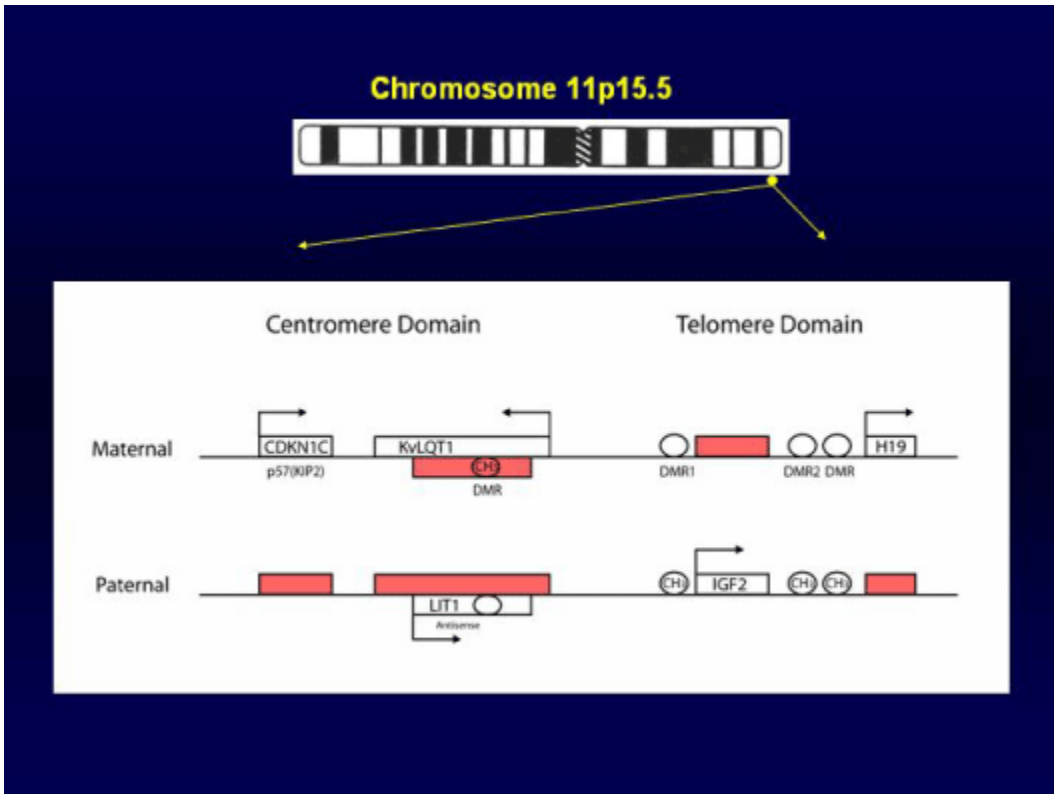
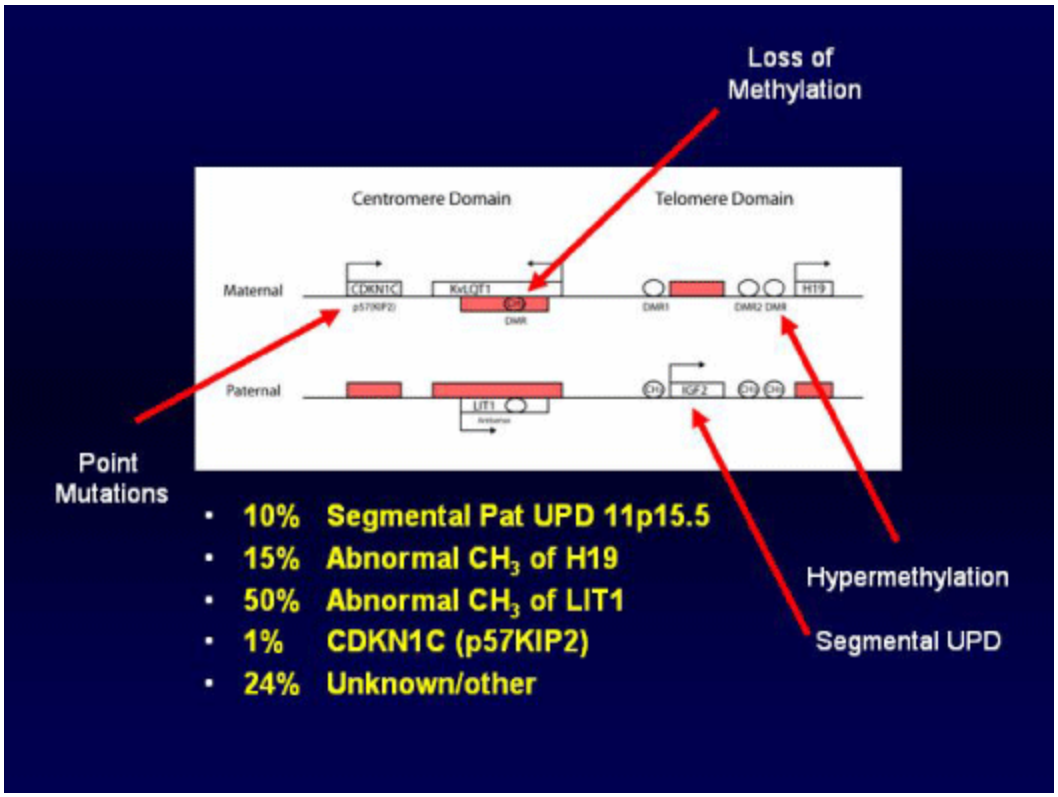
11p15.5 Region

