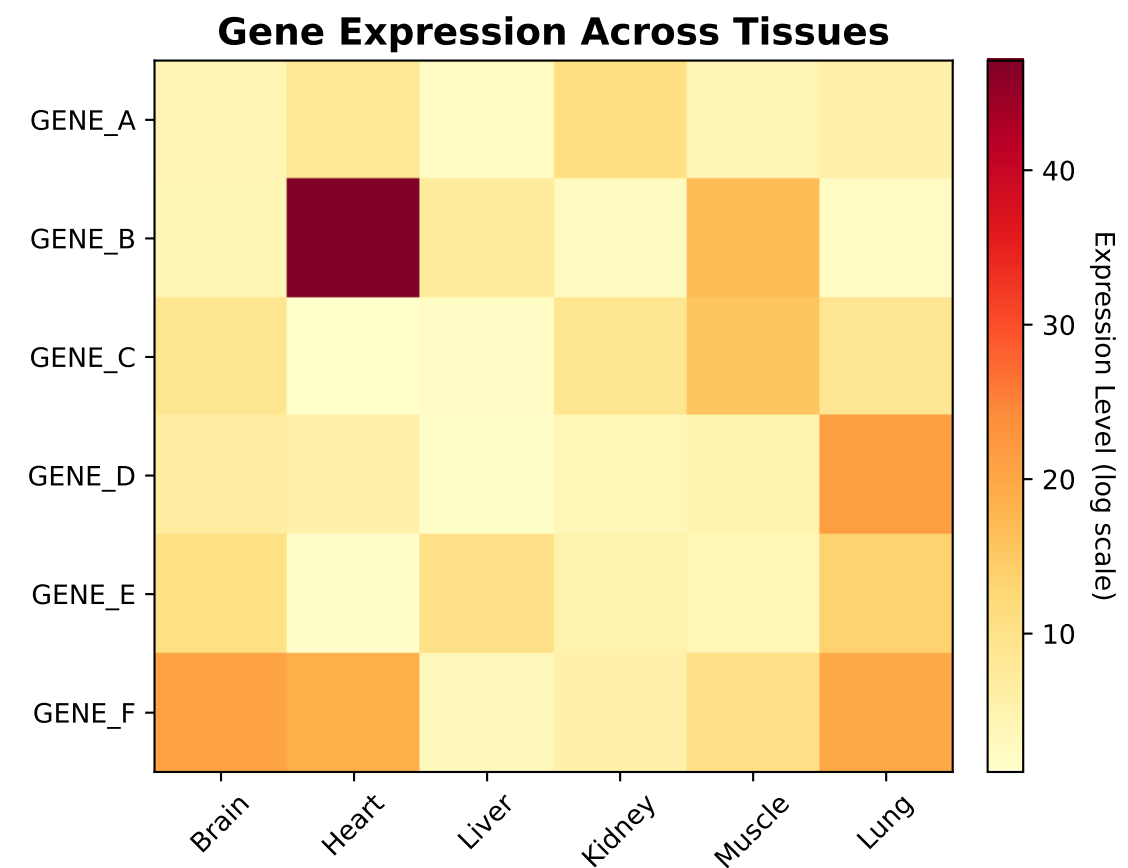**Comprehensive Gene Classification Analysis**
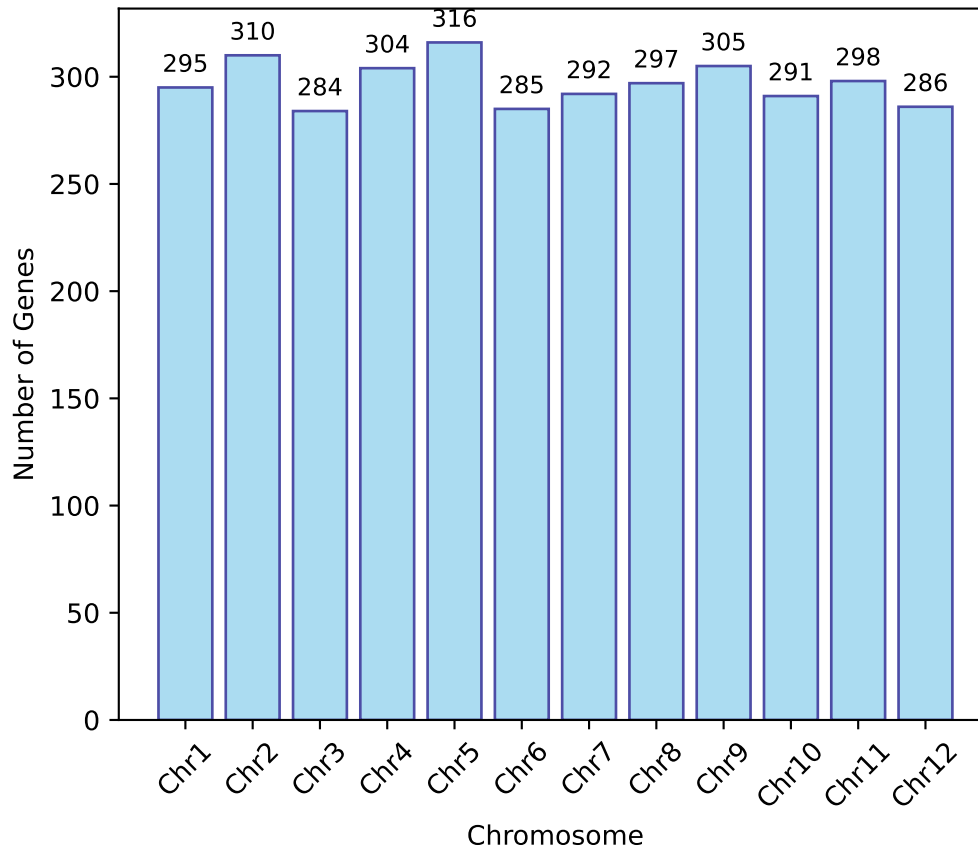