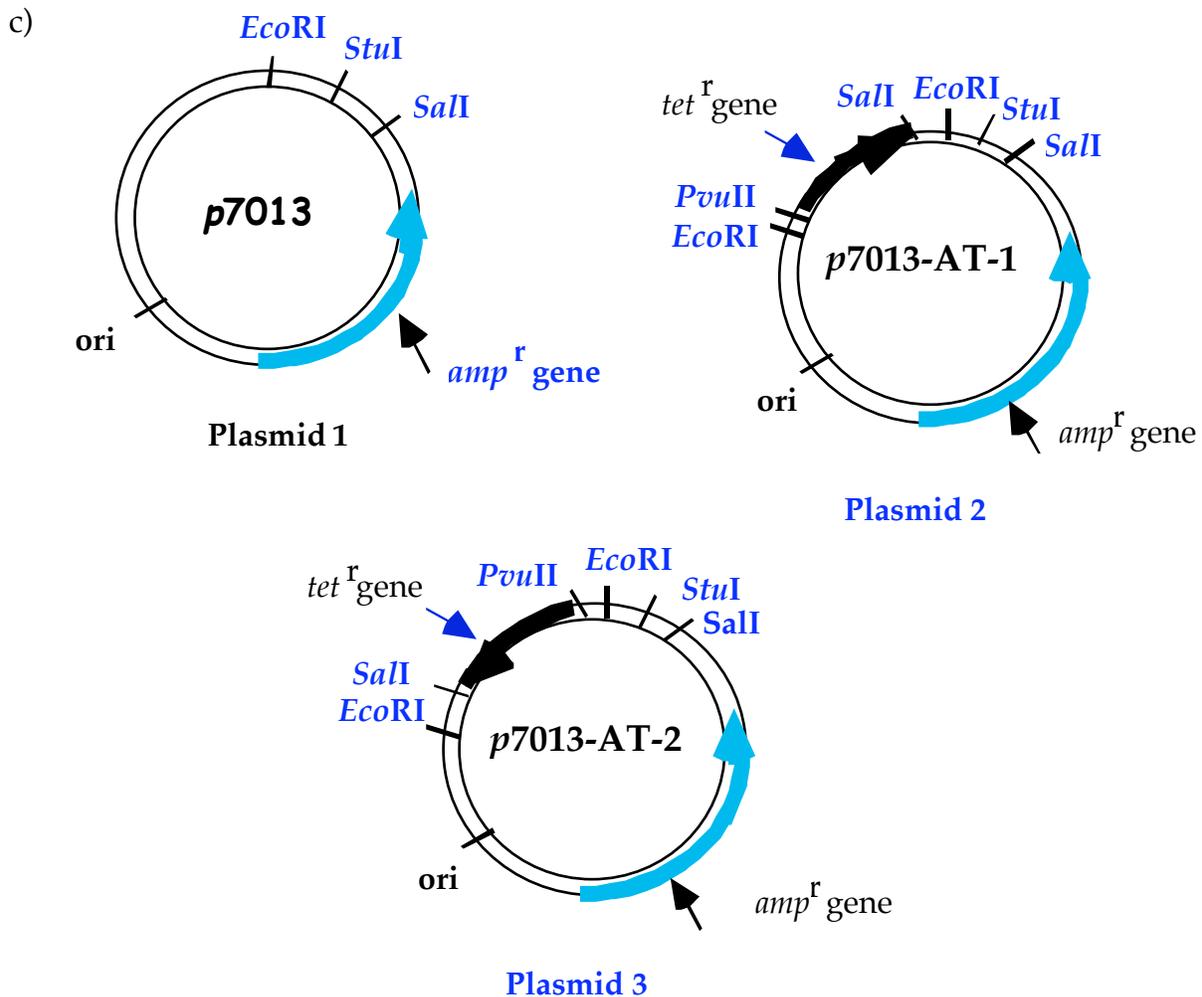


Solutions to 7.012 Recombinant DNA/Cloning

a) Plasmid *p7013* would give a single band at 3000 bp and the *tet* gene fragment would give a single band at 200 bp.

b) When you mix the DNA and bacteria in the transformation protocol, most of the bacteria in the transformation reaction do not take up a plasmid. The presence of ampicillin prevents all these other bacteria from growing and allows you to select only those containing the ampicillin resistance gene.



d) A selection for tetracycline and ampicillin resistance would produce only plasmids 2 and 3, molecules that contain both the genes for ampicillin and tetracycline resistance.

e) Use *EcoRI* and *SalI* to cut both the *p7013* plasmid and the *tet* gene fragment. This procedure generates two different "sticky" ends on each molecule, which will allow the *tet* gene to insert in only one orientation.

You could also cut *p7013* with *StuI* and *SalI*, and cut the *tet* gene fragment with *PvuII* and *SalI*. *StuI* and *PvuII* both generate "blunt" ends that can be ligated together.