Introduction

Most cancers still remain curable with the currently available therapeutic approaches, despite how much we have learnt about cancer biology in the last decades. Current treatments are based on the assumption that cancer is a proliferation-based disease. Accordingly, the main treatments are antiproliferative and they are non-specific and with serious side-effects. Furthermore, although cytotoxic drugs reduce tumour burden, relapse occurs in the majority of the cases. This paradox, that early treatment response is not related with late survival, can be explained by recent data suggesting that many malignancies arise from a rare population of cells that are the only ones that retain the ability to self-renew and sustain the tumour. These are the "Cancer Stem Cells", CSCs. In some cases, these CSCs are considered to be close derivatives of normal tissue stem cells. Another possibility is that a small portion of cancer cells has adopted the properties of a stem cell. In either situation, the net result will be the same, in that CSCs are the cells responsible for replenishing the tumour mass. They are resistant to conventional treatments because, being stem cells, they divide infrequently. Thus, gaining insight into the biology of these CSCs will allow designing targeted agents to prevent their longevity to interfere with our own one. However, mouse model systems tailored to exploit this new concept of tumour biology are not yet available. They will be, nevertheless, critical to provide the basis for the development of novel CSC-based anti-cancer therapies and new methods for assessing treatment efficacy.

References

- Herranz M, Sánchez-Garcia I. Medical chemistry to spy cancer stem cells from outside the body

Selected Links

- "Cancer Stem Cells", In Encyclopaedia of Life Sciences
- "Cancer Stem Cell". In Wikipedia

News Results

1. Stem cells, the role of stem-cell-initiating cells in diagnosis and treatment
15 Apr 2008
Recent discoveries about the role of stem cells in cancer have altered the landscape of cancer research. As scientists learn more about these cancer-initiating properties, stem cells are emerging as potential therapeutic targets.
A new study suggests that a genetic fingerprint associated with normal embryonic stem cells may be important for the development and function of cancer stem cells.

With a bit of genetic trickery researchers at the Stanford University School of Medicine have turned normal skin cells into cancer stem cells a step that will make these naturally rare cells easier to study.