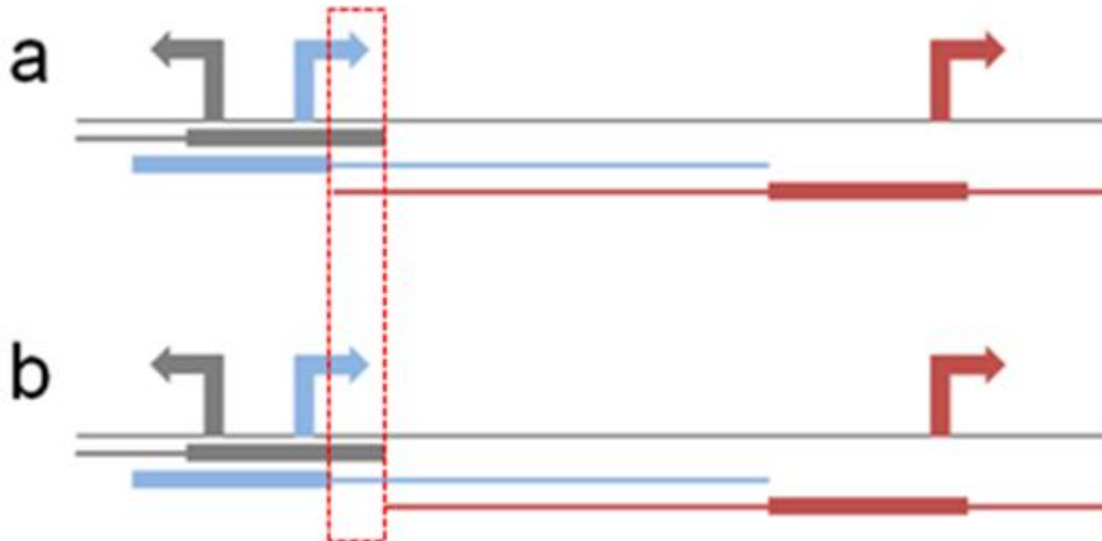


# Basal Plus Extension Association Rule Modification

The basal+extension association rule differs slightly between GREAT version 1.5 and GREAT version 1.2 and lower. In GREAT version 1.2, extension to the "left" occurred until reaching the basal domain of the gene whose transcription start site was closest to **G** from the "left" (and analogously for extending "right"). [See here for a description](#) of the current methodology used to extend the regulatory domains. This difference in methodology can lead to different regulatory domain assignments when the basal upstream and downstream distances are not equal, as shown in the below figure.



**Figure 1:** Basal+extension regulatory domain assignment for **(a)** Methodology used in GREAT version 1.2 and **(b)** Methodology used in GREAT version 1.5.

In particular, note that **(a)** in previous GREAT versions the red gene's regulatory domain extends up to the basal domain of the blue gene (whose transcription start site is nearest) and overlaps some of the gray gene's basal domain. **(b)** In GREAT version 1.5, each regulatory domain extension only goes up to the nearest basal domain in each direction. Thus, the red gene's domain stops when it hits the gray gene's basal domain. Note that blue's domain still extends down to red even though the basal domain of gray overlaps it.

This logical modification only manifests itself for basal domains that are asymmetric with respect to basal extension upstream and downstream of a gene, and then only for situations like those pictured above with genes in opposite orientation near each other.