New fluorescent tools for cancer diagnosis

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In recent years, microRNAs (miRNAs) and other non-coding RNAs are small molecules that help control the expression of specific proteins. In recent years they have emerged as disease biomarkers. miRNA profiles have been used to establish tissue origin for cancers of unknown primary origin, determine prognosis, monitor therapeutic responses and screen for disease, but clinically tractable, diagnostic methods for monitoring miRNA expression in patient samples are not currently available.

In this issue of the *Journal of Clinical Investigation*, Thomas Tuschl and colleagues at Rockefeller University developed a multicolor fluorescence labeling method that can be used to visualize miRNAs in tissue sections, such as those recovered from biopsies.

Using this method, Tuschl and colleagues were able to identify tumor specific miRNAs in basal cell carcinoma and Merkel cell carcinoma (accompanying image) and distinguish between FFPE sections from the two tumor types.

This proof-of concept study indicates that RNA FISH could serve as a molecular diagnostic in a clinical setting. In a companion commentary, Gennadi Glinksy of Stanford University discusses how this technology could contribute to the development of RNA-based diagnostics and therapeutics.

More information: Multicolor microRNA FISH effectively differentiates tumor types, *J Clin Invest*. doi:10.1172/JCI68760
RNA-guided diagnostics and therapeutics for next-generation

individualized nanomedicine, *J Clin Invest*. 2013;123(6):2350–2352. doi:10.1172/JCI69268