

Personal Memo from  
JOSHUA LEDERBERG

Prof Norman Horowitz

Cal Tech

SEP -7 1989

Dear Norman

Thank you for sending your  
very fine memo on Beetz.

I will not continue our  
debate about the one:one theory;  
the important thing is the work  
it inspired!

One small point you have  
B.O. Dodge coming from Columbia.

Judeal Dodge did his Ph.D. there, but  
he went to USDA in 1920 and the  
N.Y. Bot. Gardens in 1928. So  
he did none of his Neurospora work  
at Columbia.

As a grad. student he had discovered  
heating of *Ascoberus ascospores* and  
used that method later for Neurospora.

My very best personal wishes

Joshua

THE ROCKEFELLER UNIVERSITY

[X] ...

OT →

✓ 9/11/89  
and

Beadle - Nobel.

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worked out and the homogenetic acid isolated and identified many years  
before.

Our idea — to reverse the procedure and look for gene mutations that in-  
fluence known chemical reactions — was an obvious one. It followed logically  
from the concept that, in general, enzymatically catalyzed reactions are gene-  
dependent, presumably through genic control of enzyme specificity. Although  
we were without doubt influenced in arriving at this approach by the antho-  
cyanin investigations, by Lwoff's demonstrations that parasites tend to  
become specialized nutritionally through loss of ability to synthesize sub-  
stances that they can obtain readily from their hosts (18), and by the specula-  
tions of others as to how genes might act, the concepts on which it was based  
developed in our minds fairly directly from the eye-color work EPHRUSSI and  
I had started five years earlier.

The idea was simple: Select an organism like a fungus that has simple nutri-  
tional requirements. This will mean it can carry out many reactions by which  
amino acids and vitamins are made. Induce mutations by radiation or other  
mutagenic agents. Allow meiosis to take place so as to produce spores that  
are genetically homogeneous. Grow these on a medium supplemented with  
an array of vitamins and amino acids. Test them by vegetative transfer to  
a medium with no supplement. Those that have lost the ability to grow on  
the minimal medium will have lost the ability to synthesize one or more of the  
substances present in the supplemented medium. The growth requirements  
of the deficient strain would then be readily ascertained by a systematic series  
of tests on partially supplemented media.

In addition to the above specifications, we wanted an organism well suited  
to genetic studies, preferably one on which the basic genetic work had already  
been done.

#### *Neurospora.*

As a graduate student at Cornell, I had heard Dr. B. O. DODGE of the  
New York Botanical Garden give a seminar on inheritance in the bread mold  
Neurospora. So-called second division segregation of mating types and of  
albinism were a puzzle to him. Several of us who had just been reviewing the  
evidence for 4-strand crossing over in *Drosophila* suggested that crossing over  
between the centromere and the segregating gene could well explain the result.

DODGE was an enthusiastic supporter of Neurospora as an organism for  
genetic work. "It's even better than *Drosophila*", he insisted to THOMAS HUNT  
MORGAN, whose laboratory he often visited. He finally persuaded MORGAN

See also Robbins' memoir on  
Dodge. Vol 36 NBS Biog. Mem.