

Hosting group information for applicants

Name of DKFZ research division/group:
Cell Signaling and Metabolism (A330)

Contact person:

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Group homepage:

<https://www.dkfz.de/en/signaltransduktion-und-stoffwechsel-der-zelle/index.php>

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

RESEARCH PROFILE AND PROJECT TOPICS:

Nutrients supply the energetic and biosynthetic pathways which underlie all cellular functions. To match metabolic demands of different physiological and pathological states, cells must tightly control nutrient uptake and utilization. For instance, quiescent cells import sufficient bioenergetic substrates to sustain homeostasis, but cells must increase nutrient uptake to grow and divide. To survive starvation, cells must access alternative nutrient sources. To grow unrestrainedly, cancer cells must acquire autonomous control over nutrient uptake.

We study nutrient acquisition and metabolism in mammalian cells, which is a challenging problem, because mammalian cells are surrounded by diverse nutrients that are imported via multiple pathways. To understand how cells acquire nutrients, we characterize their cellular import pathways. Here, we are especially interested in metabolic roles of endocytosis and the lysosome. To understand how cells make choices between distinct nutrient acquisition strategies, we study their regulation by signal transduction. Here, we focus on growth factor signaling and the mTOR pathway. Cancer cells have increased metabolic demands, but must also cope with harsh metabolic environments. Hence, we study how oncogenes confer cancer cells metabolic autonomy and flexibility. To this end, we combine imaging, mass spectrometry and genome-wide CRISPR/Cas9 approaches and develop novel tissue culture systems that accurately model metabolic environments.



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We are looking for a highly motivated postdoc who would like to address fundamental problems at the interface of metabolism, signaling and cell biology. As a basic research lab, we particularly value curiosity, creativity and the will to explore. Within this framework, there are a variety of projects available with focus on basic or cancer biology, depending on personal interests.



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