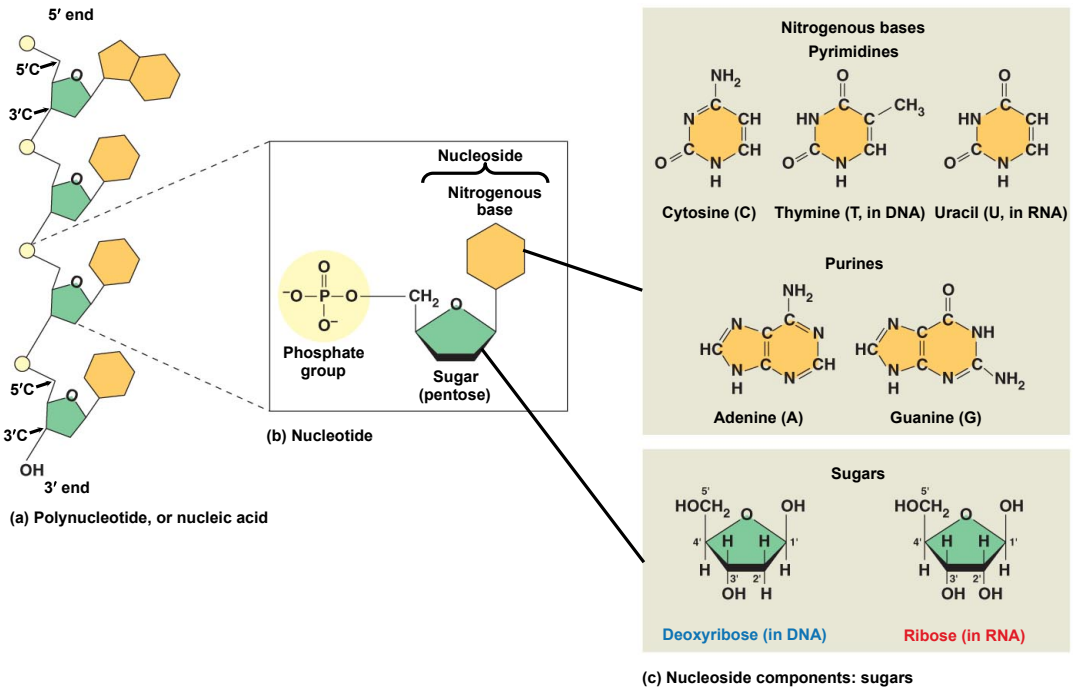
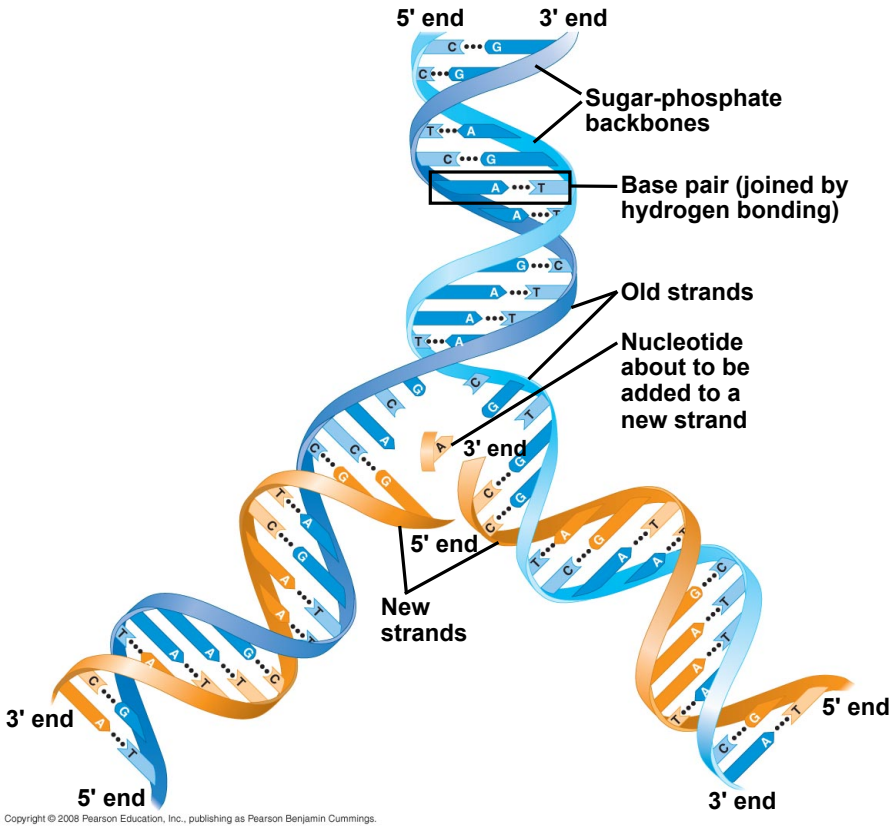
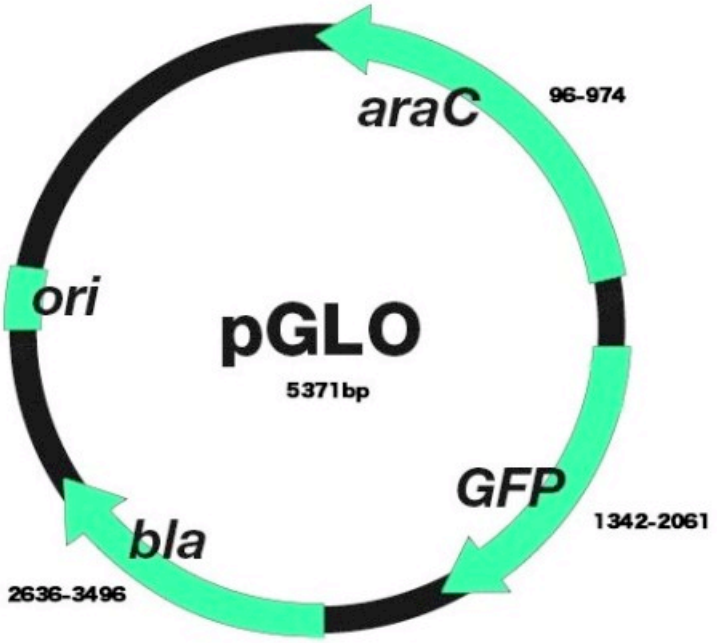
Restriction Enzymes

