Pathogenic Mechanisms of Ellis van Creveld Syndrome

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The aim of this study is to determine if protein products from EVC and LBN interact. Ellis van Creveld Syndrome is an autosomal recessive condition characterized by polydactyl, dwarfism, bone malformations and atrioventricular septal defects in approximately 60% of the cases. The two genes mutated in EvC, named EVC and LBN (EVC2), were identified as the result of linkage analysis and positional cloning. Homozygous or compound heterozygous mutations in EVC or LBN account for approximately 70% of EvC syndrome cases. Several observations suggest coordinate function of EVC and LBN proteins. Flag tagged hEVC and HA tagged hLBN plasmids and mEvc and mLbn were designed to test the aim. mEvc and mLbn were co-transfected into Hek 293 cells. Endogenous expression was demonstrated using gene specific antibodies. Next hEVC and hLBN as well as mEvc and mLbn were also co-transfected into HeLa cells. Protein expression of EVC and LBN were confirmed using Western Blot. Finally, co-immunoprecipitation was performed to demonstrate interaction of hEVC and hLBN and mEvc and mLbn. Preliminary results support the hypothesis that EVC and LBN protein products do interact. Future studies will help to determine if a mutation in either of the two genes will disrupt the protein interaction between EVC and LBN and lead to Ellis van Creveld Syndrome like characteristics.