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A Short Note on Cancer Cell Lines

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DESCRIPTION

A crucial step in the development of anti-cancer medications is the identification of cancer cell lines. Different human cancer cell lines (BEL-7402, NSCLC, NCI-H125, H157, MCF-7, MDA-MB-231, etc.) were examined (liver cancer, lung cancer, breast cancer, lymphoma, colon cancer, melanoma, leukaemia, myeloma tumours, gastric cancer, promyelocytic leukaemia, pancreatic adenocarcinoma, skin cancer). After *in vitro* screening, the most sensitive cancer cell lines can be chosen and tested in xenograft or orthotopic tumour models in mice or rats (*in vivo*).

Human immortal cancer cell lines (residents of cells from a multicellular organism that would normally not proliferate indefinitely but, due to mutation, have evaded normal cellular senescence and can instead undergo division) have accumulated an accessible, easily usable set of biological models with which to examine cancer biology and analyse the inherent efficacy of anticancer (natural, synthetic) drugs in the last few decades. One of the most significant obstacles to cancer chemotherapy is drug resistance. Studies on cell lines can be used as a first step in the search for substances that modulate medication resistance. To develop more accurate drug resistance models and to see if there are any changes in the drug resistant sublines picked by different treatments.

Cancer cell lines

The use of cell lines derived from malignancies allows researchers to study tumour cells in a more basic and controlled environment. Cancer cell lines have distinct advantages and disadvantages when compared to animal models. The kind of the experiment that can be organised is thus determined by these factors. To begin with, the expense of maintaining them is substantially lower than that of maintaining animal subjects. They are readily available, and research investigations can be completed in a reasonable time.

To create high-throughput experiments, large numbers and volumes of cells can be propagated. Cell lines are quite versatile when it comes to the types of investigations that they can be employed in. They may be made not just *in vitro*, but also in mice to create xenograft models of prostate cancer growth.

They can be modified and examined throughout time in order to dispose of consecutive events that occur in response to a specific stimulus. The secretome, as well as the products produced by the cells, may be easily examined. Cell lines have the disadvantage of failing to represent the heterogeneity of the tumour microenvironment, as well as the naturally varied character of tumours within and between individuals.

As a result, to address the whole heterogeneity found in a tumour phenotype, many cell lines may be required. In addition, cell lines are sensitive to genetic changes in culture, which might change their phenotypic throughout the course of a long investigation.

The path of the tumor's growth is lost, and therefore provides little insight into the pathogenic process.

As a result, cell lines are quite adaptable in terms of the types of investigations they can be employed in. *In vitro* equivalents of malignant cells are immortalised cell lines. They may be made not just *in vitro*, but also in mice to create xenograft models of prostate cancer growth. They can be modified and examined throughout time in order to dispose of consecutive events that occur in response to a specific stimulus.