April 20, 1955

Memorandum

Tracy:

1. Kimura is working on generalizing the formulae. Preliminary report on macronuclear sampling (MR)- for f fragments, each instance is 2(f-1) as effective as fission. That is, for f=40, 6 MR's would be equivalent to 368 fissions. The discrepancy, if any, may be due to non-random choice of less unbalanced fragments. I was momentarily concerned by the case of f=2, which I took to be fission. Kimura points out his calculation for fission is based on a redoubling of chromosomes from mn to 2mn prior to fission, while the MR is taken from an mn set. If this is not right, you can probably just take out the factor 2.

2. He is also going ahead on monosomic. If n is large, the effect is small (probably some kind of weighted mean [my intuition sees geometric] of the risks from the monosome and the rest of the complement), of the order of a reduction of viability by about 1/2n. I am somewhat dubious of this.

3. As you can see from expression you have, p= .01 and p=.001 do not give very different t's. On the one hand, this fits the steep decline seen exptly, but the p/t function would not be handy to test.

4. References: bud scars in yeast— Barton, J. Gen. Micr. 1950,4:84 and Bartholomew, 1953 J Bact 65:272

aging in Neurospora mutant TC Sheng, Genetics 51 36:199

stem cells in spermatogenesis Clermont Am J Anat 93:475 '53

see also Roosen-Runge in refs. cit., and in a recent? N.Y. Acad Sci, symposium on male germ cells.

5. Refs. wanted? Fission reorganization in protozoa; other cases of templates like Difflugia.

6. In his 1929 review, Jennings cites a few examples of protozoan "individuality"— shattering reaction on refusion of distinct individuals. Do you believe this?

Sincerely,