

# A la recherche des signaux cellulaires contrôlant la sécrétion d'insuline.

Pierre Maechler

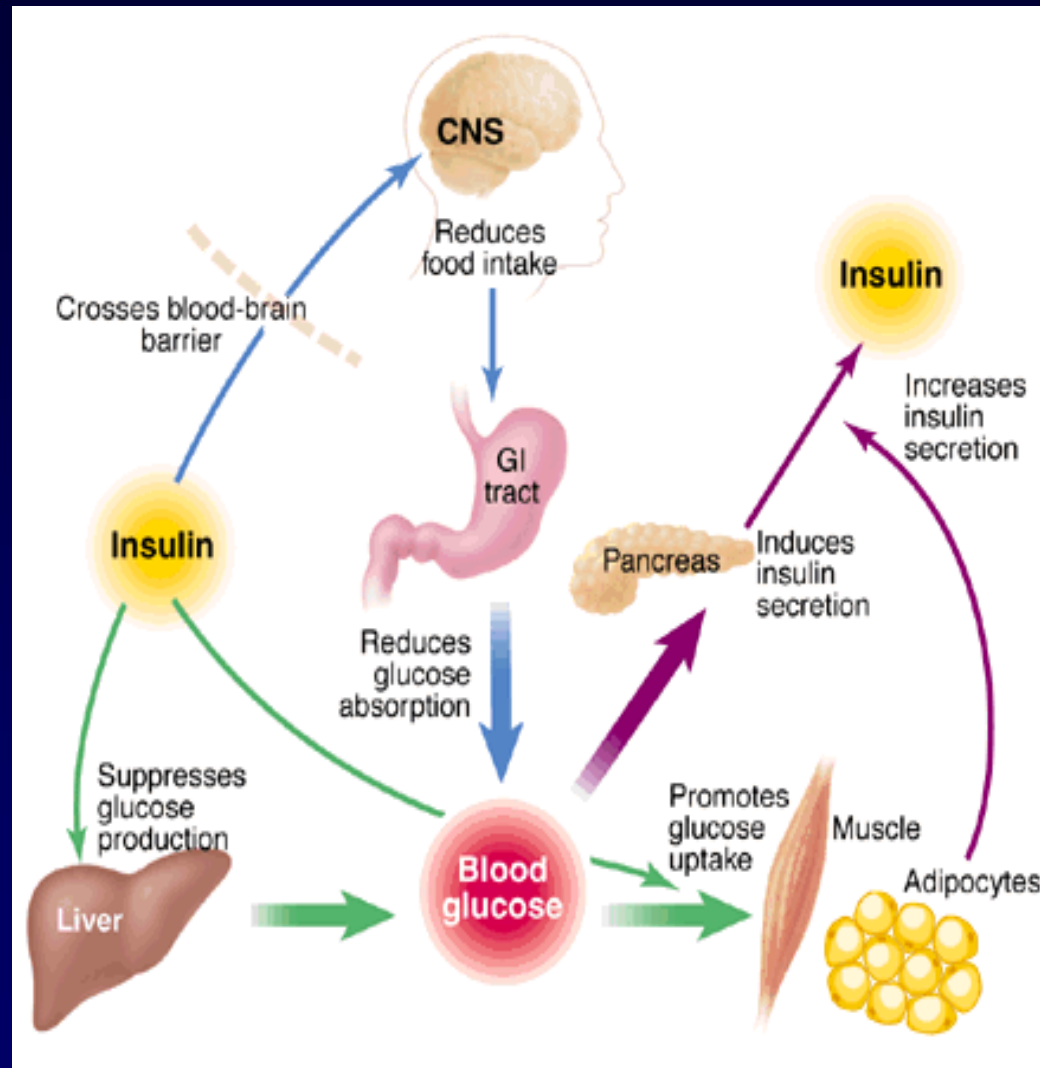
Département de Physiologie Cellulaire et Métabolisme



UNIVERSITÉ  
DE GENÈVE

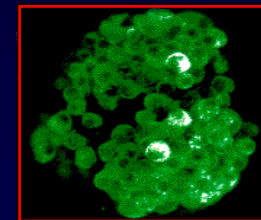
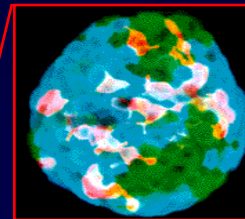
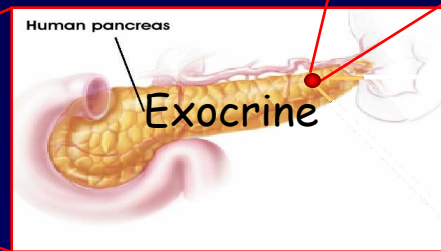
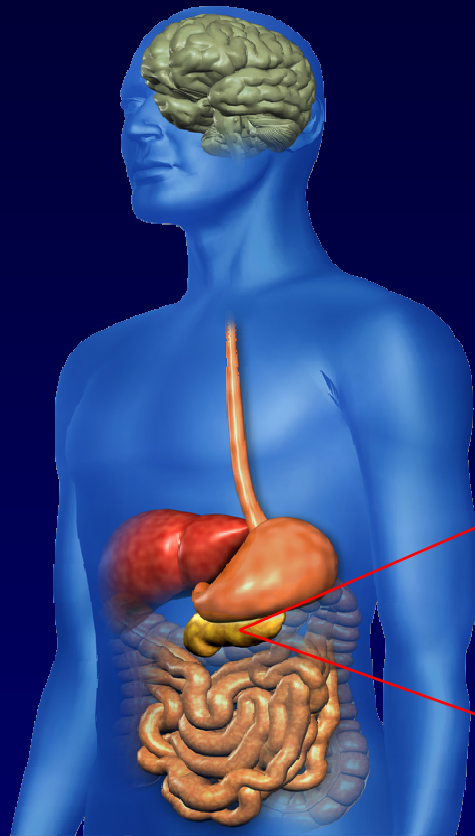
FACULTÉ DE MÉDECINE

# Contrôle glycémique

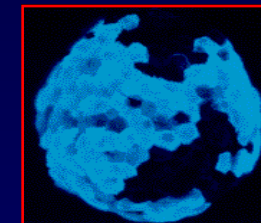


Schwartz (2000)  
*Science*

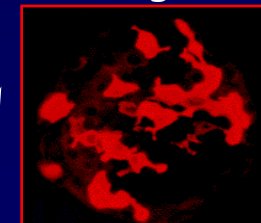
# Ilots de Langerhans: micro-organe régulateur de la glycémie



Insuline

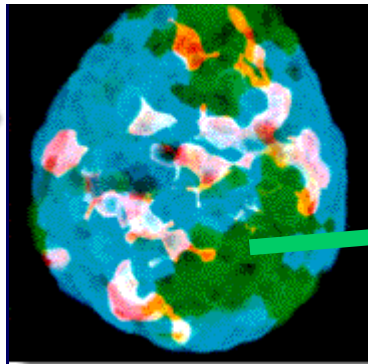
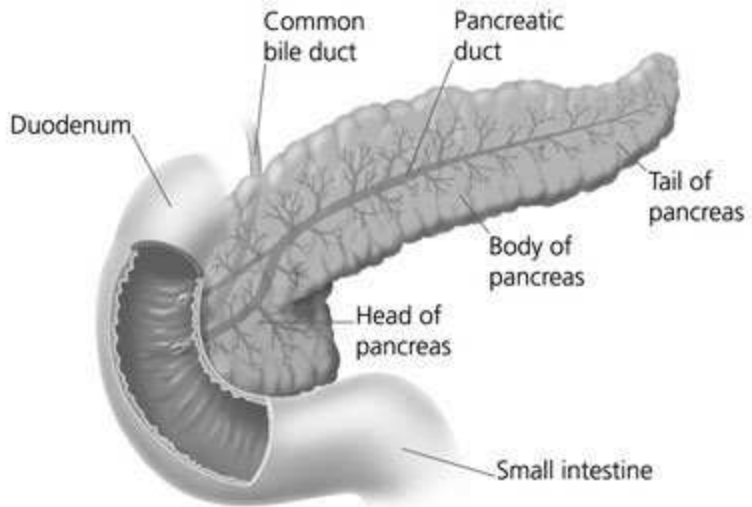


