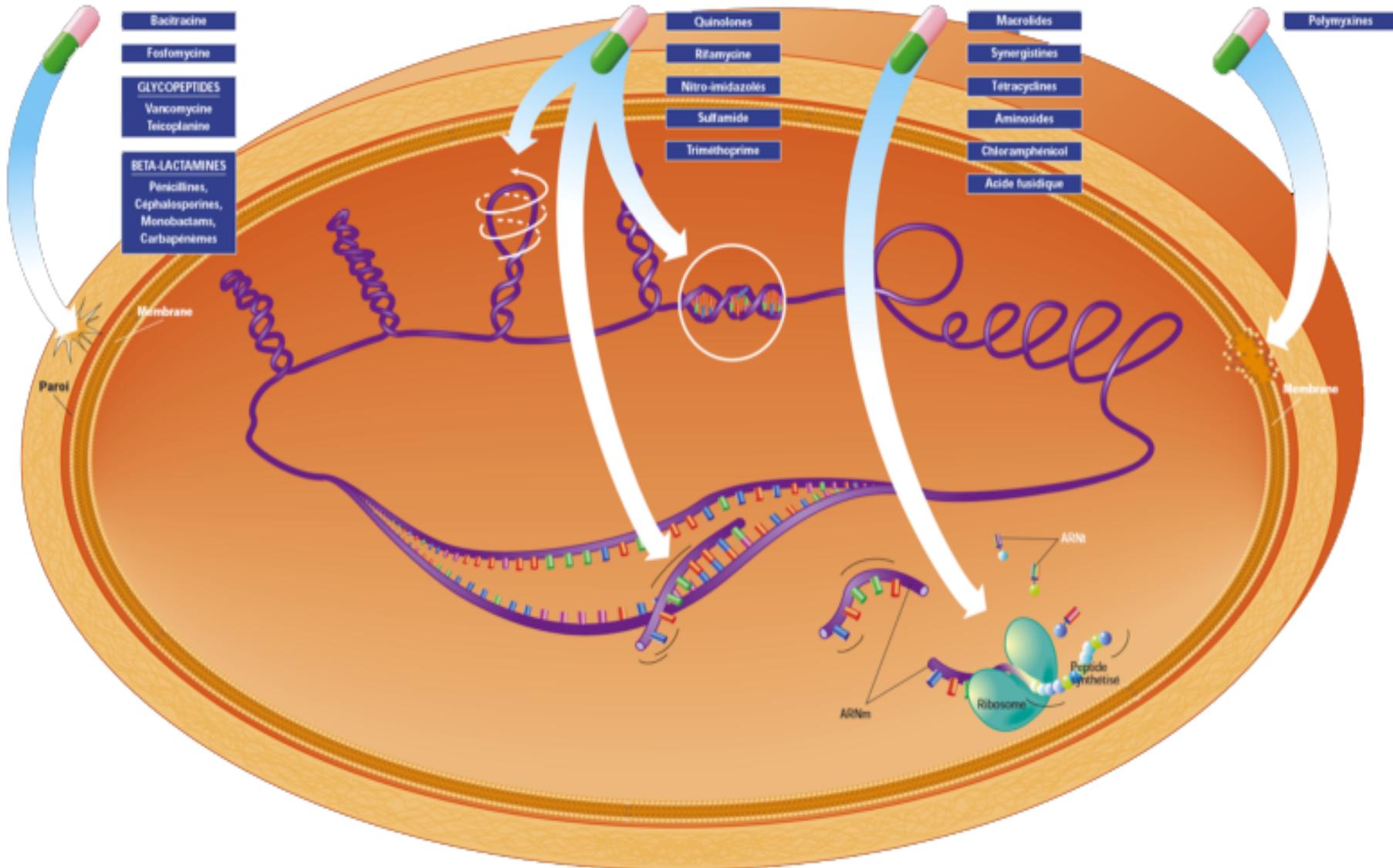


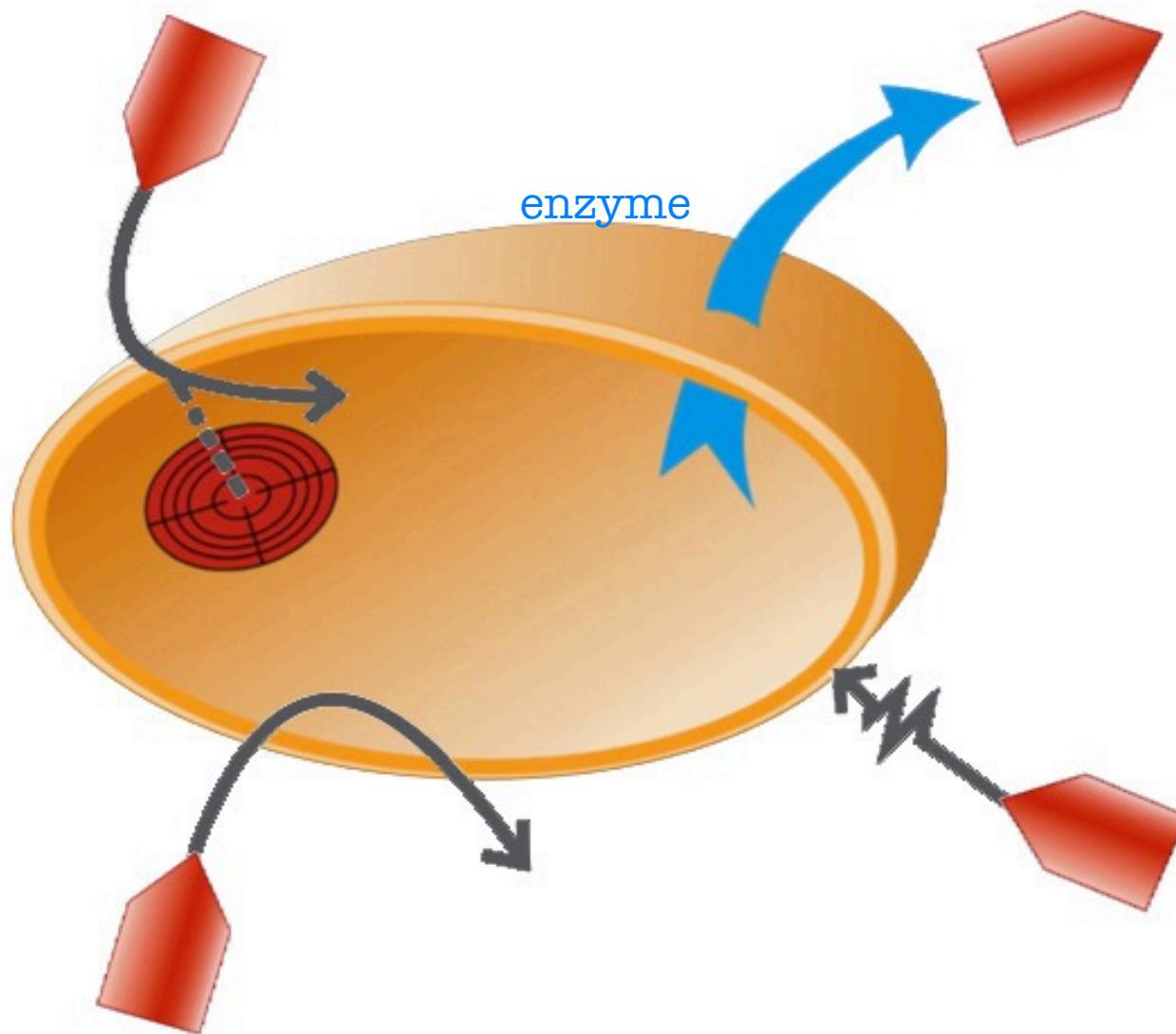
Antibiotiques et alimentation animale

Patrice Courvalin
