$$F = k_B T \left[-\log p_{\text{active}}(c) - \log \frac{R}{N_{NS}} + \frac{\Delta \varepsilon_{RA}}{k_B T} \right]$$

fold-change =
$$\left(1 + p_{\text{active}}(c) \frac{R}{N_{NS}} e^{-\beta \Delta \varepsilon_{RA}}\right)^{-1} = \left(1 + e^{-\beta F}\right)^{-1}$$