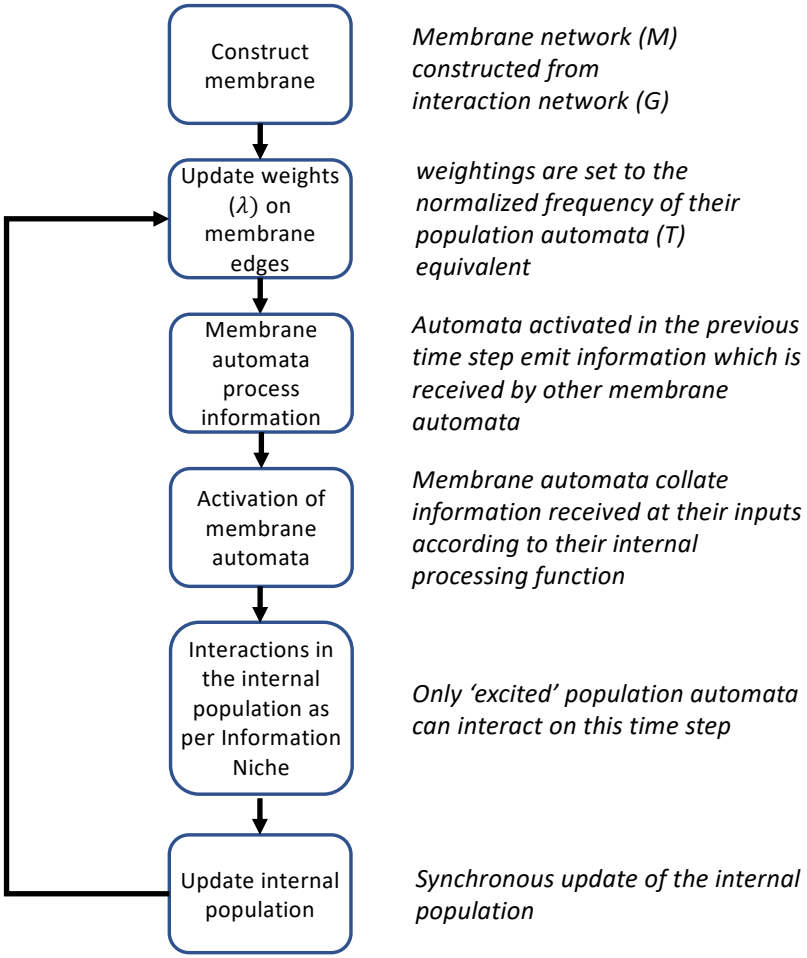
2. The computation niche simulation procedure



Membrane network (M) constructed from interaction network (G)

weightings are set to the normalized frequency of their population automata (T) equivalent

Automata activated in the previous time step emit information which is received by other membrane automata

Membrane automata collate information received at their inputs according to their internal processing function

Only 'excited' population automata can interact on this time step

Synchronous update of the internal population

Variable	Declaration	Description
frequency	1 x T integer vector	The absolute count of each automata type in the population at time t
norm_freq	1 x T real vector (normalized)	The normalized frequency distribution of each automata type in the population at time t
popDynamics	Z x T real matrix	The history of the normalised frequency distribution of the population from 1...Z (Z = total no. of iterations)
λ	1 x M real vector	The weightings on each edge of the membrane network

Constant	Declaration	Description
T	cell	The list of automata types
N	Integer	Population size (e.g. 90,000 automata in the population)
Z	Integer	Total no. of iterations of the simulation
G	T x T integer matrix	The interaction network for the population where each element of the matrix represents the automata type produced from the interaction of the automata T_i and T_j
M	T x T integer matrix	The membrane network where each edge represents the T_a -> T_b relationship of the functional composition T_b . T_a = T_c