

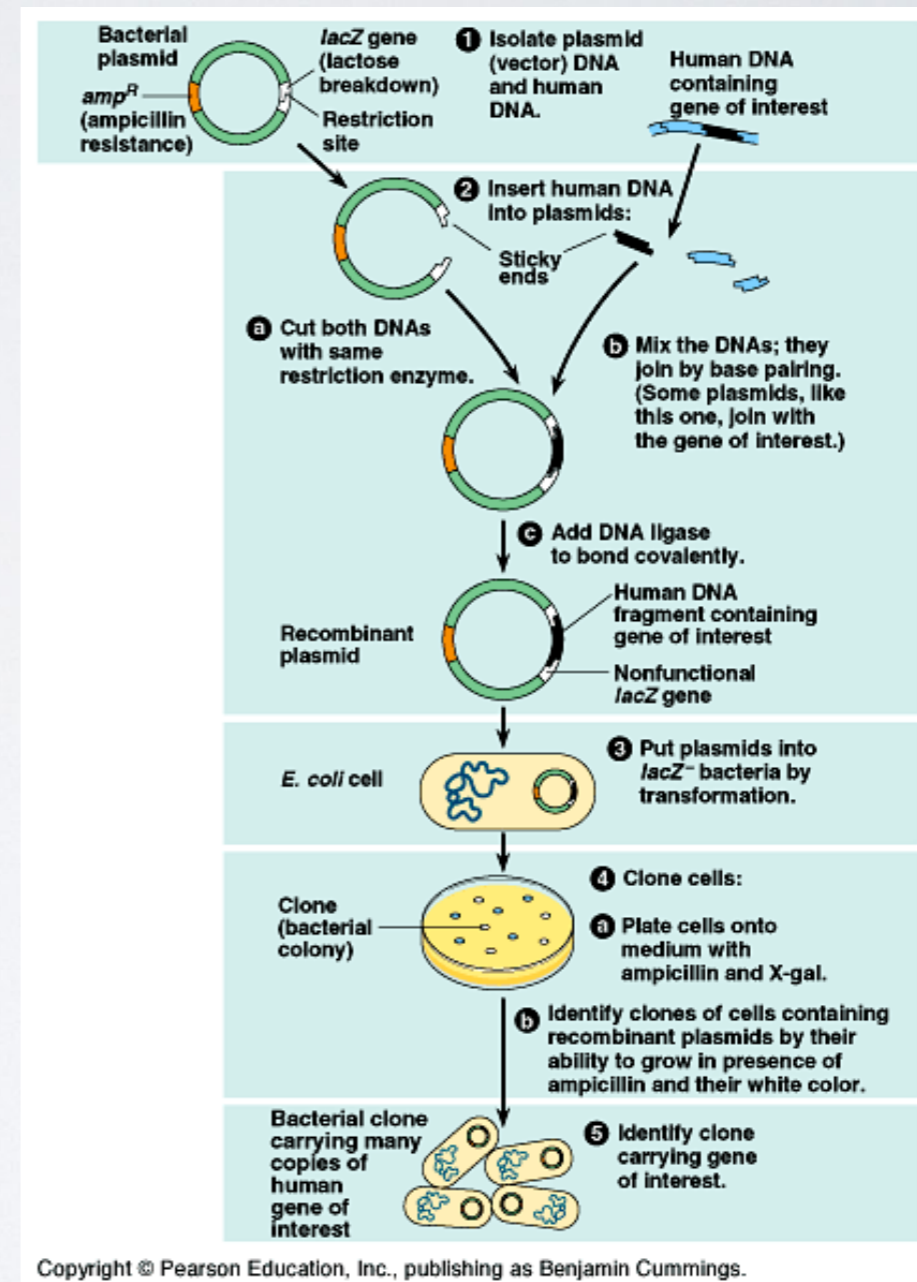


INSULIN INSULTS INC.

John Williams and Jordan Hill

GENE CLONING WITH PLASMIDS

- How does it work?
- Isolate the cloning vector and gene source
- Insertion of gene source DNA into cloning vector using restriction enzyme
- Bind the fragmented DNA with DNA ligase



GENE CLONING WITH PLASMIDS

- Introduction of cloning vector into cell
- Clone of cells
- Identification of cell clones carrying the gene of interest

HISTORY

- In 1944, Avery, MacLeod, and McCarty run their famous experiment, proving that DNA is the genetic material of living organisms.
- In the late 1960s, restriction enzymes were discovered as enzymes that cut DNA at specific spots called Restriction Sites.



HISTORY CONT.

- In 1971, Paul Berg runs a splicing experiment.
- In 1977, the first cloning vector is designed.
- In 1975, NEB became the first company to commercialize restriction enzymes.

CURRENT USES

- Primary use is in producing Insulin in bacteria. This can be done by having bacteria reproduce and then produce more and more insulin that can be harvested.



BIOETHICS, LAWS, AND SOCIETY

- As of this point in time, the only law is one forbidding this to be tested on humans.
- Ethically this process is sound since the procedure will only occur using bacteria and nobody lies bacteria right? (Ew)
- Using this procedure will be cheaper and more efficient than using bovine or pig insulin.
- The only downside is that some patients can't tolerate this type of insulin.



CASE STUDY

- GMO insulin has been used in treatment of diabetes and has shown that it lasts longer, reduced chance of a CV event, and a reduced chance of a myocardial infarction