Glucagon

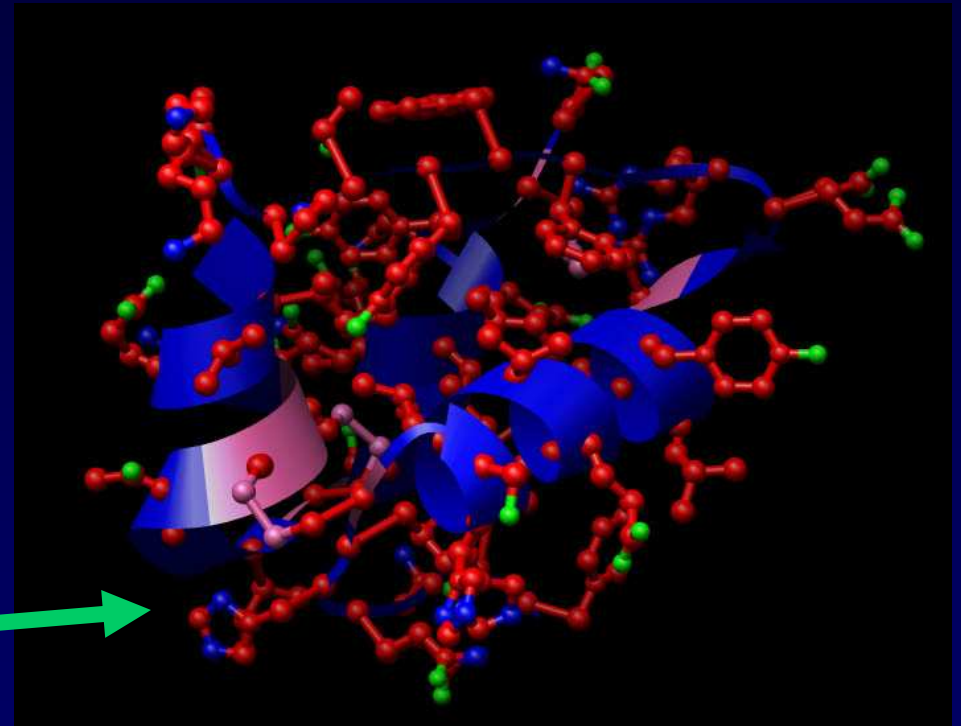


Somatostatine

# CONTROLE DE LA GLYCEMIE CHEZ UN SUJET SAIN



## Insuline

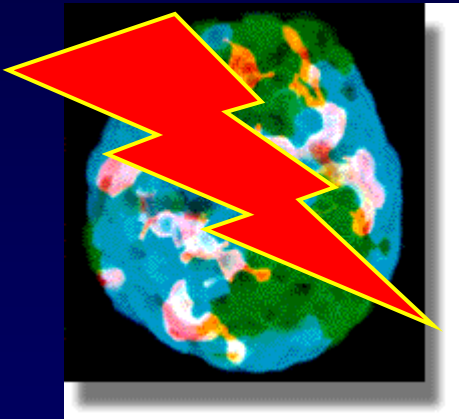


# CONTROLE DE LA GLYCEMIE CHEZ UN SUJET DIABETIQUE



