In the news

NEWS TO PHONE HOME ABOUT

There was reassuring news for over 1 billion mobile phone users across the globe after a study published in the *Journal of the National Cancer Institute* found no evidence to link mobile phone use with an increased risk of developing cancer.

In the largest and longest running investigation into the effects of mobile phone use on cancer incidence yet undertaken, researchers at the Danish Institute of Cancer Epidemiology studied 420,095 Danes who started using mobile phones between 1982 and 1995. They then tracked their health until 2002, by which time 14,249 cases of cancer had been recorded; short of the expected total of 15,001. Christopher Johansen, who led the study, concludes: "We found no evidence for an association between tumour risk and cellular telephone use among either short-term or long-term users" (http//www.timesonline.co.uk, 06 December 2006).

There were fears that the radio waves emitted by mobiles, which can penetrate up to 6 cm into the brain, might trigger head and neck cancers. Despite several previous studies that have failed to find a link between phone use and cancer, fears have persisted owing to the lack of any long-term epidemiological data. The Danish study looks to have satisfied this requirement, as Professor Tricia McKinney of the Centre for Epidemiology and Biostatistics at The University of Leeds explains: "The large number of subscribers to the study mean we can have some confidence in the results that have not linked mobile phone use to a risk of any cancer, including brain tumours" (http://www.bbc.co.uk, 06 December 2006). However, John Boice at the International Epidemiology Institute at Rockville doubts it will end the debate. "There's really no biological basis...to be concerned about radiowaves" he said, "nevertheless people are" (http://www.thestar.com 06 December 2006).

David Holmes

METASTASIS

Go forth and multiply

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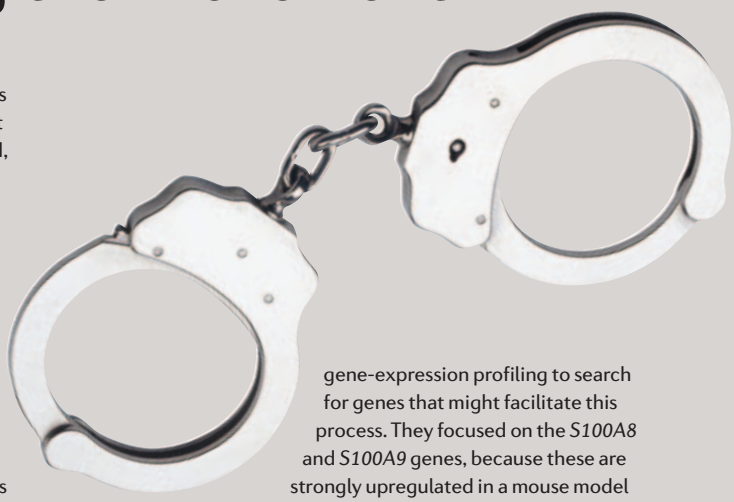
Melanoma is a highly metastatic cancer, but the mechanisms that underlie this phenotype are not completely understood. Colin Goding and colleagues now show that the microphthalmia-associated transcription factor, MITF, functions in a dynamic fashion to promote either the proliferation or metastasis of melanoma cells.

MITF is a potent oncogene that is required for the proliferation of melanoma cells with activated BRAF. However, MITF is also implicated in promoting melanocyte differentiation, and can induce G1 cell-cycle arrest. To investigate the functions of MITF *in vitro*, Goding and colleagues depleted *MITF* in 501mel melanoma cells using short interfering RNA (siRNA). *MITF* depletion led to G1 cell-cycle arrest, and *MITF*-depleted cells seemed more rounded. Immunostaining revealed a change in the F-actin organization in these cells, explaining their change in cell shape. Western blotting showed that the depletion of *MITF* leads to the increased expression of the cyclin-dependent kinase inhibitor, p27 (encoded by *CDKN1B*). Double siRNA knockdown of *MITF* and *CDKN1B* rescued the G1 block. However, ectopic expression of p27 in MITF-expressing 501mel cells did not result in altered F-actin organization. So, MITF induces G1 arrest through a p27-dependent pathway and controls F-actin organization through a p27-independent pathway.

Although the level of p27 was substantially increased in *MITF*-depleted cells, there was no corresponding significant increase in *CDKN1B* mRNA levels, indicating that the loss of MITF stabilizes p27. The stability of p27 is controlled by the F-box protein SKP2, which is regulated indirectly by the Diaphanous-related formin, DIAPH1, a Rho effector protein that regulates F-actin polymerization. The depletion of *MITF* led to a decrease in the

METASTASIS

Minimizing the movement



Cancer cells migrate from primary tumours to invade secondary tissues during metastasis. However, it is not known how this process is mediated, although many chemokines and inflammatory mediators have been implicated. Yoshiro Maru and colleagues report in *Nature Cell Biology* that the *S100A8* and *S100A9* genes, which encode inflammatory chemoattractants, are involved in the metastasis of tumour cells to the lung.

The authors propose, and previous data support the hypothesis, that lung tissue becomes vulnerable to cancer-cell invasion when tumours are pre-metastatic. So, tumour cells must influence the pre-metastatic niche. The authors used gene-expression profiling to search for genes that might facilitate this process. They focused on the *S100A8* and *S100A9* genes, because these are strongly upregulated in a mouse model of pre-metastatic tumours. Moreover these inflammatory mediators were not expressed by the lung and melanoma tumour cells that were used in this study.