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Zooming in on micrometastases

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Micrometastases of disseminated tumour cells present a threat to the long-term survival of cancer patients. Analysis of these rare, lone disseminated cells requires an amplification procedure. In the April issue of Nature Biotechnology, Christoph Klein and colleagues at the University of Munich in Germany report a PCR-based method for analyzing the transcriptome and genome of individual micrometastatic cells (*Nature Biotechnology* **20:**387-392). They used an antibody against a tumor-specific cell-adhesion molecule to immunoaffnity purify cancer cells from patient bone marrow and isolated genomic DNA and mRNA from individual tumour cells. They then performed a sensitive comparative genomic hybridization and optimized an amplification procedure to generate sufficient cDNA for microarray analysis. Klein *et al.* were able to detect several genes implicated in cell-cycle regulation, cytoskeletal organization and cell adhesion or motility. Among these they found high expression of EMMPRIN, which encodes a protein involved in regulating extracellular matrix degradation and cell invasion. The methodology may also be useful for rare cell analysis in other systems and pathological situations.

References

1. The biology and analysis of single disseminated tumour cells.

2. *Nature Biotechnology*, [http://www.nature.com/nbt/]

3. Ludwig-Maximilians-Universität München, [http://www.uni-muenchen.de]

4. Comparative genomic hybridization, loss of heterozygosity, and DNA sequence analysis of single cells.

5. The human tumor cell-derived collagenase stimulatory factor (renamed *EMMPRIN*) is a member of the immunoglobulin superfamily