

Cell reproduction research paper examples

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Cell Reproduction

Difference between normal cells and cancer cells

The difference between cancer cells and normal cells is great attributed to the significant difference in the physical appearance of the cell structures, their mode of behaviour, and profound difference in their life spans.

Microscopic studies reveal that cancer cells denote the property of pleomorphism, in that they tend to be more mortifying in size and shape than the cells in surrounding tissues. Also, the nucleus of cancer cell tends to be larger than in normal cells. Also, cancer cells are biochemically different from normal cells, in that normal cells use aerobic glycolysis for cell metabolism, whereas cancer cells use higher rates of anaerobic glycolysis. Thus, cancer cells are less dependent on oxygen and are likely to survive despite poor oxygenation. Further, cancer cells grow unrestrained ascribed to the loss of contact inhibition and adhesion property, whereas, in normal cell, cell proliferation is limited by contact inhibition. Another important difference between cancer and normal cell is their method of metabolizing iron and trace metal ions. Normal cells transport iron through transferrin, a glycoprotein in blood plasma, whereas, cancer cells never bind with the iron, but transports the iron inside the cell, with the aid of siderophore -like growth factor. Moreover, cancer cells tend to live longer than the normal cells, imputed to the unlimited number of cell division exhibited in cancer cells.

Between the lung, stomach and ovary which type of cancer shows the most aggressive growth? Explain

It is indubitable that lung cancer is the most striking prevalent malignancy compared to the stomach and ovarian cancer. It is the leading cause of cancer-related deaths worldwide, attributed to its aggressive growth kinetics and disseminated metastases. In connection to this, lung cancer always shows the most aggressive growth, and this is because, lung cancer is carcinomas-cancer originating from the epithelial cells. In addition, the lung has a large number of epithelial tissues, and the tissues are continually exposed to substances that contain carcinogens, and hence, the cells in these tissues are at high risk of mutating to cancer that exhibit high growth rates. The invasion process in lung cancer is also remarkably high, resulting to a significant spreading and growth rate of cancer cells.

Which type of tissue would have a higher mitotic index, normal tissue or cancerous tissue? Explain

Both normal and cancerous tissues contain high proliferative activity, explaining the frequent and rapid cell division and growth in various tissues. Many normal tissues have a high mitotic index, highly delineated in proliferative regions such as the bone marrow and gastrointestinal mucosa. However, cancerous tissues always demonstrate an abnormal cell differentiation, or the inability to mature completely, and in tandem to this they also exhibit a higher and increased mitotic index-the proportion of cells in a given tissue that are in mitosis at any given time-, than the normal cells, and this is attributed to the increased uncontrolled proliferation. Unlike normal cells, cancer cells do not respond to various signals that regulate cell,

tissue and organ growth, and hence a runaway cell division of the cancer cells. In line with this, the cancer cells are mature somatic cells that behave as if they were embryonic cells, dividing over and over again. As well, there are indications that cancer cells also contain regulatory protein molecules in their membrane, similar to the ones found in the embryonic cells. The regulatory proteins that trigger rapid cell division are typically structured, only that they are being synthesized in the cell in inappropriate time.