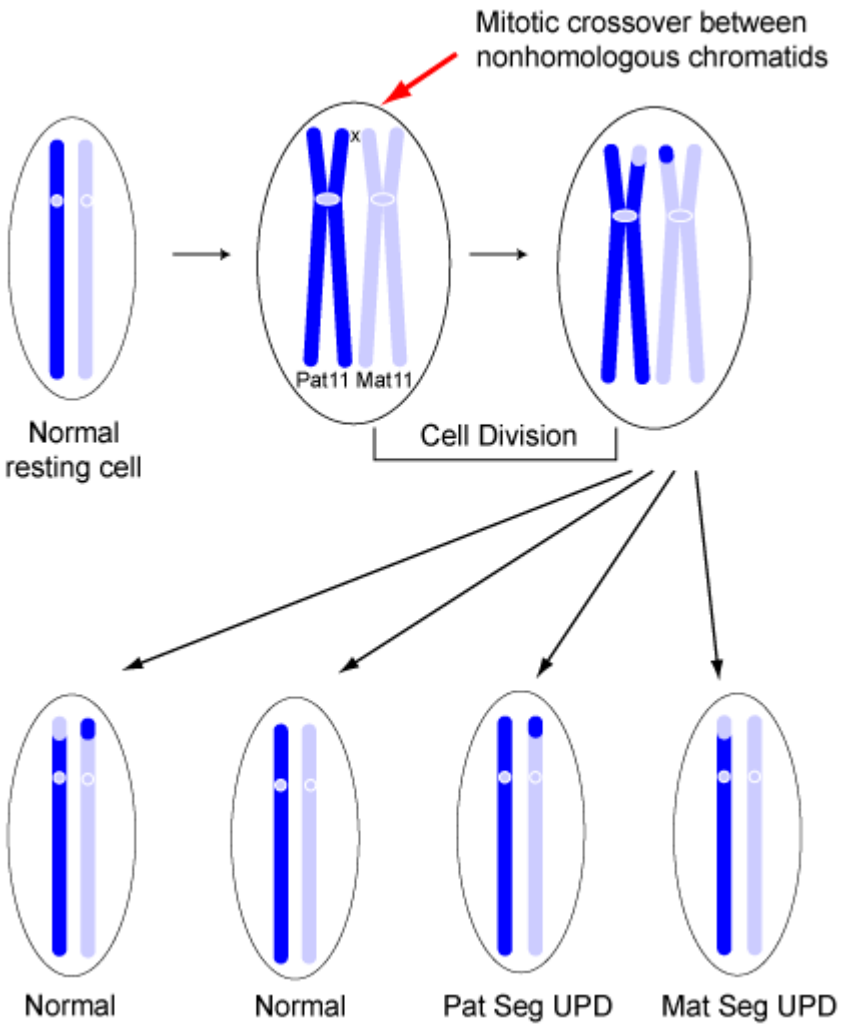
This region contains a complex area of imprinting that is associated with the Beckwith-Wiedemann syndrome. Recently, reciprocal abnormalities in this region have been implicated as the most common cause of the Russell-Silver syndrome. This first diagram illustrates the two areas of imprinted domains within this region (a centromeric and a telomeric domain).



The diagram below indicates areas that account for the main mechanisms causing Beckwith-Wiedemann syndrome.



