

CLINICAL PAPER /

BRAIN METASTASES



The pathogenesis of cancer metastasis: the 'seed and soil' hypothesis revisited

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ABSTRACT

Researchers have been studying metastasis for more than 100 years, and only recently have we gained insight into the mechanisms by which metastatic cells arise from primary tumours and the reasons that certain tumour types tend to metastasize to specific organs. Stephen Paget's 1889 proposal that metastasis depends on cross-talk between selected cancer cells (the 'seeds') and specific organ microenvironments (the 'soil') still holds forth today. It is now known that the potential of a tumour cell to metastasize depends on its interactions with the homeostatic factors that promote tumour-cell growth, survival, angiogenesis, invasion and metastasis. How has this field developed over the past century, and what major breakthroughs are most likely to lead to effective therapeutic approaches?