

Question of the week: Nov 12, 2011

Ye' the doctors wanna'be, solve this medical question from a star system in Andromeda.

In an intelligent species that lives in a star system with two stars, there are 6 chromosomes per cell in the body of the species. A newborn in this species gets three chromosomes from the Dad and three from the Mom. There are two genetically transmitted diseases that can happen to this species, the first one (Dermatocrux) can only be propagated from a Mom to her child and the other (Tumorofica) can only be propagated from the Dad to his child. In the year 40034 on that planet, there are 500,000 marriageable age boys and 500,000 marriageable age girls. The likelihood of a marriageable boy carrying Dermatocrux gene is 2% and the likelihood of a marriageable girl carrying Dermatocrux gene is 3% in that year. The likelihoods of the Tumorofica being carried in a marriageable boy is 3% and in a marriageable girl is 2%. If a Dad or Mom is a disease carrier, it does not necessarily doom the child. The chance of the child getting the disease from a parent is 50%, depending on whether the kid got the chromosome from the Dad or the Mom. If 20% of the marriageable boys and girls marry in the year 40034 and they have 10% chance of having a kid in the year 40035, find the expected number of kids born in the year 40035 to these couples that will be carrying Dermatocrux. Now find the expected number of kids born in the same year to these couples that will be carrying Tumorofica. And finally, how many kids born in that year to these couples are likely to have both the diseases?