

Using patient-derived tumor xenografts for drug discovery and to facilitate individualized cancer therapy

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Patient tumor explants transplanted into and passaged in immunodeficient mice (patient-derived tumor xenografts, PDXs) typically retain important characteristics of the original patient tumor including histology, molecular characteristics and drug sensitivity. Consequently, PDX-bearing immunodeficient mice have been used as “avatars” to identify the most promising treatments for the donor patient. In addition, PDXs have been valuable assets for drug discovery, in particular for the preparation of clinical trials. Novel experimental formats like single mouse trials (mouse clinical trials) allow the testing of large and diverse PDX collections, or the exploration of several treatment options for a single patient in a preclinical setting. Results of such experiments can also be used to predict response rates of novel therapeutic agents in the clinic, and to identify biomarkers of response. The feasibility of using PDX models for these purposes will be discussed for reagents that target the tumor cell, the tumor stroma and the immune system.



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