

Addressing the need of arresting the tumour cell in long-term dormancy

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Cancer has been one of the leading causes of mortality for centuries. However, despite years of research, in 2020, cancer accounted for around 10 million deaths. The majority of this was due to the ability of cancer to metastasise. When cells leave the primary tumour and enter our bloodstream, they are termed circulating tumour cells (CTCs). Once CTCs lodge into a new distant organ, they are called disseminated tumour cells (DTCs). The most crucial step of cancer metastasis is the capability of the cancer cells to adapt to a new microenvironment, as this lets them enter a state of long-term dormancy in which they can resist therapy. DTCs can remain in the dormant stage for years even after successful treatment of the primary tumour. They can also hide in specialised niches in distant organs before being reactivated to cause cancer relapse. In order to prevent the dormant cancer cells from becoming active and causing cancer relapse, researchers believe that maintaining this stage of dormancy is necessary. Since treatments such as radiotherapy and chemotherapy may have side effects which can induce further complications, long-term dormancy might be the best solution to prevent cancer recurrence. It also provides an effective and preventive method without any side effects. Many studies have been done in the past regarding tumour dormancy. Proposing genetic and immunological approaches would be helpful in successfully inducing long-term tumour dormancy.

Keywords: Cancer cell, Metastasis, Disseminated tumour cells, Tumour recurrence, Cancer relapse, Long-term dormancy

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