

Patient-Derived Cancer Xenograft Zebrafish Model (PDXZ) and Personalized Medicine

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Personalized medicine is to enable optimal treatment at each individual patient level, and is rapidly developing as advanced cancer individualized medicine. Current personalized medicine is based on omics information, which attempts to predict pharmacotherapy responsiveness from each patient's omics. However, since personalized medicine based on patient omics information and known medical information depends on statistical prediction, big omics data for a large number of patients is required to improve the accuracy, and enormous costs and time are required. On the other hand, the National Cancer Institute (NCI) and other organizations have made rapid progress internationally with the use of the Patient-Derived Xenograft Mouse Model (PDXM) for advanced cancer precision medicine. Recently, the PDXM system using highly immunodeficient mice is widely used in the world. However, as there are several problems in PDXM, we have constructed PDX Zebrafish Model as next-generation precision medicine protocol and report its effectiveness. We have found that the PDXZ system have big advantages such as rapid quantitative analysis of drug efficacy. These clinical PDXZ system have achieved an overwhelmingly faster therapeutic drug sensitivity test than PDXM, and the predictability of postsurgical clinical drug response has been clarified.