Institut Pasteur

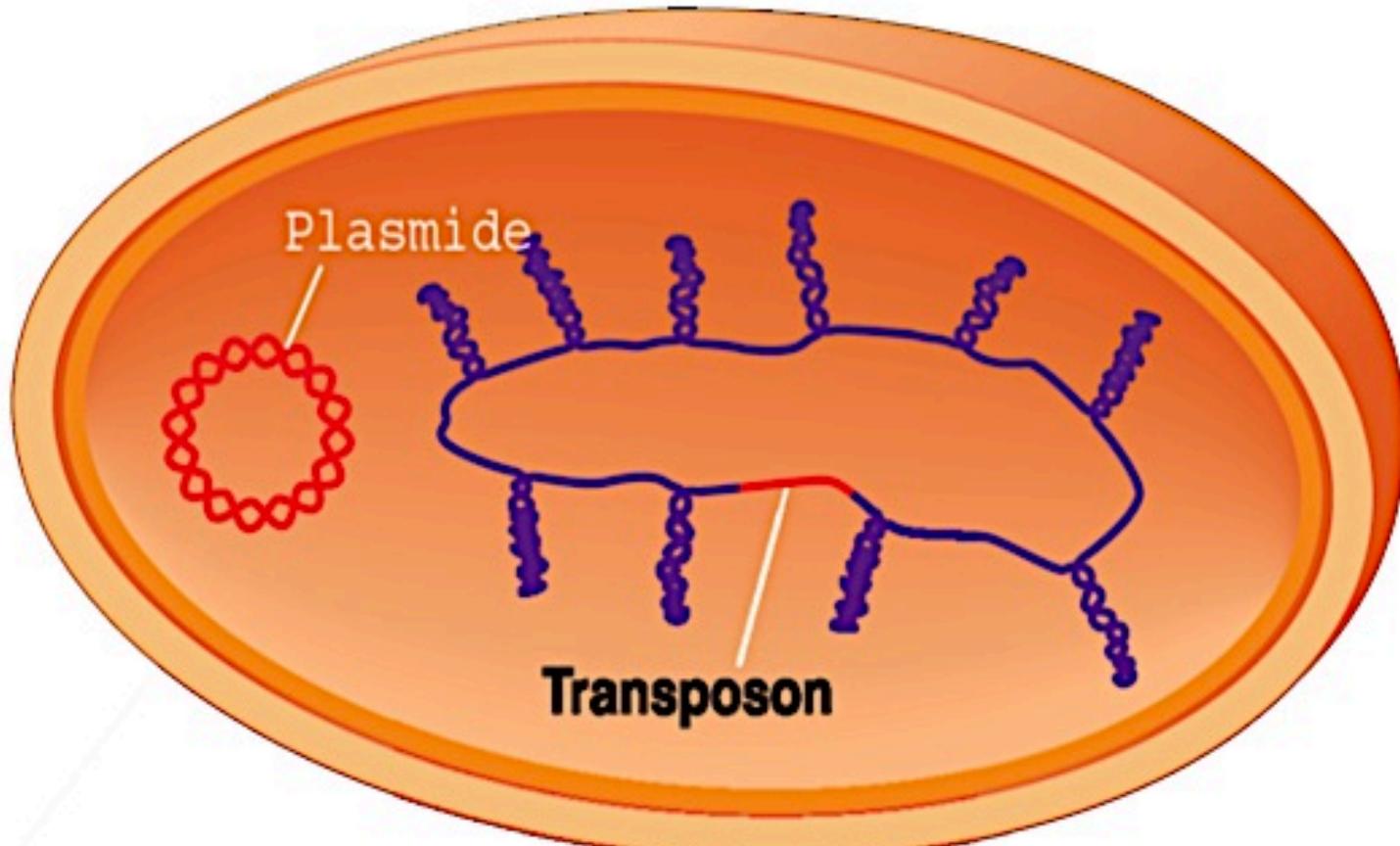
Antibiotic classes



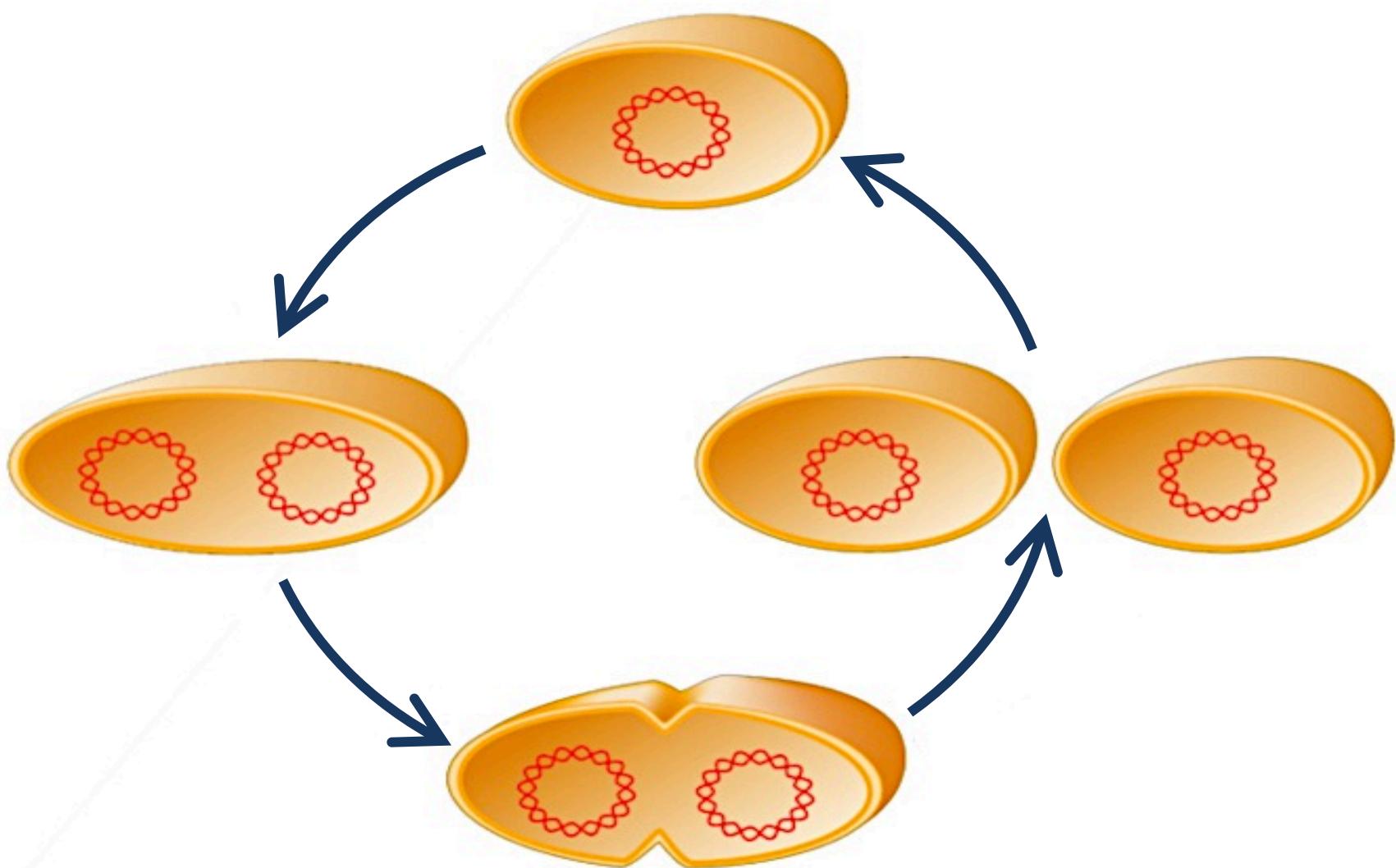
Resistance mechanisms