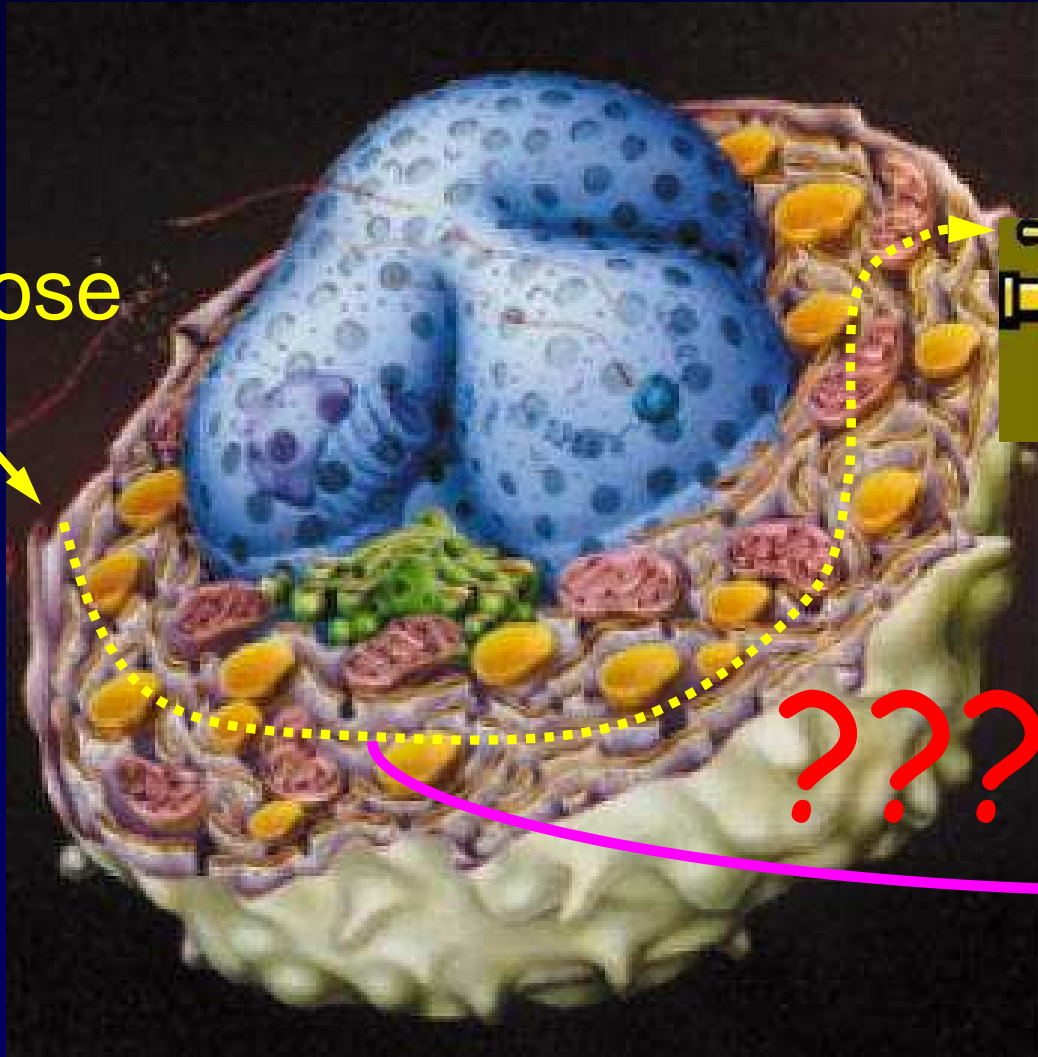
Glucose

Insuline



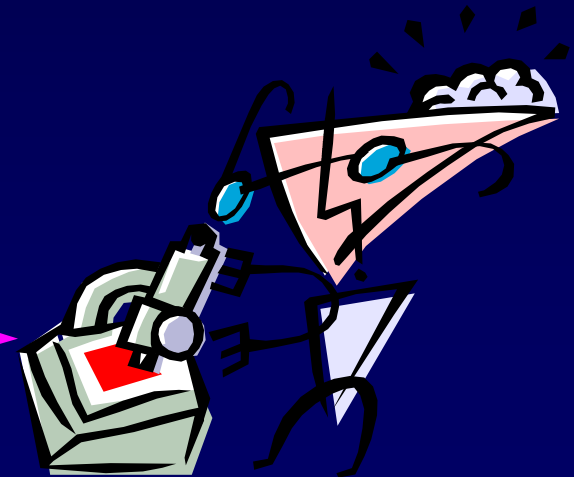
# Rechercher les signaux cellulaires

Glucose

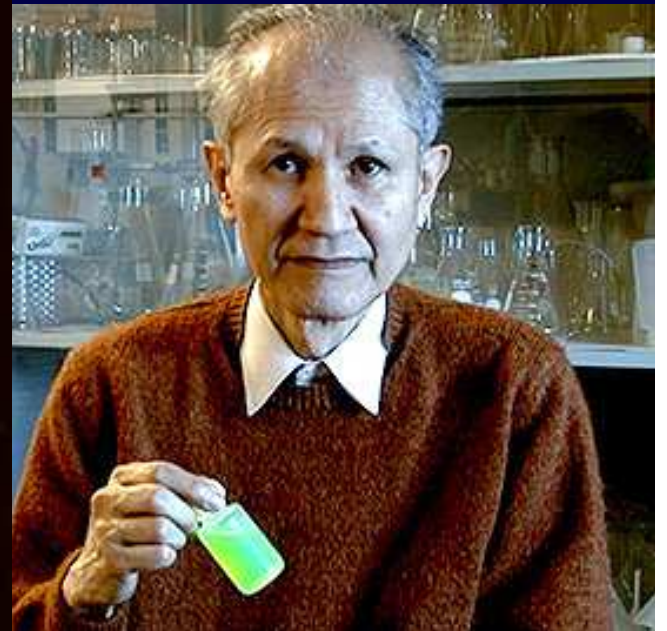
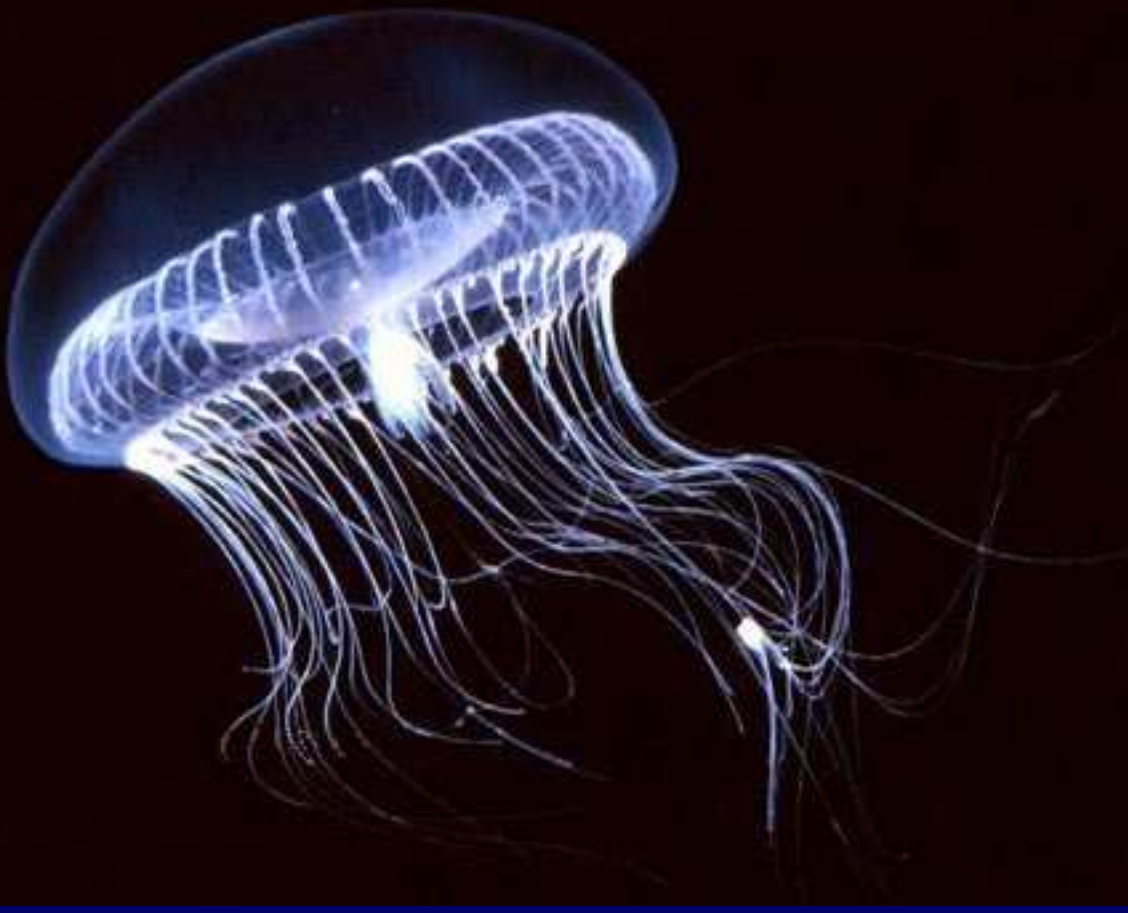


