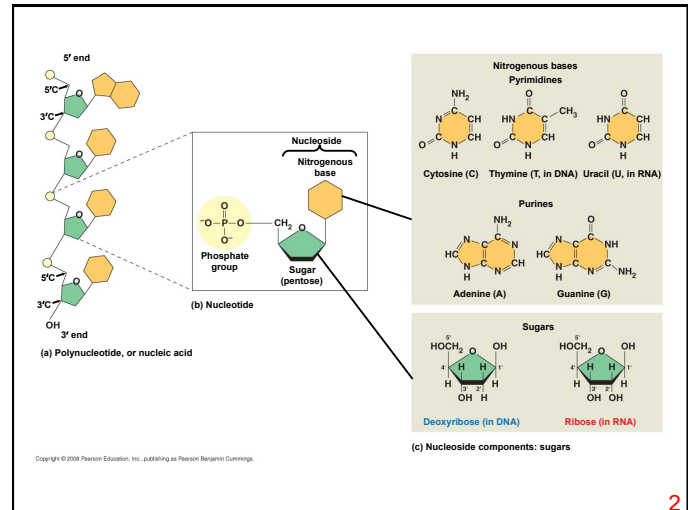


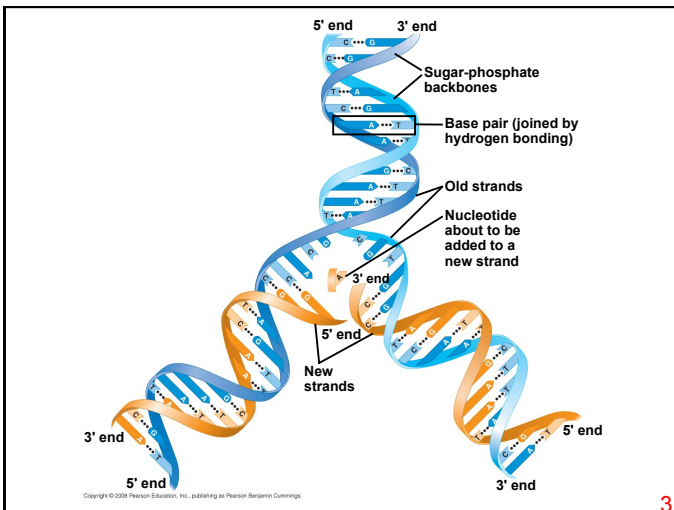
Restriction Enzymes

- 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

1



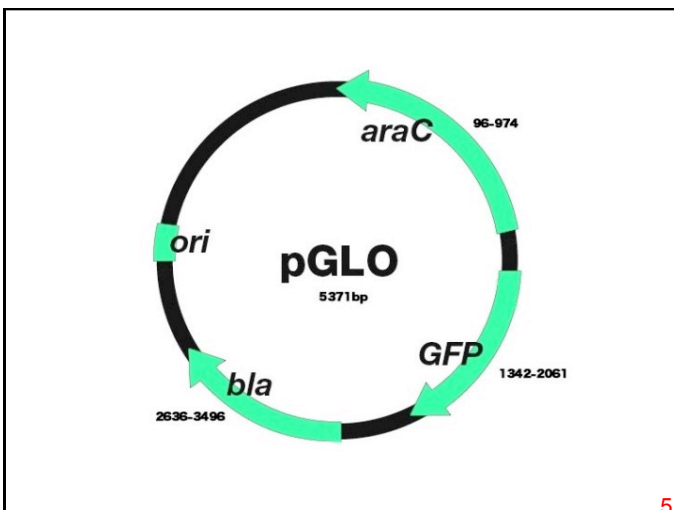
2



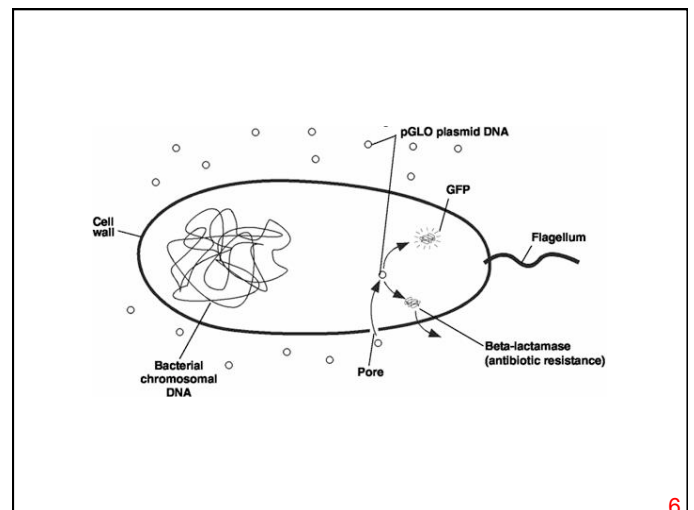
3

| Enzyme | Source | Recognition Sequence | Cut |
|-----------------------------|-----------------------------------|---|---|
| <i>AluI</i> * | <i>Arthrobacter luteus</i> | 5'AGCT 3'CTGA | 5'-AG CT-3' 3'-TC GA-5' |
| <i>BamHI</i> | <i>Bacillus amyloliquefaciens</i> | 5'GATCC 3'CTAGG | 5'-G GATCC-3' 3'-CTAG G-5' |
| <i>EcoPI5I</i> | <i>Escherichia coli</i> | 5'GAGCAGN ₁ NN 3'GTCTGTCN ₂ NN | 5'-GAGCAGN ₁ NN-3' 3'-GTCTGTCN ₂ NN-5' |
| <i>EcoRI</i> | <i>Escherichia coli</i> | 5'GAATTC 3'CTTAA | 5'-G AATTC-3' 3'-CTTAA G-5' |
| <i>EcoRII</i> | <i>Escherichia coli</i> | 5'CCWGG 3'GGWCC | 5'-G CCWGG-3' 3'-GGWCC G-5' |
| <i>EcoRV</i> * | <i>Escherichia coli</i> | 5'GATATC 3'CTATAG | 5'-GAT ATC-3' 3'-CTA TAG-5' |
| <i>HaeIII</i> * | <i>Haemophilus aegyptius</i> | 5'GGCC 3'CCGG | 5'-GG CC-3' 3'-CC GG-5' |
| <i>HpaI</i> ^[23] | <i>Haemophilus gallinarum</i> | 5'GACGC 3'TCGC | 5'-NN NN-3' 3'-NN NN-5' |
| <i>HindII</i> | <i>Haemophilus influenzae</i> | 5'AGCTT 3'TTCGAA | 5'-A AGCTT-3' 3'-TTCGAA A-5' |

4



5



6