

THE UNIVERSITY OF MANITOBA

DEPARTMENT OF BIOCHEMISTRY

MEDICAL COLLEGE
BANNATYNE AND EMILY,
WINNIPEG 3, CANADA

October 17, 1961.

Dr. P. Berg,
Department of Biochemistry,
Stanford University School of Medicine,
Palo Alto, California.

Dear Dr. Berg,

I would greatly appreciate having one copy each of your four recent papers entitled "The Enzymic Synthesis of Amino Acyl Derivatives of Ribonucleic Acid," J. Biol. Chem. 236, 1726, 1735, 1741, 1748 (1961).

In the past year we have been measuring α -glutamyl RNA, glutaminyl RNA and glycyl RNA synthetase activities in rat liver fractions by following the rate of labelling of SRNA in heated rat liver "pH5 enzymes" on addition of very small amounts of partially purified fractions in the presence of excesses of ATP and the appropriate C¹⁴-amino acid. Under these conditions the rate of labelling of SRNA is proportional to enzyme concentration as you have reported in Paper I. These activities have proven, up to now, somewhat refractory to measurement by the usual hydroxamate and ATP-PP³² exchange tests, although in partially purified preparations we have obtained both glutamate- and glutamine-dependent ATP-PP³² exchanges.

One thing that has been essential for us in the measurement of the α -glutamyl RNA and glutaminyl RNA synthetase activities. That has been elimination of C¹⁴-glutamate \rightleftharpoons C¹⁴-glutamine interconversion by the addition of a glutamine synthetase inhibitor, methionine sulfoximine. If this is not added then both α -glutamyl- and glutaminyl-RNA's form in the "cruder" preparations as identified by hydrolysis and ammonolysis of the labelled SRNA. This brings me to a question concerning your experiments that indicated that the polynucleotide chains specific for accepting L-methionine are heterogeneous. Is it not possible that the E. coli methionyl RNA synthetase preparation contains enzymes which convert methionine to some other amino acid (e.g. cysteine) and catalyze the formation of another amino acyl RNA? Have you identified the product(s) formed by both the E. coli and yeast methionyl RNA synthetase preparations (separately and mixed)?

Yours sincerely,

Murray J. Fraser

Murray J. Fraser, Ph.D.,
Assistant Professor of Biochemistry.

Dear Dr. Fraser,
Enclosed are the reprints
you requested. I was happy to hear
of your results with glutamyl-
MJF/SJ
glutamyl- & glycyl RNA fractions.

Your suggestion as to an alternative interpretation
of our methionyl RNA data is a good one
I don't think we can eliminate by any of
our data although I'm somewhat skeptical
that our purified cell enzyme will convert

methionine to cysteine without any addition^{over} if all the enzymes
necessary for the conversion were present.

S. W. C.

P. C.