EVOLUTION SIMULATOR:

Friend or Foe

based on the Science of

Immunisation for Infants

with the game available via the link

PunatiVraamarsh_KulasekaraSuvin_EvolutionSimulator:FriendOrFoe_PC-2-1225

designed using the program

Scratch[1]

on the

Microsoft Windows Operating System

INSTRUCTIONS TO PLAY EVOLUTION SIMULATOR: FRIEND OR FOE

In order to win the *Evolution Simulator: Friend or Foe* game, the player must run the program as follows:

- Click on the link, PunatiVraamarsh_KulasekaraSuvin_EvolutionSimulator:FriendOrFoe_PC-2-1225
- Once the game loads, read the instructions (as shown below) on how to win the game and get immunised.
- The aim of the game is to get immunised against Mumps, Measles, Rubella and Polio.
- To do this, the player has to craft a vaccine for each disease, namely Mumps, Measles, Rubella and Polio, while trying to dodge the viruses chasing the player.
- If the player touches the viruses, the infection increases.
- As more viruses enter the game, it becomes more and more difficult to survive as the infection increases. If the infection increases to 100 points or more, and the player loses the game, and its Game Over!
- To get immunised, the player has to collect the vaccine pieces to craft vaccines for each virus.
- The player wins the game when he/she has been immunised against all the viruses by collecting the vaccines once they are crafted.
- Every second that the player survives in the game, the score increases by one point.
- In addition, the player is awarded five bonus points for each DNA that is collected in the game.
- Click on the green flag at the top left corner of the game screen on Scratch[1].
- Press the START (yellow blob) button to begin playing. (At any time if the player wants to stop playing, press the red octagon button beside the green flag).
- When the player clicks the green flag, the player will be teleported to a '*how to play*' instructions screen.
- Press the full screen button and turn up the sound for a better experience of the game.

Footnote 1: https://scratch.mit.edu/

DESCRIPTION OF EVOLUTION SIMULATOR: FRIEND OR FOE

Evolution Simulator can be played by one player at a time. It is a friendly interactive game where the human species must survive against various viruses such as Measles, Mumps, Rubella and Polio. The viruses get progressively deadlier as the player gets further into the game. The game has three variables:

- Vaccine Pieces – By collecting more and more vaccine pieces, the player can start creating the vaccines. The player needs 3 vaccine pieces to craft 1 vaccine. The vaccines are essential for beating the viruses.
- Score – The winner of the game is determined by the player who achieves the highest score when multiple players are engaged in the game. The score increases by 1 point, for each second the player (depicted as a scientist in the game) survives in the game. Five bonus points are awarded for each instance that the player collects the helix DNA.
- Infection – The level of infection in the game determines how long the player can survive in the game. When the game starts, the infection score is zero, but as the player gets caught by the different viruses, the infection increases. If/when the infection reaches 100 points or more, the game ends.

SCIENCE BEHIND EVOLUTION SIMULATOR

In line with the 2024 Science Talent Search theme of *'Species Survival'*, the concept of the human species surviving against a group of deadly viruses such as Mumps, Measles, Rubella and Polio, has been included in the game. Mumps, Measles and Rubella viruses come under the MMR family[Ref.[1,2,3]], which can be deadly for babies in some situations. Polio is dangerous too because one in 200 infections leads to irreversible paralysis[Ref.[4]].

Our computer program incorporates some of the types of viruses that affect the human race. Humans can survive against them by avoiding those viruses and crafting, and taking the appropriate vaccines. The vaccines that newborns take was considered for the game, because without the vaccine many of those babies would not survive and consequently potentially endanger the human race. Therefore, immunisation with vaccines is critical for the survival of the human species.

INTEGRATION OF SCIENCE AND EVOLUTION SIMULATOR

Whilst a number of dangerous viruses could infect infants when they are born, Evolution Simulator aims to convey the critical message that newborns must be vaccinated so that the human race continues to survive and thrive. Some of these critical vaccines need to be taken multiple times in accordance with the vaccination schedule for newborns and infants to ensure effectiveness and robustness in combating viruses.

Evolution Simulator hopes to educate current and future generations of kids about the importance of vaccinating infants against deadly and life altering viruses such as Mumps, Measles, Rubella and Polio, and other viruses, during infancy and early childhood. By doing so, human babies, who are integral to the continuation of the human species, would have a better chance to survive and thrive, and ensure the longevity of the human race.

BIBLIOGRAPHY

Ref. [1]: About Mumps (6 June 2024) https://www.cdc.gov/mumps/about/index.html (Accessed 15-07-24, 4:05pm)
Ref. [2]: Measles (12 July 2024) https://www.who.int/news-room/fact-sheets/detail/measles (Accessed 15-07-22, 4:14pm)
Ref. [3]: Rubella (14 May 2024) https://www.who.int/news-room/fact-sheets/detail/rubella (Accessed 15-07-22, 4:23pm)
Ref. [4]: Polio Vaccine (06 July 2024) https://en.wikipedia.org/wiki/Polio_vaccine (Accessed 15-07-22, 4:32pm)
Ref. [5]: Department of Health (05 July 2024) https://www.health.vic.gov.au/ (Accessed 15-07-22, 4:52pm)

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