populations to induce optimal immune responses, is particularly interesting in this regard (141). The enhanced potency achieved with a targeted system will have to be significantly greater than the currently available nontargeted particulate delivery systems to justify development. Many of the available particulate carriers are already efficiently targeted to APC by passive uptake approaches. Nevertheless, the potential to target to particular DC subsets remains an appealing concept.

Heretofore, therapeutic vaccines, that is, the use of vaccines to ameliorate or modify the course of existing chronic infectious or noninfectious diseases has had little success. Therapeutic vaccines have been evaluated for the treatment of cancers, rheumatoid arthritis, type 1 diabetes, and multiple sclerosis. While some of these vaccines aim to induce a strong humoral or cell-mediated immune response against a new target antigen, or to break immunological tolerance against a ''self'' antigen, others are designed to deviate or suppress an existing response. Adjuvants are a key technology for modifying the immune response, and will have an important part to play if therapeutic vaccines are to be successful. The key will be to balance the competing requirements of effective treatment of disease versus the potential induction of immunopathology, as a consequence of pushing the immune system too far in one direction. The high potential in this area needs to be tempered with an appreciation that safety remains crucial and early failures, particularly if focused on safety issues, could set the field back significantly.

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