

in predictability of the survival time; the concentration of parasites in peritoneal exudates varies enough from one group of mice to another that one either must use two dilutions every week, doubling the number of animals expended, or else be prepared to deal with an unpredictably

variable time of death, ranging from 5 to 10 days as a rule.

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SPONTANEOUS APPEARANCE OF SECTORED COLONIES IN *STAPHYLOCOCCUS AUREUS* CULTURES

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A bacterial colony is called sectored when it shows discrete portions differing in some evident character from the parent strain, growing simul-

taneously and competing successfully with it. The appearance of this type of colony in bacterial cultures is considered a rare event (Lam-

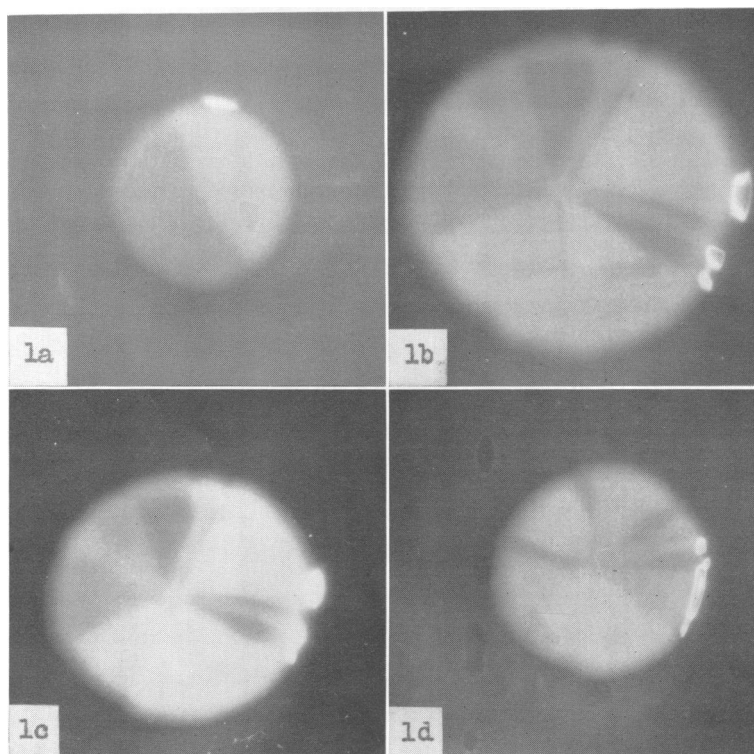


FIG. 1. Sectored colonies from *Staphylococcus aureus* strain PCI209P, appearing after 72 hr incubation at 37 C on Penassay seed agar. The darker portions correspond to the orange pigmented sectors.

- a) Colony which shows more than half pigmented sector. Magnification, 12 diameters.
- b) The most frequent type of sectored colony encountered, showing sectors of different hue. Note that the sectors are not convergent. Magnification, 15 diameters.
- c) Same as 1b but at a magnification of 12 diameters.
- d) Another type of sectored colony. The sectors are but narrow pigmented strips, not converging. Magnification, 12 diameters.

anna and Mallette, *Basic Bacteriology*, p. 516. 2nd ed. The Williams & Wilkins Co. 1959). The induced formation of sectors in colonies of *Escherichia coli* has been demonstrated by Witkin (Witkin, Cold Spring Harbor Symposia Quant. Biol. **16**:357. 1951), who studied cultures in which mutation (inability to ferment lactose) was induced by ultraviolet light and detected on lactose-eosin-methylene blue-agar, with the formation of lactose-positive and lactose-negative sectors. The observation of sectorial colonies from *Salmonella typhimurium* purine-requiring mutants, obtained by abortive transduction, has been mentioned by Demerec (Demerec, Moser, Clowes, Lahr, Oseki, and Vielmetter, Carnegie Inst. Wash. Yearbook No. **55**:301. 1956).

In the course of some studies on the resistance of bacteria to tetracyclines in our laboratory (Servin, J. Bacteriol. **79**:905. 1960), it was considered necessary to employ *Staphylococcus aureus* strain PCI209P from lyophilized ATCC ampoules (strain 6538P from the ATCC). The vials were opened in a sterile chamber with routine sterility precautions and according to instructions from the ATCC catalogue (American Type Culture Collection, *Catalogue of Cultures*, p. viii. 6th ed. 1958). The contents from each ampoule were transferred to separate culture tubes containing 5 ml of freshly prepared Pen-

assay broth. Incubation was at 37 C for 48 hr; at the end of this period, the tubes were observed for growth and the purity of the strain was checked by microscopical examination; in addition, loopfuls were seeded on plates of recently prepared Penassay seed agar. After 72 hr at 37 C there was clearly observed on the plates an array of different types of colonies, some uniform and strongly pigmented in orange, due to the presence of carotenoids (Suzue and Tanaka, Science **129**:1359. 1959), others wholly white, and about 10% of the total number were sectorial colonies, ranging from those which contain a small mutant area to those which are more than half mutant (Fig. 1*a*). The type of sectorial colony, most frequently observed, contained orange pigmented sectors of varying hue (Fig. 1*b*). It is interesting to note that the convergence zone of the sectors is not a point, but a small central portion of the colony in which no expression of the mutation is observed. Another type of sectorial colony observed is shown in Fig. 1*d*.

Up to this date, five ATCC ampoules were opened and under the experimental conditions outlined, all of them have yielded sectorial colonies. As far as we are aware, this is a first report on the spontaneous appearance of sectorial colonies in *S. aureus* cultures.