FEATURES

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Standardizing Analysis of Circulating MicroRNA: Clinical and Biological Relevance

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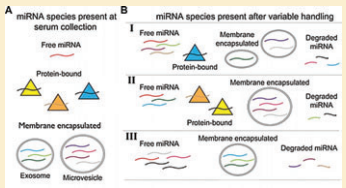
Circulating microRNAs (c-miRNAs) provide a new dimension as clinical biomarkers for disease diagnosis, progression, and response to treatment. However, the discovery of individual miRNAs from biofluids that reliably reflect disease states is in its infancy. The highly variable nature of published studies exemplifies a need to standardize the analysis of miRNA in circulation. The investigators show that differential sample handling of serum leads to inconsistent and incomparable results. A standardized method of RNA isolation from serum that eliminates multiple freeze/thaw cycles, provides at least 3 normalization mechanisms, and can be utilized in studies that compare both archived and prospectively collected samples. It is anticipated that serum processed as described by the authors can be profiled, either globally or on a gene by gene basis, for c-miRNAs and other non-coding RNA in the circulation to reveal novel, clinically relevant epigenetic signatures for a wide range of diseases.



Cytoplasmic PML: From Molecular Regulation to Biological Functions

Guoxiang Jin, Yuan Gao, and Hui-Kuan Lin

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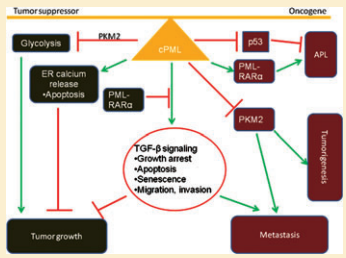
The tumor suppressor promyelocytic leukaemia protein (PML) is predominantly localized in the nucleus, where it is essential for the formation and stabilization of the PML nuclear bodies (PML-NBs). PML-NBs are involved in the regulation of numerous cellular functions, such as tumorigenesis, DNA damage and antiviral responses. Despite its nuclear localization, a small portion of PML has been found in the cytoplasm. A number of studies recently demonstrated that the cytoplasmic PML (cPML) has diverse functions in many cellular processes including tumorigenesis, metabolism, antiviral responses, cell cycle regulation, and laminopothies. In the prospect, the authors summarize the current viewpoints on the regulation and biological significance of cPML and discuss the important questions that require further investigation.



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Crk at the Quarter Century Mark: Perspectives in Signaling and Cancer

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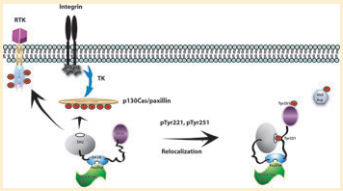

The Crk adaptor protein, discovered 25 years ago as the transforming gene (*v-crk*) product encoded by the CT10 avian retrovirus, has made a great impact on the field of signal transduction. By encoding an oncoprotein that contained a viral gag protein fused to only SH2 and SH3 domains, v-Crk demonstrated the significance of SH2 and SH3 domains in oncogenic signaling by their virtue of binding in a sequence-specific context to organize and assemble protein networks. In more recent years, the cellular homologs of Crk (Crk II, Crk I, and CrkL) have been extensively studied, and shown to have critical functions in a wide spectrum of biological and pathological processes that include cell motility, invasion, survival, bacterial pathogenesis, and the efferocytosis of apoptotic cells. Overexpression of Crk proteins in human cancers has led to a renewed interest in both their signal transduction pathways and mechanisms of up-regulation. The prospect summarizes recent developments in Crk biology, including new structural and biochemical roles for the atypical carboxyl-terminal SH3 (SH3C) domain, revelations regarding the molecular differences between Crk II and Crk L, and the significance of Crk expression in stratified human tumor samples.

Human Keloid Cell Characterization and Inhibition of Growth with Human Wharton's Jelly Stem Cell Extracts

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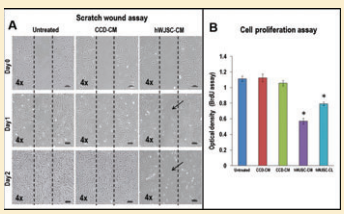

Keloids are firm rubbery growths that grow beyond the boundaries of human wounds and their treatment has met with limited success. Their properties and growth behavior have not been properly characterized and it has been suggested that a benign neoplastic stem cell-like phenotype in an altered cytokine microenvironment drives their uncontrolled cell proliferation. Modification of the stem cell niche may be an attractive approach to its prevention. The authors studied the growth behavior, stemness and tumorigenic characteristics of keloid cells in prolonged culture. Since human Wharton's jelly stem cells (hWJSCs) secrete high levels of cytokines and have anti-tumorigenic properties the authors explored its role on the inhibition of keloid growth *in vitro*. The results suggest that hWJSCs or molecules secreted by them may be of therapeutic value in the treatment of keloids.