The *Drosophila* body plan

- establishing body axes - role of maternal genes
- polarization during egg formation
- patterning along the axes - early zygote gap genes
- initiating segmentation - pair-rule genes
- patterning the segments - segment polarity genes
- assigning segment identity - homeotic genes
**Gap gene expression**

- **hunchback**

- **Krüppel**

**Krüppel gene expression in wild type**

- Concentration of hunchback protein
  - Repression
  - Activation

In the early embryo, larval, and adult fruit fly, initially, pair-rule genes are expressed in the embryo as a series of evenly spaced parasegments. Even-numbered parasegments are expressed in odd-numbered parasegments. The segmentation polarity gene pair-rule gene,Krüppel, is expressed in the anterior margin of each parasegment. Each larval segment in the anterior portion of the segment becomes the posterior portion of the next.
Binding of gap gene proteins to one of the regulatory regions in the promoter of *even-skipped*