Insuline

?????

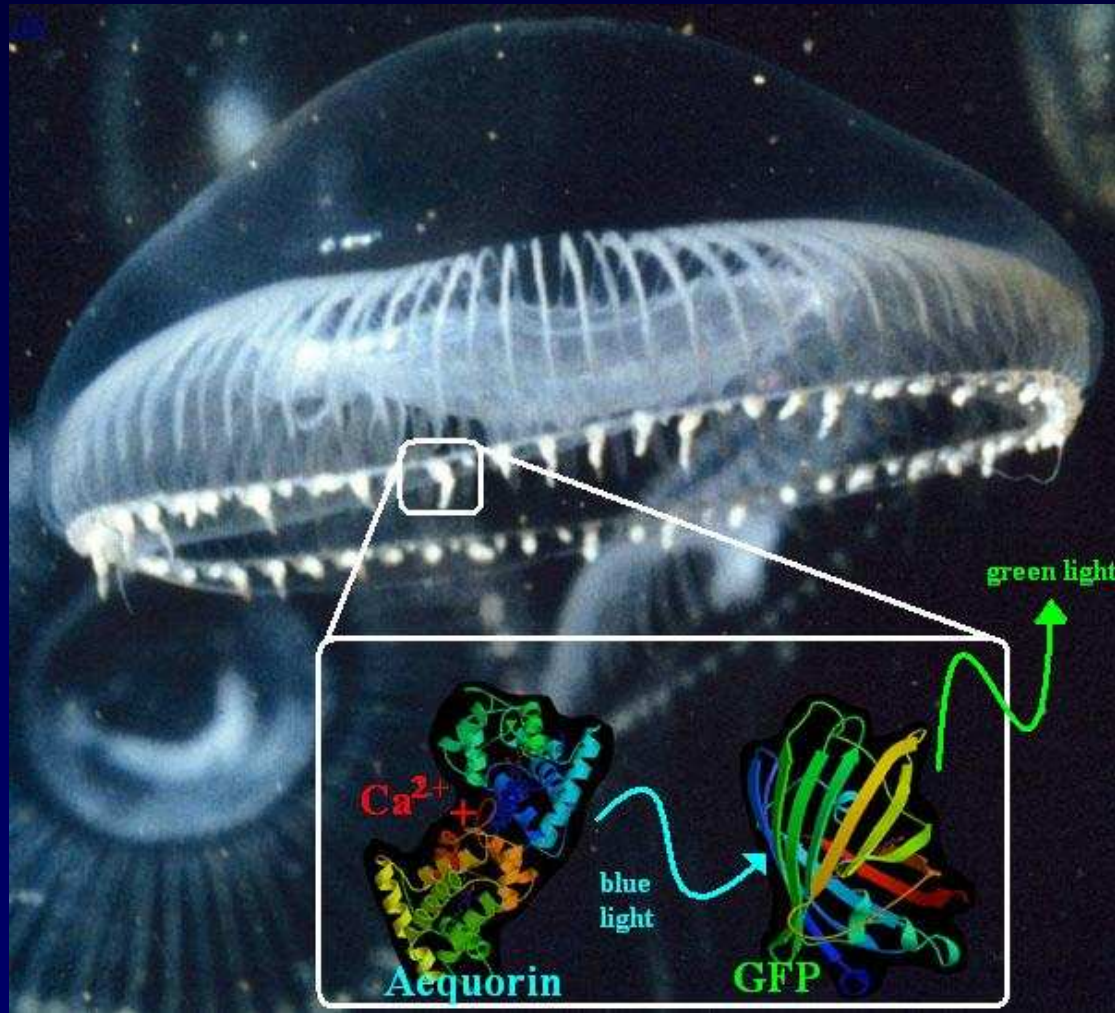


# Une protéine fluorescente de la méduse révolutionne la biologie cellulaire



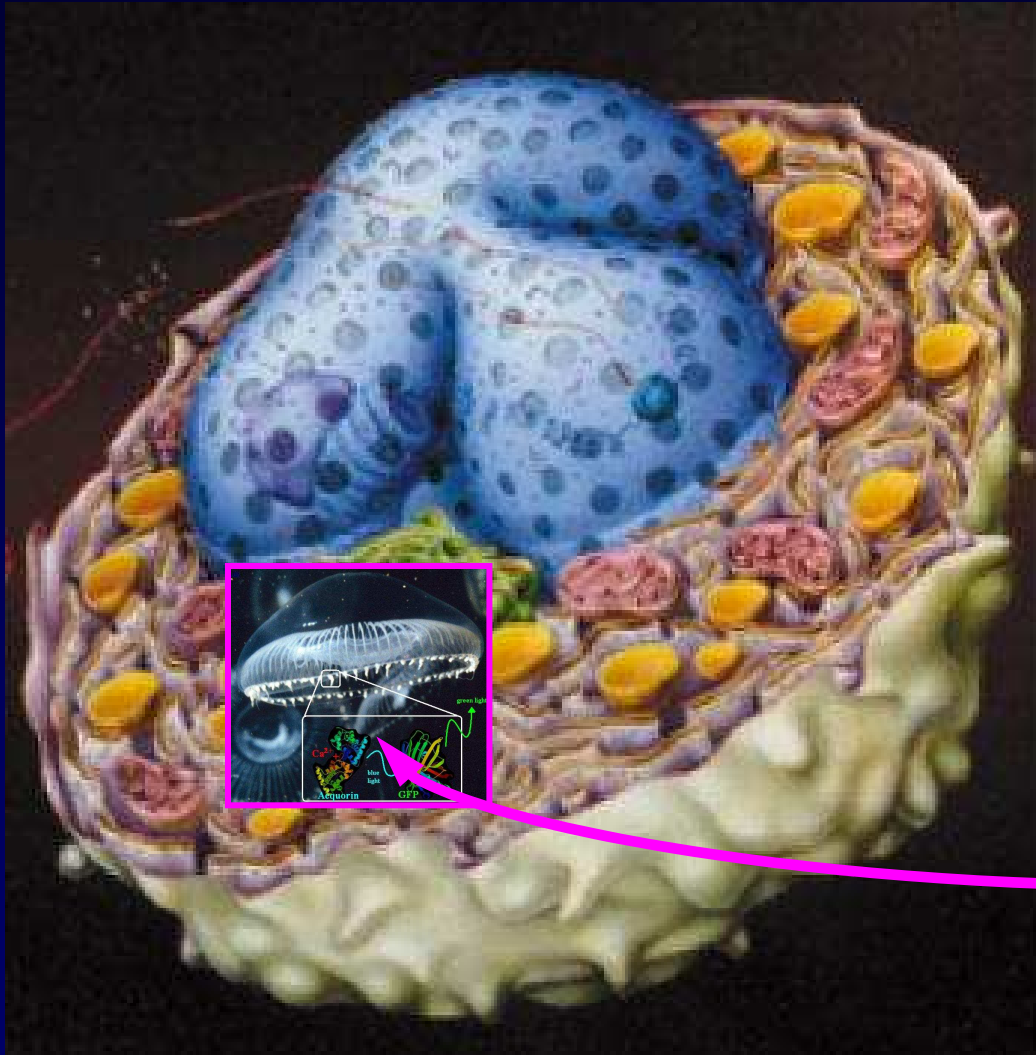
**Osamu Shimomura**  
Nobel-2008

# Une protéine fluorescente de la méduse révolutionne la biologie cellulaire





# Visualiser les signaux cellulaires



**Roger Tsien**  
Nobel-2008

# Visualiser les signaux cellulaires de la cellule bêta

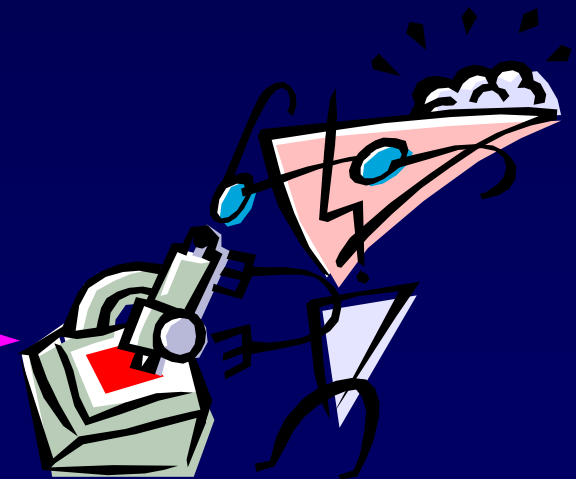
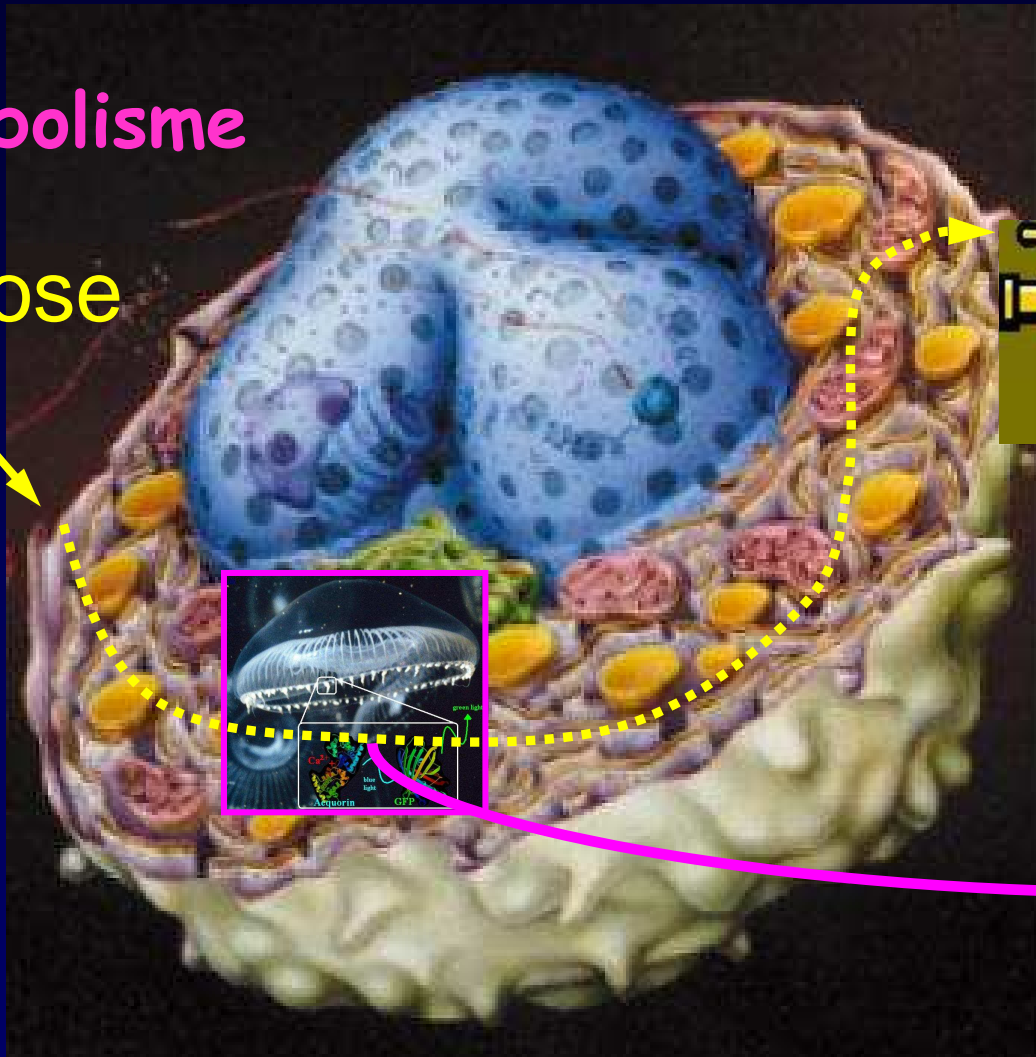
métabolisme