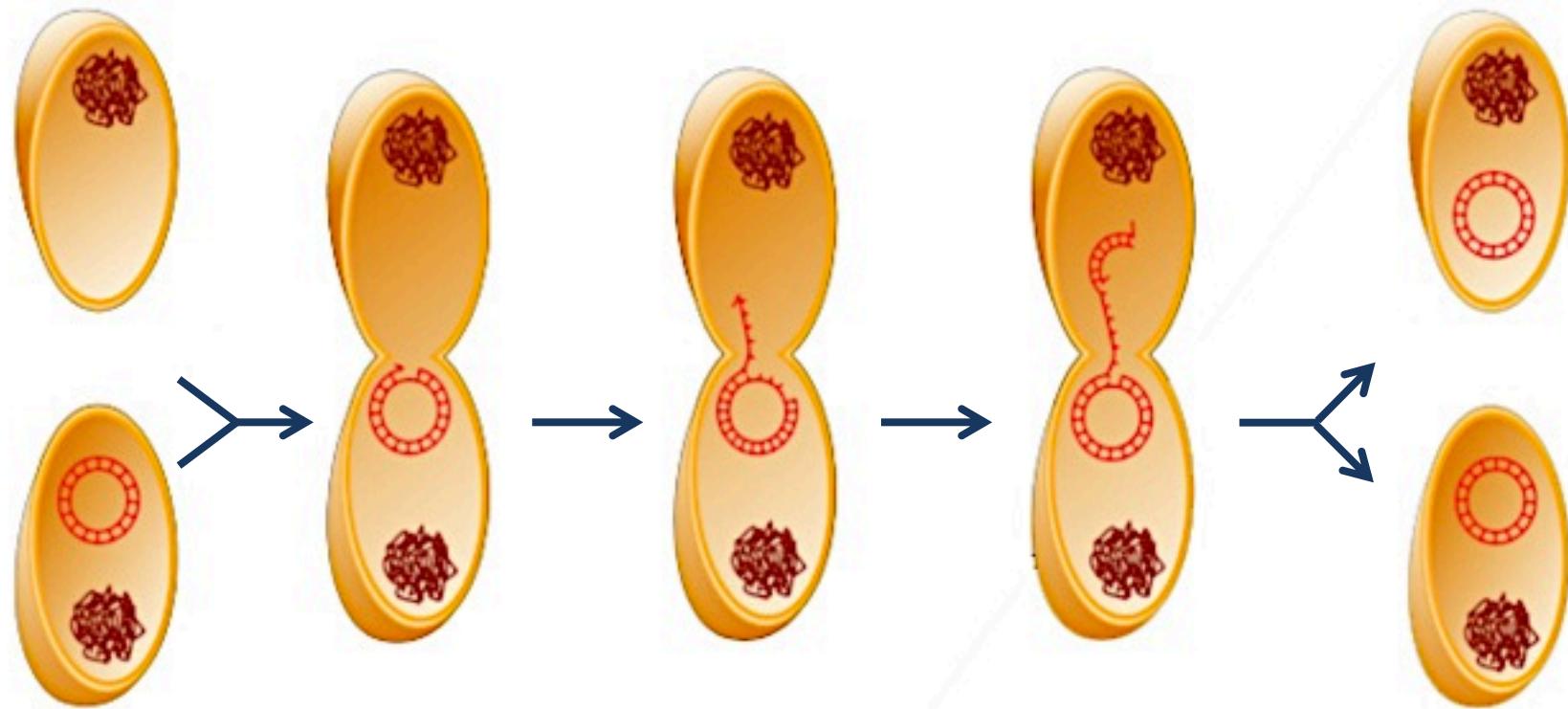
Bacterial genome



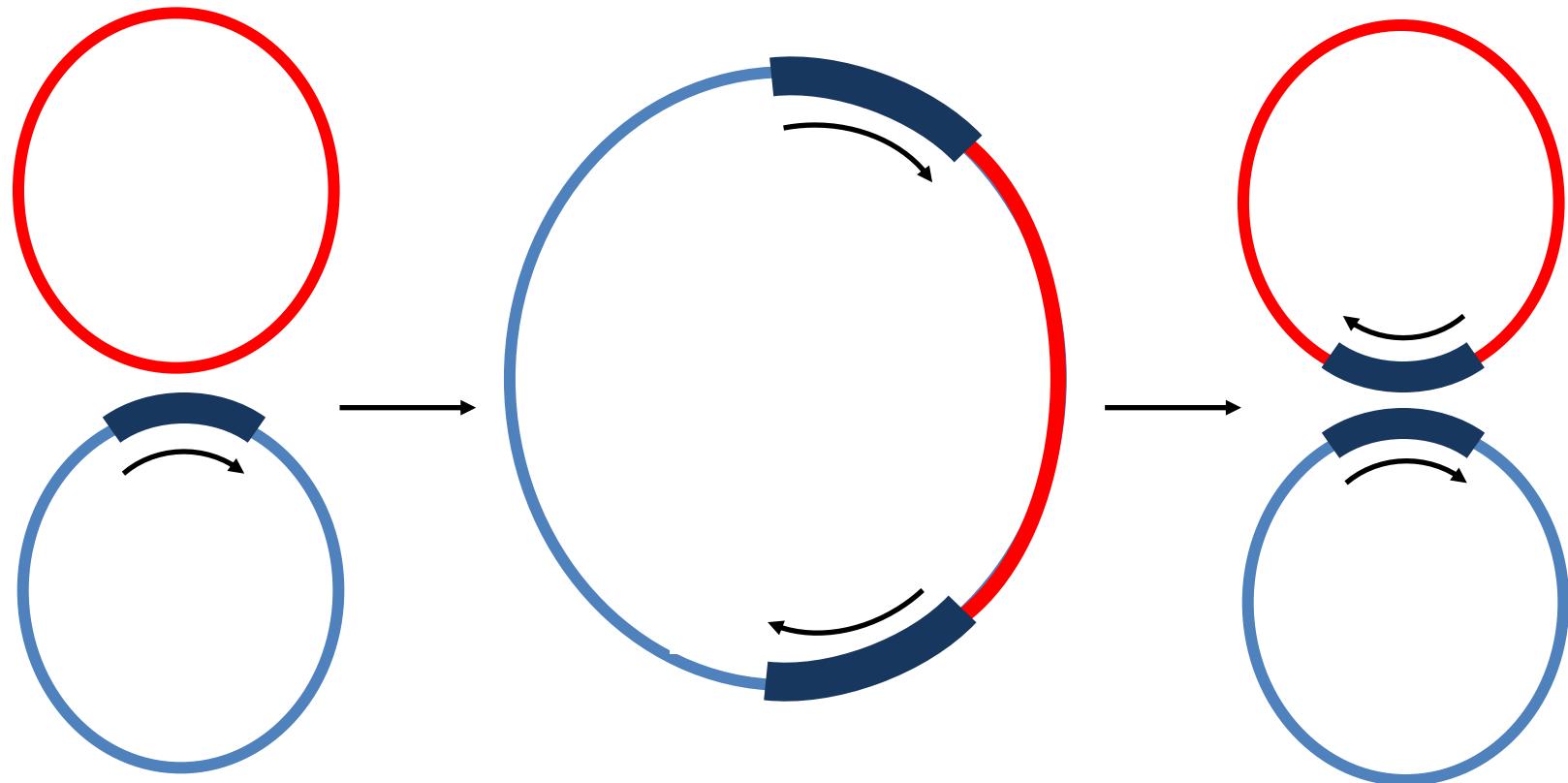
Bacterial life cycle



Plasmid transfer by conjugation



