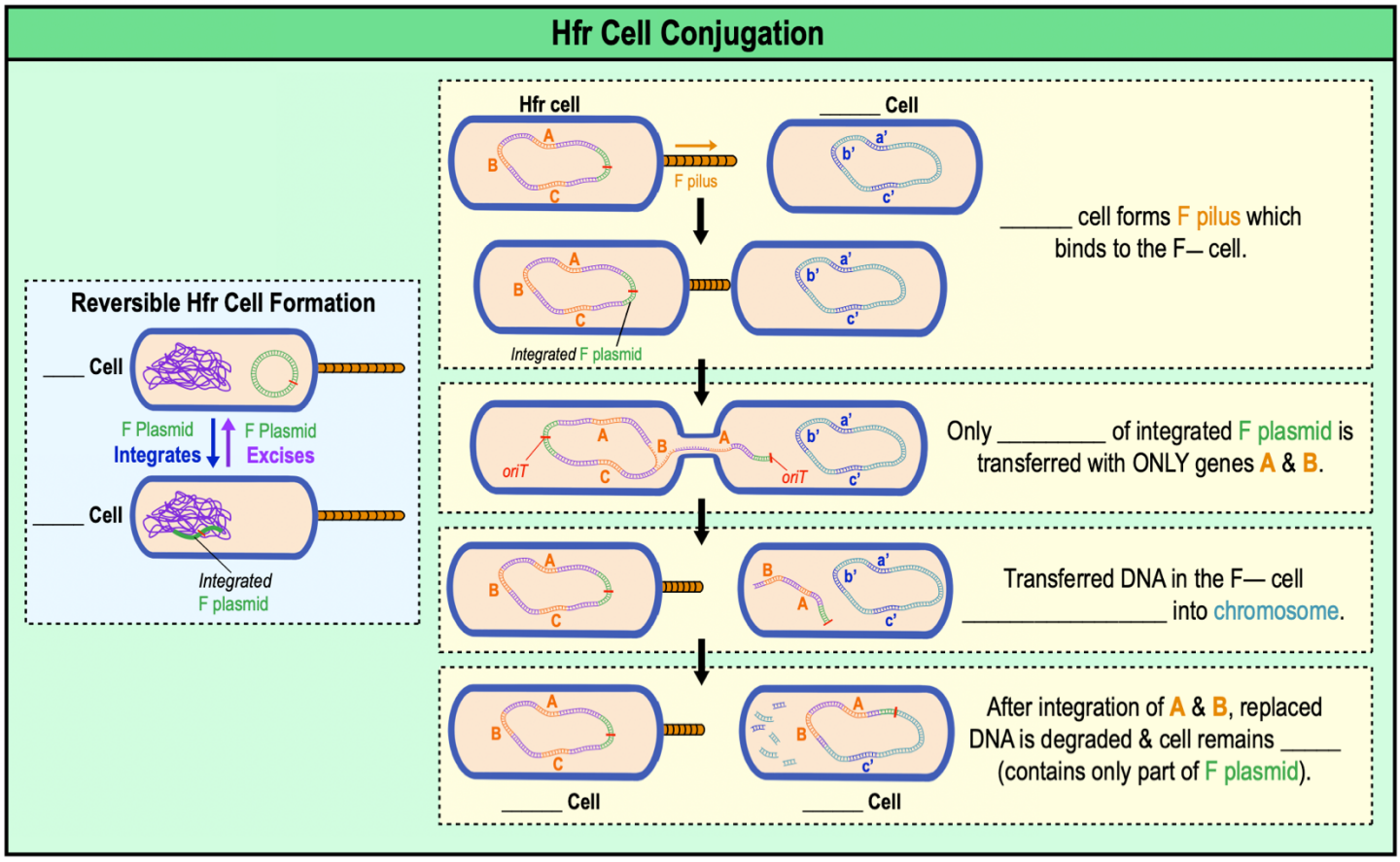
**CONCEPT:** CONJUGATION: HFR & F' CELLS

## Hfr Cell Conjugation

- F plasmids have the _____ ability to *integrate* & *excise/remove* itself from the host chromosome.
- **Hfr** (***H****igh* ***F****requency of* ***R****ecombination*) **cells:** have an F plasmid _____ into their chromosome.
  - □ *Hfr cells* are the *donor* cells in the transfer of _____ DNA via conjugation.
- Conjugation of an Hfr cell's chromosomal DNA is SIMILAR to F plasmid conjugation in *E. coli.*
- Hfr cells make F pilus to conjugate with F– cells, BUT entire integrated plasmid is NOT transferred (*recipient* stays _____).
  - □ Only small _____ of the donor Hfr cell's chromosomal DNA & F plasmid are transferred.
  - □ Transferred DNA in F– *recipient* cell is either _____ into the chromosome or *degraded*.




