

CPG oligodeoxynucleotides and their use to induce an immune response

Technology Summary

While oligonucleotides comprising 5'—C—phosphate—G—3' (CpG) sequences can effectively induce an immune response in human immune system cells, individuals respond with considerable heterogeneity depending on the specific CpG sequence. Unpredictable immune responses to CpGs present a challenge for inducing a consistent therapeutic immune response in all members of a diverse population using a single CpG sequence, even when that sequence is replicated in a CpG oligonucleotide.

FDA inventors discovered that using a mixture of multiple immune-activating oligonucleotides with different CpG motifs can induce a broad-based immunomodulatory response in a wide cross-section of subjects. These oligodeoxynucleotide mixtures comprise either different oligodeoxynucleotides expressing different CpG motifs or a single oligodeoxynucleotide containing multiple different motifs. These oligodeoxynucleotides also have the capacity to stimulate humoral, cell-mediated immune responses or both humoral and cell-mediated immune responses, depending on the motifs utilized.

Potential Commercial Applications

- Treating allergies, infectious diseases, cancer, and autoimmune disorders;
- Vaccine adjuvants for conventional and DNA vaccines
- Anti-sense therapeutics.

Competitive Advantages

- Multiple different ODN can be administered to induce an immune response

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Publications:

Klinman et al., "CpG Motifs Present in Bacterial DNA Rapidly Induce Lymphocytes to Secrete Interleukin 6, Interleukin 12 and Interferony." Proc. Natl. Acad. Sci. USA 93: 2879-2883 (1996). PMID: [8610135](#)

Intellectual Property:

United States Patent No. [7,919,477](#) issued 04.05.2011

United States Patent No. [7,521,063](#) issued 04.21.2009

United States Patent No. [8,232,259](#) issued 12.01.2015

International Patents

Product Area: Vaccine, adjuvant, therapeutic, allergy

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