Perspectives for new anti-tuberculous vaccines in the post-genomic era Vaccination with attenuated Mycobacterium bovis BCG has been used as the routine procedure to immunize against tuberculosis. Since the efficacy of BCG vaccination is very controversial, the search for new immunoprophylatic tools against tuberculosis is an area of intense interest. Knowledge of the complete sequence of Mycobacterium tuberculosis (Mtb) H37Rv genome and the application of new immunological, biochemical and genetic technologies has led to a detailed understanding of the transcriptome and proteome of this bacterium. Approximately one-third of the human population is infected with Mtb; however, the bacillus is only detected once the symptoms appear and therefore most of the recent efforts have been devoted to the development of a post-infection vaccine. In theory, this vaccine (1) will give rise to an increase in the long-lasting specific immunity against Mtb, (2) will not have significant adverse effects, and (3) will be affordable for the people in third world countries. The main strategies that have been developed include the subunit vaccines, either as a mixture of relevant immunogenic proteins or DNA constructs, recombinant strains of Mycobacterium bovis BCG and Mtb, designed to secrete immunogenic proteins or with attenuated virulence, respectively, and DNA-based vaccines. The subunit vaccines are delivered either as mixtures of immunogenic proteins and adjuvants, or as naked DNA or by viral vectors in order to induce a potent Th1 response. Most of these vaccines have been tested in several kinds of animal models, but they do not fully reproduce the human pathology. However, the results obtained so far are very encouraging and have led to the development of phase I trials in humans.

Keywords
tuberculosis, vaccines, Mycobacterium tuberculosis