Relicative transposition



Combinatorial genetics of antibiotic resistance

Vector

Host

Bacteria

Mammals

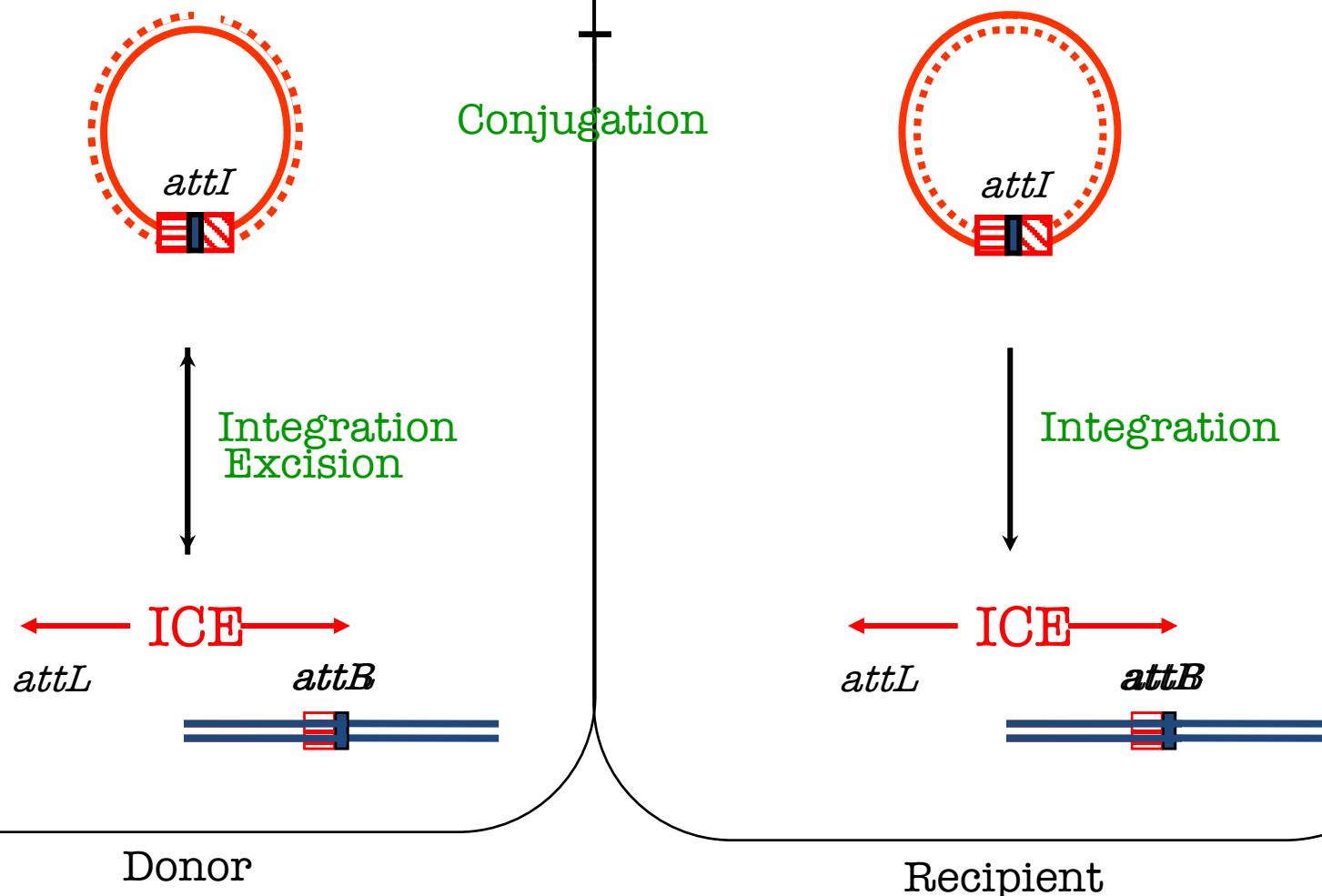
