

Naked DNA immunization as an approach to target the generic tumor antigen survivin induces humoral and cellular immune responses in mice

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Survivin, a 16.5 kDa tumor associated antigen, is the smallest member of the inhibitor of apoptosis family that is abundantly expressed during development but essentially absent in normal adult tissues. Interestingly, survivin expression is up-regulated in virtually all types of cancers studied, as well as in vascular endothelial cells during tumor associated angiogenesis. Survivin links apoptosis to cell cycle progression and plays a pivotal role in regulation of cell proliferation. These characteristics make survivin a potentially promising generic target for cancer immunotherapy. Hence, a genetic immunization strategy to induce tumor-specific immune responses against human survivin in a pre-clinical animal model was developed. In initial studies, BALB/c mice were immunized by intramuscular injection with DNA coding for human survivin (pcDNA3.1/hSurv). In addition, a construct encoding a secreted version of survivin (pSecTag2B/hSurv) was designed. A plasmid coding for murine granuloc