**Test Plan**

*In your /doc folder, upload a test plan that outlines how to user-test your game, title the document: test-plan.docx. For example, what keys to press or what mouse actions are necessary. The TAs will use this short document to test and mark your game.*

**Startup and Main Menu Tests**

1: Logo Animation

* Precondition:
  + Game is launched after building and running ./amoebash
* Test Steps:

1. Start game
2. Observe initial animation

* Expected Result:
  + Logo/text slides in from the left and settles at the center
  + During animation, all buttons are inactive and clicks are ignored

2: Shop Button Functionality

* Precondition:
  + Main menu active and logo animation completed
* Test Steps:

1. Click button located below start button
2. Verify that in shop menu (blank background)
3. Click back button on bottom left to go back to main menu

* Expected Result:
  + First click of button should display shop screen
  + Second click should hide shop screen, display main menu again

3: Info Button Functionality

* Precondition:
  + Main menu active and logo animation completed
* Test Steps:

1. Click button located at bottom of screen
2. Verify that in info menu (blank background)
3. Click back button on bottom left to go back to main menu

* Expected Result:
  + First click of button should display info screen
  + Second click should hide info screen, display main menu again

4: Start Button and Game Start Animation

* Precondition:
  + Main menu active and logo animation completed
* Test Steps:

1. Click start button located at center of screen underneath logo
2. Observe animation
3. Load into game screen

* Expected Result:
  + Animation should play showing nucleus moving from left to right into a nose
  + Note the variants of the animation, where the nose changes color / texture / added accessories / etc.
  + After animation, should transition to game mode

**In-Game Functionality**

1: Tutorial Screen

* Precondition:
  + First time loading game
* Test Steps:

1. Click start button and wait for intro cutscene to finish
2. Move mouse around the game window
3. Verify that main character always rotates to point towards mouse cursor and slowly hovers towards mouse direction if mouse is far enough from character
4. Click in any direction on game canvas
5. Observe the lazy camera follow, and also parallax movement of background
6. Traverse to right side of screen, reading text telling you how to play the game
7. Once you reach the end of the map, find the key, and push it to chest using mesh based collisions

* Expected Result:
  + After clicking, character should dash towards mouse direction, accelerating and then decelerating, and returning to previous velocity
  + Dash sound should play when clicked
  + Text should render on walls of map displaying info about game
  + Collisions should be on with the character and the key, and also key and chest

2: Grid, Camera, Procedural Map, Minimap Behavior

* Precondition:
  + Gameplay has started after logo and intro cutscene and tutorial complete
* Test Steps:

1. Click around the screen to make nucleus move around on map
2. Move nucleus towards edges of map, and notice bounds of map

* Expected Result:
  + Static minimap of map should always display the current tile character is on with a blue square
  + Portal should show up as yellow tile on the mini map
  + When reaching the map edges, the bounds should be visible as a different texture, and character can't move past them (collides into them and stops)

3: Enemy Interaction [Spike Enemy]

* Precondition:
  + Gameplay has started
* Test Steps:

1. Explore map and find enemies in map
2. Observe enemies movement pattern from a distance, and notice tracking once you get close to enemy
3. Dash into enemy sprite

* Expected Result:
  + When at a distance from enemy, will hover in patrol mode
  + When in proximity to enemy, enemy will chase player
  + When dashing into an enemy, the enemy is killed and a corresponding sound effect is played along with buff drop

4: Enemy Interaction [Red Blood Cell (RBC)]

* Precondition:
  + Gameplay has started
* Test Steps:

1. Explore map and find enemies in map
2. Observe enemies movement pattern from a distance, and notice tracking once you get close to enemy
3. Dash into enemy sprite

* Expected Result:
  + When at a distance from the enemy, it will float around in a randomized direction every few seconds.
  + When in proximity to enemy, enemy will run away from character
  + When dashing into an enemy, the enemy is killed and a corresponding sound effect is played with buff drop

5: Enemy Interaction [Bacteriophage]

* Precondition:
  + Gameplay has started
* Test Steps:

1. Explore map and find enemies in map
2. Observe enemies movement pattern from a distance, and notice tracking once you get close to enemy
3. Dash into enemy sprite

* Expected Result:
  + When at a distance from enemy, will be patrolling
  + When in proximity to enemy, enemy will orbit around player shooting projectiles
  + When dashing into an enemy, the enemy is killed and a corresponding sound effect is played along with buff drop

6. Wall Interaction / Collision

* Precondition
  + Gameplay has started after logo and intro cutscene
* Test Steps
  + Dash in one direction until you see a wall
  + Dash into the wall
* Expected Result
  + Player should not be able to enter the wall area (be clamped in wall)
  + Player’s original speed is conserved in the direction not blocked by wall
    - Eg - If the wall is horizontal, the player won’t be able to move upwards into it, but depending on dash angle, the horizontal component of their speed is preserved

7. Player Enemy Interaction for Damage

* Precondition
  + Gameplay has started after logo and intro cutscene
* Test Steps
  + Explore map and find enemies in map
  + Get close in attack range so enemies start attack
* Expected Result
  + For attack-able enemies, when they attack, player HP should reduce
  + When player HP reaches 0, gameplay should shift to gameover screen showing text relevant to game over
    - Game should not be playable after reaching 0 HP
    - Enemy damage should be inflicted

8. Buff System

* Precondition
  + Gameplay has started after logo and intro cutscene
* Test Steps
  + Explore map and find enemies in map
  + Attack enemies to collect buffs
* Expected Result
  + When enemies die, they should drop buffs
  + Buff UI should be placed on screen to indicate a buff dropped
  + Upon collecting a buff, the corresponding status changes should be applied

**Keyboard Controls**

1: Pause Functionality (Spacebar)

* Precondition:
  + Game mode active
* Test Steps:

1. Press spacebar while in game
2. Attempt in game action such as dashing

* Expected Result:
  + Game pauses, and “PAUSE” text is overlaid over current game state in center of screen
  + Everything is stationary including player, enemies, background, etc.
  + Only possible actions are unpausing with spacebar, or restarting game (see next test)

2: Restart Functionality (R key)

* Precondition:
  + In any game state
* Test Steps:

1. Press “R” key

* Expected Result:
  + Game restarts, you are taken back to the main menu
  + On restart, the logo animation wont play, as logo should already be placed in the center

3: Game Over Functionality (O key)

* Precondition:
  + Game mode active
* Test Steps:

1. Press “O” key
2. Try any character action, try and clicks / key presses (except R key)
3. Press left mouse click or “R” key to restart game

* Expected Result:
  + After pressing “O,” game over screen is displayed with a black background and message centered
  + No actions should be possible, as character should not be displayed at all
  + Only possible action is pressing left mouse click or “R” key after which game should return to main menu