August 4, 1952

Dear Hayes:

I'll be leaving fairly soon myself for a vacation — it's usually too hot and damp here in the summer to get much work done — and doubt whether there will be any further progress this summer. To answer a couple of your questions:

Virtually all progeny of Hfr x F- are F-, both in their compatibility reactions, and in their ability to transduce F+. The F- progeny, like the parent, can received F+ from other strains. I suspect that the Hfr factor, like Mal, is regularly eliminated. This would make sense: the Hfr (i.e. F++) seems to determine the direction of elimination, and may itself be the controlling site. I am trying to set up experiments involving Hfr//F- diploids (i.e., exceptions that have not eliminated) that might help to test this idea.

Our experiments on F+ filterability are quite indecisive. Our positive results almost certainly depended on the presence of F+ cells in our "sterile" filtrates. Sterility tests on lysates are very tricky: I am still suspicious as to the possibility of relatively dormant filter-passing particles, which may regenerate bacteria only very slowly. In some tests, it has required two or three days for a "contamihated" filtrate to give turbid growth when added to fresh broth. In all such experiments, one has to use marked strains as the source of the F+ agent (e.g. an S^r F+) and demonstrate the absence of this marker in the F+transduced culture. This is obviously a sine qua non of transformation experiments generally.

I haven't been able to quite make up my mind which strains to develop further. Some new people are coming in next month, and I expect to get that program going by then. We have some strains which are crossable with each other, and with F- K-12, but which show no signs of an infective F+ agent. I haven't decided whether it would be more advantageous to invest a lot of effort on such a system, or to choose another F- strain over which we have some control by importing F+ agents from K-12.

Sincerely,

Joshua Lederberg