

# Mechanisms of cancer development

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Most tumours are derived from a single cell that is transformed into a cancer initiating cell (cancer stem cell) that has the capacity to proliferate and form tumours in vivo. However, the origin of the cancer stem cell remains elusive. Interestingly, during development and tissue repair the fusion of genetic and cytoplasmic material between cells of different origins is an important physiological process. Such cell fusion and horizontal gene-transfer events have also been linked to several fundamental features of cancer and could be important in the development of the cancer stem cell. In this presentation current controversies related to the cancer stem cell concept will be discussed with special reference to brain tumours.

*Rolf Bjerkvig received his basic academic training at the Brain Tumor Research Center of the University of California at San Francisco. He has worked as a research scientist at the Norwegian Cancer Society affiliated to the Gade Institute at Haukeland Hospital, Bergen and holds a PhD in oncology from the University of Bergen. He is professor of cell biology at the University of Bergen and is co-directing the NorLux Neuro-Oncology laboratories located at the CRP Santé in Luxembourg and in Norway. He has also acted a co-director of the national gene therapy programme in Norway. At present he is coordinating the integrated project „Angiotargeting“ started within the 6th framework programme of the European commission involving 13 European research institutions. His main interests are to elucidate the mechanisms that cause tumour cell migration within the central nervous system. In later years his research has focused on mechanisms of cancer initiation and progression with particular emphasis on cancer initiating cells. His research is also focused on mechanisms of tumor angiogenesis and therapeutic approaches that will prevent angiogenesis in brain tumors.*