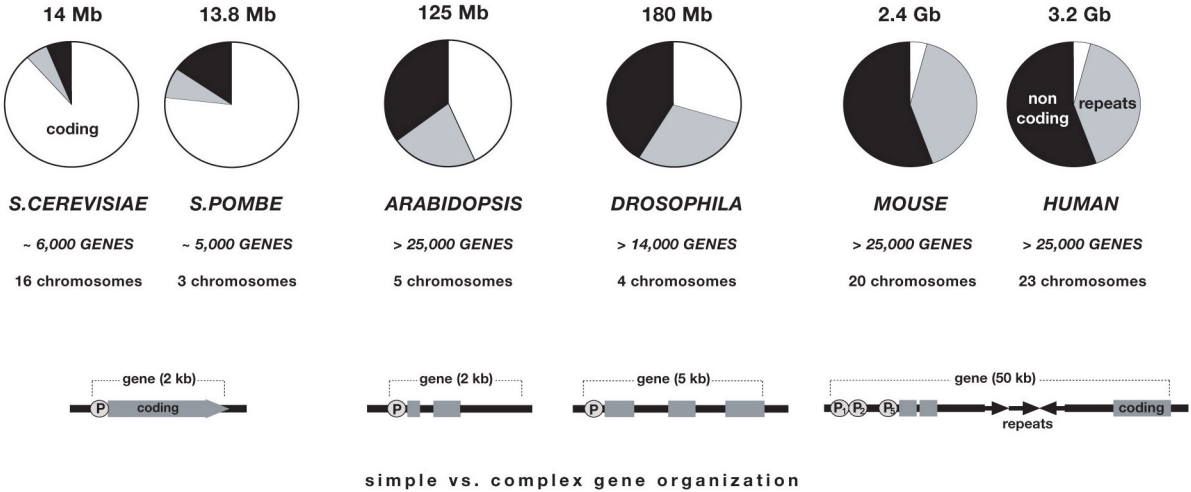

Figure 15. Pie Charts of Organismal Genome Organization

Genome sizes are indicated for the major model organisms used in epigenetic research at the top of each pie chart. The increase in genome size correlates with the vast expansion of noncoding (i.e., intronic, intergenic, and interspersed repeat sequences) and repeat DNA (e.g., satellite, LINE, SINE DNA) sequences in more complex multicellular organisms. This expansion is accompanied by an increase in the number of epigenetic mechanisms (particularly repressive) that regulate the genome. Expansion of the genome also correlates with an increase in size and complexity of transcription units, with the exception of plants; they have evolved mechanisms that are intolerant to insertions or duplications within the transcription unit. P = Promoter DNA element.