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PAUL SABATIER

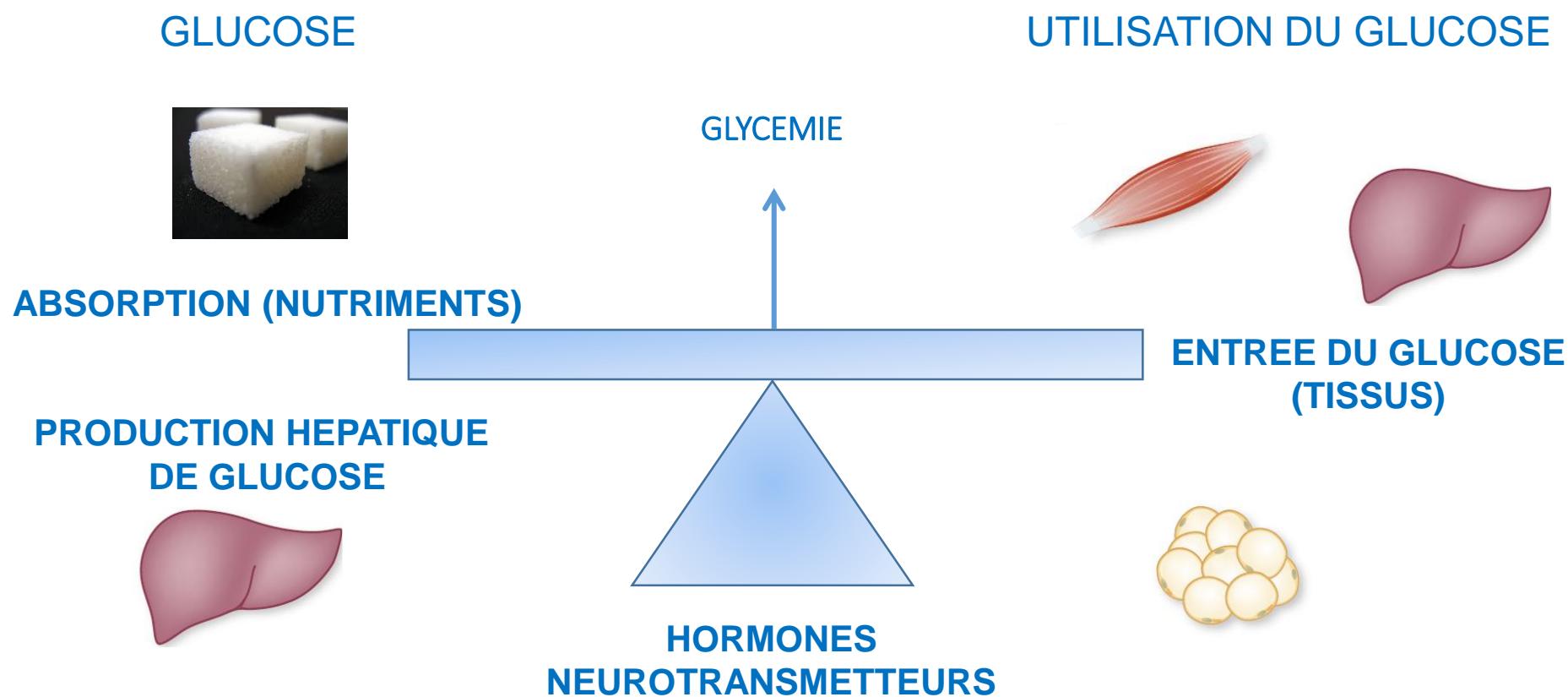


AXE « INTESTIN-CERVEAU » :

Communications nerveuses et hormonales dans le contrôle
du métabolisme glucidique

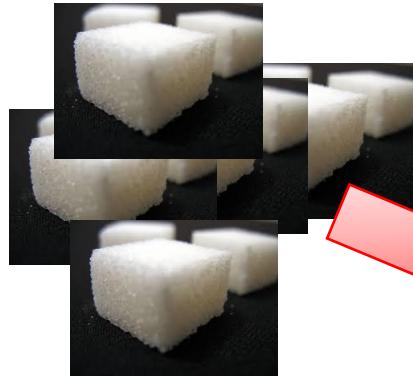
Pr. Claude Knauf

INSERM U1220, Institut de Recherche en Santé Digestive (IRSD)
Université Paul Sabatier (Toulouse III)



IMPACT NEGATIF SUR L'ORGANISME (STRESS OXYDATIF, NEURODEGENERESCENCE,...)

PRODUCTION HEPATIQUE
DE GLUCOSE



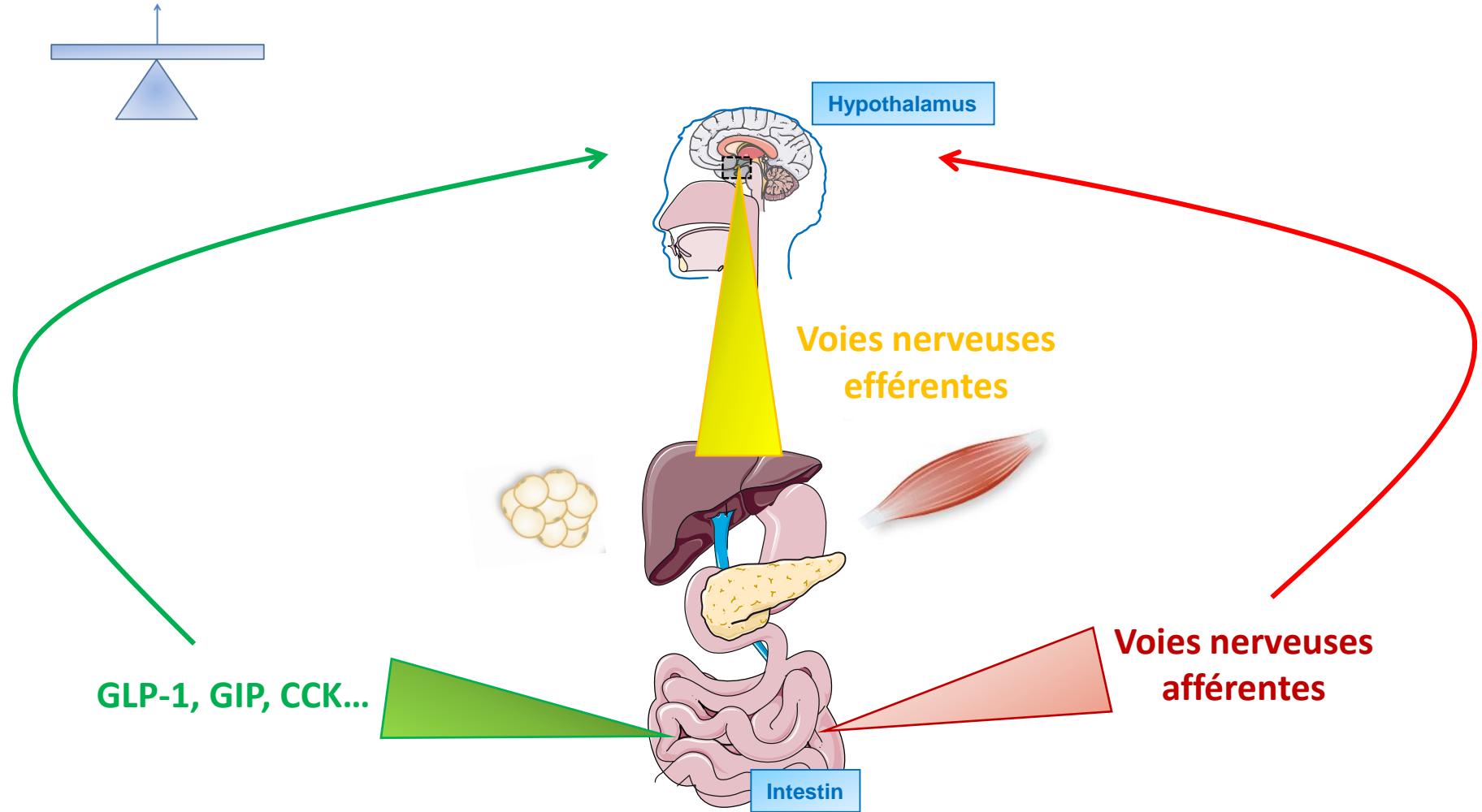
HYPERGLYCEMIE
(A JEUN / NOURRI)



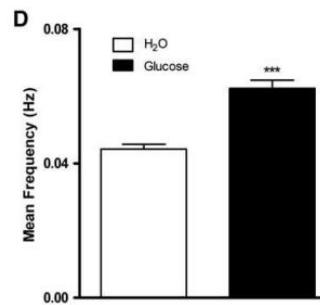
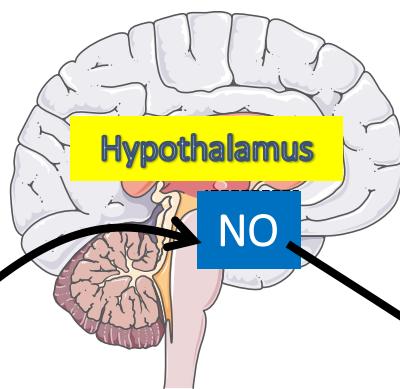
RESISTANCE A L'INSULINE
(MUSCLE)

