

# Molecular Genetics eXplorer

The Molecular Genetics Explorer (MGX) is a BioQUEST software simulation that integrates genetics, biochemistry, and molecular biology to study a biological phenomenon.



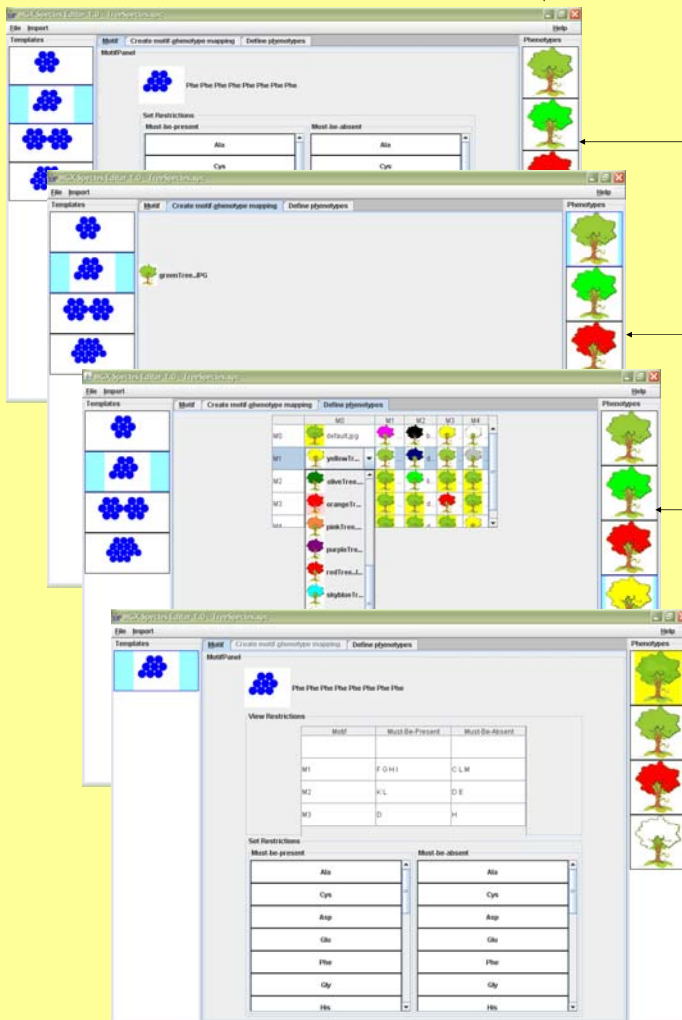
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<http://www.cs.umb.edu/mgx>



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## Species Editor



❖ Modified Protein Investigator output file ( ie. Protein Sequence + Shape) serves as template file.

### NEW SPECIES ( Step I )

- ❖ Select one template
- ❖ Define restrictions ie. Must-be-present /absent acids.

### NEW SPECIES ( Step II )

- ❖ Define motif-phenotype map.
- ❖ Motif generated on Save.

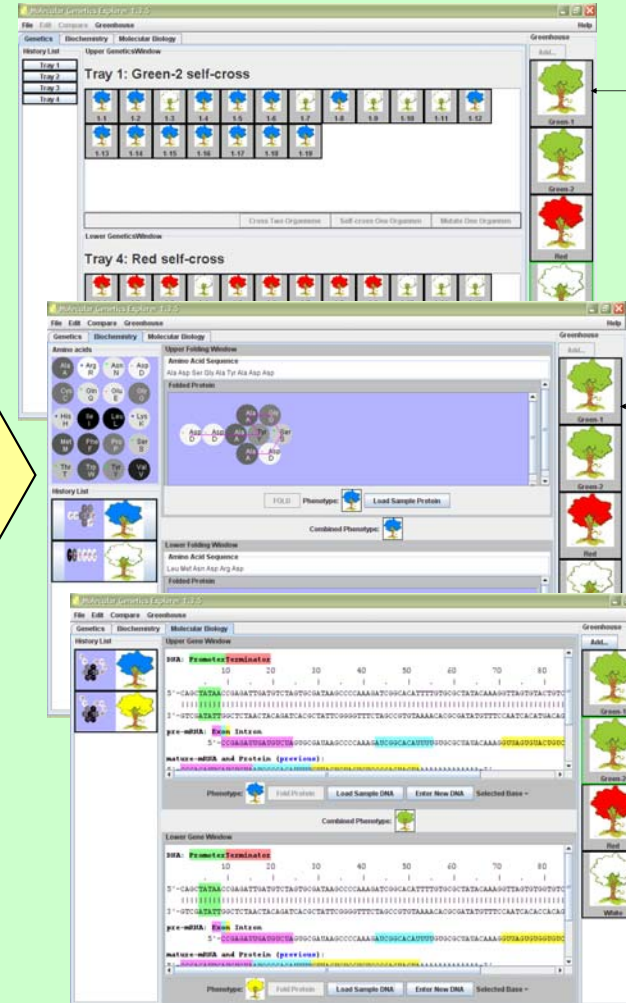
### NEW SPECIES ( Step III )

- ❖ Define phenotypes for a motif pair by selecting a phenotype from the drop down list.

### EDIT

- ❖ Open <species>.spc file.
- ❖ Modify motif restrictions
- ❖ Modify heterozygous in grid.

## MGX



### GENETICS

- ❖ Load Greenhouse
- ❖ Phenotypes rendered from .spc file.
- ❖ Cross Two Organism/Self-cross One Organism/Mutate One Organism.

### BIOCHEMISTRY

- ❖ Folded acid sequence matches template and renders the matching phenotype.
- ❖ Combined phenotype is resultant of the combined upper and lower fold.
- ❖ Tray is loaded with folded sequence and phenotype.

### MOLECULAR BIOLOGY

- Generates DNA Sequence.