

Transmission of genetic information between two *E. coli* bacteria occurs during a process known as conjugation. Dr. Lederberg discovered this process in 1946, proving that a form of sexual reproduction occurs in these asexual microorganisms. In the micrograph below, two bacteria make cell-to-cell contact through the formation of a connecting bridge. The bacterium acting as a male donor contributes DNA to the bacterium acting as a female recipient. The recipient incorporates the new genetic information into its own chromosome by recombination and passes the recombined set on to its progeny by replication.



Personal Memo from  
JOSHUA LEDERBERG

How *E. coli* conjugates MAY 30 1990

I feel somewhat bashful to show you this figure. I would much prefer to have shown you E-M slides!

However it would have been inappropriate for me to even ask to use the figure from your thesis until you had published them.

So this is awaited with expectancy!

Sincerely,  
Joshua Lederberg

POSTDOCTORAL POSITION

MOLECULAR GENETICS  
TRANSCRIPTION AND MUTAGENESIS

Position open for a Ph.D. in biochemistry or molecular biology

Experience is sought in molecular basis of gene expression, especially DNA footprinting methodology. This will be a collaboration to study the interactions of gene expression and mutagenesis in *E. coli*. Apply with C.V., one letter of reference from your Ph.D. sponsor and names of 3 referees to:

Professor Joshua Lederberg

es:  
to a main chromosome, bacteria contain plasmids—  
lar molecules of double-stranded DNA which  
tonomously. Scientists are able to insert foreign  
plasmids, which then multiply and produce cells  
genetically identical material, or clones.  
duce a human gene (in this case, the one for insulin)  
nid, scientists take the plasmid out of an *E. coli*  
break the plasmid open at a specific site by means of  
1 enzyme, and splice in insulin-making human  
resulting hybrid plasmid can be inserted into  
coli bacterium, where it replicates together with the  
making it capable of producing large quantities of

