The RELA gene, also known as Nuclear Factor Kappa B subunit 3 (NFKB3), is a gene that is involved in the regulation of a variety of cellular processes, including inflammation, immune responses, and cell survival. The RELA gene is located on chromosome 11 and encodes a protein called p65, which is a subunit of the transcription factor NF-κB.

NF-κB is a key regulator of the immune response and is activated in response to various stimuli, including infection, inflammation, and cellular stress. When activated, NF-κB translocates to the nucleus and binds to specific DNA sequences, regulating the expression of a wide range of genes involved in the immune response, cell proliferation, and apoptosis.

Mutations or dysregulation of the RELA gene have been associated with a variety of diseases, including cancer, autoimmune disorders, and inflammatory diseases. In some cancers, such as lymphoma and multiple myeloma, the RELA gene is overexpressed, leading to increased NF-κB activity and tumor cell survival. Conversely, in some autoimmune and inflammatory diseases, such as rheumatoid arthritis and inflammatory bowel disease, the RELA gene is downregulated, leading to decreased NF-κB activity and impaired immune responses.