On the Large Advantage of Bi-parental over Uni-parental Generation

Publication/Creation

Late 19th Century

Persistent URL

https://wellcomecollection.org/works/vjnzued4

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

On a certain large Advantage of Bi-parental over Uni-parental Generation.

An organism is presumably formed out of many necessary units, any one of which may be absent from a Uni-parental Germ, but is less likely to be absent from both of the two Germs that form a Zygote. The gain in safety will now be shown to be enormous.

There are 2 stages to be considered,

I. Let M be one of these necessary units & let it be absent on the average in one of every R Germs, the chance of its absence will therefore be $\frac{1}{2}\frac{1}{r}$. Let a Zygote be represented by a couplet of letters, which may be used to signify the presence of M, and μ its absence, and if the first letter in the couplet refers to the male germ, and the second to the female germ, then the four varieties of Zygote will take the form

so familiar to Mendelians of m m, m μ, μ m, μ μ, which and they will occur with equal frequency. In other words, the absence of M from a particular germ will be three times as frequent as from a Zygote, whatever the value of n may be.

II. We may be sure that units of many different kinds are necessary to the formation (lay foundation) of the future animal. I do not venture to guess their number but will call it m^n. Then the chance of absence of them, there units being present in the Zygote would be 3^m times as great (as in a single germ. This increase of safety value becomes enormous even when n is only moderate (in value). Even if n were only = 10, 3^n would exceed fifty-nine thousand.