Algorithm 3 The main loop of the agent-based model for the evolution of fimbriation

$Time = 1$
loop
  for all Hosts **do**
    Determine the number, n_f, of fimbriate agents in host.
    if $n_f \geq D^h$ **then**
      Delete the entire population of the host and skip to next host.
    end if
    {Release nutrient according to the response function equation 2.7.}
    $R \leftarrow G + F\frac{n_f^h}{D^h + n_f^h}$
    {Determine the number of cells N in this host. }
    $N \leftarrow$ CountAgentsInHost(thisHost)
    $f \leftarrow R/N$
    for all Agents in this host **do**
      {Update the internal energy state}
      $e \leftarrow e + f$
      $age \leftarrow age + 1$
      if $age > thresh_{age}$ **then**
        With probability $p1$ place agent in the reaper queue and skip to the next agent
      end if
      {Reproduction places offspring in birth queue. }
      if $agent > thresh_e$ **then**
        Reproduce cell with probability $p2$
      end if
      if agentIsFimbriate **then**
        Switch off fimbriation with probability p_{af}
      else
        {This uses equation 2.5 }
        Switch on fimbriation with probability $p_f = 1 - C\frac{f^h}{K^h + f^h}$
      end if
    end for
    {Movement between hosts.}
    With probability p_m move a randomly chosen agent to a randomly chosen host
    Delete agents from the reaper queue
    Place agents from birth queue into same host as parents
    Clear reaper queue and birth queue
  end for
  $Time = Time + 1$
end loop