In most hospitals word-wide, histopathological cancer diagnosis is currently based on formalin-fixed and paraffin-embedded (FFPE) tissues. In the last few years new approaches and developments in patient-tailored cancer therapy have raised the need to select more precisely those patients, who will respond to personalised treatments. The most efficient way for optimal therapy and patient selection is probably to provide a tumour-specific protein network portrait prior to treatment. The discovery and characterisation of deregulated signalling molecules (e.g. human epidermal growth factor receptor 2, mitogen-activated protein kinases) are very promising candidates for the identification of new suitable therapy targets and for the selection of those patients who will receive the greatest benefit from individualised treatments. The reverse phase protein array (RPPA) is a promising new technology that allows quick, precise and simultaneous analysis of many components of a network. Importantly it requires only limited amounts of routine clinical material (e.g. FFPE biopsies) and can be used for absolute protein measurements. We and other research groups have described successful protein extraction from routine FFPE tissues. In this manuscript we show how these recent developments might facilitate the implementation of RPPA in clinical trials and routine settings.