

A

Scr group

Fruit fly	TKRQRTSYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKMKKEH
Grasshopper	TKRQRTSYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEH
Beach hopper	TKRQRTSYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEH
Centipede	TKRQRTSYTRYQTLELEKEFHFNRYLTRRRRIEIAHSLCLSERQIKIWFQNRMMKWKKEH
Mite	TKRQRTSYTRYQTLELEKEFHFNRYLTRRRRIEIAHSLCLSERQIKIWFQNRMMKWKKEH
Leech	NKRTRTSYTRHQTLELEKEFHFNRYLSRRRIEIAHVNLNLSERQIKIWFQNRMMKWKKDH
Sea urchin	SKRSRTAYTRYQTLELEKEFHFNRYLTRRRRIEIAHALGLTERQIKIWFQNRMMKWKKEH
Zebra fish	GKRARTAYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLSERQIKIWFQNRMMKWKKDN
Mouse	GKRARTAYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLSERQIKIWFQNRMMKWKKDN
Human	GKRARTAYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLSERQIKIWFQNRMMKWKKDN

Antp group

Fruit fly	RKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Grasshopper	RKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Beach hopper	RKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Centipede	RKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Spider	RKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Leech	QKRTRQYTRYQTLELEKEFYSNRYLTRRRRIEIAHSLALSERQIKIWFQNRMMKWKKEN
Sea urchin	GKRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEH
Zebra fish	GRRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKEN
Mouse	GRRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKES
Human	GRRGROYTRYQTLELEKEFHFNRYLTRRRRIEIAHALCLTERQIKIWFQNRMMKWKKES

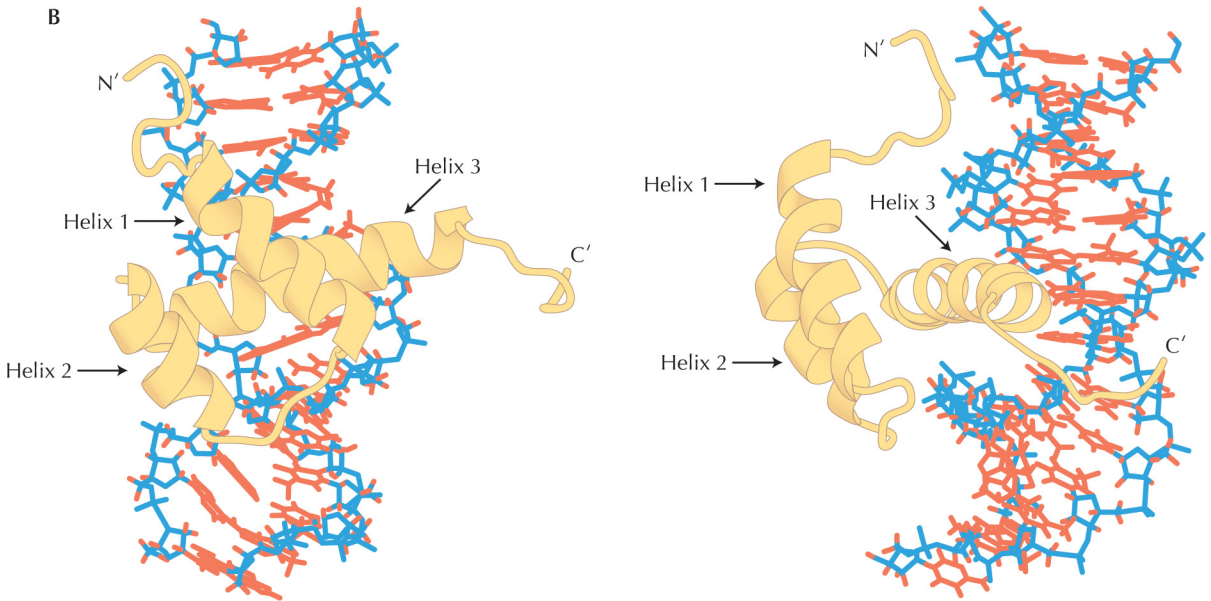


FIGURE 11.5. (A) Amino acid sequence alignment of the *Scr* orthologs and *Antp* orthologs reveals a high level of sequence conservation across a wide range of phyla. Conserved amino acids are *aqua*, unique amino acids for *Scr* family members are *yellow*, and unique amino acids for *Antp* family members are *red*. (B) Two views of the structure of the homeodomain (*yellow*) and associated DNA (*red* and *blue*). The unique amino acid sequence of each homeodomain-containing protein allows it to bind to specific DNA sequences, which in turn allows homeodomain-containing proteins to regulate the transcription of target genes that contain these homeodomain-binding sequences.

11.5B, redrawn from <http://www.biosci.ki.se/groups/tbu/homeo.html>