IGF-1, CANCER AND AGING

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Insulin-like growth factors (IGFs) are involved in normal growth and development. However, as growth factors they are powerful anti-apoptotic agents via activation of the IGF-I receptor. Recent epidemiological studies have shown that individuals with circulating IGF-I levels in the upper quintile (of the normal range) are at increased risk of developing prostate, breast, colon and lung cancer. Using a mouse model in which the circulating levels of IGF-I are reduced by 75%, but tissue IGF-I levels are intact, we demonstrated that the growth and metastases of colon and breast cancer is significantly reduced. Thus, suggesting that circulating IGF-I maybe important in cancer growth.

Obesity, insulin resistance and Type 2 diabetes are also associated with increased risk of developing cancer. In a mouse model with obesity induced by dietary manipulations we show that cancer development is enhanced in obese mice compared to thin controls.

Using an inducible system we are able to reduce the levels of circulating IGF-I in the obese mice to determine if IGF-I is the mediator of the obesity-induced enhancement of cancer growth.

The importance of these findings with relation to aging and cancer are clear and should help in the further understanding of these processes