HORMONES
NEUROTRANSMETTEURS



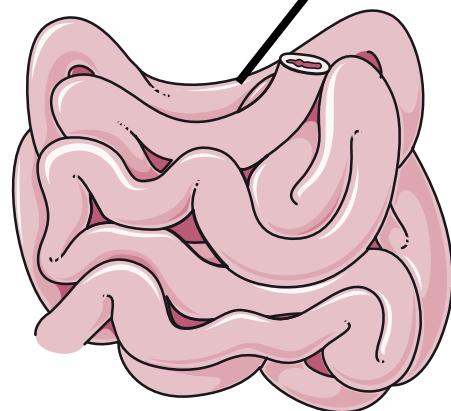


UN DIALOGUE COMPLEXE...
NOTAMMENT ENTRE L'INTESTIN ET LE CERVEAU

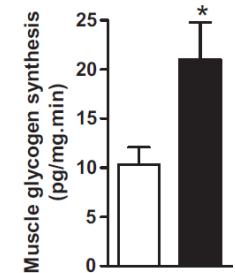
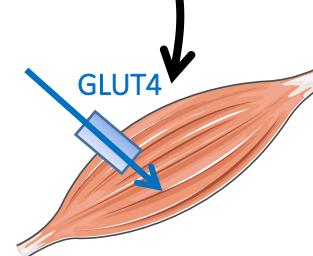
Duparc et al., *ARS*, 2011

ETAPE 2: LIBERATION DE NEUROTRANSMETTEURS

ETAPE 1: « DETECTION »



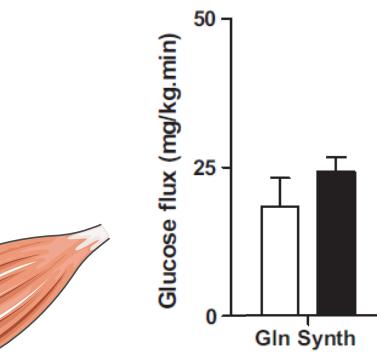
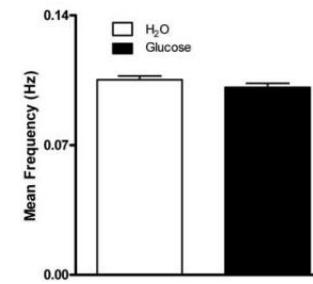
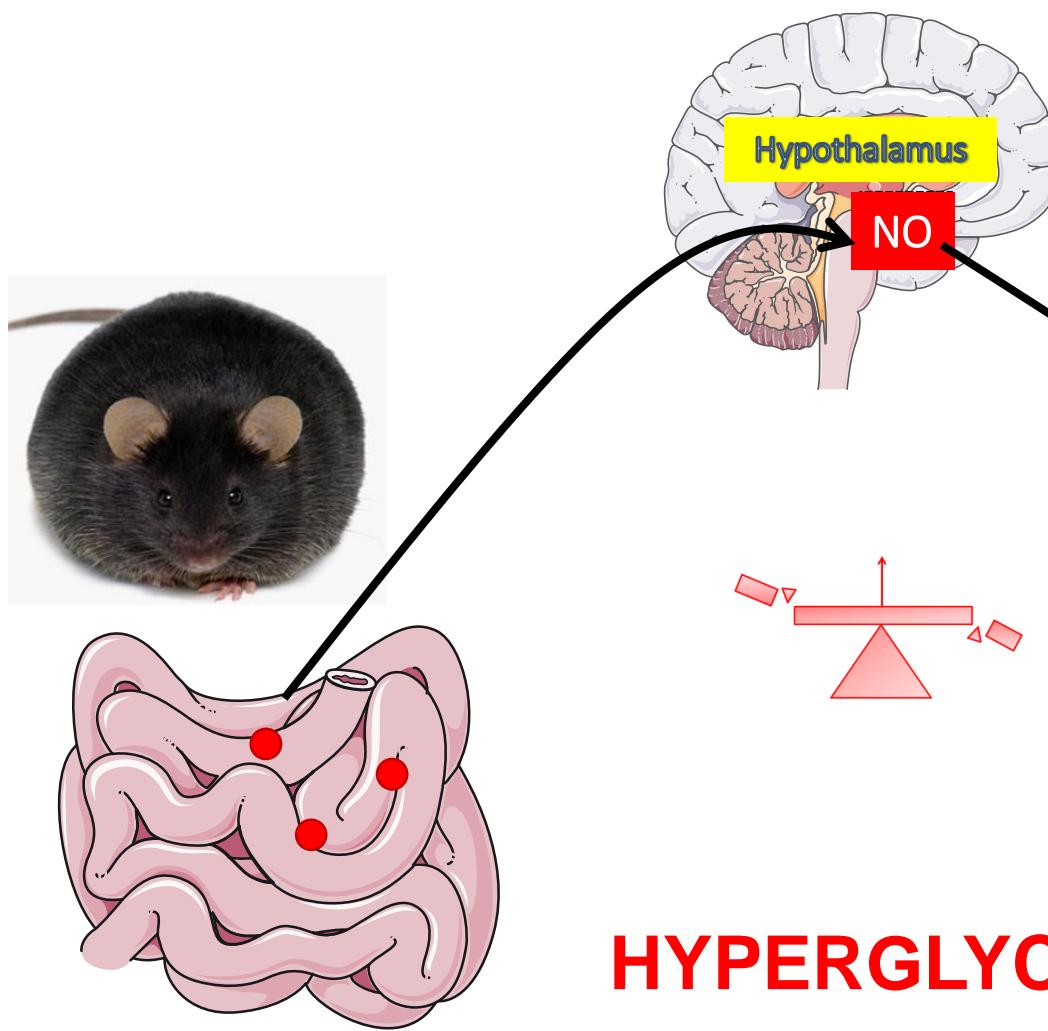
Glucose