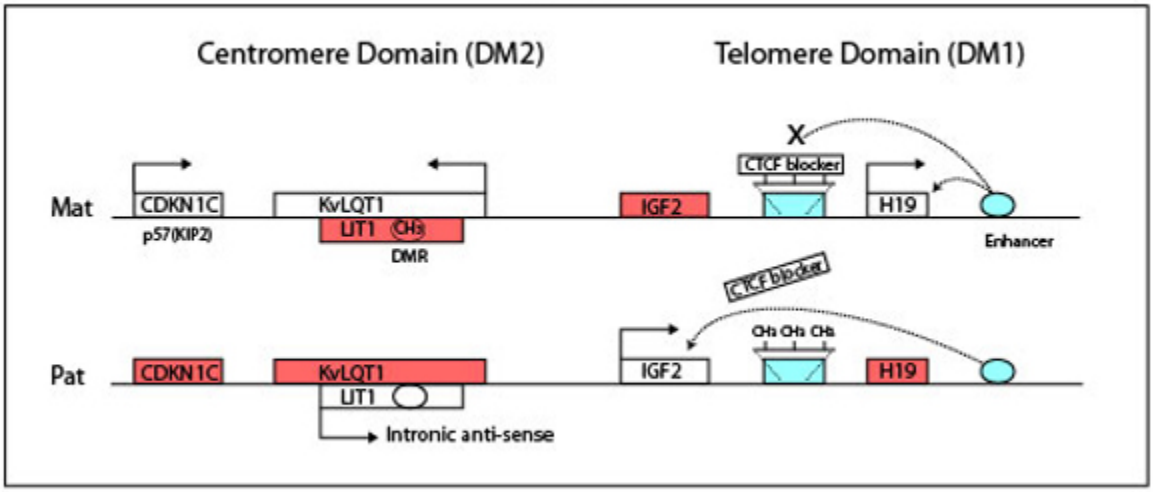
As illustrated below, segmental UPD can occur because of mitotic crossover. Such a mechanism can create both paternal and maternal segmental uniparental disomy.



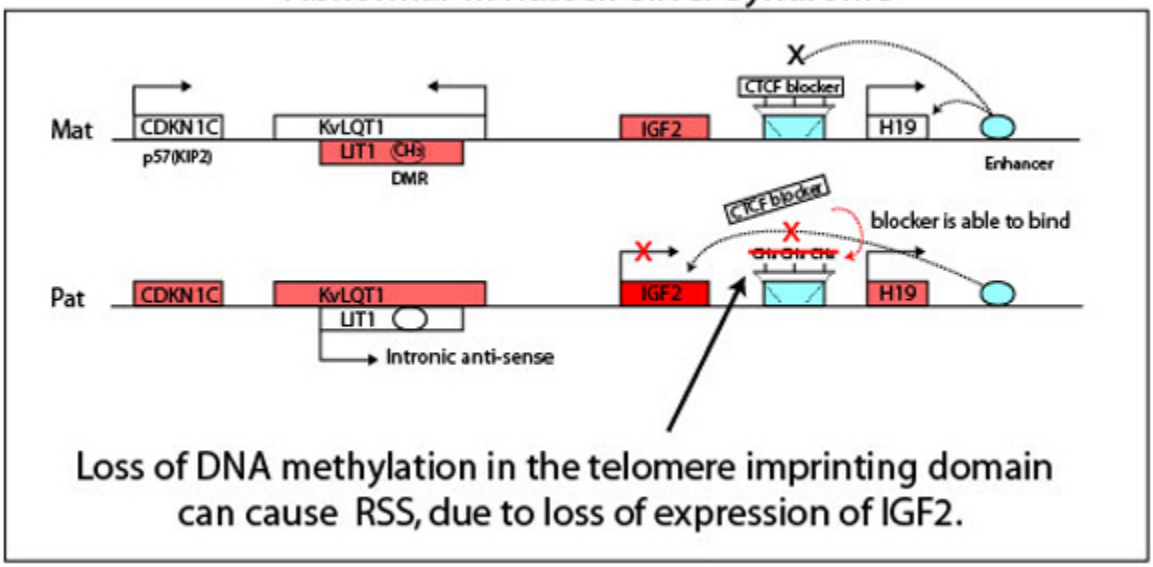
The Russell-Silver Syndrome and the 11p11.5 region

In the two diagrams illustrated below, I have indicated how loss of methylation in the telomeric imprinting domain of 11p11.5 can cause the Russell-Silver Syndrome. One way of thinking about IFG2 is regulation is by considering the idea of how insulator areas govern gene expression. The telomere region at 11p11.5 is known to have such an insulator (a CTCF binding domain) at this region is sensitive to DNA methylation changes as illustrated.

Normal



Abnormal in Russell-Silver Syndrome



Loss of DNA methylation in the telomere imprinting domain can cause RSS, due to loss of expression of IGF2.