

P53 Score Predicts Recurrence in Lung Adenocarcinoma

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The tumor suppressor gene TP53 is highly mutated in lung adenocarcinoma, but the prognostic value of p53 mutation status remains unclear. By comparing gene expression between p53-mutant and wild-type samples from the TCGA data, Zhao and colleagues defined a gene signature that captures the p53 pathway deficiency in a sample-specific manner. The resulting p53 deficiency score was found to be predictive of patient survival in early-stage lung adenocarcinoma, even after considering key clinical variables. This study provides a general framework to bridge somatic mutation information with transcriptome data for predicting cancer prognosis.

Physical Activity, miRNA, and Cancer

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In this review, Dufresne and colleagues synthesize the available observational and experimental data from studies evaluating the impact of physical activity (PA) on the expression of circulating miRNAs (c-miRNAs) known to play a role in carcinogenesis and disease progression. Single bouts of PA (acute) as well as long-term (chronic) PA significantly impacted c-miRNA expression across studies; however, the effects appear to be dependent on exercise modality. Standardized procedures for PA prescription as well as quantification and reporting of c-miRNAs are recommended to strengthen the evidence base. Altered expression of relevant c-miRNAs appears to be a mechanism through which regular PA reduces the risk of several cancers and improves outcomes.

Night Shift Work Increases Cancer Risk of Women

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Night shift work has become an unavoidable attribute of today's 24-hour society. The related disruption of circadian rhythm causes short-term and long-run adverse effects on public health. Night shift work has previously been associated with increased cancer risk in women, but epidemiological evidence has been inconsistent. Yuan and colleagues integrated 61 articles in a meta-analysis, finding that night shift work is a risk factor for several common cancers in women. It is imperative for long-term female night shift workers to accept regular cancer screening, and appropriate protection measures should be taken.

Pleiotropic Cancer Risk Variants

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Emerging evidence indicates that some genetic variants are associated with multiple cancer types (i.e., pleiotropy), but the extent and biological mechanisms of pleiotropy are unclear. Wu and colleagues investigated all cancer risk associations between variants and the risk of 27 cancer sites in the NHGRI-EBI GWAS Catalog. Having accounted for linkage disequilibrium and ancestry information, pleiotropic variants comprised 3.3% of all cancer risk-associated variants. They were more likely to be located in genes compared with variants associated with a single cancer. This study implies carcinogenic mechanisms common to different cancers and identifies potential targets for genetic testing and repurposing cancer therapy.