Table 2. EFFECT OF CALCIUM ON ALGINATE GEL

Calcium chloride in sea-water agar base (%)	Syneresis	Gel strength	Activity of alginase <i>Ps. carrageenovorax</i>
0	—	— +	Liquefaction
0.1	—	+	Liquefaction
0.25	— +	+	Pit 25 mm
0.5	+	++	Pit 25 mm
1.0	++	+++	Pit 10 mm

purpose calcium is added to a soil extract agar medium and the sodium alginate is dissolved in an aqueous solution of dipotassium hydrogen phosphate.

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Aminopterin as an Inducing Agent in Bacteriocinogenic Bacteria

INDUCTION of lysogenic bacteria was first produced by the use of ultra-violet light¹. It was shown later that other radiations², nitrogen mustard, ethylene-imines, epoxides and organic peroxides³ can also induce lysogenic bacteria to produce phage. The process of induction is not yet clear. Several lines of evidence indicate that the primary lesion initiated by inducing agents could be an alteration in the nucleic acid economy of the host, an effect of unbalanced growth⁴.

In 1952⁵ it was demonstrated that exposure of bacteriocinogenic bacteria to ultra-violet light induces the production of bacteriocin. The fact that phage production and bacteriocin formation are induced by the same agents, and many other similarities⁶ suggest that the mechanism of induction might be analogous in both systems. Since bacteriophage production appears to be the more complex of the two systems, it may be easier to study the triggering effect of induction in the case of bacteriocins.

The experiments described here were performed using strain *P* of *Pasteurella pestis*, which produces bacteriocin, when irradiated with ultra-violet light^{7,8} or when treated with mytomyacin C⁹. Cultures of exponentially grown cells start to produce bacteriocin almost immediately after irradiation⁷, that is, too early for the resumption of DNA synthesis to occur. If DNA synthesis is, indeed, not needed for bacteriocin production (in contrast to phage production), the system will permit the demonstration of triggering the induction even by a substance which will stop synthesis of DNA completely.

Aminopterin (California Corporation for Biochemical Research), when given in a dose of 200 γ /ml., induces the *P* strain of *P. pestis* to produce bacteriocin. In a typical experiment, 200 γ /ml. of aminopterin was added to a sample of an exponentially grown culture of *Pasteurella pestis* in synthetic medium¹⁰. Another sample was irradiated with ultra-violet light. The tubes containing these samples and the control were immersed in a water bath at 37° C, for 3 h. Chloroform was then added to each

culture, to kill the bacteria, and bacteriocin (pesticin) in the medium titrated after decantation, as described previously⁷. The titre of the control was less than 1×10^2 arbitrary units/ml., the titre of the irradiated culture 1×10^4 and that of the aminopterin-treated culture 5×10^3 arbitrary units/ml.

Attempts to reverse induction of aminopterin by thymine, thymidine, folic acid or folinic acid have failed so far, both when these metabolites were added to the bacteria 1 h before or immediately after induction.

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GENETICS

Apparent Genetic Recombination in a Blue-Green Alga

THE blue-green algae (Myxophyceae) have generally been thought to be devoid of sexuality^{1,2}, although no genetical evidence for or against this supposition seems to have been reported so far. This communication describes experimental results obtained with a unicellular blue-green alga, generally known as *Anacystis nidulans* (Myers' strain), which seem to indicate the occurrence of sexual or parasexual phenomena in this organism.

From the wild-stock, strains of the alga which are, *inter alia*, about ten times as resistant to penicillin and streptomycin as the sensitive (parent) strain were derived by a few sub-cultures in basal medium (slightly modified Medium C of Kratz and Myers³, diluted with equal parts of water) supplemented with gradually increasing concentrations of the respective antibiotic. These strains seem stable; a streptomycin-resistant strain has been passed through 40 sub-cultures in the absence of streptomycin without having lost its resistance.

Each of the resistant strains was tested for cross-resistance to the other antibiotic and found not to be cross-resistant. They were also inoculated—separately and jointly—into media which contained both the antibiotics. No growth was found to have occurred in any case even after six weeks.

Inocula from streptomycin-resistant and penicillin-resistant strains were then transferred together into the basal medium containing no antibiotics. At various times, inocula were withdrawn from the mixture and transferred to culture flasks containing both the antibiotics. Out of a total of 36 such flasks (in different experiments) growth occurred in 10. Two typical growth-curves are shown in Fig. 1. The duration of the lag-phase was found to vary from 8–13 days. Since neither of the strains can by itself grow in flasks containing both streptomycin and penicillin, in contrast to inocula from the basal mix of the two strains which can, it is highly probable that growth in the latter case is due to the appearance of