Krishnamurthy and colleagues have described the production, by genetic engineering, of cytotoxic T cells that specifically recognize and lyse melanoma cells expressing a retroviral envelope protein HERV-K-ENV, thereby providing a potential novel therapeutic strategy (1). In this context, studies conducted by the Febrile Infections and Melanoma (FEBIM) group of the European Organization for Research and Treatment of Cancer have shown that vaccination with Bacille Calmette–Guérin (BCG) and/or vaccinia early in life afforded a significant level of protection against the development of melanoma later in life (2). It was also found that the prognosis of patients with melanoma was significantly enhanced in those who had previously received one or both of these vaccines (3). A postulated mechanism for this protection is the presence of epitopes homologous to the "satellite" peptide HERV-K-MEL in these vaccines, thereby facilitating the generation of cross-reacting immune responses (4).

It was also shown that protection is afforded by certain serious but increasingly uncommon infectious diseases caused by pathogens likewise expressing HERV-K-MEL homologs (2), suggesting a role for infections in driving the evolution of immune surveillance mechanisms. It also suggests an association between the increase in the prevalence of melanoma in several industrially developed countries and the decreasing incidence of the relevant infectious diseases, cessation of vaccinia vaccination, and the diminishing use of BCG vaccination.

Accordingly, there is evidence that the expression of "ancient" retroviruses on tumors can be harnessed for therapeutic intervention but also, by use of available vaccines, namely, BCG and possibly yellow fever 17D vaccine (5), to induce a useful level of long-lasting cross-reactive immune protection against melanoma and, perhaps, other cancers, including certain breast tumors that are known to express HERV-encoded epitopes.

Disclosure of Potential Conflicts of Interest

B. Krone is listed as a co-inventor on a patent on immune prevention of melanoma that is owned by the University Goettingen, Germany. No potential conflicts of interest were disclosed by the other author.

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