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Growth factor receptor bound protein-7 (Grb7) is an adapter protein, aberrantly overexpressed in several cancer cell types, that mediates the coupling of tyrosine kinases with their downstream signalling pathways via its SH2 domain. In particular, Grb7 signals the activation of the erbB-2 receptor, which plays a key role in the progression of poor prognostic breast cancers. Grb7 is over-expressed with erbB2 in a subset of human breast cancer cell lines and breast tumours, suggesting erbB2 signaling via Grb7 may be increased in these cancers. Grb7 also mediates signalling pathways from focal adhesion kinase (FAK) in the regulation of cell migration, also implicated in tumor progression. It is thus a prime target for the investigation of the potential of novel anti-cancer therapies. We are currently examining Grb7-SH2-specific cyclic peptides developed using phage display libraries using biophysical techniques. Structural and affinity measurements for the Grb7-SH2 domain, as well as computational approaches are being used to develop more potent and specific molecules. Cellular studies of cell-permeable forms of these peptides will allow us to better understand the downstream effects of Grb7 and to serve as a starting point in the design of therapeutics targeting Grb7.

Research Projects

1. Targeting the Grb7 protein involved in cancer progression

Selected significant publications:


