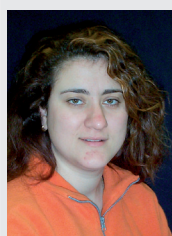


# Vaccines in clinical trials: cancer

Expert Rev. Vaccines 10(6), 711–712 (2011)



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“This special issue includes 15 up-to-date articles that cover past and recent developments in clinical trials of cancer vaccines and outlines where we might expect the next success stories to come from.”

Cancer is the second leading cause of death in the Western world after cardiovascular disease [101]. Despite progress in cancer research, there is still no cure. Currently, primary treatment of cancer involves surgery, removal of the draining lymph nodes, radiotherapy, hormone therapy and cytotoxic drugs. Despite these treatments, no major advances in cancer therapy have been observed for decades, although tamoxifen, and more recently aromatase inhibitors for breast cancer, may be of real benefit [1]. Perhaps one of the most important problems in cancer research at this time is the identification of markers that could be used *in vivo* for the early identification and therapy of cancer cells. Immunotherapy, an old concept, is now giving new insights into the treatment of many diseases, including cancer, because of the identification of antigens and cytokines, the molecular events that trigger oncogenesis and the better understanding of the immune system. Immunotherapy or cancer vaccines represent attractive treatment modalities. Immunotherapy requires a target – tumor-specific antigens and the development of an appropriate immune response – T lymphocytes or antibodies. For solid tumors, cytotoxic T lymphocytes would appear.

Following on from our recent issue ‘Vaccines in clinical trials: infectious disease’, we are now delighted to bring you this timely issue regarding cancer vaccines in clinical trials.

As John Nemunaitis outlines in his editorial article, the success of sipuleucel-T (Provenge<sup>®</sup>, Dendreon Corporation) may only be the start of a wave of successes in the area of cancer vaccines [2].

Even the failure of a clinical trial may contribute to our eventual realization of a therapy and, thus, a discussion of this, alongside recent success stories, is invaluable. This special focus issue includes 15 up-to-date articles that cover past and recent developments in clinical trials of cancer vaccines and outlines where we might expect the next success stories to come from. The articles include:

- Breast cancer vaccines: ongoing National Cancer Institute-registered clinical trials (Peoples *et al.*) [3];
- From clinical trials to clinical practice: therapeutic cancer vaccines for the treatment of prostate cancer (Madan *et al.*) [4];
- Vaccine-based clinical trials in ovarian cancer (Nijman *et al.*) [5];
- Colorectal cancer vaccines in clinical trials (van der Burg *et al.*) [6];
- Vaccination therapy in renal cell carcinoma: current position and future options in metastatic and localized disease (Brookman-May *et al.*) [7];
- Clinical trials of vaccines for immunotherapy in pancreatic cancer (Plate) [8];
- Non-small-cell lung carcinoma vaccines in clinical trials (Gridelli *et al.*) [9];
- Clinical peptide vaccination trials for leukemia patients (Casalegno-Garduño *et al.*) [10];
- Idiotype vaccines for lymphoma therapy (Inogés *et al.*) [11];
- Melanoma vaccines: developments over the past 10 years (Cebon *et al.*) [12];

- Neuroendocrine cancer vaccines in clinical trials (Bridle) [13];
- Vaccines for glioblastoma and high-grade glioma (Wheeler and Black) [14].

Also featured are a number of drug profiles that describe in more detail the progress of some specific therapeutics:

- Heat shock protein-peptide complex in the treatment of glioblastoma (Lim *et al.*) [15];
- CDX-1307: a novel vaccine under study as treatment for muscle-invasive bladder cancer (Morse *et al.*) [16].

This special issue includes a range of fascinating articles that should not be missed by immunologists, oncologists and clinicians alike working in this ever more exciting field. The success story of sipuleucel-T in Phase III trials and its approval by the US FDA has reinvigorated the field. Alongside this, the development of novel delivery systems, adjuvants and adjuvant

technology has seen a corresponding surge and will probably prove invaluable in helping overcome the tumor's immunosuppressive microenvironment.

While it is clear that much work remains to be done to build on the promising early results of clinical trials, at this stage, an optimistic view of cancer vaccine development in coming years does not seem unreasonable.

#### Financial & competing interests disclosure

*The author has no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.*

*No writing assistance was utilized in the production of this manuscript.*

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#### Website

- 101 How to prevent cancer  
<http://mywaytohealth.com/How%20to%20prevent%20Cancer.html>