

1.6a - Genetic Engineering & Biotechnology



Genetic Engineering

DNA Cloning Process

Probes - for locating the gene you want

Restriction Enzymes - for cutting up DNA

Transferring DNA to new cells

Why do we do all this?

Yeast is cool.







Plasmid =

Recombinant DNA =

Vector =

Recombinant cell =

Probes

finding the gene you want in a genome



Probe binding to gene of interest.



Restriction Enzymes



Restriction enzymes =

Restriction site =

Restriction fragment =

Sticky ends =



How do we transfer recombinant DNA to new host cell?

Getting it into new cell's cytoplasm or nucleus (= recombinant cell)

Bacterial plasmid vector:

- 1. Electroporation (electric pulse)
- 2. Microinjection (small needle)



https://www.youtube.com/watch?v=h-Bfc1GPWpE

3. Transformation (bacteria uptakes)



conjugation - they share plasmids

How do we transfer recombinant DNA to new host cell?

Getting it into new cell's cytoplasm or nucleus (= recombinant cell)

Viral vector:

Virus infects new cell with recombinant DNA -

Into bacterial cell:



Into human cell (gene therapy):







Therapeutic proteins Pest resistance Increase yields Antibiotics and drug development

YEAST Important for Biotech

Yeast has become a real focus for producing new and modified proteins:

- * biopharmaceuticals
- * enzyme production
- * alcohols
- * organic acids
- * flavours and fine chemicals

Can manipulate them to work under different conditions — used for all sorts of applications.