Knauf et al., *JCI*, 2005Knauf et al., *Diabetes*, 2008

ETAPE 3: UTILISATION DU GLUCOSE

DIABÈTE DE TYPE 2

Duparc et al., ARS, 2011



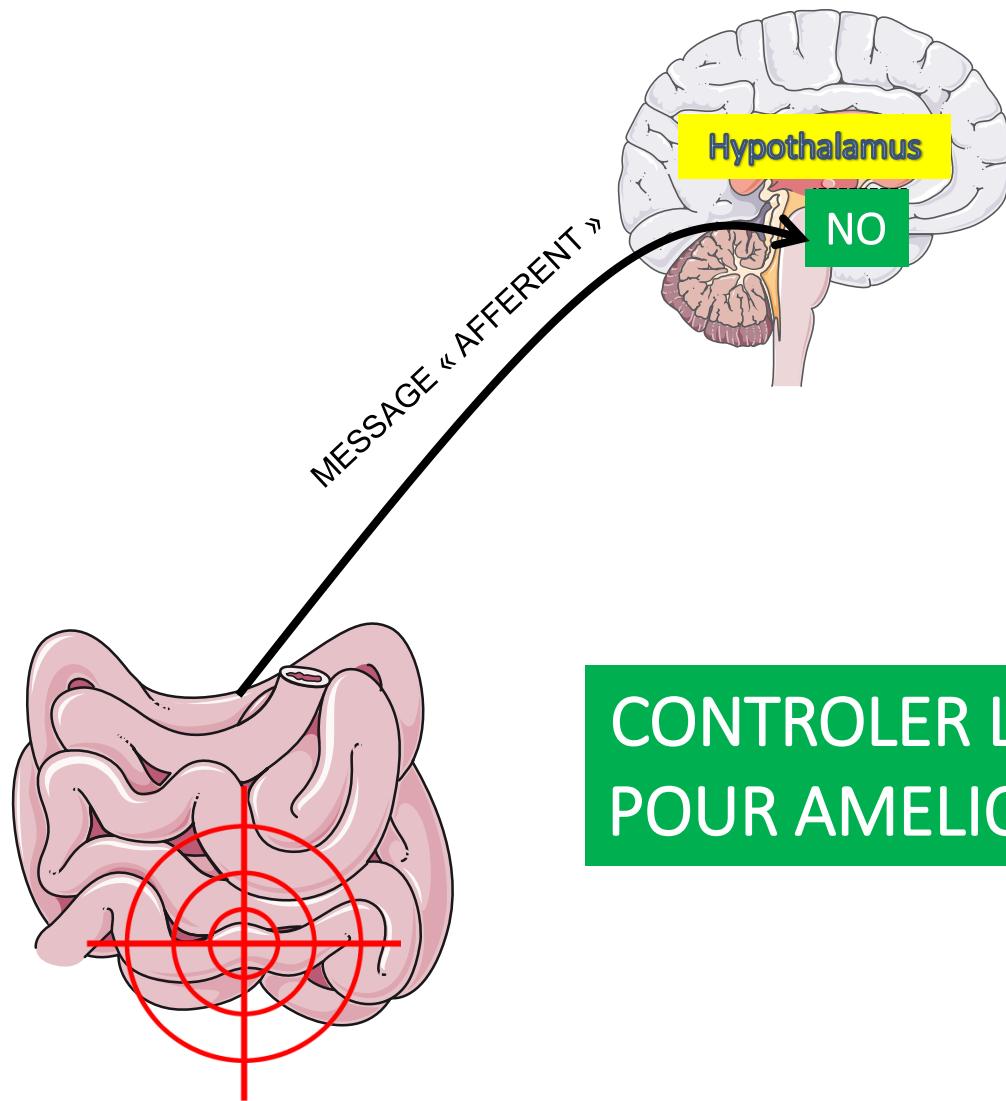
Knauf et al., *Diabetes*, 2008

HYPERGLYCEMIE

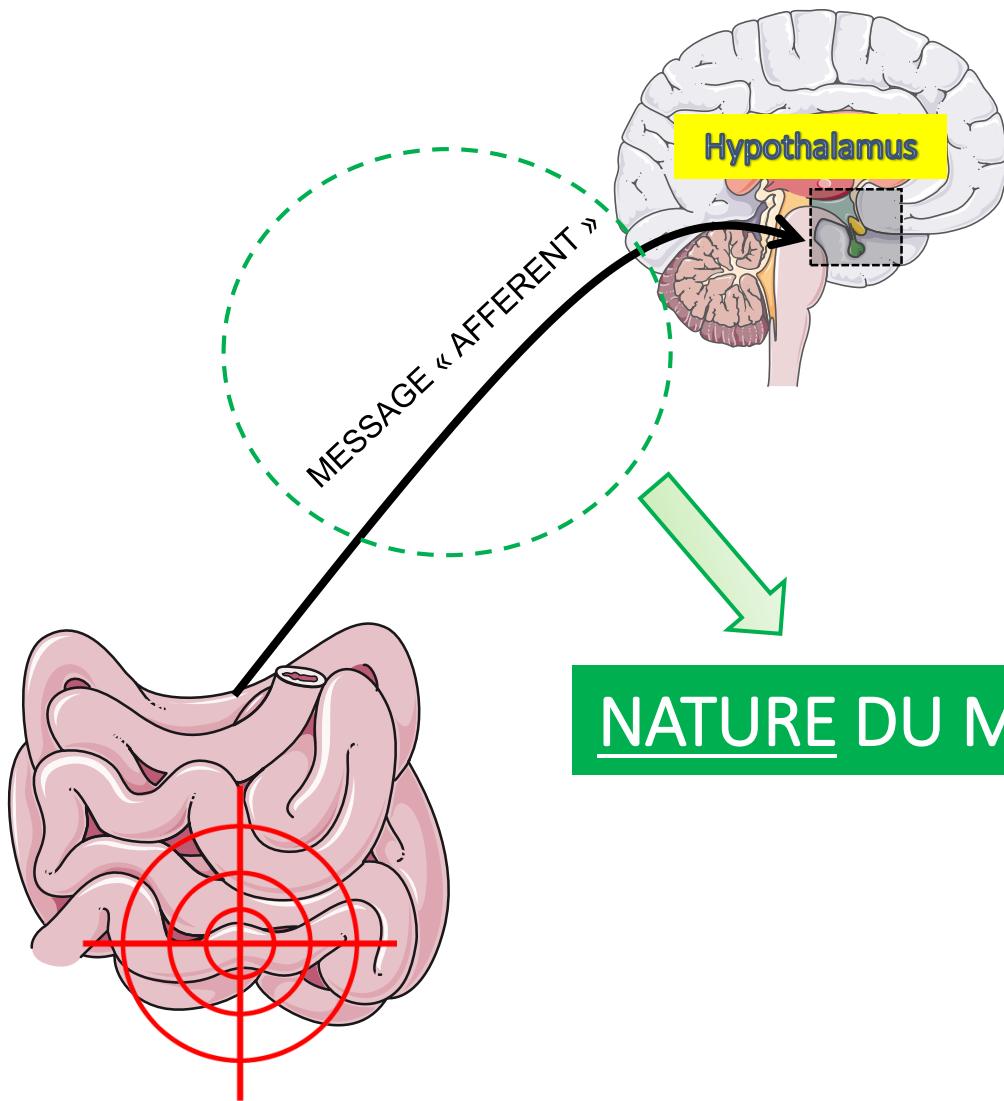
Glucose

Knauf et al., *JCI*, 2005

RESISTANCE A L'INSULINE

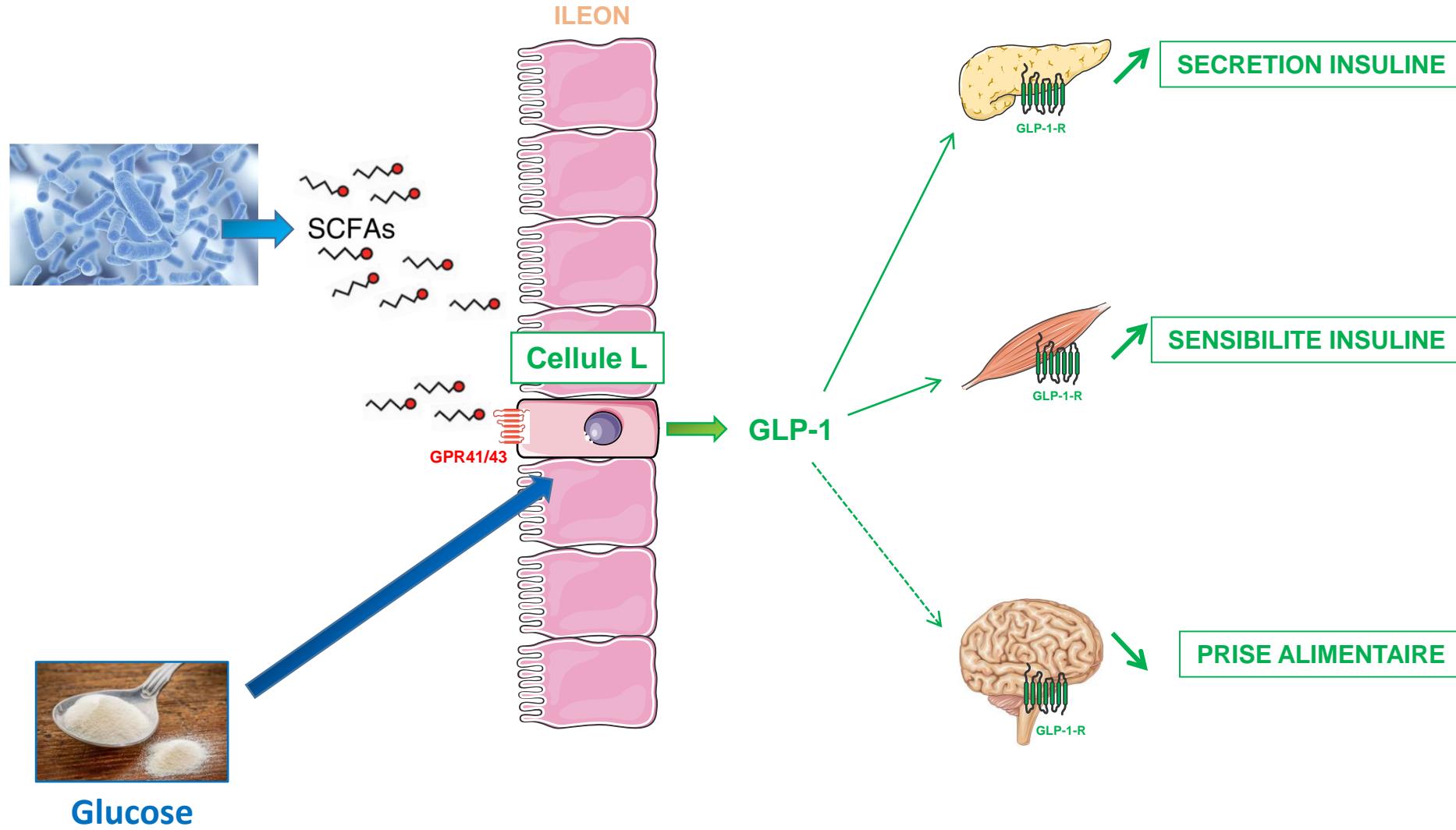


CONTROLER L'AXE INTESTIN-CERVEAU
POUR AMELIORER L'ETAT DIABETIQUE



