

GENETIS: Adding Hole Size constraints

12/3/19

① In fitnessFunction - Ara . py

✓ add :

$$\left\{ \begin{array}{l} \text{for } R_A > R_H \\ \text{FitnessScore} = \text{FitnessScore} \times e^{-\frac{A(R_A - R_H)}{L}} \\ \text{else} \\ \text{FitnessScore} = \text{FitnessScore} \end{array} \right\}$$

✓ variable for "A" Scaling constant

✓ Read in output from roulette algorithm

② In Bash Script:

✓ add variable "A" to top

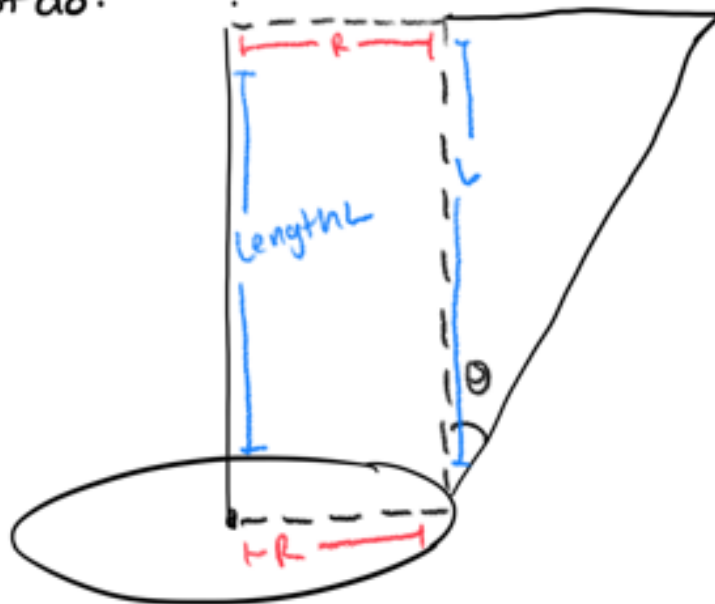
✓ add Flag for variable at place where fitnessFunction.py is run in part(E) and (G) of Bash Script.

③ In plotting Code:

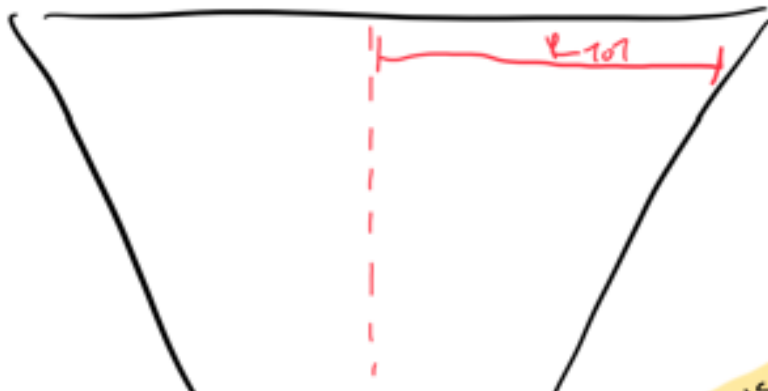
□ Area constants : V_{eff} , θ , R to compare to when plotting!

Note: Comparing R_{ant} to R_{hole} is incorrect!

In the `fitnessFunction_AEA.cpp`, we must do:



- ie- we must calculate R_{total} :

