

# NOBEL PRIZE 2011: TWO TYPES OF IMMUNITY

## Summary

Bruce Beutler, Jules Hoffmann and Ralph Steinman share the Nobel Prize in physiology and medicine. Beutler and Hoffmann elucidated the sensory branch of innate immunity. They discovered and characterized the receptors of innate immune cells involved in the recognition of invading pathogens and analyzed the intracellular signaling pathways leading to development of inflammation and mobilization of the front line of defense against patho-

gens. Hoffmann concentrated on the role of Toll receptors in *Drosophila melanogaster*, Beutler on the role of Toll-like receptors in mammals. Steinman investigated mouse dendritic cells and their role in the induction of adaptive immunity, the second line of immune response that comes into play when innate immunity is not enough. The findings of Steinman established dendritic cells as a link between innate and adaptive immunity.