GRAND HÔTEL
STOCKHOLM

TELEFON: 22 10 20
RIKS: 22 17 20
TELEGR. GRAND

December 10, 1958.

Dear Francis:

I met Igor Tamm at a reception last night and he proved a remarkably lively & linguistically accomplished fellow, quite extraordinary among the Russians I've ever met. He is also remarkably interested & well informed about genetics, far more than any Russian biologist I've encountered.

He was quizzing me on triplet codes and raised the question of redundancy in the complement, which I thought I had long since raised with and had quieted by you, but I couldn't reproduce the argument.

Briefly, in a complementary double helix, does a triplet carry 5 bits or 6? His argument was that the sets:

$$\begin{array}{cc} A & A' \\ B & B' \\ C & C' \end{array} \quad \text{and} \quad \begin{array}{cc} C' & C \\ B' & B \\ A' & A \end{array}$$

$$\equiv$$

i.e., $\underline{ABC} \equiv \underline{C'B'A'}$ and insisted there was no exception on the grounds of steric asymmetry — i.e., the double helix has the same sense when inverted.

I could hardly think you had overlooked this point; Tamm brought it up in connection with the utility of the 20 meaningful triplets in a comma-less code. The steric argument is the one I can't intuitively be quite sure of without the models so the quickest answer seemed to be to ask you directly.

Fred Sanger will give you all the intimate & gruesome details of the week here. One minor calamity averted when Ed Tatum finally showed last last evening having been fogbound in Paris.

all best wishes

Joshua

Have a fine time at Cambridge & we look forward to seeing you in July.

PP/CRI/D/1/1/12