**PRACTICE:** Hfr strains of bacteria:

a) Do not have an F plasmid.

b) Have an F plasmid.

c) Have an F factor integrated in the bacterial chromosome.

d) Have a partial F plasmid as a linear fragment in the cytoplasm.

**CONCEPT:** CONJUGATION: HFR & F' CELLS

**PRACTICE:** What is transferred between two bacterial cells in Hfr conjugation?

a) A small portion of the integrated F plasmid from the Hfr donor cell.

b) A small, random portion of the Hfr donor's cells chromosome.

c) A small portion of the Hfr donor cell's chromosome and integrated F plasmid.

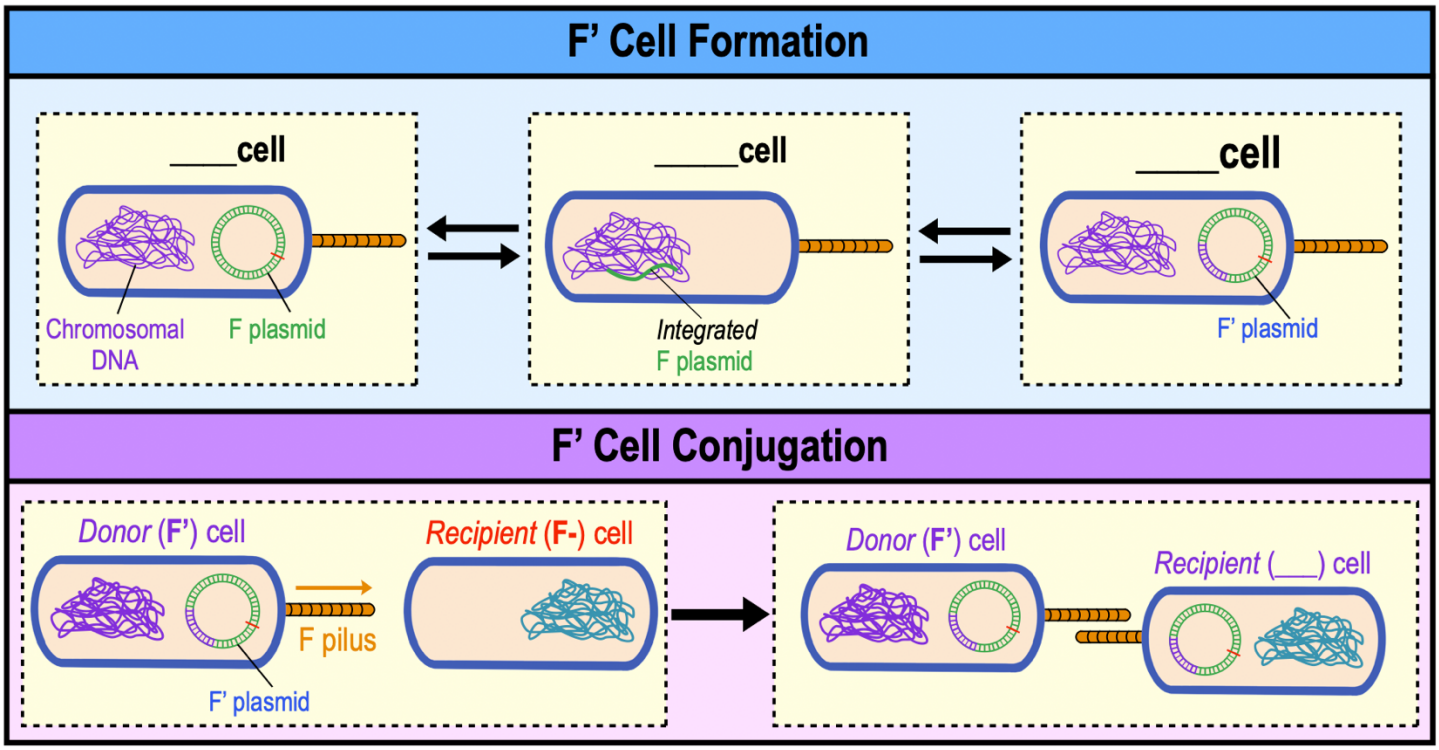
**F' Cell Conjugation**

●*Recall:* F plasmid integration is *reversible* & can regenerate F+ cells when the _____ F plasmid DNA is excised.

□ HOWEVER, excision process is error prone (*donor* DNA can be excised with F plasmid creating _____ *cells*).

□ **F' cells**: have an *excised* F plasmid containing a fragment of the cell's _____ *DNA*.

●F' cells conjugate with F– cells, transferring chromosomal DNA & the entire F plasmid (recipient becomes _____).




**PRACTICE:** Which of the following statements about bacterial cells and plasmids is false?

a) F- cells do not possess any form of a plasmid.

b) F+ cells possess an F plasmid which is separate from the bacterial chromosome.

c) Hfr cells possess a plasmid that replaces the bacterial chromosome entirely.

d) F' cells possess an F' plasmid which contains plasmid DNA and some bacterial chromosomal DNA.