Glucose

sécrétion

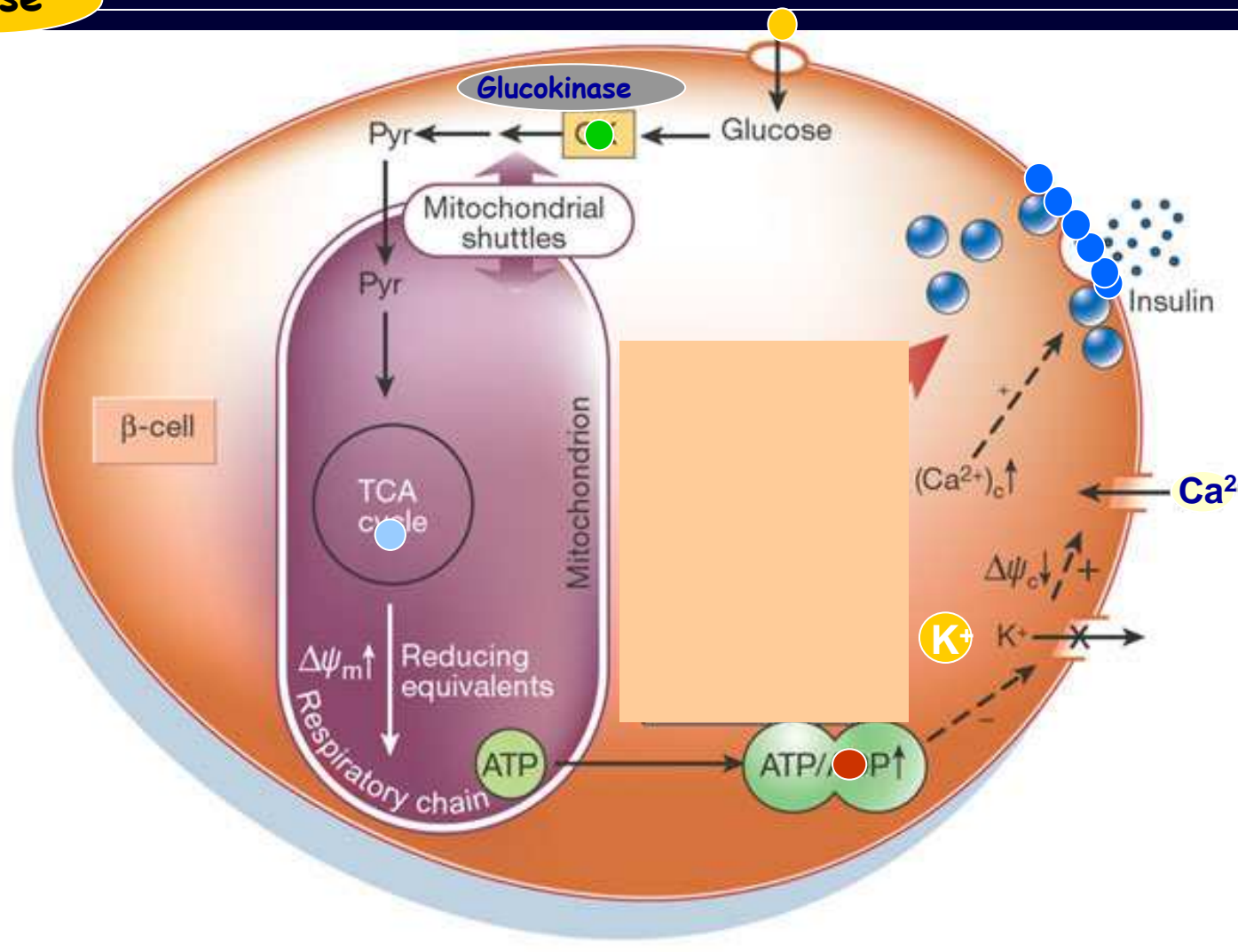


Insuline

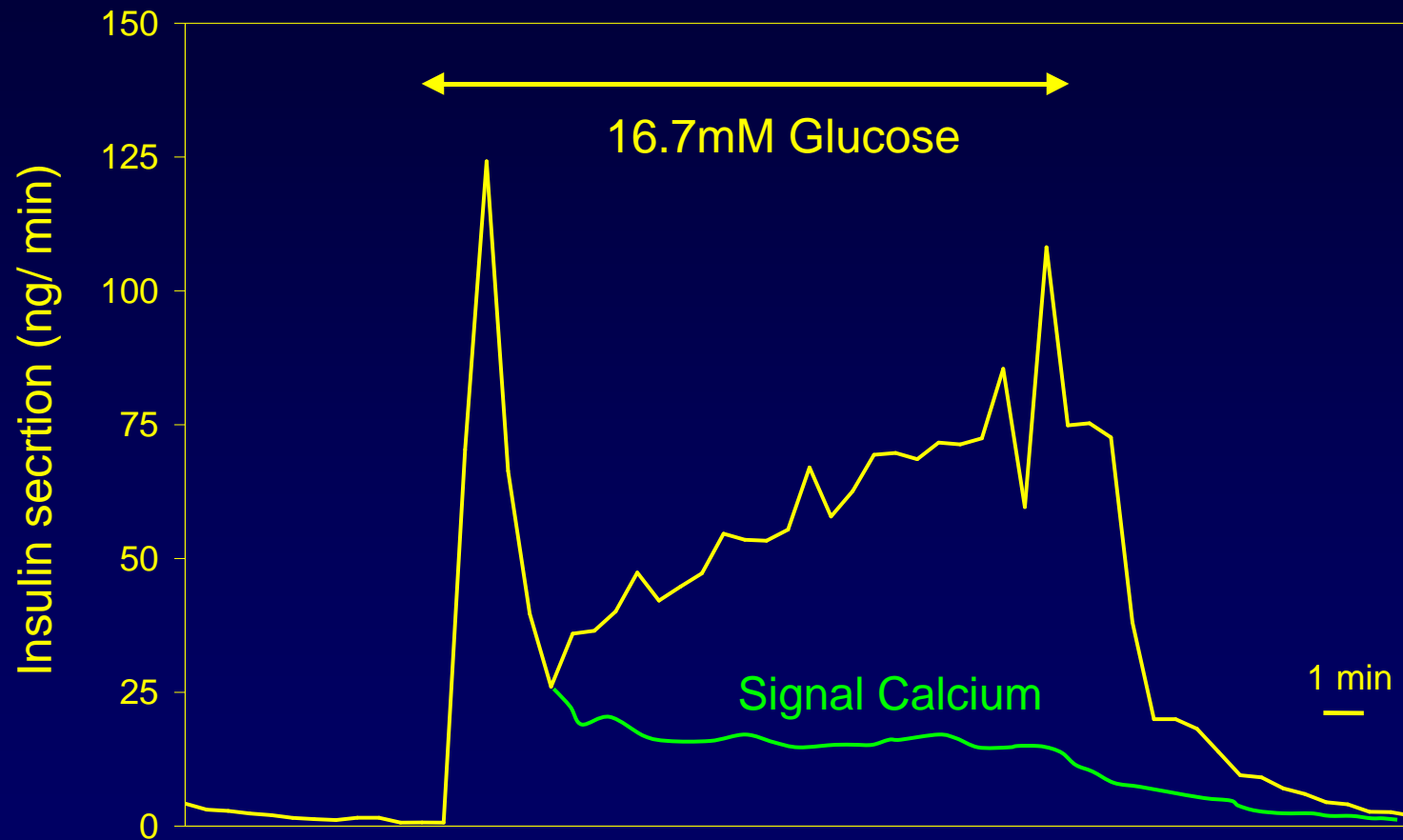


# Couplage métabolisme - sécrétion d'insuline dans la cellule $\beta$

Glucose



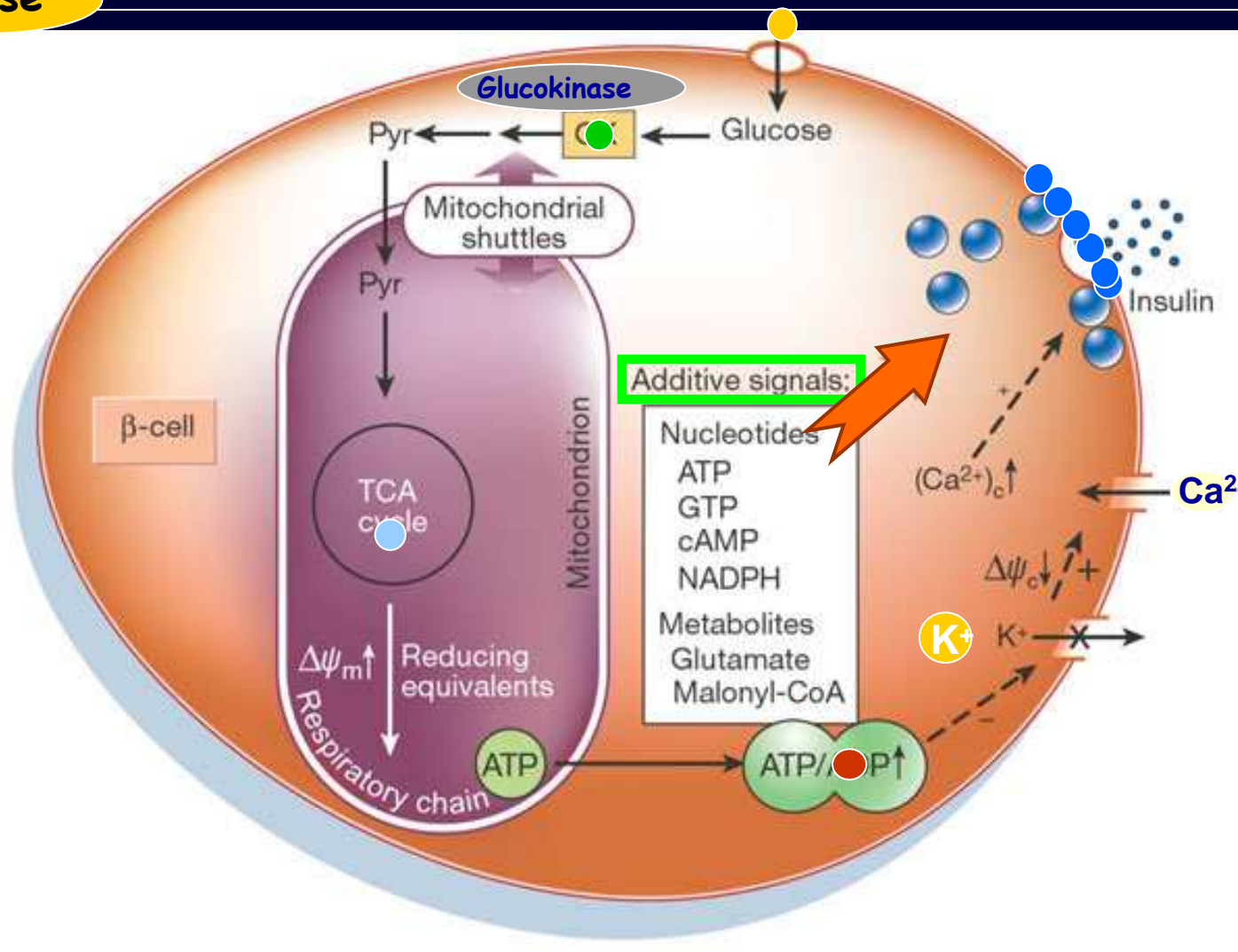
métabolisme  $\longrightarrow$  sécrétion



