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NCI60 anticancer drug discovery program was reviewed in detail by Shoemaker, who highlighted the history and methodology. Learning from the NCI60 experiences, the Cancer Chemotherapy Center of the Japanese Foundation for Cancer Research established the JFCR-39 platform. This panel of 39 human tumour-derived cell lines included a subset of the NCI60 cell lines and additional genetic cancer cell lines. A new algorithm for drug analysis enabled the comparison of newly screened compounds with previously screened compounds to discriminate between new or previously described modes of action. Using the COMBINE algorithm and advanced data mining techniques, several new anticancer agents were identified. In drug discovery or predictive biomarker studies, the introduced targeted anticancer therapeutics', small panels of cancer cell lines do not display the clinical activities of these compounds, which are often limited to small subgroups of molecular-defined patients [15]. Taking this into account, high-throughput screenings are now being adapted to much larger panels of cell lines.

Discussion

To capture the genetic heterogeneity among diverse cancers, M. Dermott and colleagues developed an automated platform for the screening of the chemo-sensitivity of 500 solid cancer cell lines to kinase inhibitors. In this study, they observed the expected response rates with only a small subgroup of cell lines showing response to particular compounds. Therefore, a comprehensive cancer cell line platform was established, currently including 1000 cancer cell lines [16]. Due to the fact that only around 80% of these secondary cancer cell lines are adaptable to high-throughput screening, mostly caused by technical limitations such as insufficient doubling times or atypical culture requirements, this panel is referred to as the Center for Molecular Therapeutics 1000 cell line panel, currently being used to investigate the genetic determinants for chemo-sensitivity. First results from this large dataset showed that tumour-derived cell lines recapitulate clinical findings concerning response to targeted inhibitors. Another, very recent approach in general primary cell lines for in vitro experiments has been introduced [doi:10.1186/1745-7256-2-2(2)7(0)-(0)-6(-)-1(0)-6] BT-6(r) 193.35 T BT1 54.24 460.

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