



## Heat shock proteins in health and disease.

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Heat shock proteins (hsp) are highly conserved and abundant proteins essential for cellular viability. They are constitutively expressed under normal growth conditions of cells, playing a role as molecular chaperones. Expression of hsp appears during mammalian embryogenesis. However, hsp are markedly induced by heat and other stress factors. Hsp as pathogen antigens induce defence immunological responses such as CD8+ T cell proliferation, increasing cytokine production, and expression of chemokines and cell adhesion molecules. Hsp also participate in antigen presentation. Immunization with hsp preparations isolated from cancer cells or virus-infected cells elicits a protective antitumor or antiviral cellular immune response. Hsp derived from pathogens are used in protection against many diseases such as histoplasmosis, yersiniosis and tuberculosis.

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