- Discovered in bacteria
- Allow bacteria to protect themselves from viri
- Specialized proteins (enzymes) that act as nucleases
- Break bonds between nucleotides (building blocks of nucleic acids, including DNA)
- Recognize specific, short sequences of nucleotides in DNA
- Cleave DNA at the recognition sites





Enzyme	Source	Recognition Sequence	Cut
AluI*	*Arthrobacter luteus*	5'AGCT 3'TCGA	5'---AG CT---3' 3'---TC GA---5'
BamHI	*Bacillus amyloliquefaciens*	5'GGATCC 3'CCTAGG	5'---G GATCC---3' 3'---CCTAG G---5'
EcoP15I	*Escherichia coli*	5'CAGCAGN_{25}NN 3'GTCGTCN_{25}NN	5'---CAGCAGN_{25}NN ---3' 3'---GTCGTCN_{25} NN---5'
EcoRI	*Escherichia coli*	5'GAATTC 3'CTTAAG	5'---G AATTC---3' 3'---CTTAA G---5'
EcoRII	*Escherichia coli*	5'CCWGG 3'GGWCC	5'--- CCWGG---3' 3'---GGWCC ---5'
EcoRV*	*Escherichia coli*	5'GATATC 3'CTATAG	5'---GAT ATC---3' 3'---CTA TAG---5'
HaeIII*	*Haemophilus aegyptius*	5'GGCC 3'CCGG	5'---GG CC---3' 3'---CC GG---5'
HgaI[33]	*Haemophilus gallinarum*	5'GACGC 3'CTGCG	5'---NN NN---3' 3'---NN NN---5'
HindIII	*Haemophilus influenzae*	5'AAGCTT 3'TTCGAA	5'---A AGCTT---3' 3'---TTCGA A---5'


araC
96-974
ori
pGLO
5371bp
GFP
1342-2061
bla
2636-3496

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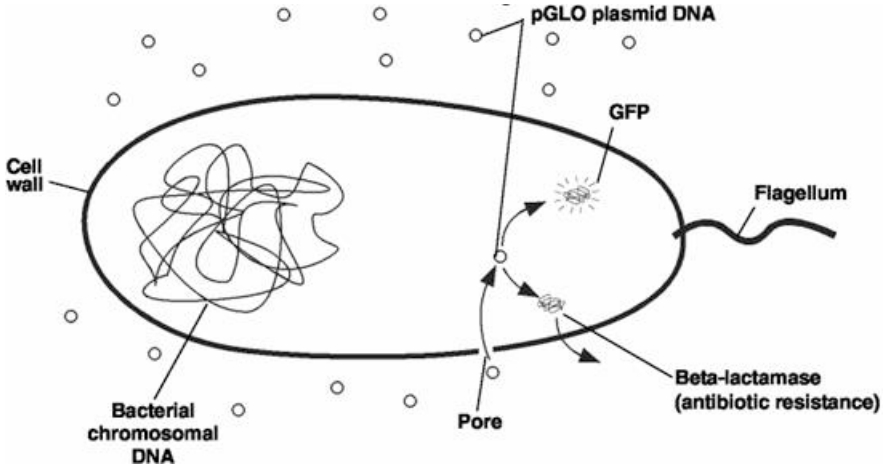
pGLO plasmid DNA
GFP
Cell wall
Flagellum
Beta-lactamase (antibiotic resistance)
Bacterial chromosomal DNA
Pore

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