Novel null mutations in the EYS gene are a frequent cause of autosomal recessive retinitis pigmentosa in the Israeli population.

To characterize the role of EYS, a recently identified retinal disease gene, in families with inherited retinal degenerations in the Israeli and Palestinian populations. Clinical and molecular analyses included family history, ocular examination, full-field electroretinography (ERG), perimetry, autozygosity mapping, mutation detection, and estimation of mutation age. Autozygosity mapping was performed in 171 consanguineous Israeli and Palestinian families with inherited retinal degenerations. Large homozygous regions, harboring the EYS gene, were identified in 15 of the families. EYS mutation analysis in the 15 index cases, followed by genotyping of specific mutations in an additional 121 cases of inherited retinal degenerations, revealed five novel null mutations, two of which are founder mutations, in 10 Israeli and Palestinian families with autosomal recessive retinitis pigmentosa (arRP). The most common mutation identified was a founder mutation in the Moroccan Jewish subpopulation. The ESTIAGE program produced an estimate that the age of the most recent common ancestor was 26 generations. The retinal phenotype in most patients was typical yet relatively severe RP, with an early age of onset and nonrecordable ERGs on presentation. The results demonstrate that EYS is currently the most
commonly mutated arRP gene in the Israeli population, mainly due to founder mutations. EYS mutations were associated with an RP phenotype in all patients. The authors concluded that the gene plays only a minor role in causing other retinal phenotypes.