Plasmids

Bacteria

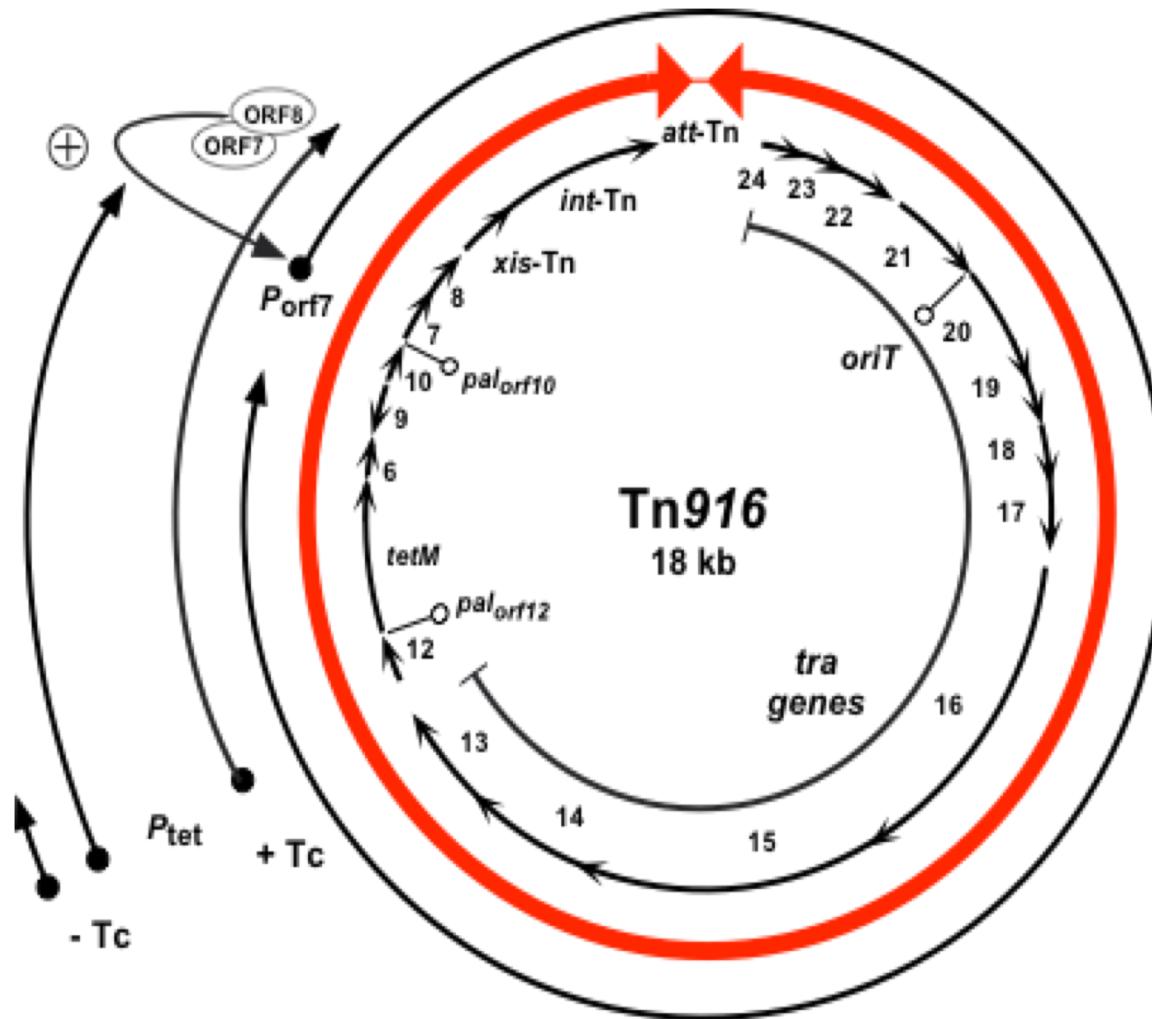
Transposons

Replicons

Transfer of integrative conjugative element