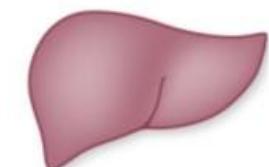
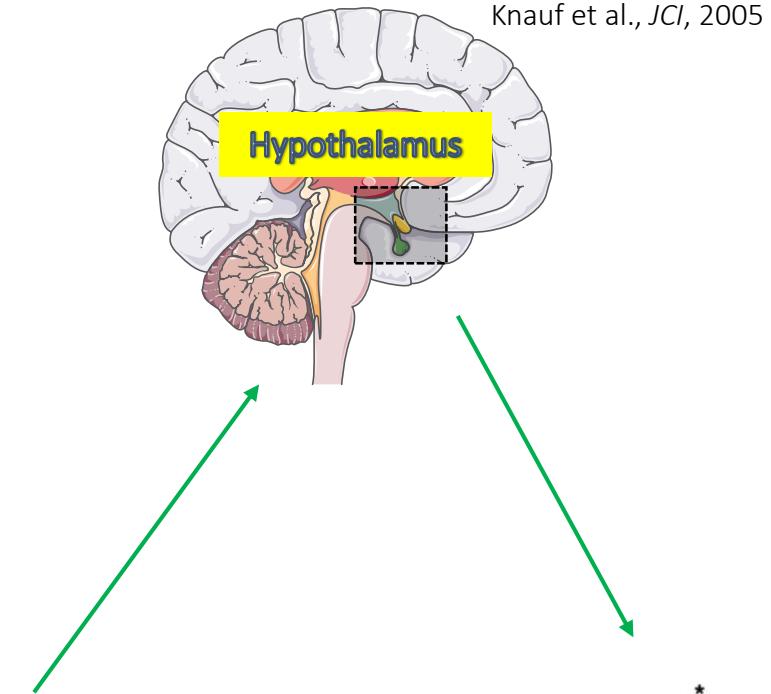
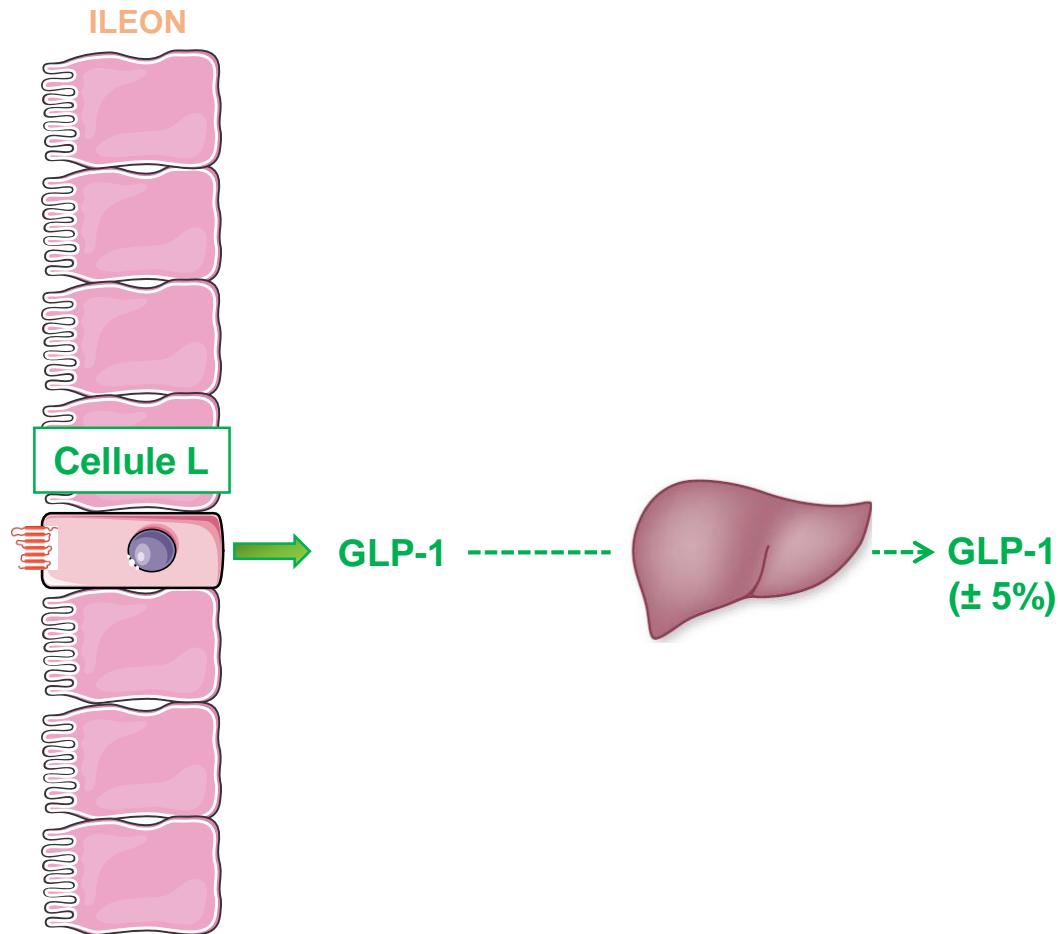
AXE INTESTIN-CERVEAU
- REGULATION HORMONALE -

L'EXEMPLE DU GLUCAGON LIKE-PEPTIDE 1 (GLP-1)

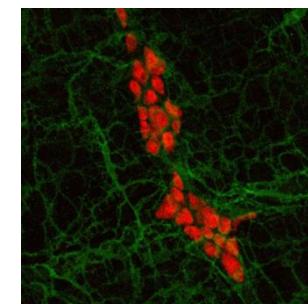
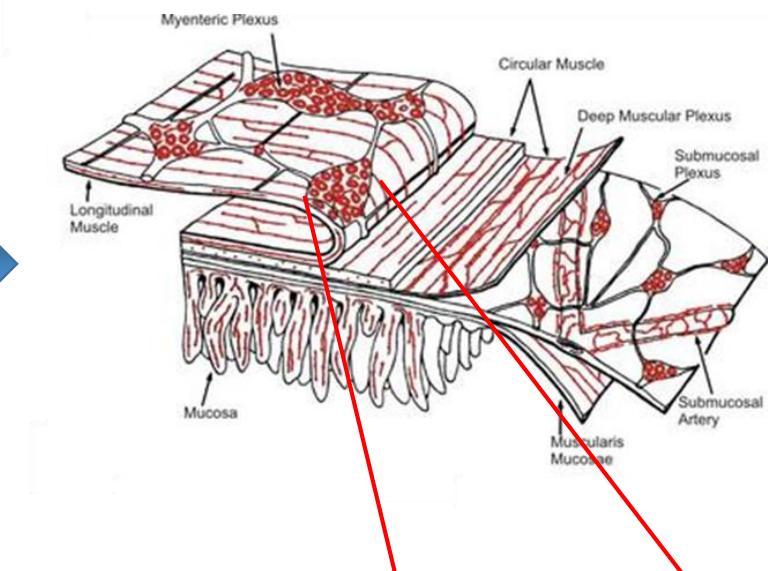
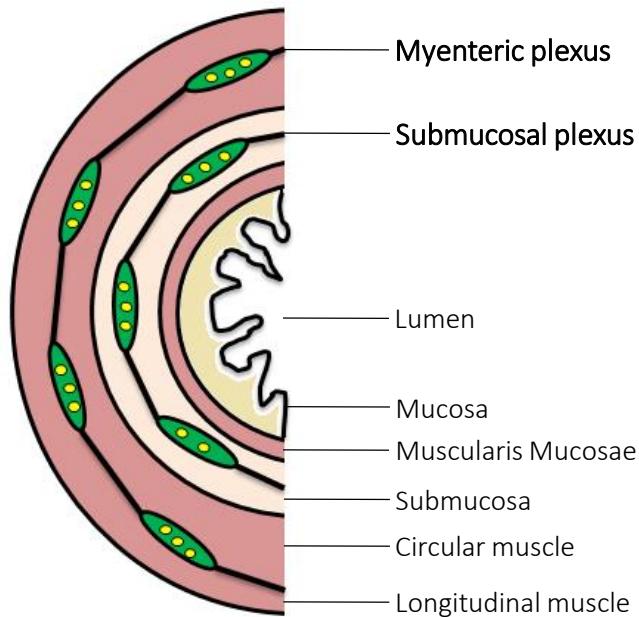
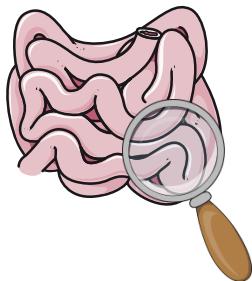


L'EXEMPLE DU GLUCAGON LIKE-PEPTIDE 1 (GLP-1)

