

May 16, 1951.

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Dear Evelyn:

This is a strange time to bring something up for MGB, but I understand you have a bibliographic issue in press, and you might want to throw in this technique note. Don't knock it till you've tried it: I think the transfer method described herewith may save a lot of work in experiments done laboriously now, and should make possible a few things I had never thought feasible before.

Another procedure still half-baked looks promising as a partial substitute for single-celling, and might be useful locally: to catch early products of division of cells (e.g. after uv), stroke a loopful containing a few cells along a line at one side of a plate. After incubating for 2 - 5 fissions, make one firm stroke with a spreading-rod perpendicular to the first streak. This will break up the microcolonies and pull them into a linear group representing (I hope) fission products. With a proper spreader, it might be possible to achieve a similar redistribution more effectively on colonies plated over two dimensions. My own use for this is with segregating diploids, but there might be other applications; for example, both the decalc.-transfer and this could probably be used as a ~~sketchy~~ clincher to Newcombe's formal proof that resistance mutants pre-exist as clones.

See you at the Symposium,

Sincerely,

Joshua Lederberg

BACTERIAL DECALCOMANIA

Genetic experiments, in particular, require the tedious and repetitious picking of colonies from one agar plate to a series of others, for example in the isolation of auxotroph mutants, or in scoring unselected markers segregating in crosses. A surprisingly simple solution to this problem has been found that should dispense with previous attempts in the same direction (for example, the delayed enrichment or layer-plating method of Lederberg and Tatum).

A disc of high-quality, tightly woven velvet is mounted on a wooden, cardboard, or metal support either with tabs, or by a collar strip. The disc is cut to correspond to most of the agar surfaces used. The agar plate with a hundred or so colonies is carefully inverted onto the velvet disc, and very little pressure beyond the plate's own weight is used to bring the velvet surface into intimate contact with the colonies and agar. The plate is then elevated, leaving an impression of the colonies on the fabric. This can then be used to "print" almost an indefinite number of copies on fresh agar plates using the same procedure. With care, a surprising degree of fidelity and sharpness can be obtained for the prints. The original plate can usually be used repeatedly, if necessary. There are any number of detailed variations in the application of this technique, as well as new kinds of experiments that are made possible, which require no discussion here. The velvet discs can be washed and sterilized (with chloroform, or cautious heat or steam) for repeated use.

J. Lederberg, May 15, 1951.