

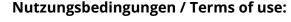


OTHR-04. Development of a functional plattform for real-time personalized drug sensitivity profiling of patient-derived 3D fresh tumor tissue cultures in the pediatric precision oncology program INFORM [Abstract]

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ABSTRACT CITATION ID: NOAD073.286 OTHR-04. DEVELOPMENT OF A FUNCTIONAL PLATFORM FOR REAL-TIME PERSONALIZED DRUG SENSITIVITY PROFILING OF PATIENT-DERIVED 3D FRESH TUMOR TISSUE CULTURES IN THE PEDIATRIC PRECISION ONCOLOGY PROGRAM INFORM Heike Peterziel<sup>1,2</sup>, Nora Jamaladdin<sup>1,2</sup>, Dina ElHarouni<sup>1,3</sup>, Xenia F. Gerloff<sup>1,2</sup>, Sonja Herter<sup>1,2</sup>, Petra Fiesel<sup>1,4</sup>, Yannick Berker<sup>1,2</sup> Mirjam Blattner-Johnson<sup>1,5</sup>, Kathrin Schramm<sup>1,5</sup>, Barbara C. Jones<sup>1,6</sup>, David Reuss', Laura Turunen<sup>8</sup>, Aileen Friedenauer<sup>1,2</sup>, Tim Holland-Letz<sup>9</sup>, Martin Sill<sup>1,1</sup>, Lena Weiser<sup>11</sup>, Christopher Previti<sup>1,3</sup>, Gnanaprakash Balas ubramanian<sup>1,10</sup>, Nicolas U. 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The international precision oncology program INFORM enrolls relapsed/refractory pediatric cancer patients for comprehensive molecular analysis. We report a two-year pilot study implementing ex vivo drug sensitivity profiling (DSP) using a library of 75-78 clinically relevant drugs. We included 132 viable tumor samples from 35 pediatric oncology centers in seven countries. DSP was conducted on multicellular fresh tumor tissue spheroid cultures in 384-well plates with an overall mean processing time of three weeks. In 89 cases (67%), sufficient viable tissue was received; 69 (78%) passed internal quality controls. The DSP results matched the identified molecular targets, including BRAF, ALK, MET and TP53 status. Drug vulnerabilities were identified in 80% of cases lacking actionable (very) high-evidence molecular events, adding value to the molecular data. Striking parallels between clinical courses and the DSP results were observed in selected patients. Overall, DSP in clinical real-time is feasible in international multicenter precision oncology programs.