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► **COVER:** 'Running in ever increasing circles' by Lara Crow, inspired by the articles on p352 and p375, which discuss the growth of brain metastases and bacteria, respectively.



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Over the past 2 years or so, one of the most common phrases seen in the pages of this journal has been that “most cancer patients die from their disease as a result of metastasis”. The invasion of crucial organs, such as liver and lung, by metastatic cells is difficult to treat, despite the accessibility of drugs to these lesions. By contrast, the invasion of cells into the parenchyma of the brain represents a sanctuary site: one where the levels of drugs remain low, making the cancer cells largely untouchable by chemical means.

Currently, all treatments for brain metastases are essentially palliative and, as Patricia S. Steeg and colleagues discuss on page 352, this fact limits some of the survival gains made possible in recent years through the use of targeted agents. Initial results from animal models and some clinical data indicate that prevention of brain metastases might be a more effective route rather than attempting to treat established metastases within the brain. However, prevention would undoubtedly require the ability to identify patients who are most at risk of developing brain metastasis but our knowledge of how and why metastatic cells invade the brain remains limited. In the meantime, Steeg and colleagues argue, we need to limit the debilitating side effects of palliative treatments, such as whole-brain radiotherapy.

The biology of metastatic cells remains an intense area of research and some evidence has linked metastasis with a stem cell phenotype. The existence of cancer stem cells is still controversial in solid tumours, and some researchers have started to turn their attention back to finding the tumour cell of origin. Both of these aspects are covered in a poster on ‘The emerging biology of cancer stem cells’, which is freely available thanks to sponsorship from Abcam.

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