**Key Genetic Engineering Processes**

**Isolating the target gene from a genome**

1. Sequence genome for restriction sites
2. Cut up genome with restriction enzymes
3. Separate fragments with gel electrophoresis
4. Transfer to nylon membrane
5. Soak in solution that has single stranded DNA probes (radioactive) that match part of target gene
6. Expose to X-ray film - any radioactive probes that matched will show up
7. Get the fragments and use PCR to make many copies of the gene

**Inserting Gene Into Host**

1. **Place gene into vector (DNA molecule used to transfer target gene into host cell)**

**Bacterial plasmid vector:**

- cut with same restriction enzyme

- use of sticky ends and ligase = recombinant DNA

- place in host cell and use antibiotics to find them

- clone the host cells with target DNA

**Viral vectors:**

- insert gene into viral genome

- virus infects host cell and gene is incorporated into host genome

1. **Use microinjection to place target DNA into pronucleus:**

- = transgenic cell

- culture transgenic cell into blastocyst

- place into surrogate mother

\*transgenic plants…