To: ute.hentschel@mail.uni-wuerzburg.de
Cc: me
Subject: Microbiome [P-320
Replyto: lederberg@mail.rockefeller.edu

_000707
Dear Drs. Hentschel, Steinert

Thank you for your communication and the reprints. We plainly concur closely in our outlook.

I imagine by now you have also seen:

320** Infectious History
Joshua Lederberg*
Science 2000 April 14; 288: 287-293. (in Pathways of Discovery)

and I would carry the rhetoric one further stage:

If you take this as a footnote to that article.
<<<
It may broaden our horizons
if we think of the human as a superorganism, with an extended
genome as comprising

a) karyome -- chromosome set
b) chondriome -- mitochondria
c) microbiome -- entourage of microbial flora that
we carry in and on us, perhaps as endosymbionts, but also on our skin, gut lumen, mucosal surfaces, and elsewhere.

Each of these components can have an important impact on the outcome of our encounters with infection (and reinfection), as well as on nutrition and other phenotypes.
>>>>

The concept of "microbiome" overlaps that of plasmid:
1) the former embraces endo- and extra-cellular associations
2) the latter, (but not the former) includes DNA fragments smaller than intact "organisms".

If you've not seen this book, you'll enjoy it!
Sapp, J. (1994). Evolution by Association. A History of Symbiosis. Oxford University Press, New York.

and also:

an article:
Plasmid (1952-1997). Plasmid 39:1-9 (1998)
and that goes back to

33 Lederberg J.
Cell genetics and hereditary symbiosis.
Physiol. Rev. 32: 403-430. (1952)

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Your collection of examples is very useful. I don't know if you go as far as I do in the implications of evolution being much faster in the microbiome: namely that the outcome of interaction is mainly dominated by what the bugs "choose" to do (including restraint on virulence).

Now we have to convert this "philosophy" into concrete research programs.

Sincerely,

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