

May 5, 1956

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Dear Herman et al:

Thank you for the preliminary report on Gal-1, 6, and 7⁻. These mutants are all distinguishable from one another: crosses of Gal₁⁻ x Gal₆⁻ for example give about 0.05% Gal⁺ recombinants, and they are also separable by transduction. However, they do fall into one position-effect group, insofar as the "heterogenotes" of the type (trans)

$$\text{Gal}_1^- \text{Gal}_6^+ / \text{Gal}_1^+ \text{Gal}_6^- \quad (\text{call this simply } 1/6)$$

are galactose-negative, and the same holds for 6/1, 6/7, and 1/7 etc.

We now have ready three more cultures as enclosed. W-3092 and W-3094 are Gal₂⁻ and Gal₄⁻ respectively, while W-3142 is another galactose-negative mutant that we have not yet named. Please do not give this a locus designation until we have completed our genetic study of it, and we will just refer to the culture as W-3142.

Gal₄⁻ is in the same position-effect group as 1,6 and 7.

Gal₂⁻ however, belongs to another position-effect group. That is the heterogenotes of 2/1; 1/2; 2/4, etc. are all galactose-positive. There is another mutant, Gal₈⁻, that we do not yet have ready for you, which is in the same group as Gal₂, so that the heterogenote 2/8 and 8/2 are galactose-negative, while 1/8 etc. are positive.

W-3142 is a unique mutant; it is one of the very few galactose-negative mutants that are not involved in the transduction system; also it shows about 10% recombination with the other cluster of Gal mutants. It may not be a full negative.

It will be surprising if Gal₄ differs enzymatically from 1,6 and 7. It will be extremely interesting however if Gal₂ & (and then Gal₈⁻) are blocked at a different step, and this I will be eager to learn. I don't know what to expect of Gal:W-3142.

Could I possibly have some quantitative results, at least on the relative activities of Gal⁺ and the mutants for the 4 steps? I am also astonished that the galactosylase should appear to be constitutive, as I had done some rough experiments with intact cells which suggested it was adaptive. This is very fortunate, as you can get over many possible difficulties about selection of Gal⁺ mutants. Of course, my previous experiments had compared cells grown on glucose vs. galactose, and glucose probably is actively inhibitory. I would

i.e. all are)
very closely)
linked to each)
other and to)
lambda)

very much like to learn your experiences in this regard: are not galactose-grown cells of the Gal+ much more active than cells grown on the glycerol-casein digest medium? If not, then can you check whether glucose is inhibitory?

Some addl. reprints are being sent under separate cover.

Yours sincerely,


Joshua Lederberg