Cellular regulation

Positive and negative feedback in signal transduction
Figure 6A: The Cyclin - E2F cell cycle control system (version 3a - June 8, 1999)
How does a cell respond as a function of the magnitude of stimulus?

Does stimulus-response function influence the fitness of the cell or the organism?
monotonous response

first order kinetics

saturated response by exhaustion of receptor
monotonous response

second (or higher) order kinetics

sensitivity

saturated response by exhaustion of receptor
threshold response
desensitization
adaptive response
response to differences
autocatalytic positive feedback
molecular switch
self-regulation by negative feedback
temporary responses
oscillations
transient responses to travelling waves
molecular switches to propagating relays
local switch with lateral inhibition
repeated patterns in space