Knauf et al., JCI, 2005

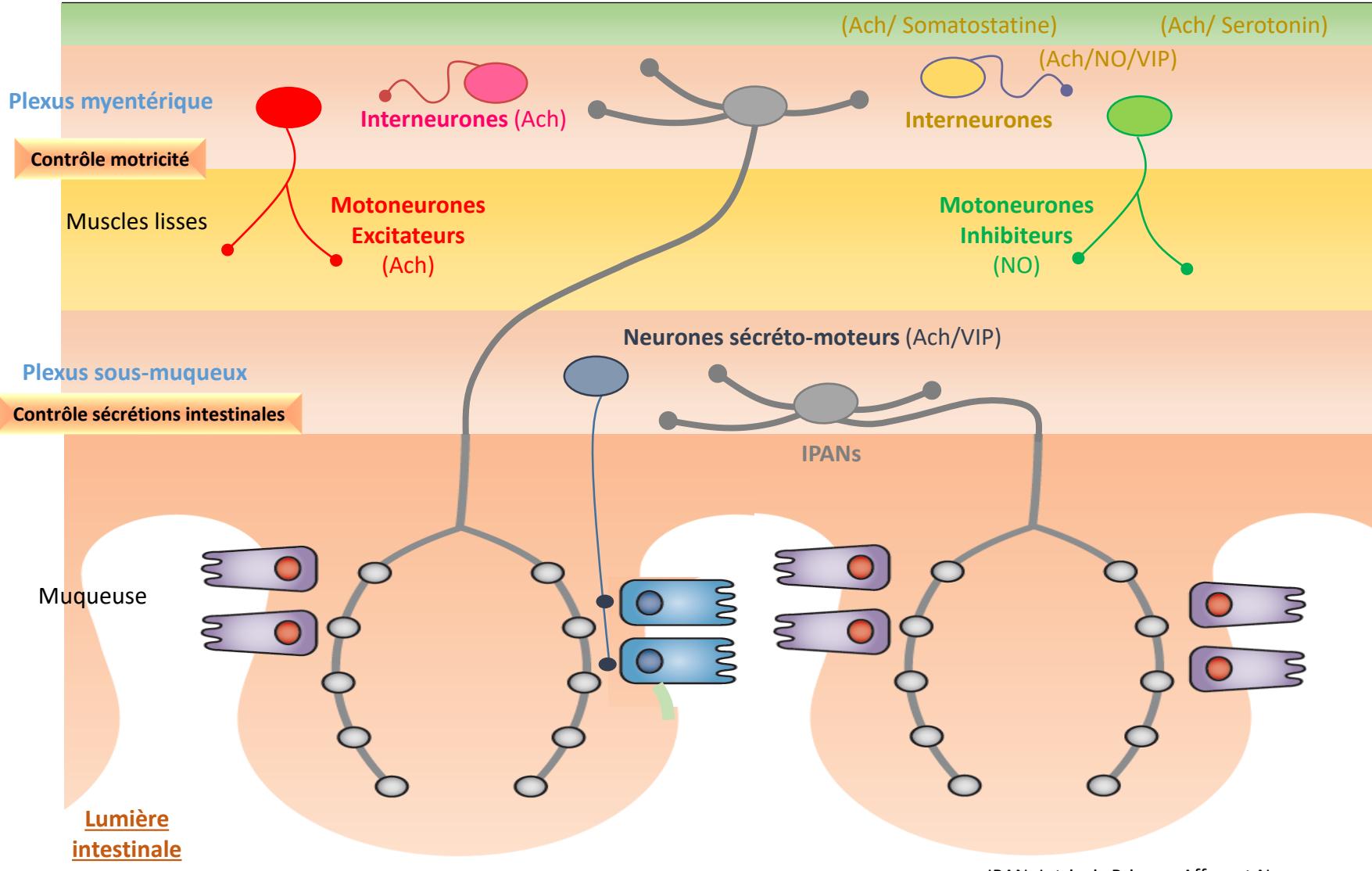


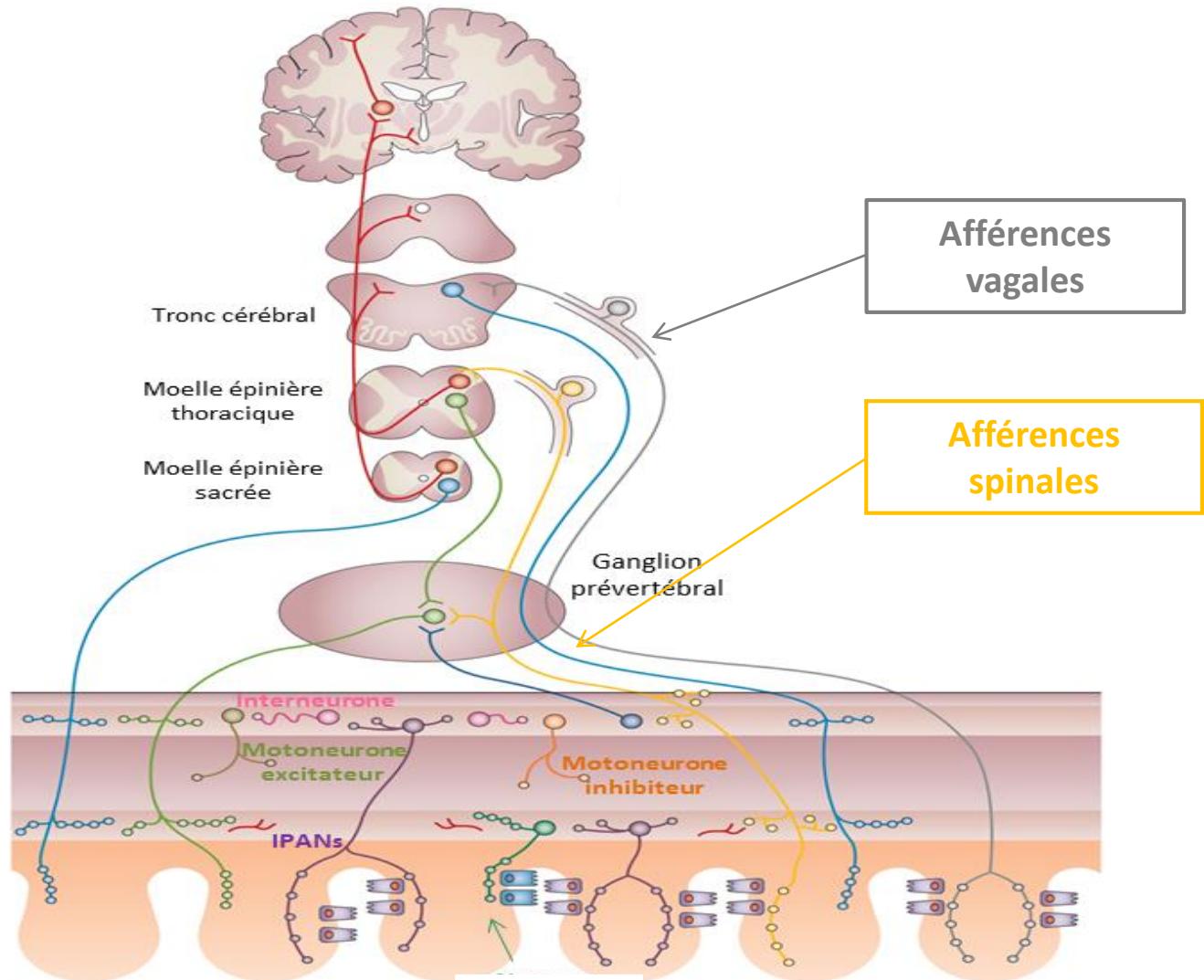
AXE INTESTIN-CERVEAU
- REGULATION NERVEUSE -



