Predicting cancer prognosis

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Researchers led by Dr. Soheil Dadras at the Stanford University Medical Center have developed a novel methodology to extract microRNAs from cancer tissues. The related report by Ma et al, "Profiling and discovery of novel miRNAs from formalin-fixed paraffin-embedded melanoma and nodal specimens," appears in the September 2009 issue of the *Journal of Molecular Diagnostics*.

Cancer tissues from patients are often stored by a method that involves formalin fixation and paraffin embedding to retain morphological definition for identification; however, this method frequently prevents further molecular analysis of the tissue because of mRNA degradation. Even so, these tissues contain high numbers of microRNAs (miRNAs), which are short enough (~22 nucleotides) to not be broken down during the fixation process.

In this study, Dr. Dadras and colleagues optimized a new protocol for extracting miRNAs from formalin-fixed paraffin-embedded tissues. Using their new procedure, they identified 17 new and 53 known miRNAs from normal skin, melanoma, and sentinel lymph nodes. These miRNAs were well-preserved in a 10-year-old specimen. This new protocol, therefore, will allow for the identification of novel miRNAs that may differ in cancerous and healthy tissue, even from long-preserved tissue, leading to better predictions of disease prognosis and treatment response.

Ma et al suggest that their "cloning strategy has the advantage of not only discovering novel and known miRNA sequence identity but also

providing an estimate of relative expression level. … [This methodology may provide] a more robust strategy to obtain an accurate expression profile for novel and/or previously characterized small RNAs from clinically defined [formalin-fixed paraffin-embedded] tumor specimens, thereby facilitating the discovery of 'oncomirs' as biomarkers."

More information: Ma Z, Lui W-O, Fire A, Dadras SS: Profiling and discovery of novel miRNAs from formalin-fixed paraffin-embedded melanoma and nodal specimens. *J Mol Diagn* 2009, 420-429

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