 37623 |

* Other pack sizes available; plese inquire.

This kit is intended for general laboratory use. No claim or representation is intended to provide information for the diagnosis, prevention, or treatment of a disease.

## To learn more about solutions for protein sample prep, visit www.qiagen.com/protein



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