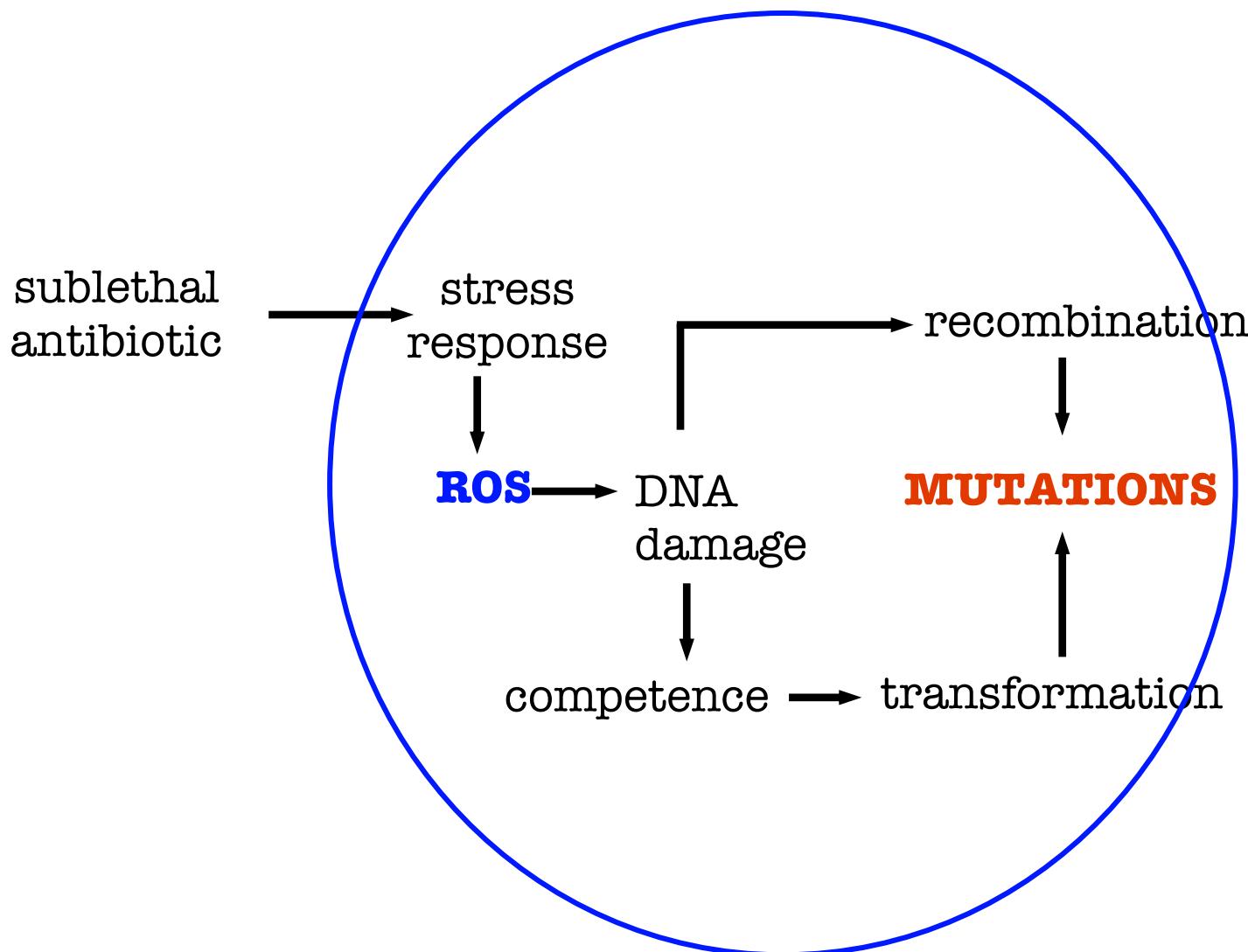
Tetracycline-induced Tn916 transfer



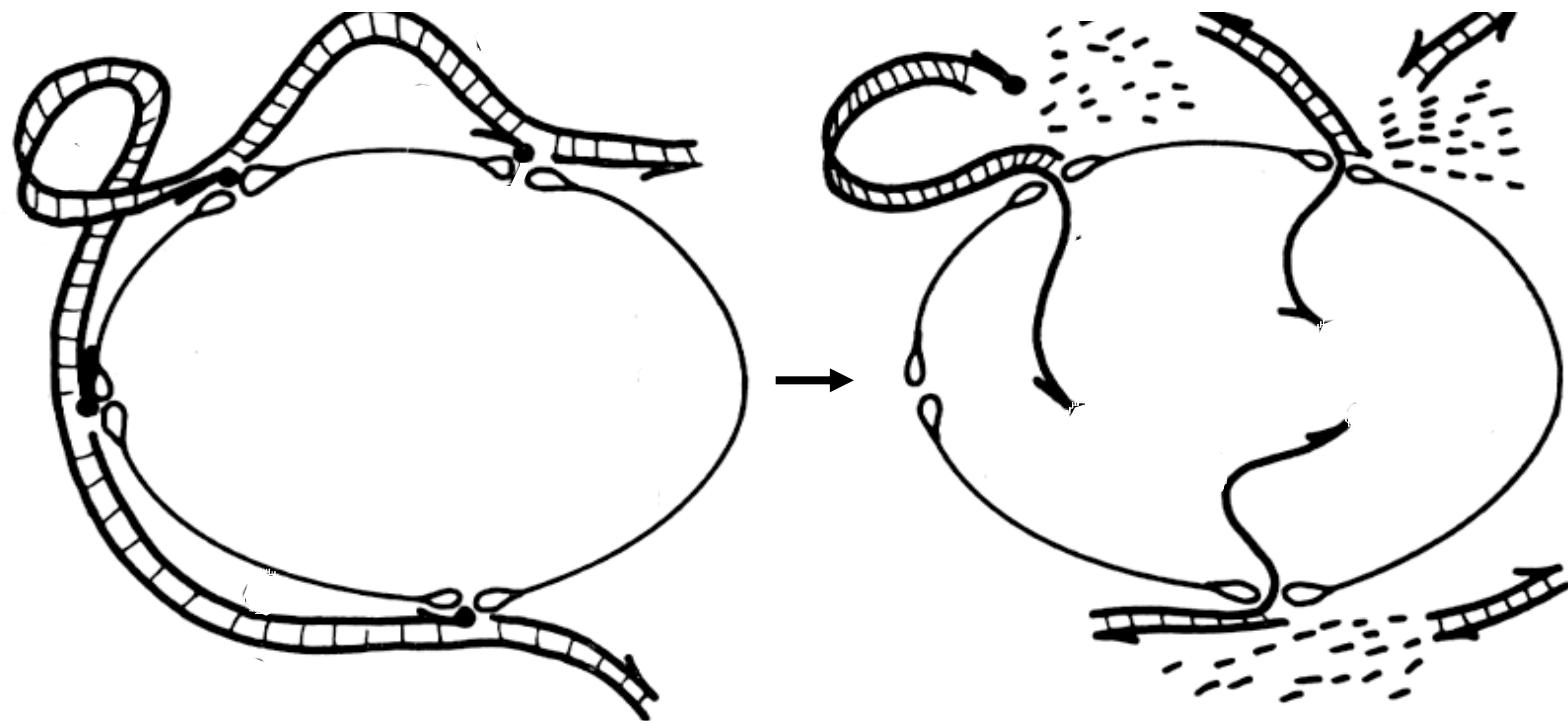
Celli and Trieu-Cuot, Mol. Microbiol. 1998