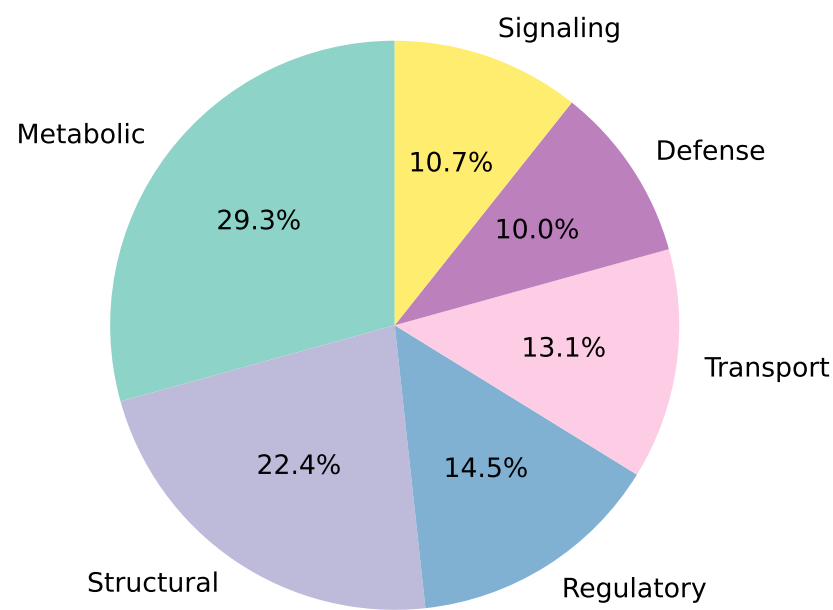
Gene Classification by Function
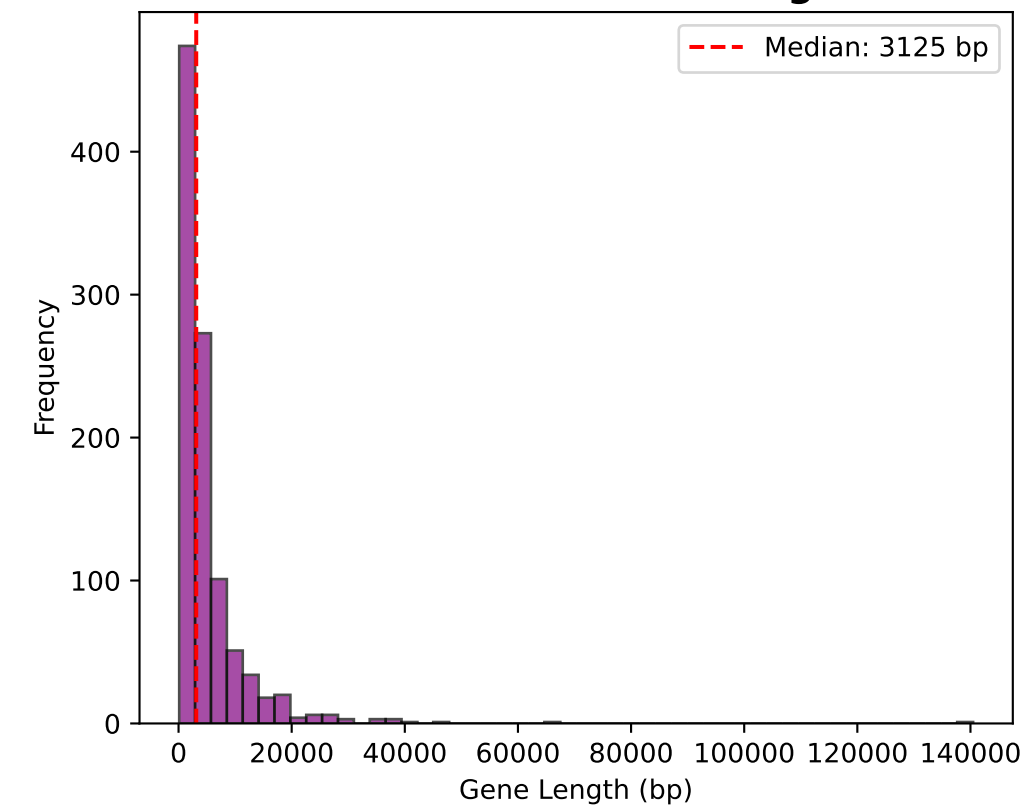
- Signaling — 10.7%
- Defense — 10.0%
- Transport — 13.1%
- Regulatory — 14.5%
- Structural — 22.4%
- Metabolic — 29.3%

