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Mobile phones, heat shock proteins and cancer.

[French PW](#), [Penny R](#), [Laurence JA](#), [McKenzie DR](#).

Centre for Immunology, St Vincent's Hospital Darlinghurst, Sydney, NSW, Australia.
p.french@cfi.unsw.edu.au

There are several reports which indicate that electromagnetic radiation (such as from mobile phones) at non-thermal levels may elicit a biological effect in target cells or tissues. Whether or not these biological effects lead to adverse health effects, including cancer, is unclear. To date there is limited scientific evidence of health issues, and no mechanism by which mobile phone radiation could influence cancer development. In this paper, we develop a theoretical mechanism by which radiofrequency radiation from mobile phones could induce cancer, via the chronic activation of the heat shock response. Upregulation of heat shock proteins (Hsps) is a normal defence response to a cellular stress. However, chronic expression of Hsps is known to induce or promote oncogenesis, metastasis and/or resistance to anticancer drugs. We propose that repeated exposure to mobile phone radiation acts as a repetitive stress leading to continuous expression of Hsps in exposed cells and tissues, which in turn affects their normal regulation, and cancer results. This hypothesis provides the possibility of a direct association between mobile phone use and cancer, and thus provides an important focus for future experimentation.

PMID: 11683499 [PubMed - indexed for MEDLINE]

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