Using patient-derived tumor xenografts (PDXs) for drug discovery, identification of biomarkers and facilitation of individualized cancer therapy

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Patient tumor explants implanted and passaged in immunodeficient mice (patient-derived tumor xenografts, PDXs) retain important characteristics of the original patient tumor including histology, molecular characteristics and drug sensitivity. Consequently, PDX-bearing immunodeficient mice have been used to identify the most promising treatments for cancer patients. PDXs are valuable assets for drug discovery, in particular for the preparation of clinical trials. Novel experimental formats using PDXs in humanized mice allow for preclinical testing of immuno-therapy. Mouse clinical trials/single mouse trials can be used to screen a large panel of PDXs, or to explore several treatment options for a single patient in a preclinical setting. Results can also be used to predict response rates in the clinic, and to identify biomarkers of response. The feasibility of using PDX models for these purposes will be discussed for reagents targeting the tumor and the immune system.

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