1 Entity Sets for the proposed database.
The primary key is identified by an underline.

1.1 Comparison Types
Represents a comparison type of an experiment.

1.1.1 Attributes

1.1.1.1 Transition
The name of the comparison.

1.1.1.2 Species
The species for this comparison.

1.1.1.3 Cell Type
The cell type associated with this comparison.

1.2 Experiments
Represents one experiment performed by a lab technician.

1.2.1 Attributes

1.2.1.1 Experiment ID
Name of researcher and date of experiment.

1.2.1.2 TESS Job
The ID number of the TESS job that this experiment's data is based on.

1.3 Genes
Represents a gene for any number of experiments.

1.3.1 Attributes

1.3.1.1 Name
The name of the gene.

1.3.1.3 Chromosome
Where the gene is located.
1.3.1.4 Start
Location of beginning of the gene sequence.

1.3.1.5 End
Location of end of the gene sequence.

1.4 Regulatory Sequences
Represents a sequence found to be related to a transcription factor inside of a gene.

1.4.1 Attributes

1.4.1.1 Beginning
Where the sequence starts on the gene sequence.

1.4.1.2 Length
Length of the sequence.

1.4.1.3 Sense
The direction that the sequence travels along the DNA.

1.5 Aggregate Factor Matches
Represents aggregate data about factor matches in a gene.

1.5.1 Attributes

1.5.1.1 Study
The scientific paper which data about a factor match was found.

1.5.1.2 Transfac
The transcription factor associated with this match.

1.5.1.3 NumMatches
The number of related tuples in the Matches table.

1.5.1.4 P-Value
1.5.1.5 Rate
1.5.1.6 La
1.5.1.7 FACs

1.6 Matches
Represents individual factor matches for a gene.

1.6.1 Attributes

1.6.1.1 Study
The scientific paper which data about a factor match was found.

1.6.1.2 Transfac
The transcription factor associated with this match.

1.6.1.3 La
1.6.1.4 La_slash
1.6.1.5 Lq
1.6.1.6 Lpv
1.6.1.7 Sc
1.6.1.8 Sm
1.6.1.9 Spv
1.6.1.10 Ppv

1.7 Gene Sequences
Represents the sequence for a specific gene.

1.7.1 Attributes

1.7.1.1 Sequence
A sequence of base pairs that represent a gene.
2 Relationship Sets

2.1 Experiments to Comparison Types

2.1.1 Cardinality

Many Experiments to one Comparison Type.

2.1.2 Participation Constraints

An Experiment must have a Comparison Type. A Comparison type does not have to have an Experiment.

2.2 Genes to Experiments

2.2.1 Weak Relationship

Genes inherits

2.2.2 Cardinality

Many Experiments to many Genes.

2.2.3 Participation Constraints

A gene must have at least one experiment, an experiment must have at least one gene.

2.3 Regulatory Sequences to Genes

2.3.1 Weak Relationship

Regulatory Sequences inherits primary key from Gene.

2.3.2 Cardinality

Many Regulatory Sequences to one Gene.

2.3.3 Participation Constraints

A Gene must have at least one Regulatory Sequence; a Regulatory Sequence must have a Gene.
2.4 Aggregate Factor Matches to Genes

2.4.1 Weak Relationship

Aggregate Factor Matches inherits primary key from Gene.

2.4.2 Cardinality

Many Aggregate Factor Matches to one Gene.

2.4.3 Participation Constraints

A Gene must have at least one Aggregate Factor Match; an Aggregate Factor Match must have a Gene.

2.5 Factor Matches to Aggregate Factor Matches

2.5.1 Cardinality

Many Factor Matches to one Aggregate Factor Match.

2.5.2 Participation Constraints

A Factor Match must have one Aggregate Factor Match; an Aggregate Factor Match must have at least one Factor Match.

2.6 Factor Matches to Regulatory Sequences

2.6.1 Weak Relationship

Factor Matches inherits primary key from Regulatory Sequences.

2.6.2 Cardinality

Many Factor Matches to many Regulatory Sequences.

2.6.3 Participation Constraints

A Regulatory Sequence must have at least one Factor Match; a Factor Match must have at least one Regulatory Sequence.
2.7 Genes to Gene Sequences

2.7.1 Weak Relationship

Gene Sequences inherits primary key from Genes.

2.6.2 Cardinality

Many Genes to one Gene Sequence.

2.6.3 Participation Constraints

A Gene must have one Gene Sequence; a Gene Sequence must have at least one Gene.