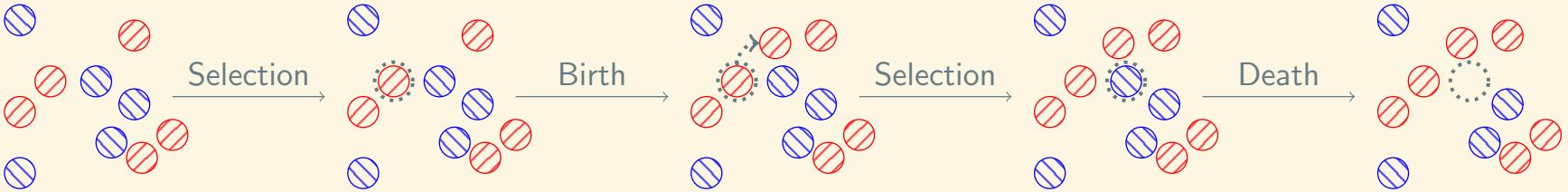
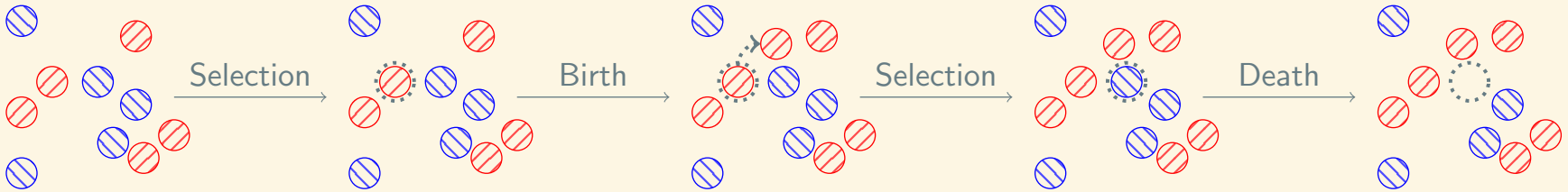
The Mathematics of Evolution


Selection
Birth
Selection
Death



$$p_{i,i-1} = \frac{i(N-i)}{N^2}$$

$$p_{i,i+1} = \frac{i(N-i)}{N^2}$$

$$p_{i,i} = 1 - p_{i,i-1} - p_{i,i+1}$$

$$\begin{pmatrix} 0 & 3 \\ 1 & 2 \end{pmatrix}$$

Group simulation

$$f_{1i} = \frac{3(N-i)}{N-1} = 3\frac{N-i}{N-1}$$
$$f_{2i} = \frac{i + 2(N-i-1)}{N-1} = \frac{2N-2-i}{N-1}$$

$$x_1 = \frac{1}{1 + 5/9 + 5/9 \times 2/3 + 5/9 \times 2/3 \times 1} = \frac{1}{62/27} = \frac{27}{62} \approx .44$$

Computer simulation