

Script to run FREGENE for Const-Neut replications:

```
#Run a const size population of 25,900 with a FREGENE scaling factor of 40
i=20
/usr/local/bin/fregene -i in_c_n.xml -p par_c_n.xml -recomb recomb_c_n.xml -o rin_1_c_n.xml -af
posAf_c_n.txt -sd $i -scale 40.0 -hz homoz_n_1.txt > log_1_c_n.txt

#Unscale population size
let i=$i+1
/usr/local/bin/fregene -i rin_1_c_n.xml -p par_c_n.xml -gn 0 -recomb recomb_c_n.xml -o rin_2_c_n.xml -sd $i
-scale_exp 40.0 1 -hz homoz_n_1.txt -af posAf_c_n.txt > log_2_c_n.txt

#Run sample and make a genotype (-og) file for "Gen_0"
let i=$i+1
usr/local/bin/sample -i rin_2_c_n.xml -log output_c_n_Sample -og geno_c_n_Sample_1
-controls 5000 -chromolength 50.0 -sd $i > log_1_c_n_Sample.txt

#Run for a further 10 generations
let i=$i+1
/usr/local/bin/fregene -i rin_2_c_n.xml -p par_c_n.xml -gn 10 -recomb recomb_c_n.xml -o rin_3_c_n.xml -sd $i
-hz homoz_n_3.txt -af posAf_3_c_n.txt > log_3_c_n.txt

let i=$i+1
#Run sample and make a genotype (-og) file for "Gen_10"
/usr/local/bin/sample -i rin_3_c_n.xml -log output_c_n_Sample_3 -og geno_c_n_Sample_3 -controls 2000 -
chromolength 50.0 -sd $i > log_3_c_n_Sample.txt
```

Input files for Const-Neut FREGENE simulations

par_c_n.xml

```
<?xml version='1.0' ?>
<!-- Parameter File --><HEAD>
<NO_GENER>37000</NO_GENER>
<MUTAT_RATE>9.38e-09</MUTAT_RATE>
<PROP_SEL>5.0e-04</PROP_SEL>
<SEL_COEF_POS>0.005</SEL_COEF_POS>
<SEL_COEF_SD_POS>0.05</SEL_COEF_SD_POS>
<SEL_COEF_NEG>-0.01</SEL_COEF_NEG>
<SEL_COEF_SD_NEG>0.005</SEL_COEF_SD_NEG>
<PROP_POS_SEL_COEF>0.0</PROP_POS_SEL_COEF>
<SEL_DOM_POS>0.5</SEL_DOM_POS>
<SEL_DOM_SD_POS>0.2</SEL_DOM_SD_POS>
<SEL_DOM_NEG>1.2</SEL_DOM_NEG>
<SEL_DOM_SD_NEG>0.2</SEL_DOM_SD_NEG>
<PROP_POS_SEL_DOM>0.8</PROP_POS_SEL_DOM>
<GROWTH_RATE>0.0</GROWTH_RATE>
<DELETION_INTERVAL>37000</DELETION_INTERVAL>
<PROP_SEL_LOCAL>0.5</PROP_SEL_LOCAL>
</HEAD>
```

in_c_n.xml

```
<?xml version='1.0' ?>
<!-- This a Forward Data Simulation --><HEAD><DATE>Fri March 6th 11:30:50 2009
</DATE>
<SIMULATION_FEATURES>
<SEGMENTS>51800</SEGMENTS>
<MAX_MUT_CHROMO>0</MAX_MUT_CHROMO>
<CHROMO_LENGTH>50.0</CHROMO_LENGTH>
<MAX_MATRIX_SIZE>1.25e+17</MAX_MATRIX_SIZE>
</SIMULATION_FEATURES>
</HEAD>
<DATA>0
</DATA>
```

recomb_c_n.xml

```
<?xml version='1.0' ?>
<!-- Recombination File --><HEAD>
<RECOM_RATE>1.0e-08</RECOM_RATE>
<PROP_RECOM_HS>0</PROP_RECOM_HS>
<GC_RATE>0</GC_RATE>
<GC_LENGTH>0</GC_LENGTH>
<HS_LENGTH>10</HS_LENGTH>
<HS_SPACING>50000</HS_SPACING>
<N_REGIONS>1</N_REGIONS>
<SUBS_PER_REGION>1</SUBS_PER_REGION>
<REGION_GAMMA_SCALE>0</REGION_GAMMA_SCALE>
<REGION_GAMMA_SHAPE>1</REGION_GAMMA_SHAPE>
<SUB_REGION_GAMMA_SHAPE>1</SUB_REGION_GAMMA_SHAPE>
<INTENSITY_GAMMA_SHAPE>1</INTENSITY_GAMMA_SHAPE>
<HS_SPACING_GAMMA_SHAPE>1</HS_SPACING_GAMMA_SHAPE>
<HS_COMB>1</HS_COMB>
</HEAD>
```