Gene Distribution Across Chromosomes

Chromosome	Number of Genes
Chr1	295
Chr2	310
Chr3	284
Chr4	304
Chr5	316
Chr6	285
Chr7	292
Chr8	297
Chr9	305
Chr10	291
Chr11	298
Chr12	286

Gene Expression Across Tissues

Genes: GENE_A, GENE_B, GENE_C, GENE_D, GENE_E, GENE_F
Tissues: Brain, Heart, Liver, Kidney, Muscle, Lung
Expression Level (log scale)

Gene Ontology Classification

- Biological Process
- Cellular Component
- Molecular Function

Gene Conservation Levels

Conservation Level	Number of Genes
Species-Specific	400
Poorly Conserved	600
Moderately Conserved	800
Highly Conserved	1200
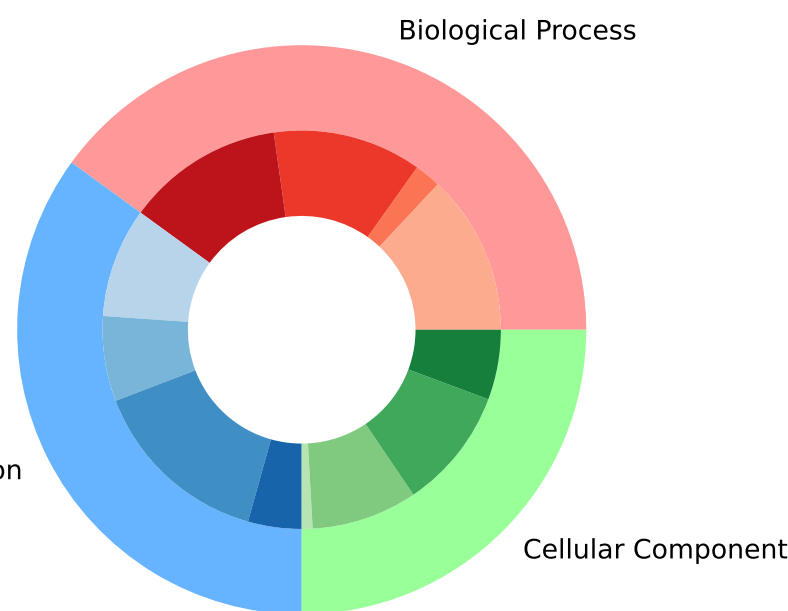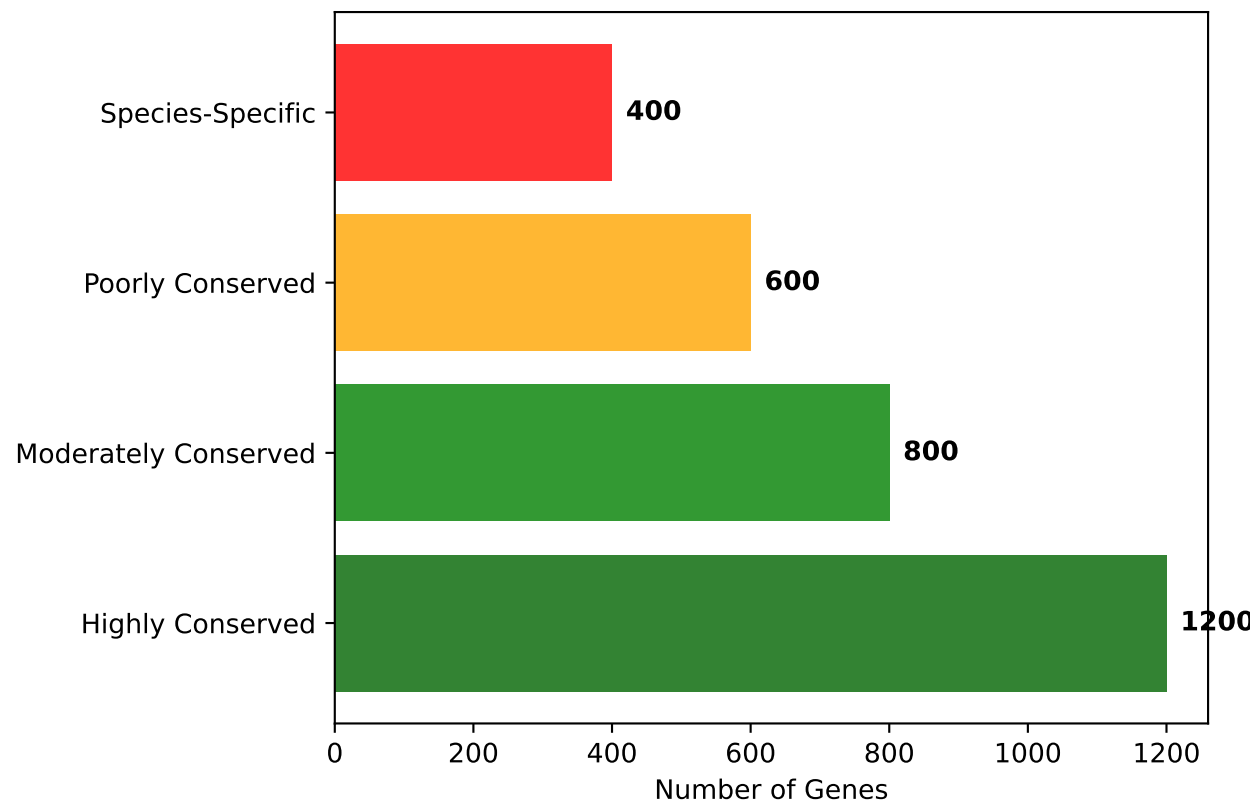
Distribution of Gene Lengths

