

Grant, S. and E. Rapport. University of Toronto, Canada. The effect of lactamide on the mutant *eyeless*<sup>2</sup>.

*eyeless*<sup>2</sup> (*ey*<sup>2</sup>), a fourth chromosome, recessive mutant which also reduces eye facet number.

Table 1. The effect of lactamide on facet number in *ey*<sup>2</sup>/*ey*<sup>2</sup> flies.

percent lactamide	sex	no. of eyes	average number	± std. deviation
0	♂	36	248.02	27.65
0	♀	32	261.43	32.58
2	♂	23	212.06	23.14
2	♀	28	233.79	28.49
3	♂	17	207.26	16.92
3	♀	24	211.40	26.25
4	♂	25	197.89	29.17
4	♀	25	209.18	29.98
5	♂	28	185.33	21.72
5	♀	30	201.16	16.16

compounds used by Kaji) caused a reduction of protein synthesis, the concomitant reduction in the synthesis of lysozyme could result in less cell death in the Bar mutant (Michinomae and Kaji 1973, DIS). In the *ey*<sup>2</sup> stock, however, the reduction in protein synthesis could retard eye development even more than normal. This hypothesis is now being tested.

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Kaji (1954-1959) demonstrated that several organic compounds, especially lactamide, increased eye facet number in the mutant Bar. To determine if this effect was specific to the Bar mutant we tested the effect of lactamide on *eyeless*<sup>2</sup>.

We transferred 60 hour larvae from a yeast-seeded cream of wheat-molasses medium to a similar medium containing 0 to 5% lactamide by weight. After 30 hours of treatment larvae were removed to vials containing a yeast-seeded agar-sucrose medium to complete development. Facet number was determined using a compound microscope equipped with a grid ocular. Under conditions in which Bar eyed flies showed up to a four-fold increase in facet number (data not shown) *ey*<sup>2</sup> had reduced facet numbers (approximately a 20% reduction).

We suggest that a unitary hypothesis can account for the disparate effects of lactamide on the two different mutants. If lactamide (as well as the other com-

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*D. buzzatii* (a species of the *mulleri* subgroup of the *repleta* group) is known to breed and feed in rotting cladodes of a number of species of the cactus genus *Opuntia*, and is apparently specific to the cactus niche (Barker and Mulley 1976). In Australia, *Opuntia* species (mainly

*O. inermis*) occur as isolated patches, usually in open sclerophyll forest or largely treeless grazing areas. During the day in summer, adult flies are not found in cladode rots, where temperatures as high as 44°C have been recorded. However, adults can sometimes be located on the underside of fallen cladodes, so that during the day they presumably take refuge in the plant litter on the ground where the temperature will be lower, but where relative humidity often will also be low. Normally, they become active during summer afternoons when the temperature drops to about 24-26°C. On some occasions, however, when summer collections were being made, the temperature at sunset was at least 32°C, and flies started coming to bait buckets from just prior to sunset. They remained quite active until dark when the temperature was still at least 29°C.

The temperature below which flies are active clearly depends on other factors, one of which would appear to be light intensity. Apparently *D. buzzatii* will be active and feeding in early morning and in the evening, practically regardless of temperature. Thus during summer, while their behavior and activity patterns will act to reduce temperature and/or desiccation stress, they will be exposed to such stresses for a large proportion of each day. Also, if adults do migrate between *Opuntia* patches, they would be exposed not only to these stresses, but also to a nutritional stress resulting from lack of access to cactus-specific yeasts.