# Algorithm

The updated populations $SIR$ for humans and $SI$ for mosquitos at the time $t+1$ is calculated with the following sequencies of steps:

**Step 1:** Input the biogical parameters;

**Step 2:** Set the initial conditions for all state variables *SIRSI*;

**Step 3:** Define the time-step $dt$ to the numerical method;

**Step 4:** Set the initial and final times: $T_0$ and $T_f$;

**Step 5:** For $t = T_0$ to $T_f$:

- Compute the populations $SIRSI$ from a discretized form of the ODE system 11 by Euler method, using the $dt$ defined in **step 5**;

- Update all frequencies $f(aa)$, $f(Aa)$, $f(AA)$, $p$ and $q$;

**Step 6:** Check the *Hardy-Weinberg* equilibrium, in which $f(aa) = q^2$, $f(Aa) = 2pq$ and $f(AA) = p^2$.

**Step 8:** Check the differences of the dynamics of the three genotypes.