Median: 3125 bp

Gene Classification by Type

- Protein-coding — 37.3% (20,000)
- Others — 5.6% (3,000)
- Pseudogenes — 22.4% (12,000)
- lncRNA — 28.0% (15,000)
- miRNA — 4.7% (2,500)
- rRNA
- tRNA
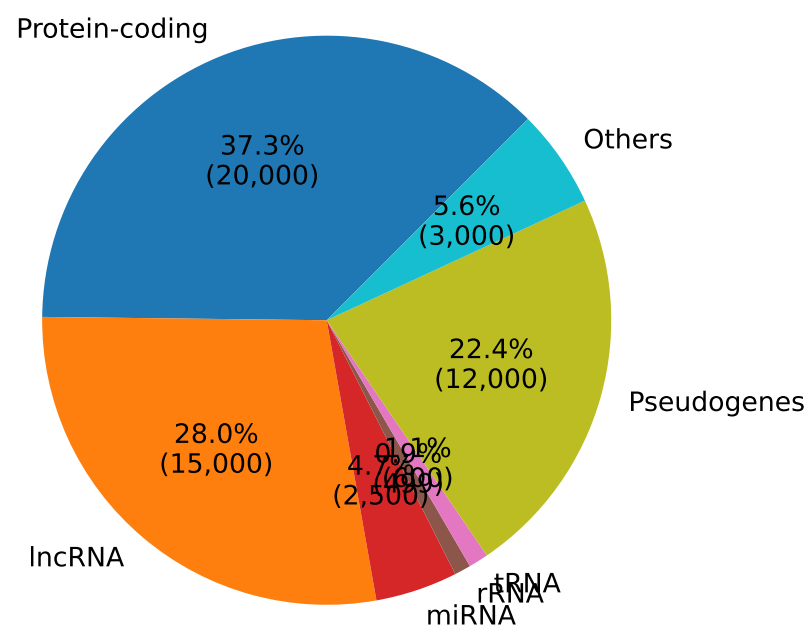
Gene Classification by Expression Pattern

Expression Pattern	Number of Genes
Housekeeping	3,500
Tissue-specific	8,000
Stress-induced	2,000
Developmental	4,500
Circadian	1,200
Disease-associated	2,800
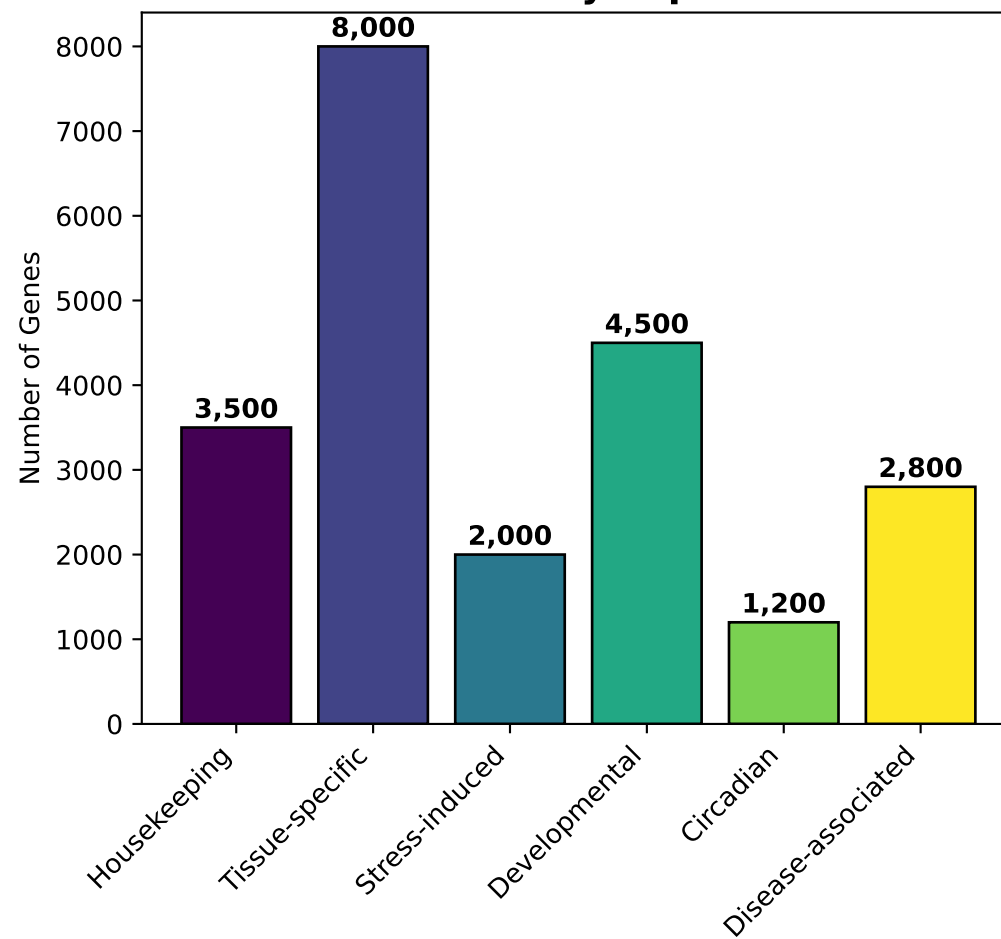
Evolution of Gene Families