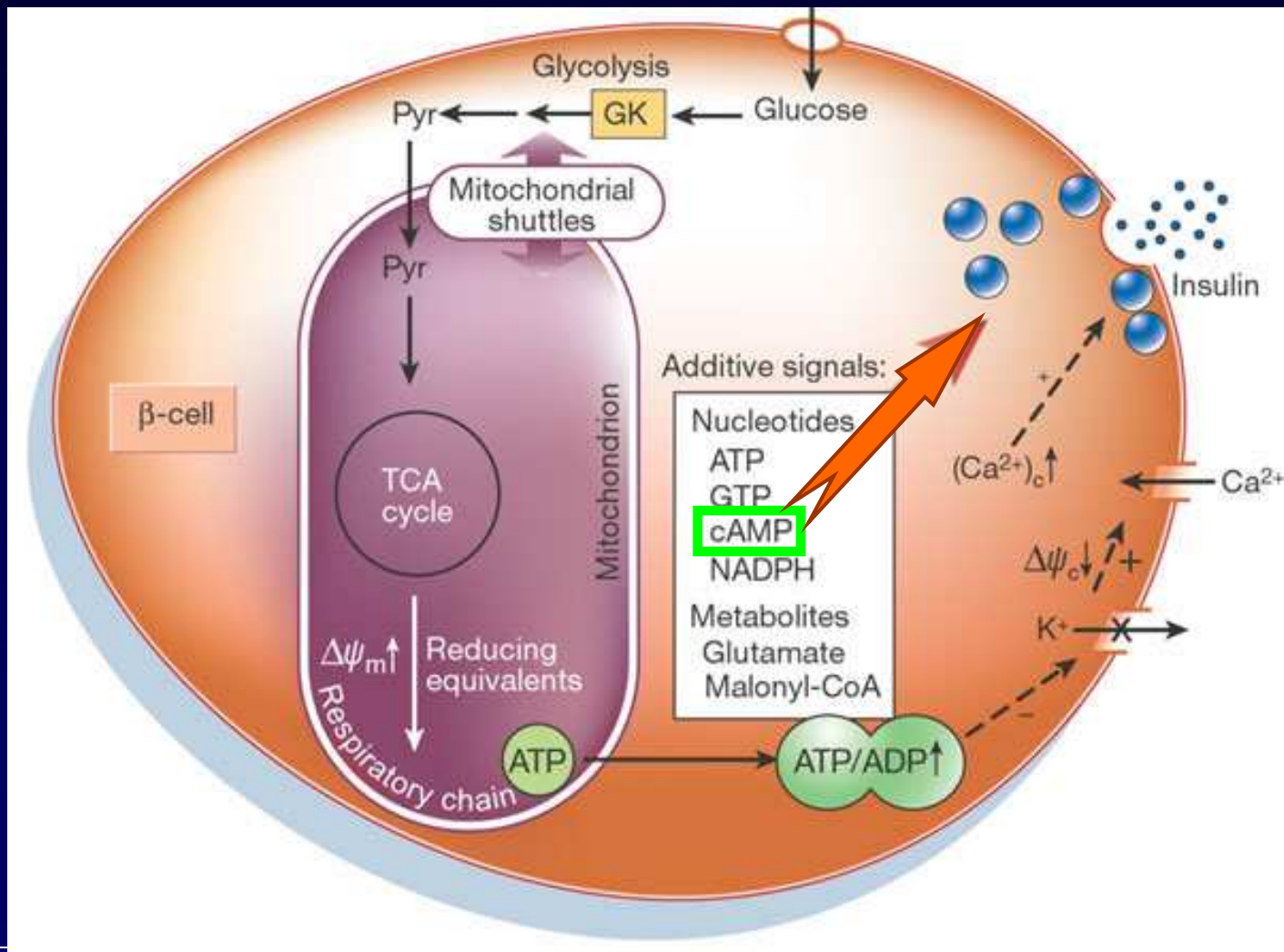
*Diabetes (2002) 51:S99-S102*

# Couplage métabolisme - sécrétion d'insuline dans la cellule $\beta$

Glucose



# Couplage métabolisme - sécrétion d'insuline dans la cellule $\beta$



# Structure GLP-1, GLP-1R agonists, DPP-4 inhibitors

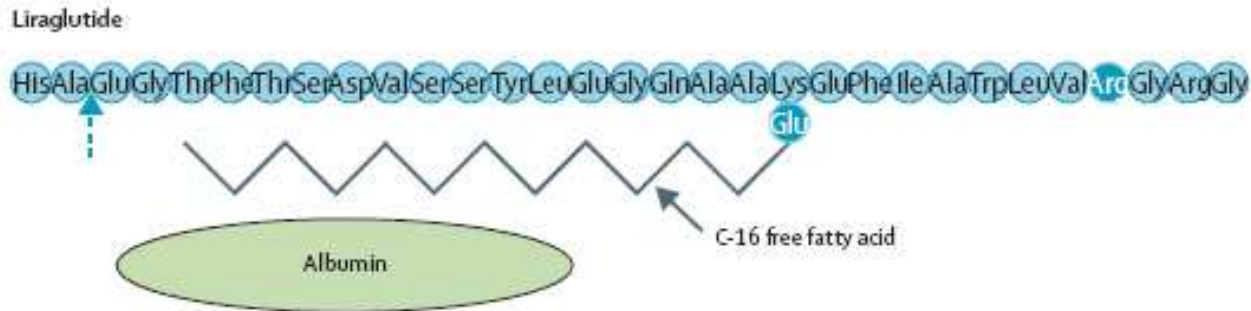
GLP-1



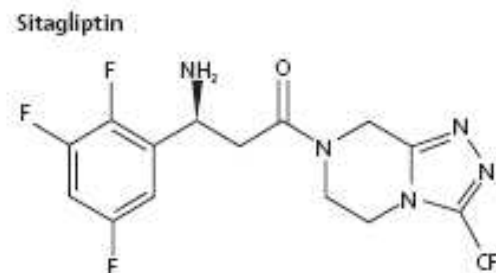
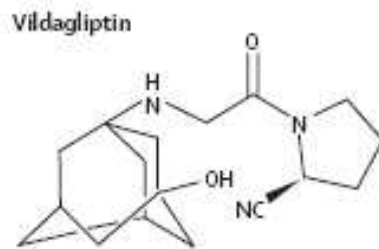
Mimétique