Oral

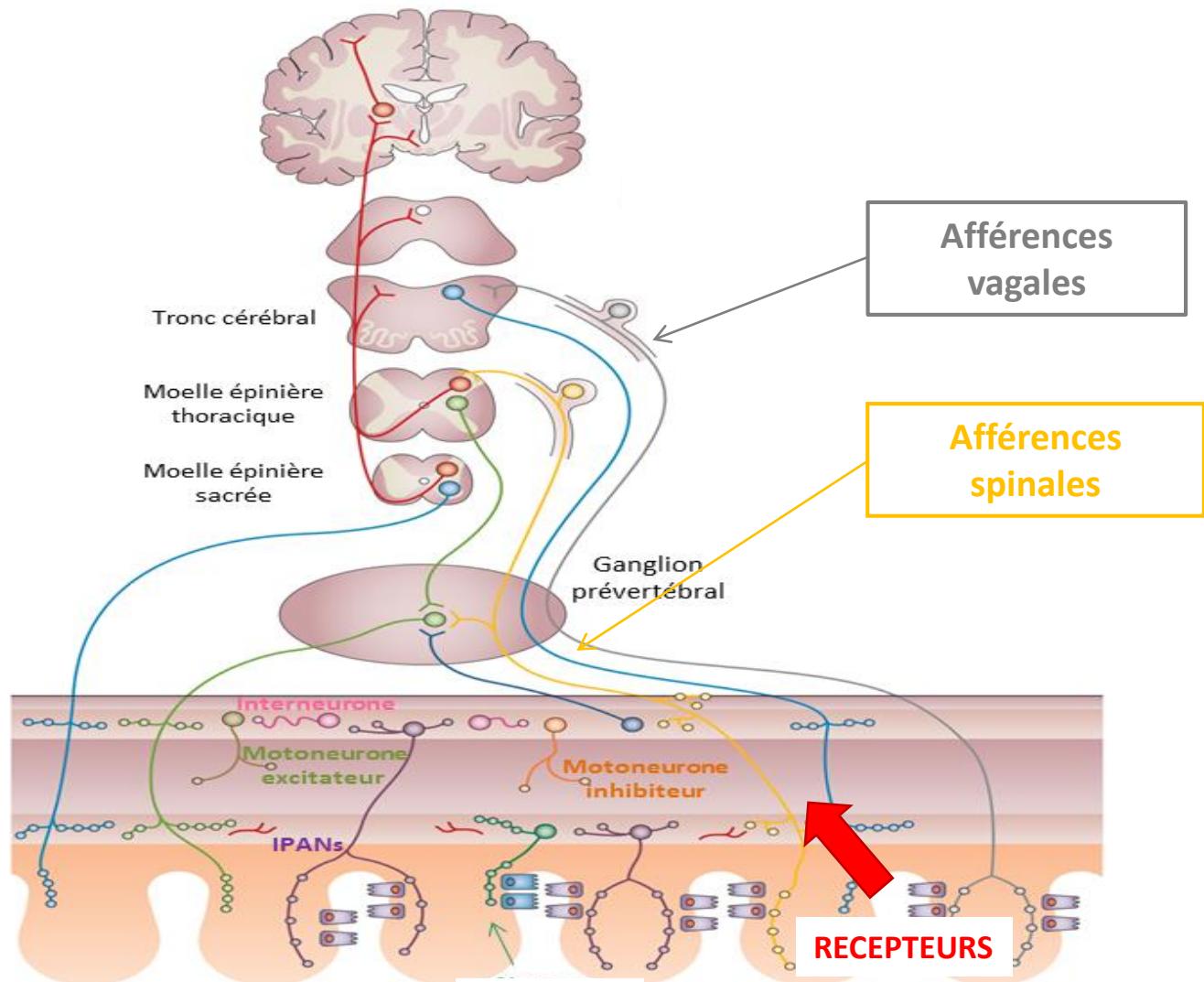
Anal



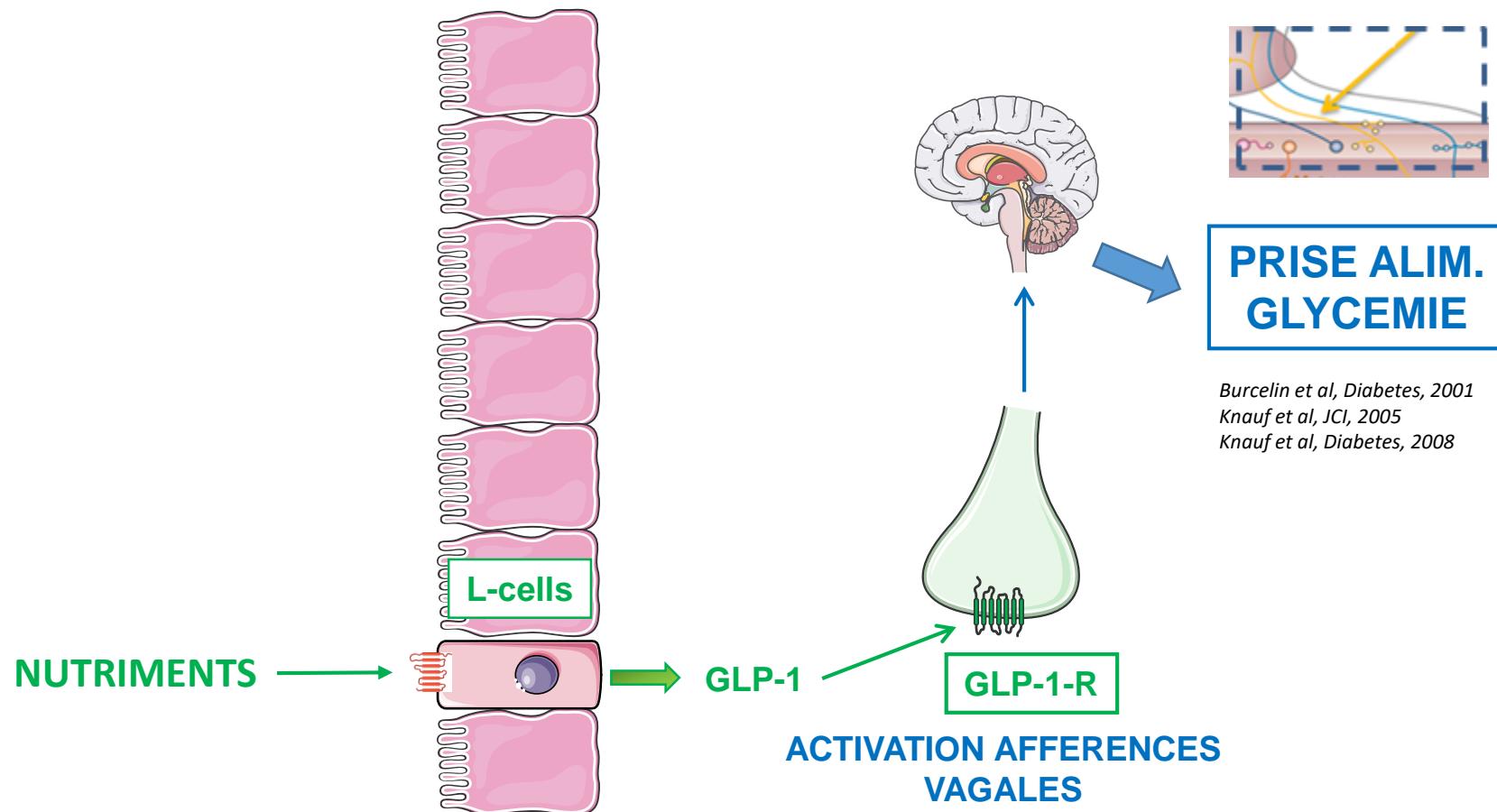


AXE INTESTIN-CERVEAU
- REGULATION NERVEUSE -

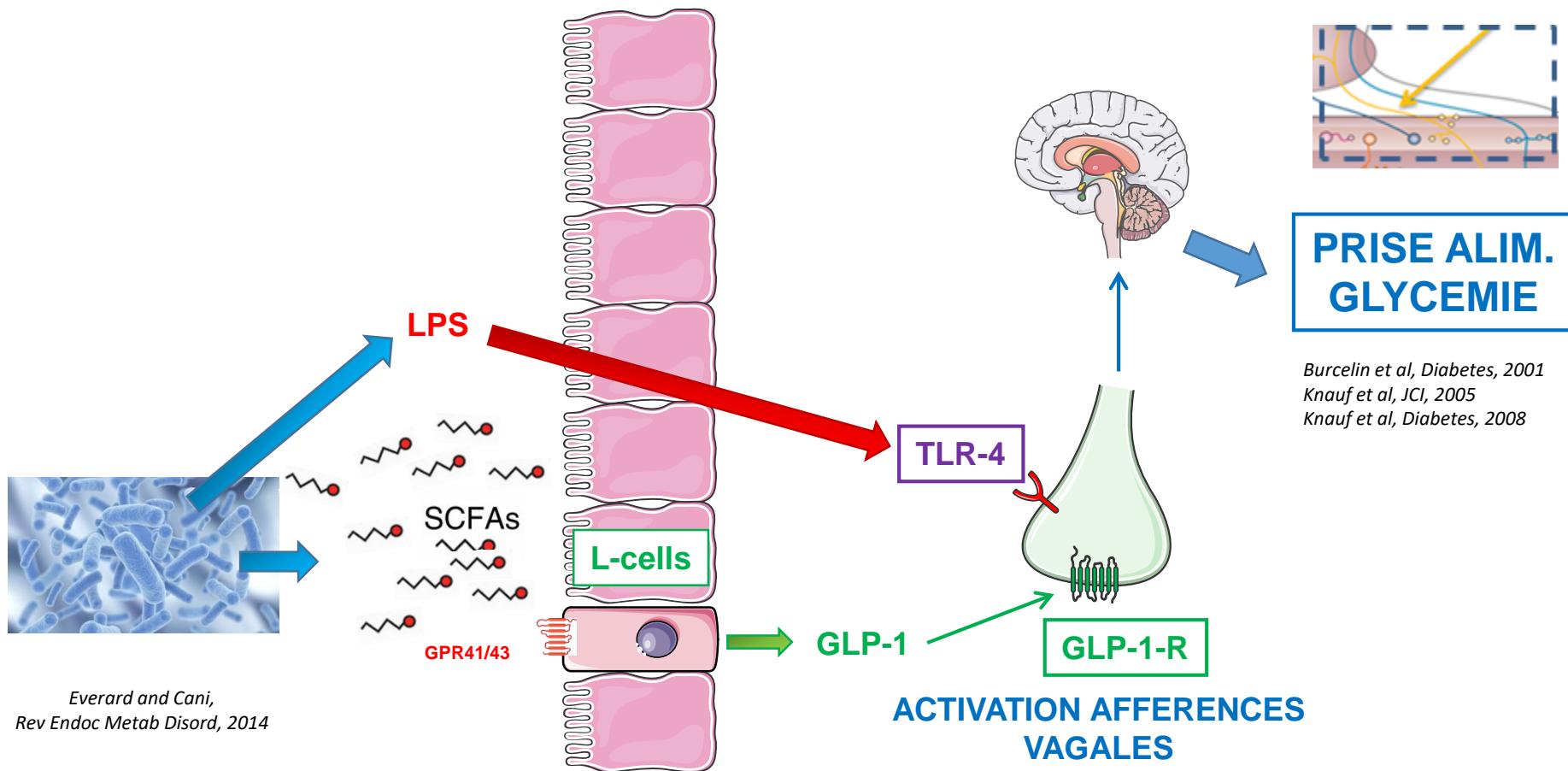
EXTRINSEQUÉ



GLP-1 ET AFFERENCES VAGALES



MICROBIOTE ET AFFERENCES VAGALES

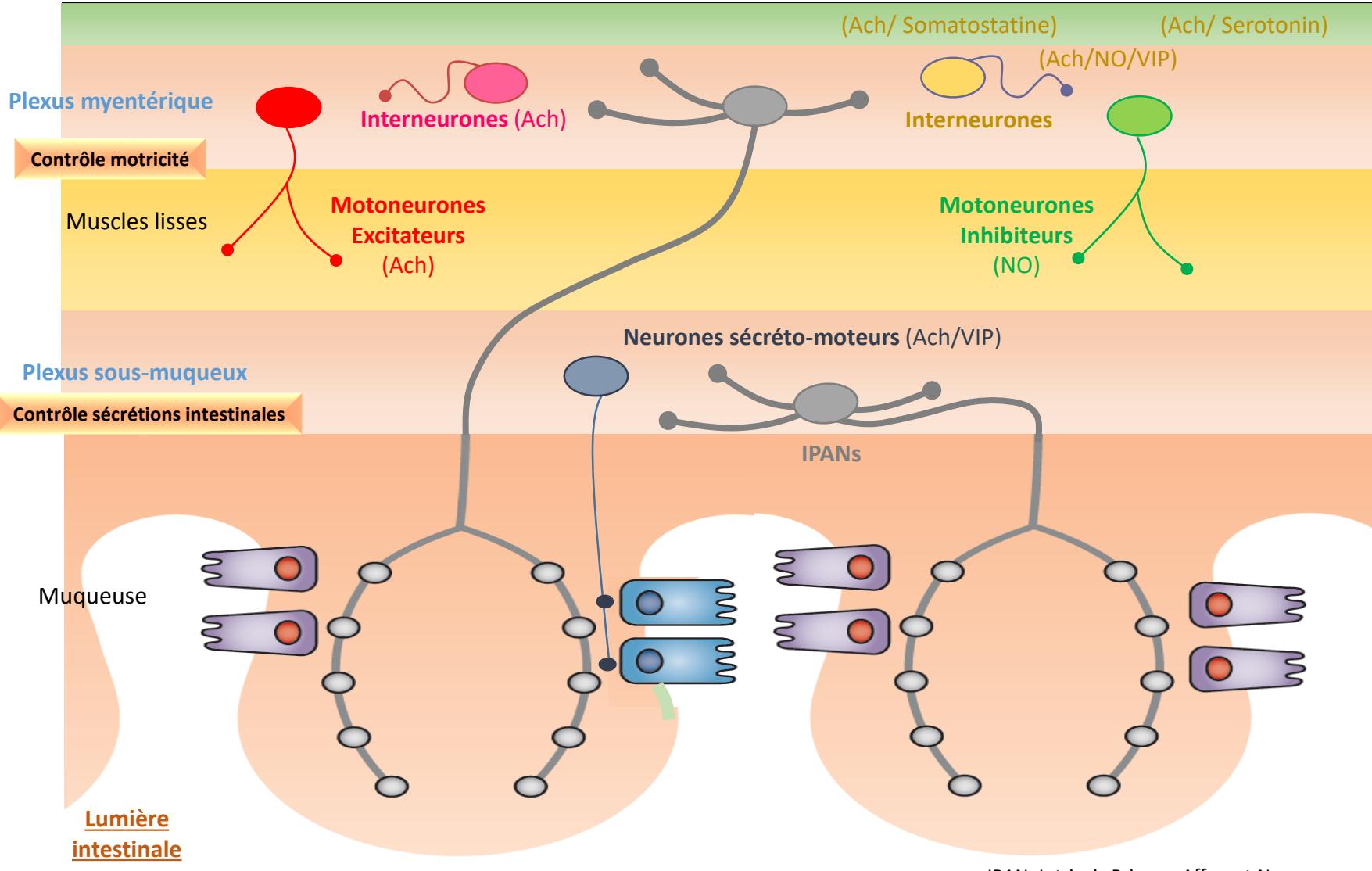


AXE INTESTIN-CERVEAU
- REGULATION NERVEUSE -

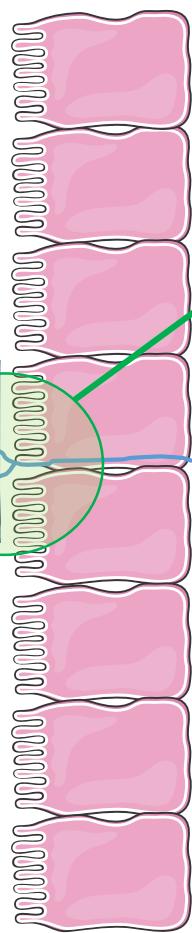
