

Talk:Coefficient of Inbreeding

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The calculation is a bit confusing as given.

There are actually 4 steps in the genealogy (one each from a gen I individual to each of the offspring)

But also the count should be over all paths to all common ancestors. Both gen I individuals are ancestors, so the count needs repeated.

$F = (1/2)^{4+1} + (1/2)^{4+1} = 1/16$ (as given, but derived incorrectly)

Response

Thank you for your comment. First, I would like to point out that **no derivation (wrong or right) of the formula is given** in the dictionary entry of coefficient of inbreeding - for a specific purpose - this formula should serve as a quick tool for students of medicine to estimate the inbreeding coefficient in simple pedigrees they are encountering during their Genetics course at our Faculty. In my opinion, the statistics and genetics behind the derivation is well beyond the scope of Wikilectures. Actually, there are several used formulas and derivations, both arriving at the same result, e.g.

- if one parent in a first-cousin marriage transmits a particular allele to a child, then the probability that the other parent will transmit the same gene equals r (coefficient of relationship) $\times 1/2 = 1/8 \times 1/2 = 1/16$
- a sum of probabilities that a child in a first-cousin marriage will be homozygous for allele A or B in common grandfather or allele C or D in common grandmother, i.e. $1/64 + 1/64 + 1/64 + 1/64 = 1/16$

or we can go back to Wright's formula from 1920s.... To sum up, I believe the entry as is is not misleading in any way and expanding the derivations section will only obfuscate the relatively simple tool. Thank you --OSeda 15:46, 4 October 2011 (CEST)