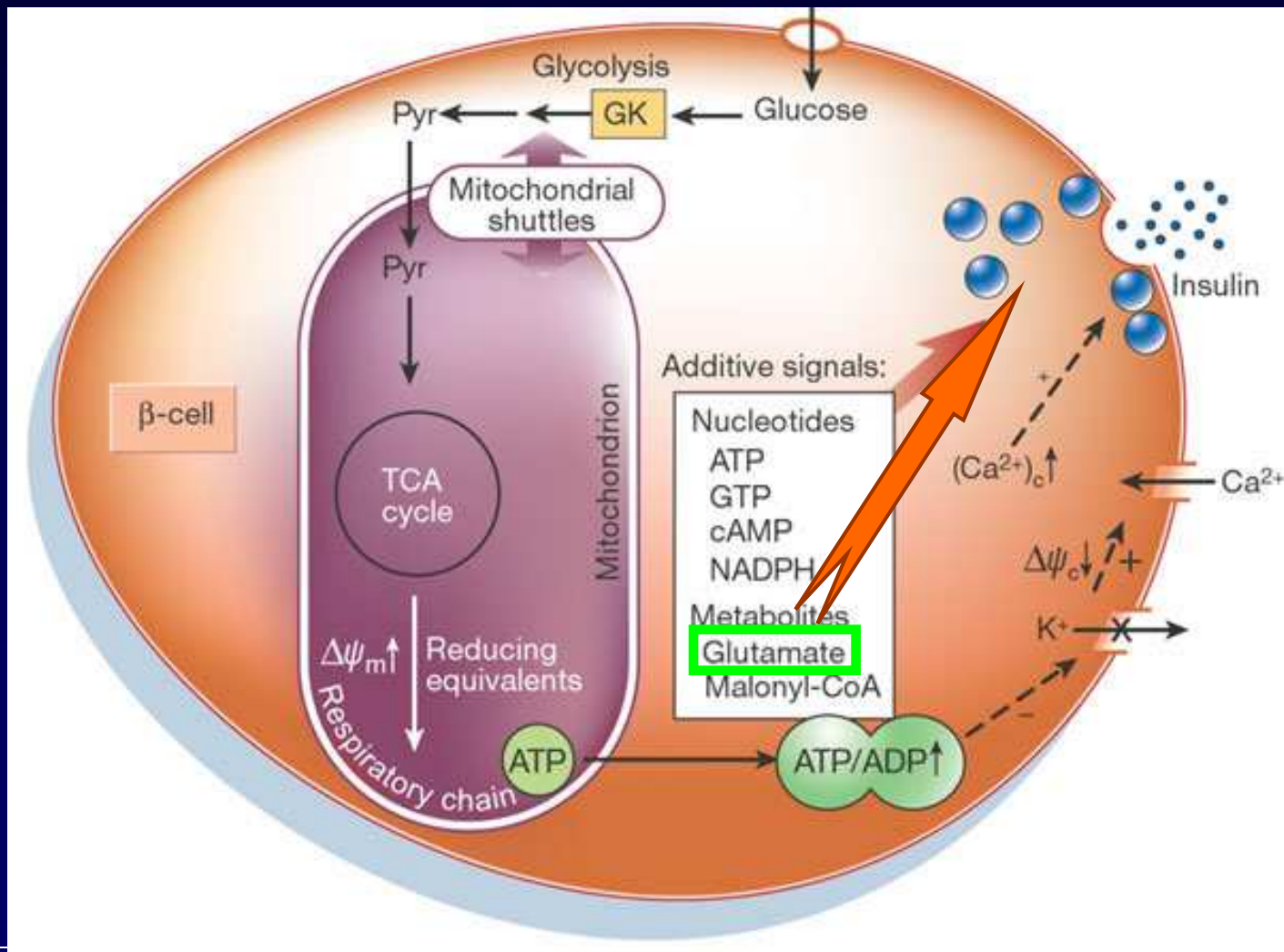
Dérivé résistant



Inhibiteurs de DPP-4

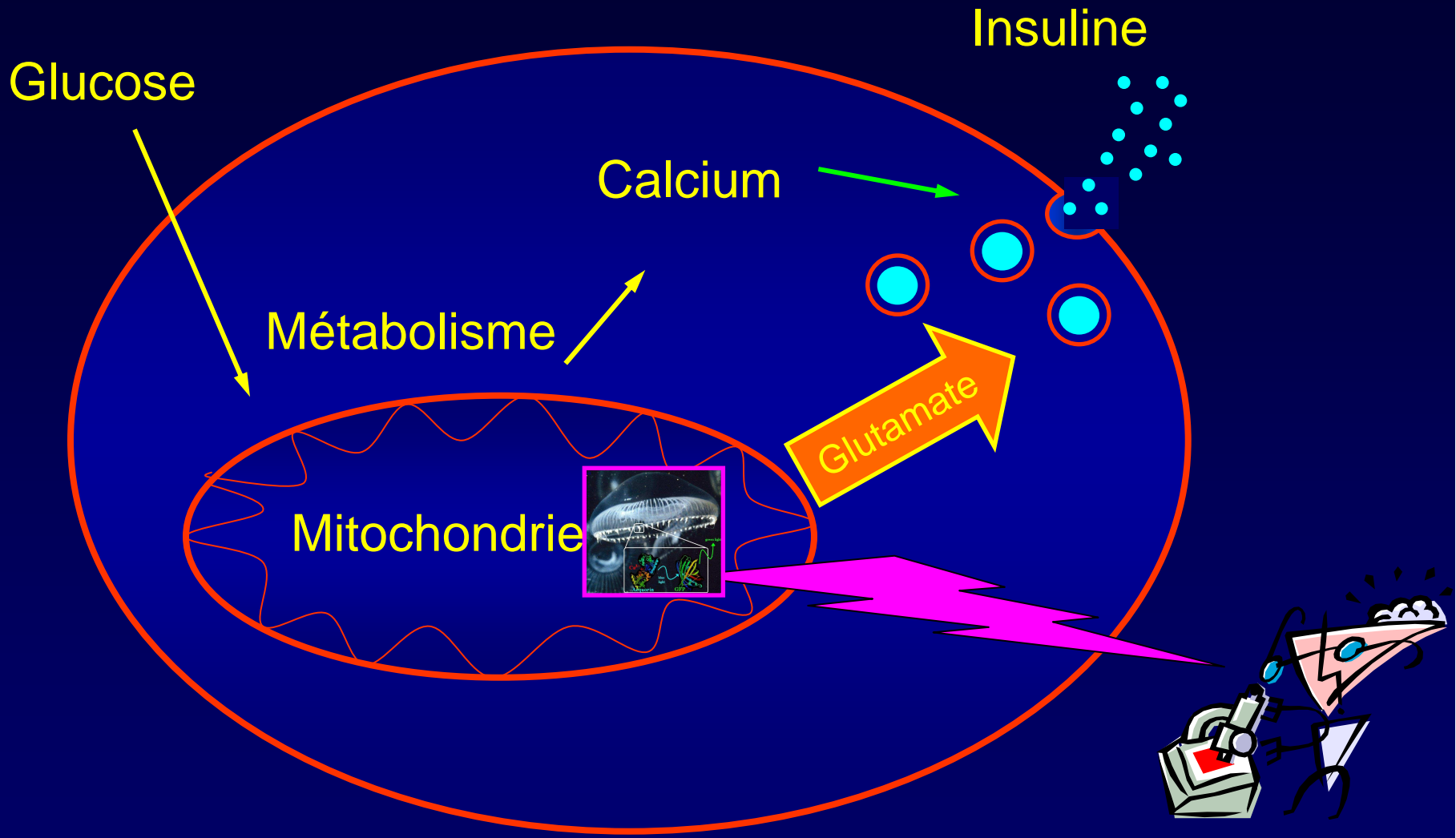


# Couplage métabolisme - sécrétion d'insuline dans la cellule $\beta$





# Cellule bêta



Cellule bêta

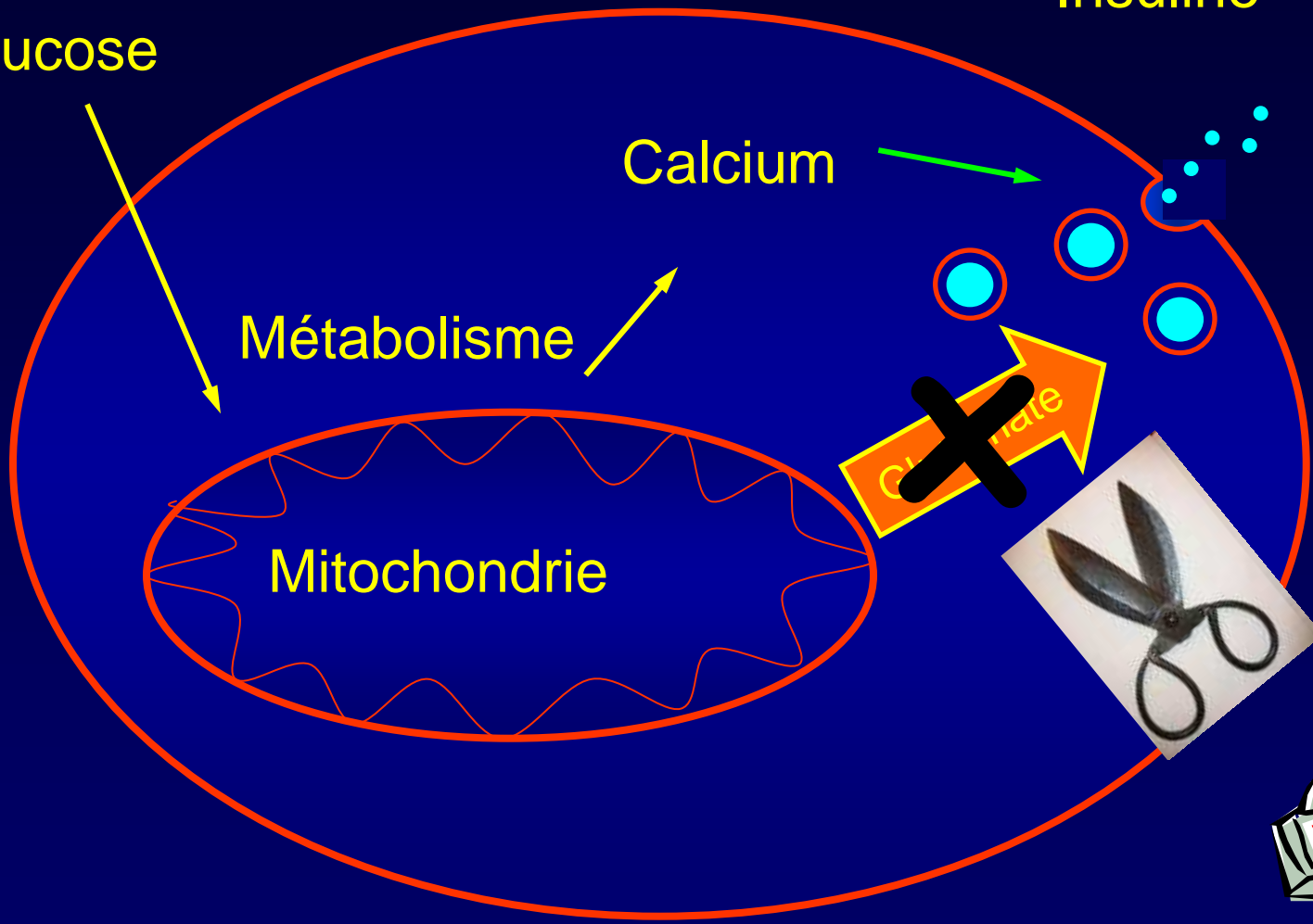
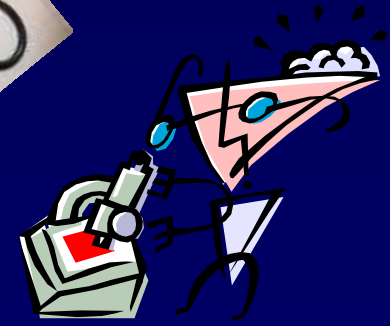
Glucose

