TITLE: XRN2 Loss in Cancers Represents an Exploitable Cancer Vulnerability for Specific Therapies

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TECHNOLOGY: Diagnostics

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SUMMARY:

This technology describes the use of XRN2 as a biomarker to predict vulnerability of cancers to DNA damaging agents. Predictive biomarkers assess the likelihood that tumors will respond to a therapy, allowing personalization of anticancer treatment regimens.

The inventors identified that XRN2 (human 5’-3’ exoribonuclease 2 known to be involved in RNA transcription termination), is also involved in DNA replication stress and double strand break (DSB) repair, notably in both non-homologous end joining (NHEJ) and homologous repair (HR). Moreover, XRN2 deletions or decreased expression in cancer result in hypersensitivity to specific DNA damaging agents such as ionizing radiation, DNA double strand break-inducing agents, alkylating agents and PARP inhibitors.

DNA repair is an important cancer survival pathway with crucial roles in the development, progression and response to therapy for a wide array of cancers. Identification of cancer vulnerabilities to DNA damaging agents is crucial to avoid abandoning development of potentially useful agents as well as avoid subjecting patients to ineffective therapies.

The specific hypersensitivity of XRN2-deficient cancer cells to DNA damaging agents offers a means to delineate which cancers and which specific individuals will benefit the most from such treatments.

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