INTRINSEQUÉ

Oral

Anal



FOCUS SUR LES IPAN (NEURONES PRIMAIRES AFFERENTS INTRINSEQUES)



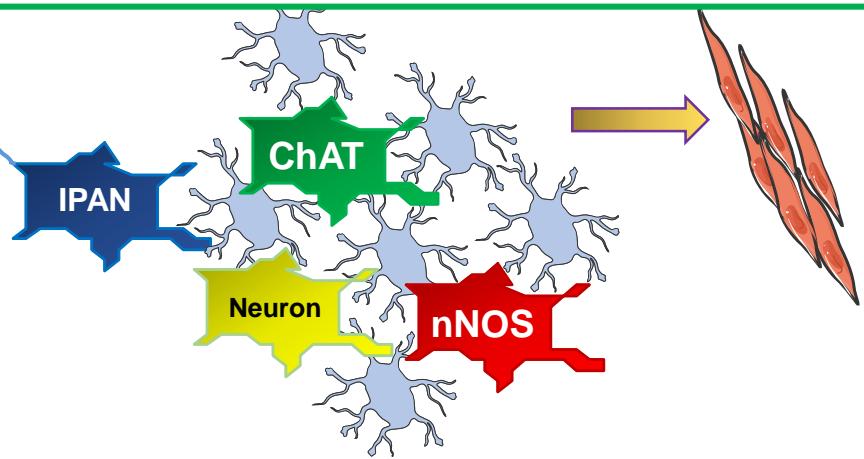
Neurogastroenterology & Motility

Neurogastroenterology & Motility 34

POTENTIAL ROLE: IPAN / GUT-BRAIN AXIS

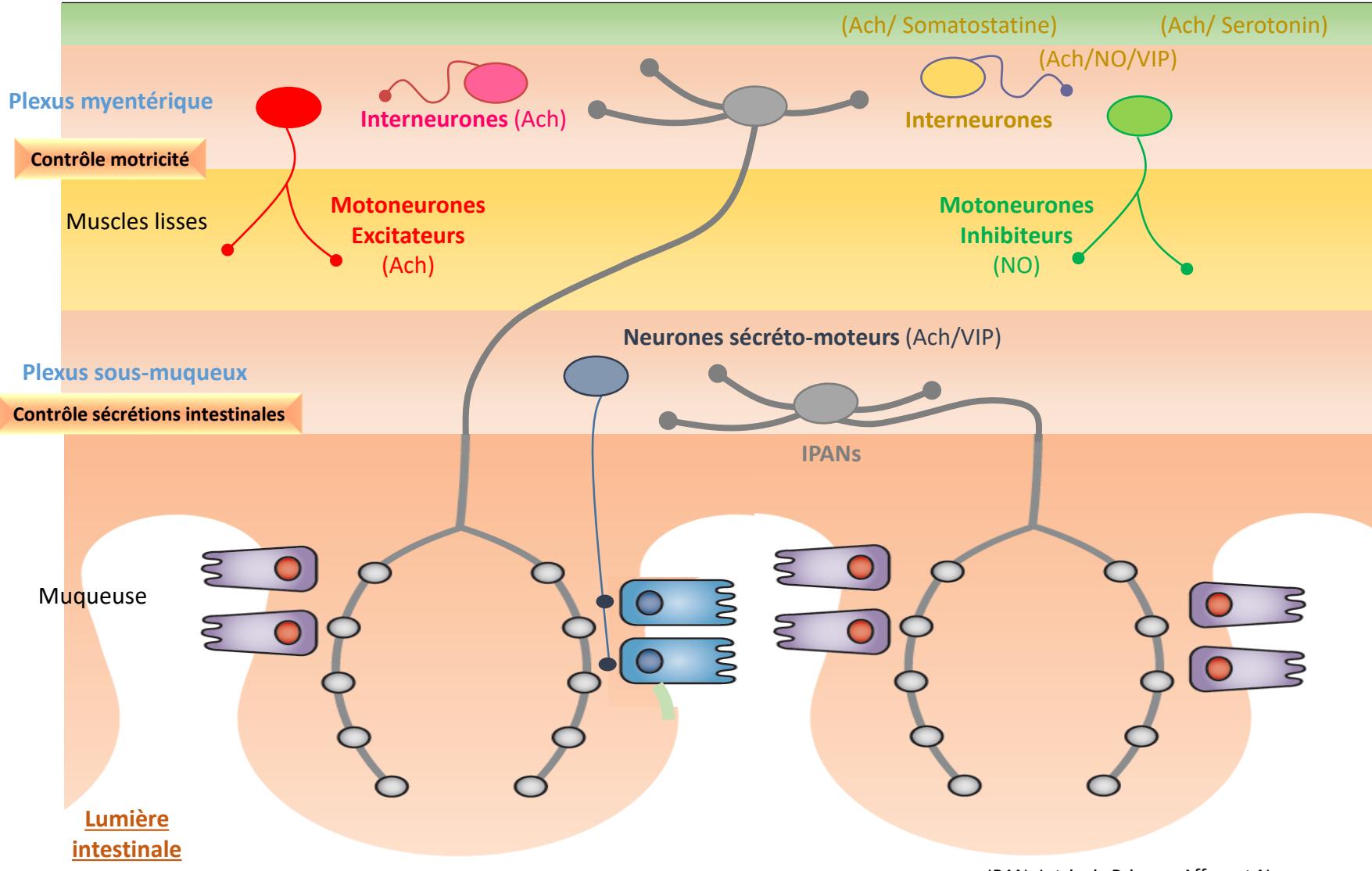
The gut microbiome restores intrinsic and extrinsic nerve function in germ-free mice accompanied by changes in calbindin

