Personal Memo from
JOSHUA LEDERBERG

Jared Diamond
1/10/90

Auxo vs Prototrophs.
(I just happened on your 1986 essay.
Do you know of more recent findings?)

As you may have no reason to recall, I've been puzzled by the phenomenon for a long time;* and I agree that "saving energy" is a feeble explanation — thought it would be hard to measure 1% growth differentials except in a competition experiment. It is especially puzzling to see nuclear competition in a heterokaryon — though there's an outside possibility that homo- or uni-karyotic hyphal tips are the unit of selection.

and periodic selection wins further down the d.

One thought: the auxotroph is not just relieved of a biosynthetic step, it is also blocked in front of it — though this is

*Ryan + Lederberg PNAS 1946.



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usually also true in the presence of the nutrilite through coordinate repression and feedback inhibition. However different processes do come into play and there are bound to be quantitative differences; and variations in just which anabolite is inhibiting. So some of the intermediate metabolites may be secreted by $x^-$ and processed differently by $x^+$ cells. That's a long shot — but what else?

As I recall (dimly) there was some evidence that trp$^-$ cells make a "toxin".‡

Anyhow any further thoughts or data would be welcome

Sincerely

Jim Lederberg

‡ in B. subtilis
see Barlati — J Bact 1970 101:355
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