Stochastic switching of NF-κB system

NF-κB is a key transcription factor controlling immune responses such as inflammation, proliferation and apoptosis. Its regulatory system is tightly controlled by the numerous feedback loops. We pursue our earlier studies [1, 2] by considering not only two negative loops mediated by NF-κB inducible inhibitors IκBα and A20, which assures the oscillatory responses of NF-κB, but also a positive feedback loop mediated by the NF-κB inducible cytokine TNFα. This loop is negligible in many cell lines, but may become, as suggested by our study, dominant in immune cells like monocytes or macrophages that have a high level of TNFα expression.

References