**Gene Simulator**

Code

1. How do you make the simulation box bigger or smaller? Can you make the simulation box 4 big cells? Can you make it a lot of small cells?
2. Can you speed up or slow down the simulation?

Normal Simulation

1. The code asks you some questions at the start. If you change the value of each question, how does it affect the simulation?
2. How do the cells split after one dies? What are the options for cell splitting? How often do random cells appear? (Hint: check breed function)
3. What happens if 2 cells fight each other? What happen if they both cooperate? (Hint: check normal function)

Tumour Simulation

1. Give the antibody a certain strength - what happens when you adjust it? (Hint: find antibody strength). What value makes the tumour take over, what value gets rid of most of the tumour?
2. Set the strength of the antibody to 2. How does randomness affect the ability of the antibody to fight the tumour?
3. How does cooperation affect the antibody strength?
4. Some antibodies cooperate with each other, some fight. What happens if you adjust this? (Hint: find the word ratio in the code and change the value in the statement, if(r < ‘number’):

Normal Simulation - Dominant Gene

1. One of the options is to select the dominant gene at the end. How does the code do that? What happens if you change the number that controls the dominant gene (Hint: find strength in the code).
2. Can you change the algorithm so you end up with all red genes at the end? (Hint: random numbers)

Memorizer Simulation

1. What happens with the simulation if a colour remembers the last move they did ? Why do you think this happens? What happens if all the colours remember the last move they did?

Pokemon Simulation

1. 2 of the Pokemon are in the code - add one more so you can battle.
2. Play around with each Pokemon’s attack power. How does it affect the outcome?
3. What happens if you change the Pokemon’s health?