Pestis - A Rat-based Strategy Game

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1 Premise

You are a rat. For years, your colony has spent their lives dwelling in sewers. Humans see you as wretched, plague-infested beasts. You and your rat ancestors have spent centuries developing sophisticated attack strategies to take over Earth. No one will stand in your way, except the other rat hordes (and the humans of course) who want the throne to themselves.

Compete with other rat hordes in an exciting multiplayer strategy game. Breed and evolve your horde, capture strongholds, and defeat the other rats who dare stand in your way.

2 Gameplay

2.1 Goal & Gameplay loop

Your goal is to be the most populous rat colony within an allotted time frame. To achieve this, your rats must explore and identify important points of interest. Your hordes can capture these POIs and use them as strategic strongholds. In addition to rival rats, you must be aware of human settlements. These human settlements occasionally send out rat extermination squads that wander the map. The settlements also contain important resources that a rat may find useful. Prepare for attacks from the humans and enemy rats, using your strongholds and plundered resources to aid you. As time progresses, your rats will evolve, for better or for worse. The ultimate goal is to expand your colony, do whatever it takes to have the most rats.

2.2 Evolutionary Dynamics

You start off with a very small colony of rats. You are randomly given unique genetic traits that the other colonies do not have. These traits are based on the environment your rats spawned in. Your initial population is genetically homogeneous.

You can acquire deleterious (harmful) or advantageous mutations. You cannot choose whether you acquire a deleterious or advantageous mutation, but you can choose which specific deleterious or advantageous mutation you would like from a pool of mutations.

Dynamics are determined by your birth rate, death rate, mutation rate (how many mutations you develop per turn), and selection strength. Selection is the process through which the environment drives populations towards a certain evolutionary path. Selection can be negative or positive, i.e. selecting against deleterious mutations or selecting towards advantageous mutations.

Develop genetic diversity by capturing colonies from competing hordes. Opt to split your horde into colonies that can develop their own specialised skills. The mutations available to choose from depend on factors like current environment and ancestry.

2.3 Resources

To sustain your colonies, you need food. Controlling POIs earns you an amount of food per second. Your population and armies consume an amount of food per second. You can also use food to purchase mutations. If you do not have enough food to buy a positive mutation, you are forced to develop a random deleterious mutation.

2.4 Points of Interest

Points of interest are locations on the map that can be useful to the player. Players can take over POIs through combat. POIs include farms, rat forts, human settlements, and exterminator camps.

2.5 Combat

Combat is different to most games. Rather than controlling individual units and manually performing all the micro-actions like "Bite enemy", combat is initiated by defining an attack strategy. You must also choose how many rats you would like to fight with. After you've defined the initial parameters, real-time combat will occur. As combat occurs, you may provide live updates to your army's strategy. You can also send in more rats.

2.6 Map & Terrain

The map is where all POIs and spawns are based. You can't immediately see the whole map due to a fog of war. The map consists of different terrain. Some terrain types include radioactive zones, tundra biomes, desert biomes, and urban areas. The biome your rats spawn in will affect their starting mutations and traits. For example, a rat colony spawned in a desert biome may be nimble in the desert, good at tunnelling, and able to survive on low food, but may struggle to move and survive in snowy areas. Furthermore, the pool of mutations available to you depends on what biome your rats are currently living in. This allows you to develop bonuses in more than the terrain you spawned in.

3 Look & Feel

Isometric graphics are best suited to a real-time strategy game, since the perspective is more practical. Visually, the game would have a vivid and exaggerated style, similar to Fallout 2 (1998). The game would play like most 4X games. Combat should feel familiar to those who've played real-time strategy games like Mount & Blade or Warhammer. Exploration can be compared to other games that use a Fog of War. Evolution system should feel like a more sophisticated version of Plague Inc mechanics.

4 Flagship Technology

The main key tech is:

- Simulation of complex evolutionary dynamics
  - Modifying agent behaviour based on their genetics
  - Available mutations depend on all previous ones
  - How do different mutations interact?

And as a potential fallback:

- Simulation of the movement of 1000s of rats
  - Movement of colony as a whole
  - But also, individual rats within that
  - How do individual rats avoid obstacles without repeating calculations between rats?

5 Development

The game will be developed using the Unity engine and the native C# support. It has not been definitively decided whether it will be 3D or pixelated, but Blender or Aseprite would be used respectively.

5.1 Schedule

- 13/01/25 - Skeleton and basic functionality tested
- 20/01/25 - Feels like a bad game, but a game nonetheless
- 27/01/25 - Good game jam entry-level
- 03/02/25 - MVP, testing at the end of week
- 10/02/25 - implement feedback from testers, first panel Wednesday, implement feedback from panel
- 17/02/25 - Reading week (reduced workload)
- 24/02/25 - ???
- 03/03/25 - beta release, testing at end of week
- 10/03/25 - implement feedback from testers, second panel Wednesday, implement feedback from panel
- 17/03/25 - ???
- 24/03/25 - ???, testing at end of the week
- 31/03/25 - Polish and implement feedback from the test, games day on Friday