**Introduction to chapter**

Polarity is an out-of-equilibrium process in which feedback reactions regulate the conversion of proteins between slowly diffusing plasma membrane-bound states and rapidly diffusing cytoplasmic states. So far, I have shown that PAR-2 dimerises at the membrane, and that this reaction underlies a form of positive feedback, whereby membrane affinity increases as concentrations increase. In this section, I consider the impact that this feedback reaction might have in the context of polarity.

To consider the potential implications of dimerisation-dependent membrane association behaviour in the context of polarity, it is no longer sufficient to consider the equilibrium state, and individual rates governing membrane association and dissociation must be considered. I therefore begin this chapter by considering the impact that dimerisation might have on membrane binding and unbinding rates. Fortunately, the thermodynamic model described in the previous chapter can be easily extended to this scenario, which I describe in the first section of this chapter. I then use this description to incorporate several features of dimerisation into existing mathematical models of PAR polarity.