

AP Biology

Changes in Signal Transduction Pathways (Topic 4.4)

A large number of diseases are caused by defects in signal transduction pathways. The nature of these defects and how they are induced varies enormously. Pathogenic organisms and viruses, many of which can interfere with signal transduction events, cause some of these defects. There are other diseases that can be traced to defects in the function of cell signal transduction pathways.

Take for example, diabetes. In Type 1 diabetes, insulin (ligand) is not produced. In Type 2 diabetes, there is failure of the target cell receptors to respond to insulin, the liver fails to take up glucose from the blood, and blood glucose levels remain elevated.

For this assignment, choose one topic from the list below. Explain, in detail, the disruption of the signal transduction pathway. At a minimum, your description should include the particular part of the signal transduction pathway that is affected, the effect on the cellular response, and whether or not the pathway is activated or inhibited.

Blood pressure drugs

Anesthesia

Birth control pills

Antihistamines

DDT

Anthrax

Neurotoxins

Cholera

Whooping Cough

Bacillary Dysentery

Listeria

Tuberculosis

Macular Degeneration