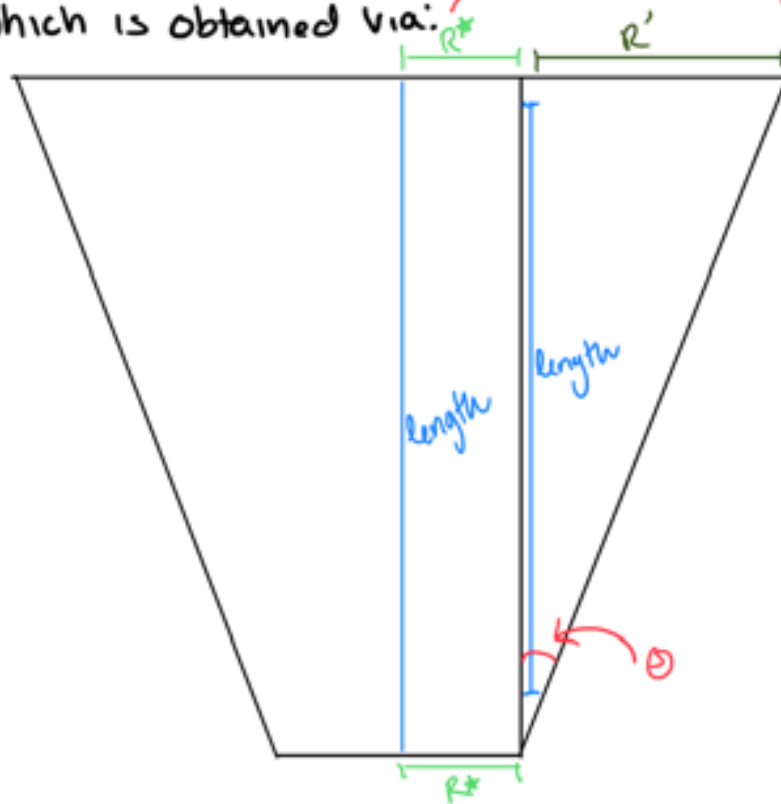


is what
at?

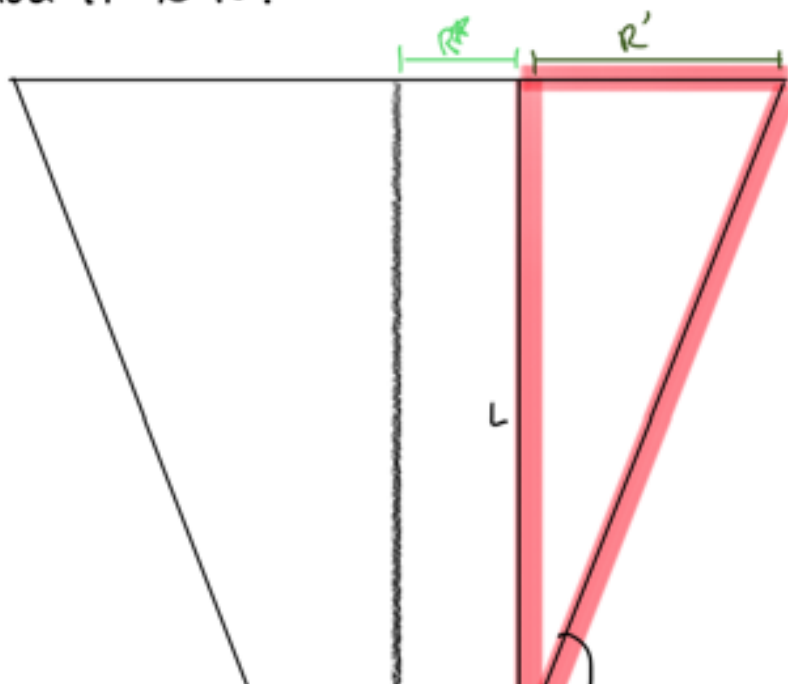


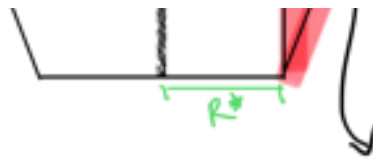
This is
we want
 R_{107}

Which is obtained via:



Thus, we must calculate R' first. Then add it to R^* .





$$R_{tot} = R^* + R'$$

R_{tot} is what we want to compare to R_{hole} . Thus, it must be calculated first.

$$\left. \begin{array}{l} \text{If } R_{tot} > R_{hole} \\ \text{Then} \\ \text{FitnessScore} = \text{FitnessScore} \times (e^{-R_{tot} \dots})^2 \\ \text{else} \\ \text{FitnessScore} = \text{FitnessScore} \end{array} \right\}$$

The math should be done as follows:

$$\tan \theta = \frac{R'}{L}$$

We know θ and L . So,

$$L \tan \theta = R'$$

Finally,

$$R' + R^* (\text{initial radius read into the .cpp Program}) = R_{tot}$$



- ☐ Read in L , Θ Lines from generation DNA.csv.
- ☐ Use them to calculate R' .
- ☐ add already Read in R^* (initial Radius) to R' calculated above to obtain R_{Total} .
- ☐ store newly calculated R_{Tot} and compare That in our "if" Statement.