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“Oncogenicity of Metabotropic Glutamate Receptor in Melanoma”

[Characterization of a new gene, and its role in the development of melanoma, with therapeutic potentials.]

The incidence of melanoma, a very aggressive type of skin cancer, is rising faster than any other type of cancer. In the US, 1 in 82 women and 1 in 58 men will develop melanoma. Furthermore, melanoma is one of the most common causes of cancer and cancer deaths between the ages of 20 to 35. By affecting a young population, a strong psychological and socioeconomic impact is therefore associated with melanoma. Developing an animal model system is of crucial interest to analyze the causes of this deadly disease and to uncover new diagnostic methods as well as to define new targets for therapy. In our laboratory, we have developed such a mouse model. The progression of melanoma in our model is very similar to that of the human. Recently, we have identified a new gene implicated in melanoma development. We have preliminary results suggesting that the same gene may play a role in the development of human melanoma in some cases. This gene directs the synthesis of a protein called metabotropic glutamate receptor 1. Our research goals are to study how the production of this protein transforms a normal cell to a cancer one. We will examine how the “signals” are turned on from the outside of the cell and transmitted to the inside of the cell. As a consequence, alterations in the various regulations of normal cell growth occur. We will also take advantage of the availability of molecules that have been shown to counteract the effects of the receptor, called antagonists. In these experiments, we will treat the cells with the antagonists, and will monitor if the melanoma cells are no longer growing or even dying. Such results will be very encouraging and valuable in the design of new therapeutic means aimed to destroy melanoma cells bearing the receptor. Advanced stages of melanoma are very resistant to radiotherapy and chemotherapy available today. Results from our studies will contribute to define, develop, test and optimize new therapeutic strategies against melanoma.