

Hosting group information for applicants

Name of DKFZ research division/group:
Translational Control and Metabolism (B250)

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Group homepage: <https://www.dkfz.de/en/translationskontrolle-stoffwechsel/index.php>

Please visit our website for further information on our research and recent publications.

RESEARCH PROFILE AND PROJECT TOPICS:

The demand for building blocks in cancer cells differs greatly from the one of a normal cell. In order to divide, a cell must duplicate its protein content, a process that requires large amounts of energy and amino acid resources. To cope with higher demand of energy and building blocks, cancer cells rewire profoundly their metabolic networks. However, the metabolic changes a tumor undergoes to adapt to deregulated growth might expose vulnerabilities that can be exploited for therapy. To exploit amino acid vulnerabilities for cancer therapy, one must first identify which amino acid is the most restrictive to the tumor. Our laboratory uses a combination of innovative genomics tools, molecular biology, animal models, and bioinformatics to uncover these metabolic limitations in cancer. Recently, we developed a novel approach to detect restrictive amino acids in cells and tumors. The rationale of our approach is based on differential ribosome codon reading (diricore); we make use of ribosome profiling to detect ribosomes stalled at specific codons. The accumulation of ribosomes at a particular codon indicates that the corresponding aminoacylated tRNA might be limiting and suggests a deficiency of the amino acid. The diricore approach can be used as a platform to sense these amino acid deficiencies in cells and tumors and to expose the weaknesses of tumor's metabolic remodeling.)



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