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New strategy for the identification of therapeutic lung cancer antigens

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Most non-small cell lung cancers are squamous carcinoma (SCC). We report a new vaccination strategy for SCC. In a mouse model, the vaccine was prepared by transducing DNA-fragments (25 KB) from SCC (H-2^d)) into LM cells (H-2^k), a fibroblast cell line. Since only a small proportion of the transduced cell-population was expected to have incorporated DNA-segments that included genes for tumor-associated antigens (TAA), we devised a novel approach to enrich the vaccine for immunotherapeutic cells. Microarrays of the enriched vaccines were used to identify genes that specified "therapeutic" lung cancer antigens. ((Immunity to "therapeutic" antigens promotes tumor regression). Aliquots of the transduced cell-population were divided into a number of small pools (initial inoculums = 1 X 10^3). Randomly, the distribution of immunotherapeutic and non-therapeutic cells in each pool was not the same. Cells from individual pools were allowed to increase in number. A portion of the expanded cell populations was maintained frozen/viable for later recovery. The remaining portion was used to immunize naïve (H-2^d)) mice. Pools containing greater numbers of immunotherapeutic cells were identified by two independent assays. Frozen aliquots of cells from the pools that stimulated immunity to the SCC to the greatest extent were recovered and subdivided for additional rounds of positive immune selection. Microarrays of the enriched pools resulted it in the first identification of 10 newly described "therapeutic" TAA.

Biography

Cohen completed his medical studies at Washington University (St Louis). Postdoctoral studies were at the University of Chicago, the NIH and the University of Colorado. He has been a member of the faculty of Rutgers University, the University of Chicago and, most recently, the University of Illinois. Cohen has published more than 135 peer-reviewed papers, in the field of tumor immunology, numerous reviews and book chapters. Currently, Cohen is the CEO of Immune Cell Therapy, Inc., a tumor vaccine company.

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