- Core Metabolism
- DNA Repair
- Cell Adhesion
- Immune System
- Neural Development

Stages: Prokaryotes, Early Eukaryotes, Multicellular, Vertebrates, Mammals, Primates
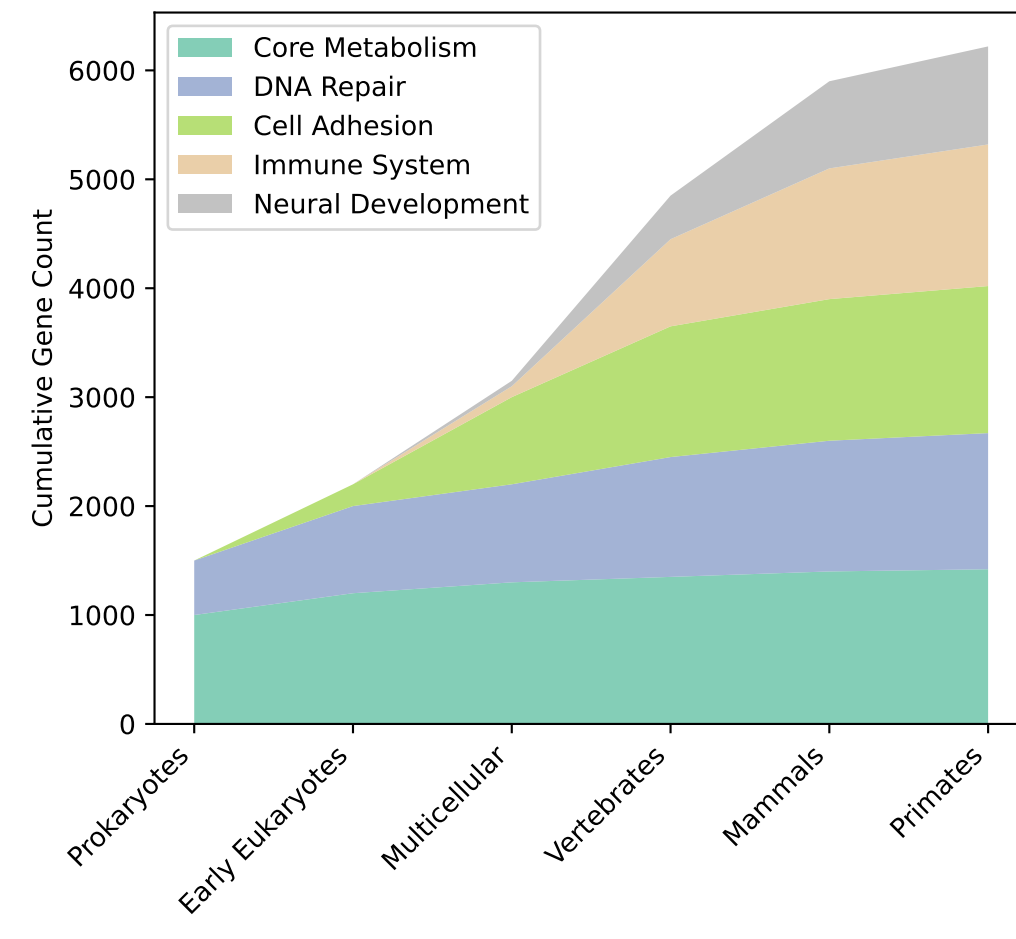
This comprehensive visualization shows various approaches to gene classification including:
• Functional categories and molecular roles
• Chromosomal distribution and genomic organization
• Expression patterns across tissues and conditions
• Gene Ontology hierarchical classification
• Evolutionary conservation and timeline analysis