the $1200 fellowship has more purchasing power than in many places. Students interested in radiation research, especially with maize, may wish to apply. The deadline for applications is February 28, and awards are announced soon after April 1.

W. Ralph Singleton

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1. Single gene dwarf mutants of maize and their differential growth response to gibberellins and to gibberellin-like substances.

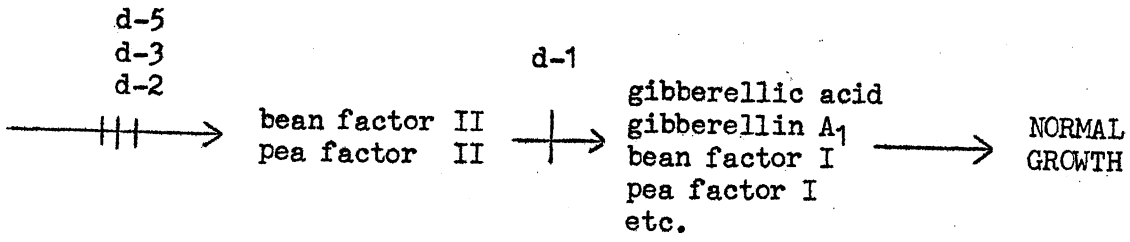
The 4 mutants, d-1, d-2, d-3, and d-5, respond by normal growth to microgram amounts of the gibberellins produced by the fungus Gibberella fujikuroi. Gibberellic acid (gibberellin A_3) has about twice the activity of gibberellin A_1. This relative activity is the same for the 4 mutants. Of the numerous gibberellin-like substances from flowering plants that produce a similar growth response with these 4 mutants, bean factor I has been isolated in crystalline form from young bean seeds (Phaseolus vulgaris). It has the same infrared spectrum and the same biological activity as gibberellin A_1. (British workers have recently reported the isolation of gibberellin A_1 from runner beans.)

Using the maize dwarfs for bioassay, additional gibberellin-like substances have been obtained from beans (Phaseolus vulgaris) and peas (Pisum sativum) that have biological properties different from the substances indicated above. These properties are as follows:

1. Bean factor II. Material has been isolated by chromatography and prepared in crystalline form. Thus the activity can be expressed relative to gibberellic acid. On this basis, activity is in the order of 130% that of gibberellic acid for the mutants, d-2, d-3, and d-5. However, activity is less than 10% that of gibberellic acid for the mutant, d-1. At low levels, d-1 seedlings show no growth response to bean factor II, while d-2, d-3, and d-5 seedlings respond at these levels by normal growth.

2. Pea factor II. Material has been purified, but is not crystalline. As yet, d-1 seedlings have shown no growth response to this factor, while d-2, d-3, and d-5 seedlings respond by normal growth.

These data are useful in determining the relative order of the dwarfing genes that presumably block different steps in a metabolic pathway concerned with gibberellin production in Zea mays. The data suggest that the d-1 gene is terminal for this series of mutants.



Bernard Phinney
Charles West
Peter Neely

2. The effect of gibberellins on the frequency of mitotic figures in a dwarf mutant of maize.

The parenchyma cells of the mature first leaf sheath of d-1 seedlings are both shorter and fewer in number than those of normals. Treatment of seedlings with gibberellins results in an increase in both length and number of these parenchyma cells. At a time when the first leaf blade has unfolded (8 days following soaking of seed), there are some 60% fewer mitotic figures in d-1 leaf sheaths than in normals. However, if d-1 seedlings have been treated with 10 micrograms/plant twenty hours prior to this period, the basal meristem of the first leaf sheath shows a frequency of mitotic figures very similar to normals (non-treated d-1 = 27 mitotic figures/leaf sheath; treated d-1 = 70 mitotic figures/leaf sheath; non-treated normals = 71 mitotic figures/leaf sheath.)

Kenneth Skjegstad

CENTRE DE RECHERCHES AGRONOMIQUES
Rabat (Morocco)

1. A new (?) gene affecting the structure of the endosperm.

In the flint inbred MR 368 the action of a recessive gene has been revealed, the effects of which on the structure of the endosperm are analogous to those described in connection with the genes h (soft starch, Mumm 1929), o_1 and o_2 (opaque endosperm, Singleton and Jones). This gene appearing in inbred MR 368 has proved different from the genes h, o_1, o_2, fl_1, fl_2 deriving from Dr. H. H. Kramer's gene stocks; the F_1 seeds from crosses of stock 368 with Kramer's stocks have all been quite normal.

Pending a possible further identification, it is proposed to call this gene h_2, while reserving the term h_1 for the first gene of this type found by Mumm in 1929.