Dr. Hana Dobrovolny's Lab

Viral Agent-Based Model Interface Glossary

Version 1.0

Revision History

Date	Version	Description	Author
09/26/2025	1.0	Filled out all the sections initially	Norwood, Ellion

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Glossary

1. Introduction

This document defines terminology specific to the problem domain of the **Viral Agent-Based Model (ABM) Graphical User Interface (GUI)**. It ensures a consistent understanding of terms related to viral dynamics, simulation parameters, data visualization, and the underlying C++/CUDA backend code. It serves as an informal data dictionary, explaining terms that may be unfamiliar to the reader of the use-case descriptions and other project documents.

1.1 Purpose

To define terms that are specific to our Viral Agent-Based Model graphical user interface and ensure consistent understanding among users and developers.

1.2 Scope

This Glossary is primarily associated with the **Viral Agent-Based Model GUI** development project. It defines terms used across all project documentation, including the Project Vision and Scope Document, Use Case Specifications, and communications regarding the GUI's features, data inputs, and outputs.

1.3 References

No documents are mentioned elsewhere in glossary

1.4 Overview

This Glossary contains a series of definitions essential to the Viral Agent-Based Model GUI project. The terms are organized into two main groups for improved clarity: General Terminology and Components and Simulation Parameters and Variables. All terms within these groupings are presented in alphabetical order.

2. Definitions

2.1 ABM - Agent Based Model

A computer simulation that shows how individual “agents” (like people, animals, or organizations) interact with each other and their environment, to see how those small actions create larger patterns or outcomes.

2.2 Simulation Parameters and Variables

2.2.1 Cell-Free Transmission

A binary parameter/mode (ON/OFF switch) that enables the viral spread mechanism reliant on the movement and diffusion of free-floating virus particles to infect susceptible cells.

2.2.2 Cell-to-Cell Transmission

A binary parameter/mode (ON/OFF switch) that enables viral spread directly between adjacent cells, bypassing the need for free virus particles.

2.2.3 Dead Cells

A variable tracked and plotted in the simulation, representing cells that have been cleared or have died due to the viral infection.

2.2.4 Eclipse Cells (or Eclipse Duration)

A variable representing cells that have been infected but are not yet actively producing or spreading the virus..

2.2.5 Infectious Cells (or Infectious Lifespan)

A variable representing cells that are actively producing and spreading the virus.

2.2.6 *Infection Rate*

A continuous parameter defining the rate or probability at which a susceptible cell becomes infected by free virus or direct cell-to-cell contact.

2.2.7 *Uninfected Cells*

A variable tracked and plotted in the simulation, representing healthy, susceptible cells remaining in the simulated environment.

2.2.8 *Viral Clearance Rate*

A continuous parameter defining the rate at which free virus particles are removed or neutralized in the simulation environment (e.g., by the immune system or natural decay).

2.2.9 *Virus (Amount)*

A variable tracked and plotted in the simulation, representing the total concentration or amount of free virus particles in the environment.