Antibiotic induced increase in mutation rate

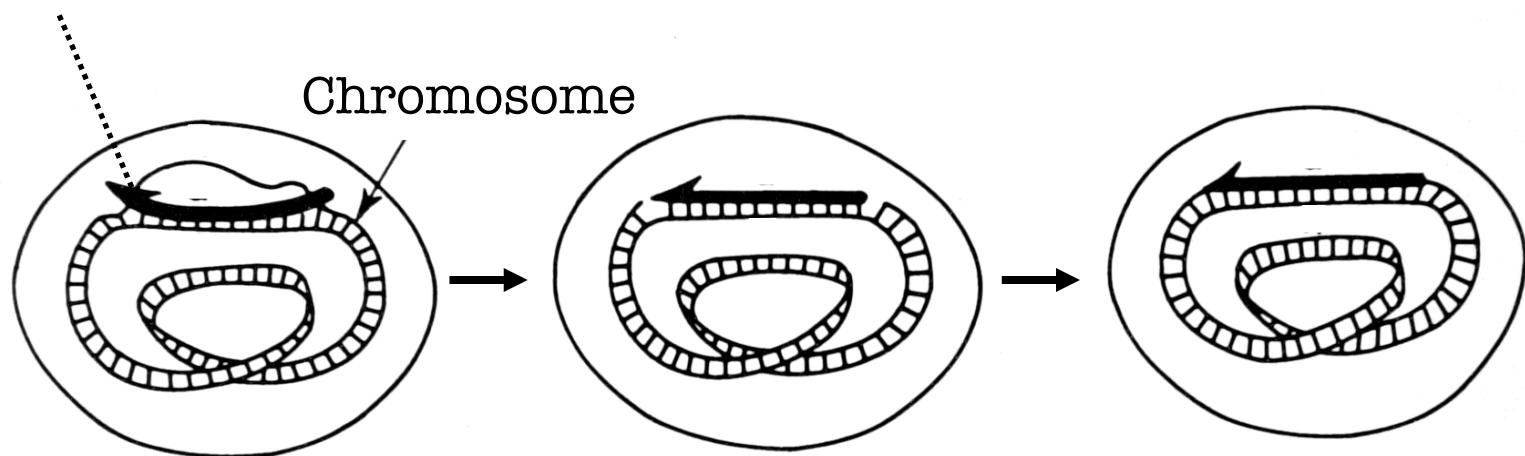


Transformation: internalization of exogenous DNA



Transformation: processing of internalized DNA

Exogenous DNA

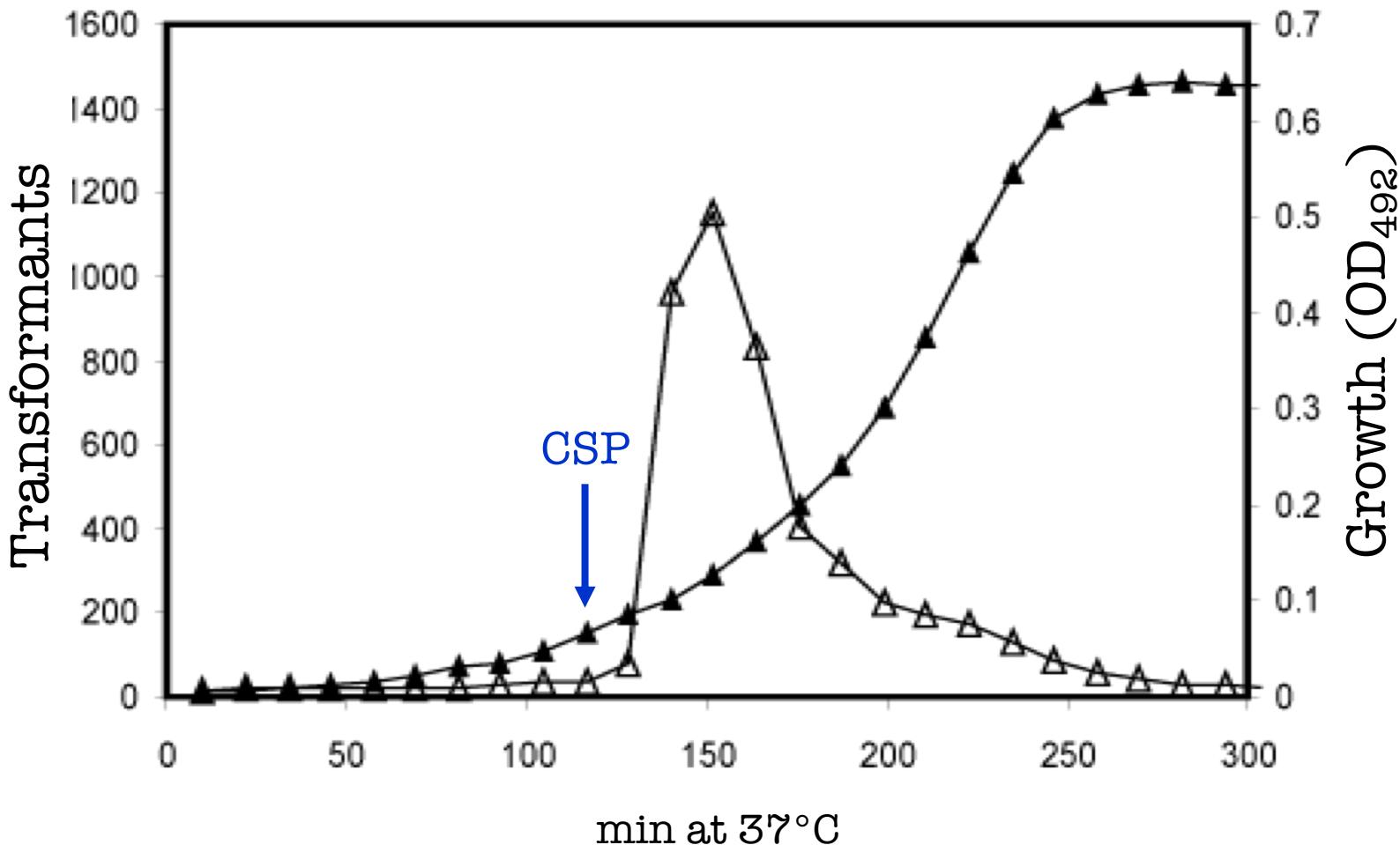


Linear synapsis

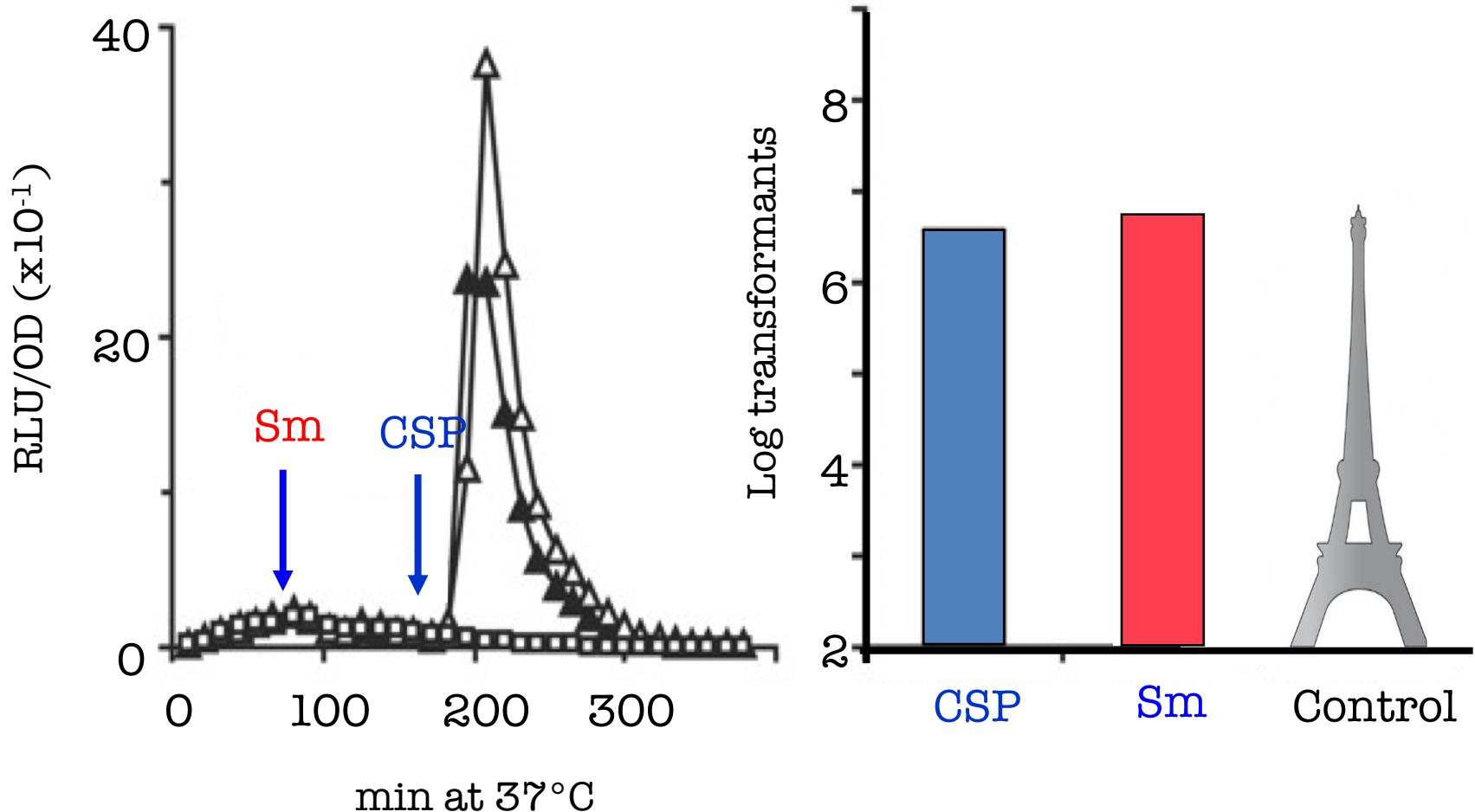
Integration
intermediate

Covalent
joining

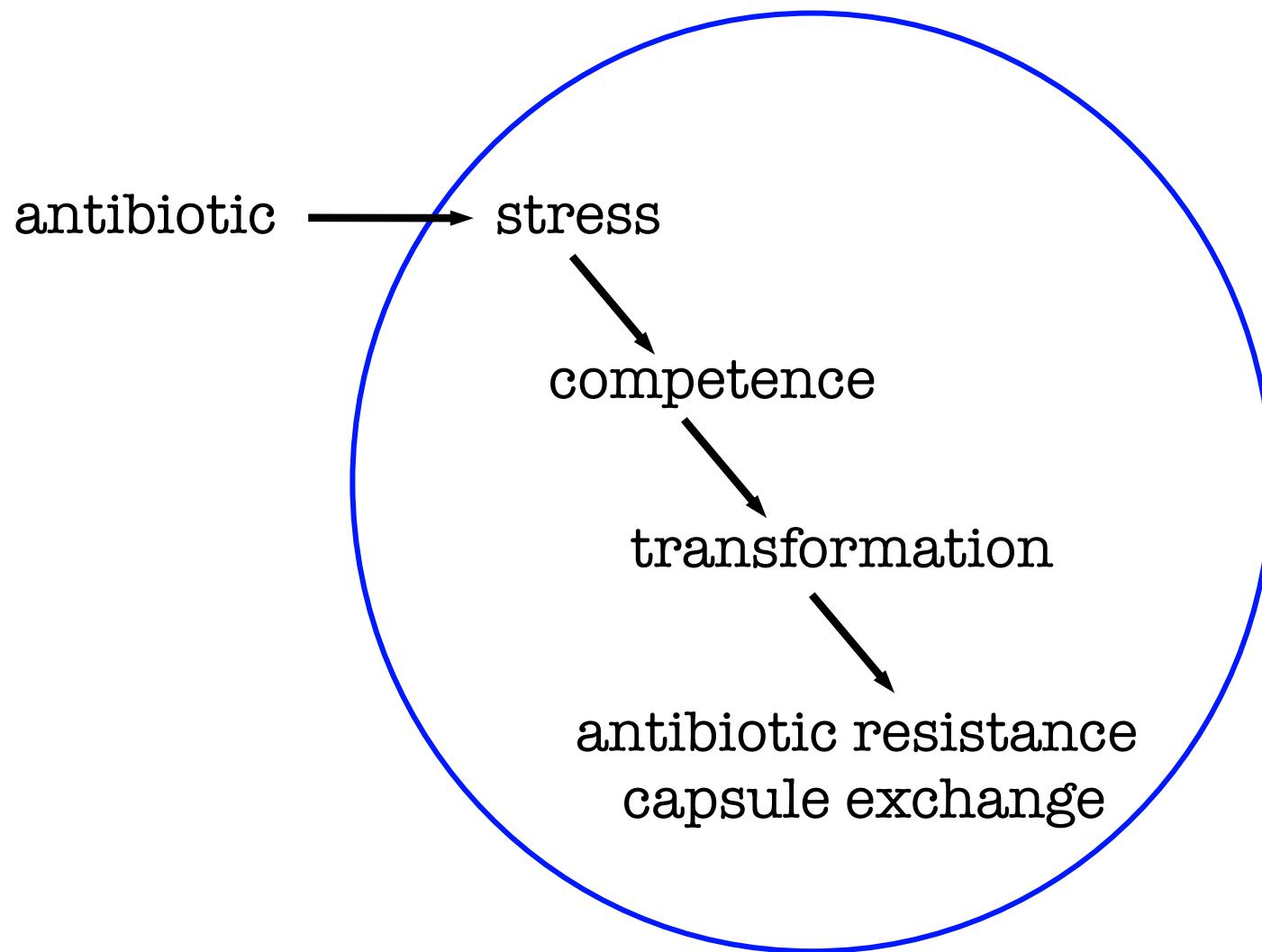
The Competence Stimulating Peptide (CSP) induces competence



Induction of transformation in *S. pneumoniae*



Antibiotics promote evolution of resistance



Conclusions

- La résistance aux antibiotiques est infectieuse et exponentielle
- Les antibiotiques, à faibles concentrations, augmentent les taux de mutation et le transfert horizontal d'information génétique
- Les mutations sont infectieuses