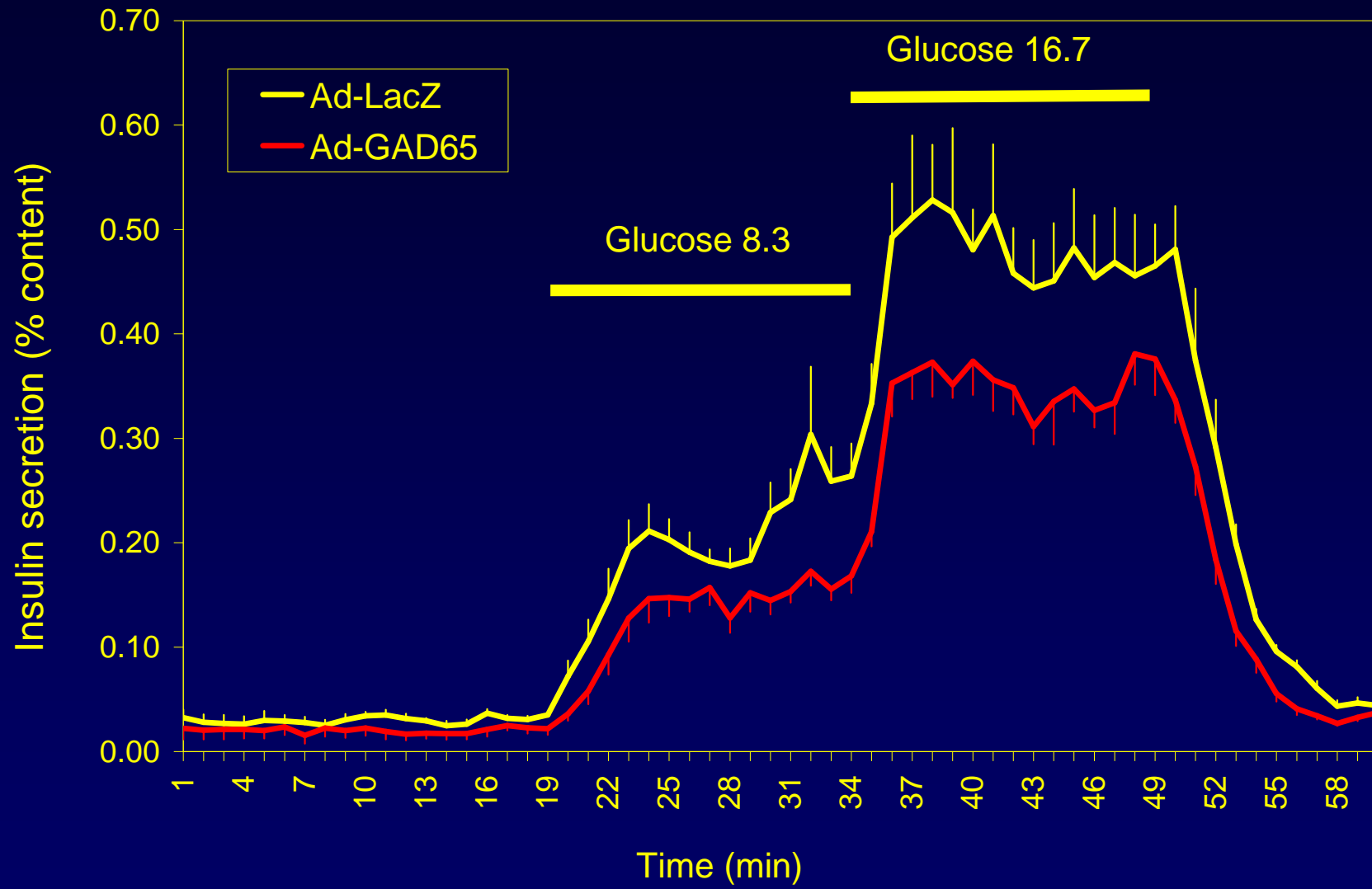
Insuline

Calcium

Métabolisme

Mitochondrie





Cellule bêta

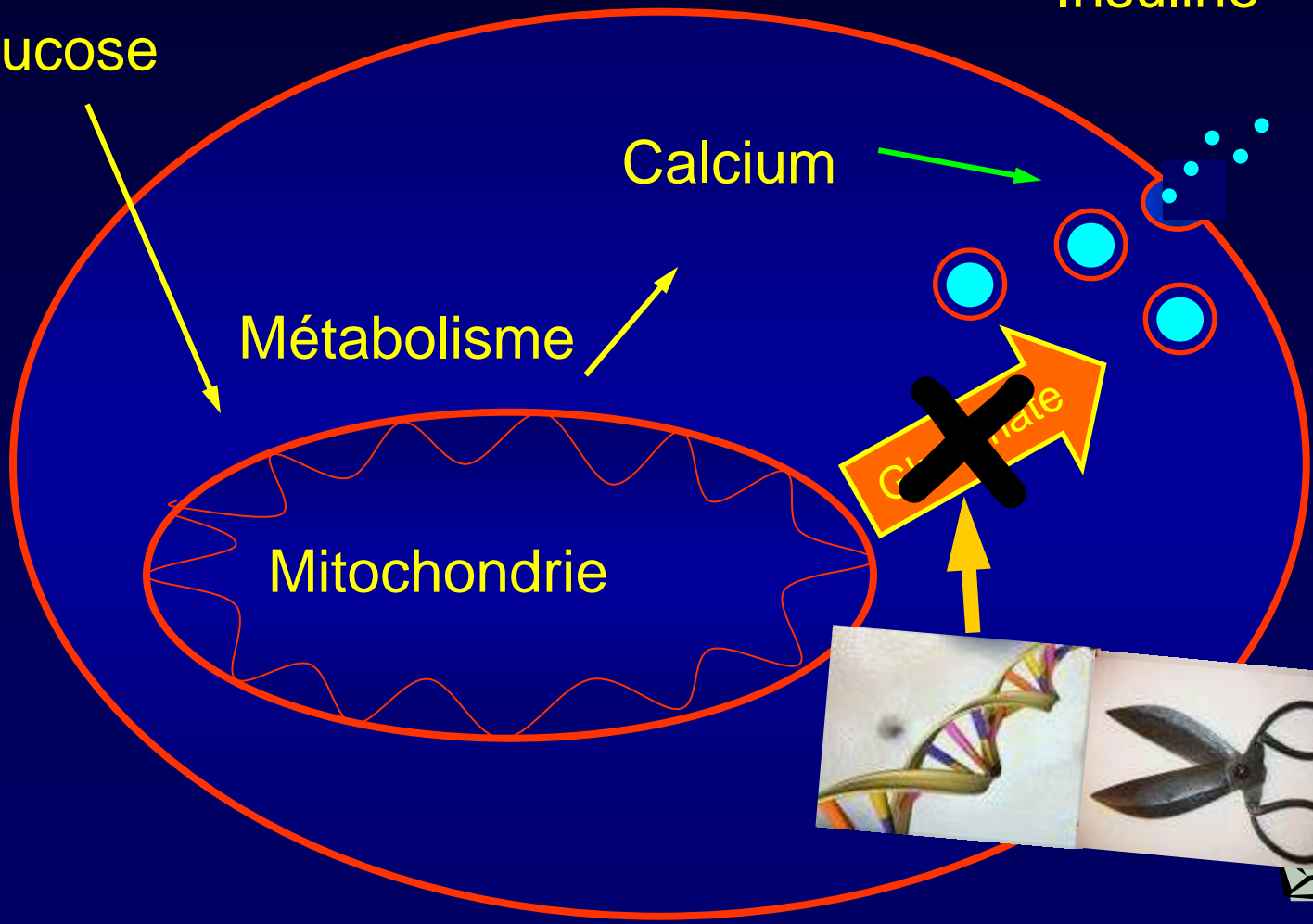
Glucose

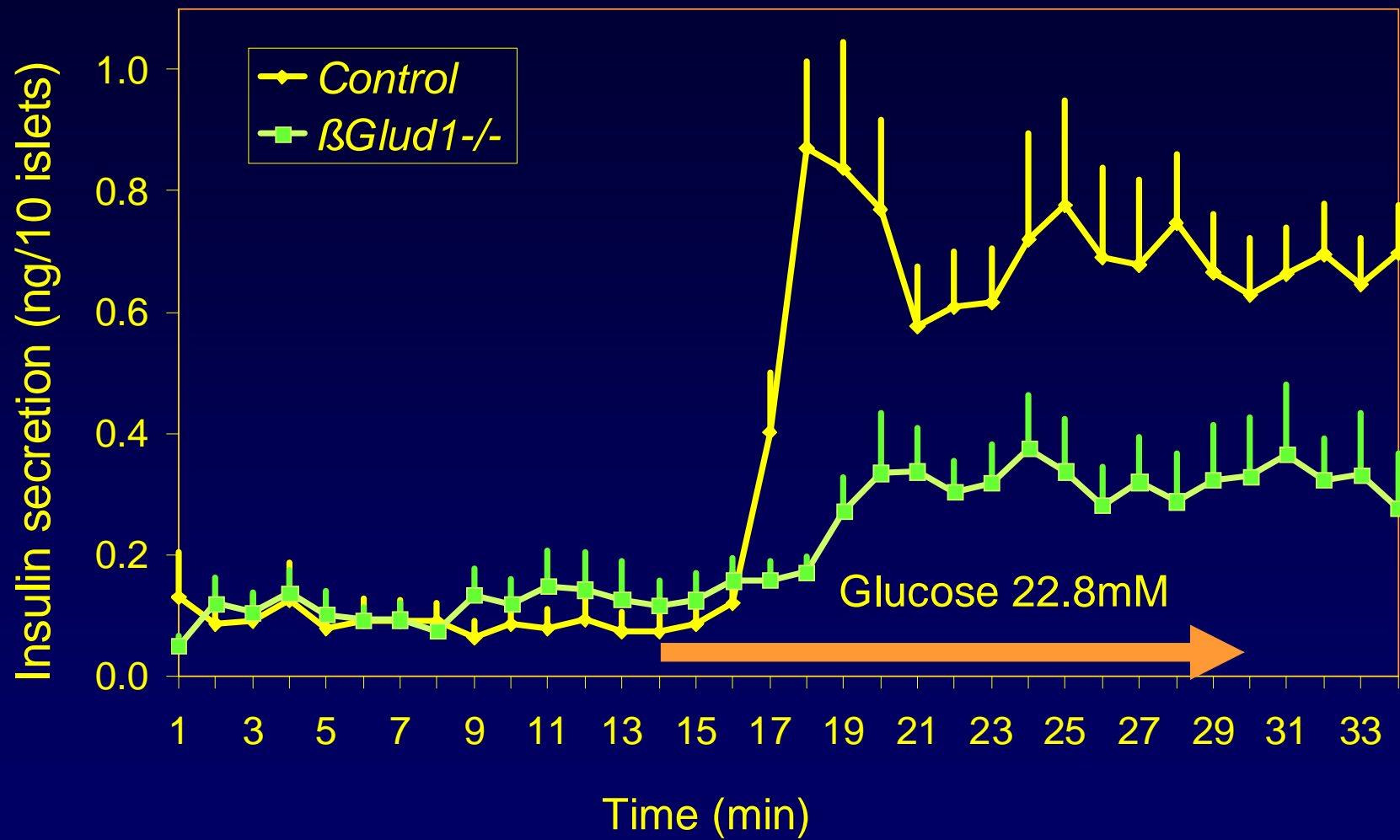
Insuline

Calcium

Métabolisme

Mitochondrie





# Couplage métabolisme - sécrétion d'insuline dans la cellule $\beta$

