These results indicate that the three strains of mice differ in their susceptibility to intestinal infection with *M. johnei*. The susceptibility of the C.57 black mice was markedly higher than that of the other strains.

A full report of this experiment will be published elsewhere. Further experiments are in progress to ascertain the suitability of the C.57 black mouse as a laboratory animal for work on Johne's disease.

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The Host-Range of a *Streptomyces aureofaciens* Actinophage

A VIRULENT actinophage destructive to *S. aureofaciens* cultures and chlortetracycline (the trade mark of American Cyanamid Company for chlortetracycline is 'Aureomycin') fermentations had previously been reported¹. Limited data regarding its host-range obtained at that time showed that it was a monovalent phage. Since other actinophages have been noted to be either polyvalent or monovalent², further tests have been made with the *S. aureofaciens* phage to establish more clearly the nature of its host-range.

Evidence is presented in this communication confirming that this phage is species-specific for *S. aureofaciens*. Tests for susceptibility to *S. aureofaciens* phage were made by spreading *Streptomyces* spore suspensions over the surface of corn-steep agar, resulting in confluent growth surfaces within 24–36 hr. When the spore suspensions had dried, the seeded surfaces were spotted with drops (0.01–0.02 ml.) of phage suspension using two concentrations in broth, 3×10^6 and 3×10^4 phage particles per ml. Controls consisted of broth and water drops spotted on the seeded surfaces. Observations for the presence of plaques were made after 1, 2, and 4–5 days. All tests were made at least in duplicate; in the case of a doubtful reaction, tests were repeated.

Representatives of forty diverse named species of *Streptomyces* other than *S. aureofaciens*, selected to encompass most sections and series of the genus as set up by Pridham *et al.*³, showed no reaction to the phage. Tests were made with 3–5 strains each of *S. griseus*, *S. lavendulae*, *S. fradiae*, *S. antibioticus*, *S. rimosus*, *S. hygroscopicus*, *S. purpurascens*, *S. albobriseolus*, *S. tanashiensis* and *S. erythreus* and with one strain each of 30 additional species, use being made wherever possible of authentic strains from type culture collections.

Twenty-five soil isolates determined to be *S. aureofaciens* on the basis of morphological, cultural and physiological characteristics were also used in this work. Eighteen of these isolates were susceptible to the virulent *S. aureofaciens* phage, though some less than others, as indicated by reduced plating efficiency. The seven resistant isolates gave indications that their resistance was connected with the presence of homologous temperate phage(s) in their cultures. It is not definitely known whether these cultures are lysogenic or carry phage. Results with

Table 1. RESPONSE OF *Streptomyces aureofaciens* STRAINS TO *S. aureofaciens* PHAGE

Collection* designation	Phage reaction†	Collection* designation	Phage reaction†
A-1787	++	AB-357	—
A-2021	—	AB-708	+++
A-2380	++	AC-105	++
A-4342	+++	AD-417	—
A-5156	+++	T-2146	+
A-6496	+++	T-3452	±
A-7189	+++	T-3491	—
A-7300	±	NRRL 2209	+++
A-8202	—	NRRL B-1286	+++
A-9635	++	NRRL B-1287	—
AA-689	+	NRRL B-1288	++
AA-772	++	ATCC 12416	+
AB-46	—		

* The designations of the first 20 strains are those of the Lederle Collection.

† Phage susceptibility (as indicated by plating efficiency): +++, high; ++, intermediate; +, low; ±, very low (a few plaques observed); —, none (no plaques observed).

the *S. aureofaciens* group of isolates are recorded in Table 1.

The possible utility of actinophage susceptibility as a criterion for species differentiation in the genus *Streptomyces* has been the subject of much discussion among investigators concerned with the taxonomy of this group. It seems to be generally agreed that polyvalent phages would be difficult to utilize because of their complex host relationships, but that species-specific, monovalent phages would have definite applicability, in conjunction with other taxonomic features characterizing *Streptomyces* species^{2,4,5}. Susceptibility of newly isolated *Streptomyces* cultures to such a species-specific phage would reinforce other results on their close relationship to the phages' host species. Lack of susceptibility, however, would not exclude an isolate from being allied with the host species, as species susceptible to phages are generally known to comprise strains resistant to the same phages.

In the light of this evidence that the subject *S. aureofaciens* actinophage is species-specific, it was extremely interesting from a taxonomic point of view to extend this investigation to include three controversial organisms, *S. viridifaciens*⁶, *S. psammotomicus* (*S. feofaciens*)⁷ and *S. sayamaensis*⁸. Although described as separate new species by those who isolated them, these organisms have morphological, cultural and physiological properties which raise serious doubts as to their distinction from *S. aureofaciens*. The results obtained, all three proving to be susceptible to the virulent, monovalent *S. aureofaciens* phage, add support to the contention that these three species should be reduced to synonymy with *S. aureofaciens*.

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