Genomic imprinting and embryonic development Impronta genómica y desarrollo embrionario

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SUMMARY: In diploid organisms, autosomal genes are composed of two copies, or alleles, inherited from both parents at fertilization. For the vast majority of autosomal genes, expression occurs from both alleles simultaneously. However, a small proportion (<1%) of genes are imprinted, meaning that their expression depends on the parental origin. DNA methylation is one of the most known epigenetic modifications and its function is critical for the establishment of imprinting. The global pattern of genomic methylation is stable and inheritable, however, it is erased and re-established in a sex-depended manner at two critical periods of embryonic development. Functionally, the majority of imprinted genes play roles in the control of embryonic and placental growth and development. Alterations in imprinted genes have been correlated with several pathologies including the Angelman and Prader-Willi syndromes.