K. A. MCVEY NEUFELD, *,† A. PEREZ-BURGOS, * Y. K. MAO, * J. BIENENSTOCK *,‡ & W. A. KUNZE *,†

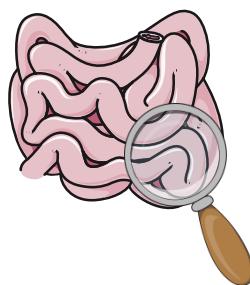


Oral

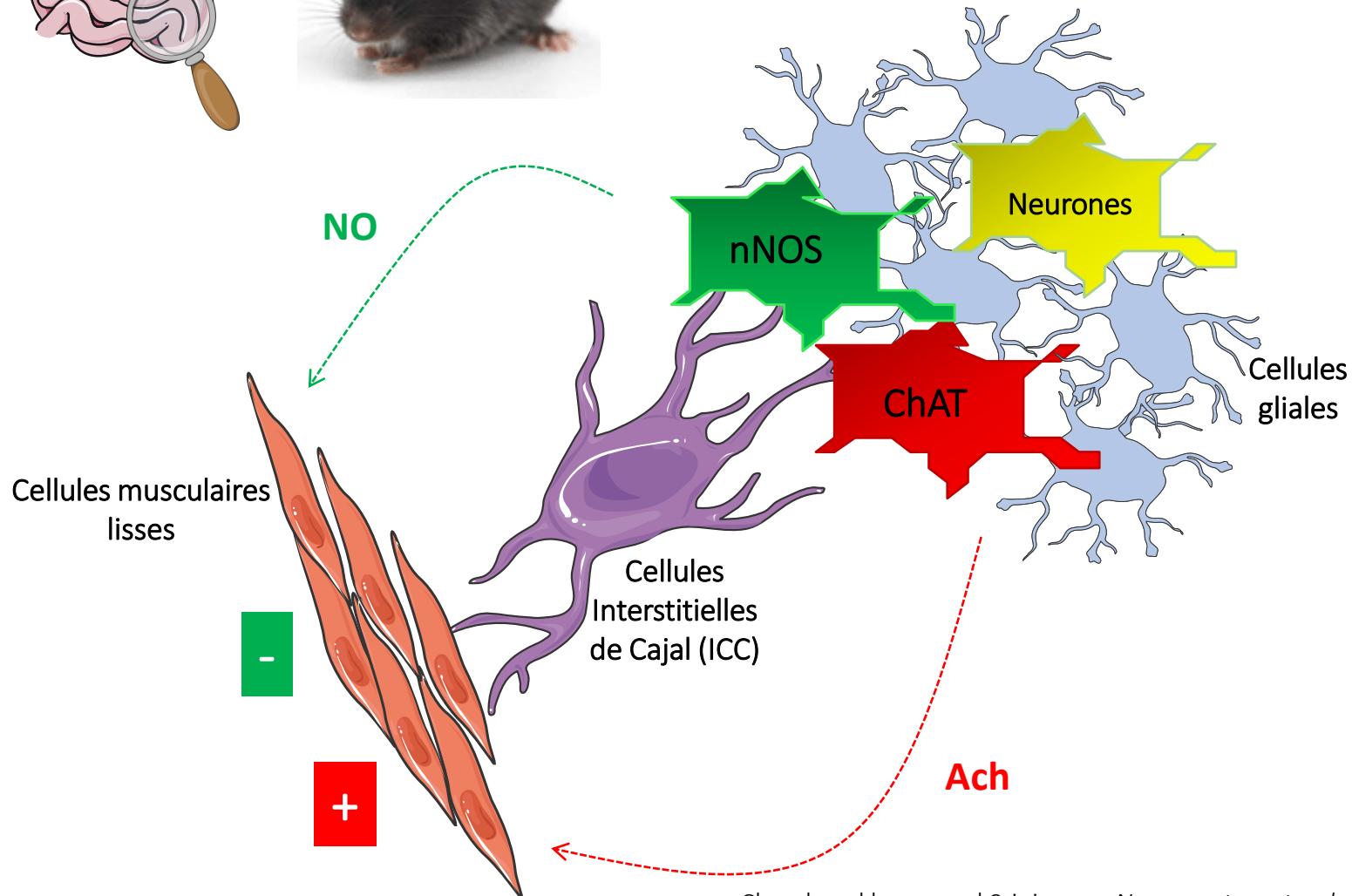
Anal



FOCUS SUR LES MOTONEURONES



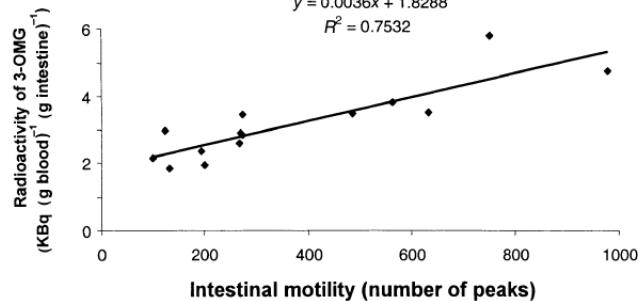
nNOS: neuronal Nitric Oxide Synthase
ChAT: Choline Acetyl Transferase



GLUCOSE SENSING

ABSORPTION GLUCOSE ($\pm 80\%$)

CONDITIONS « NOURRIES »

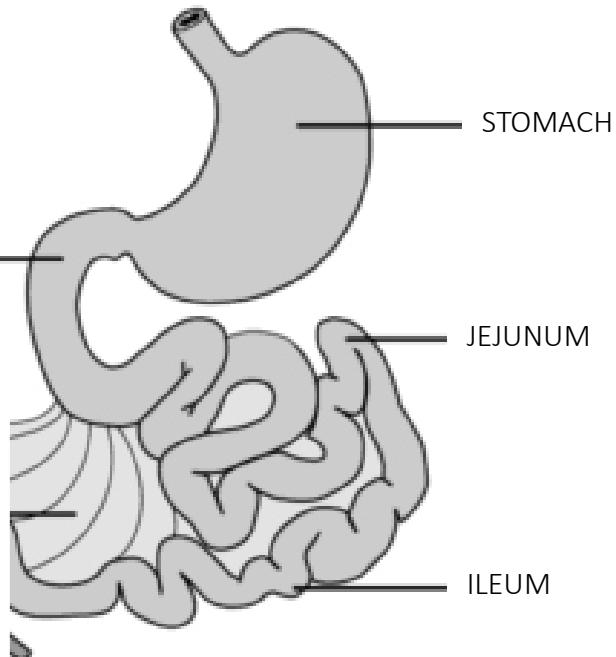


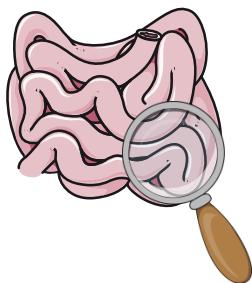
DUODENUM

STOMACH

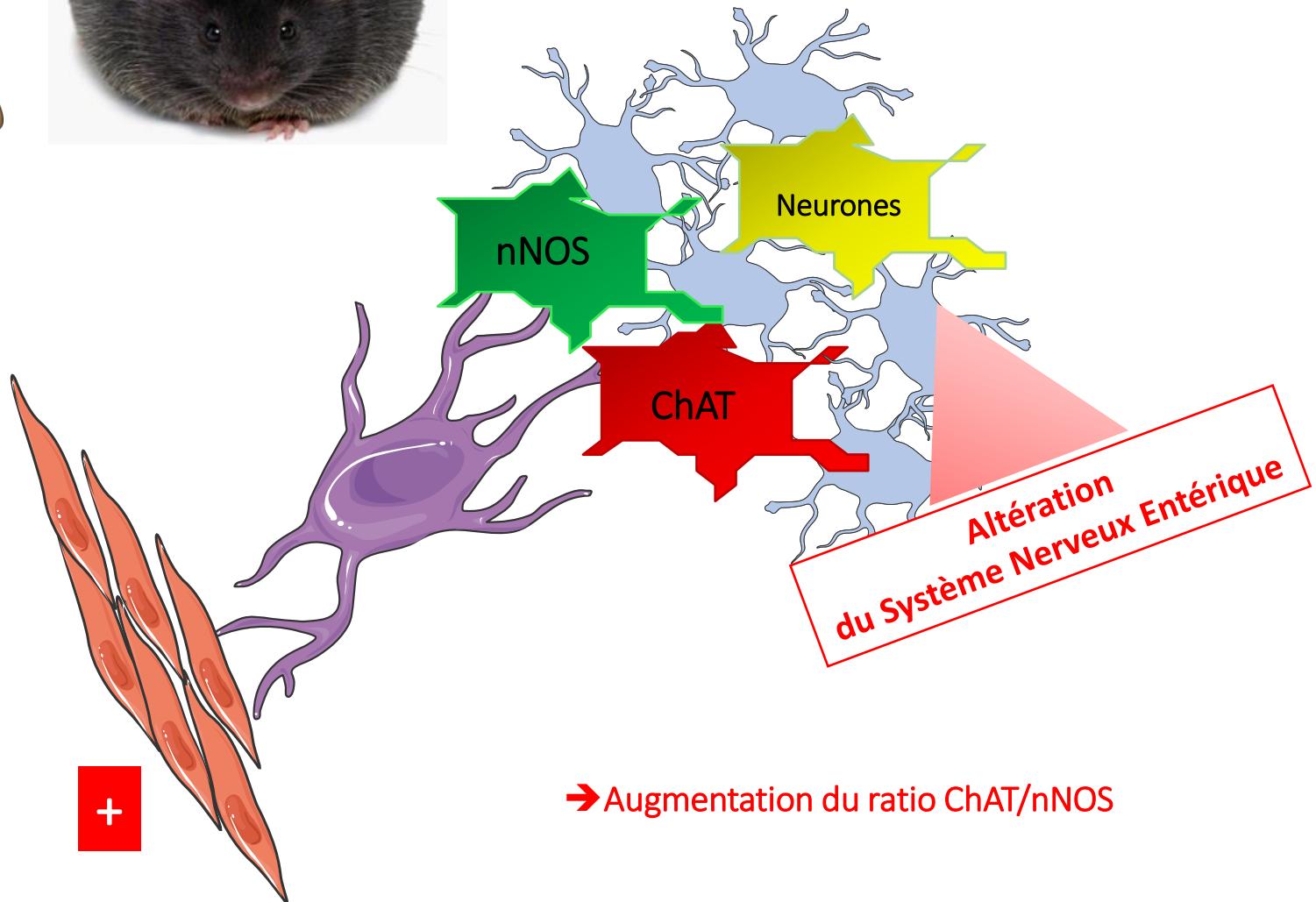
JEJUNUM

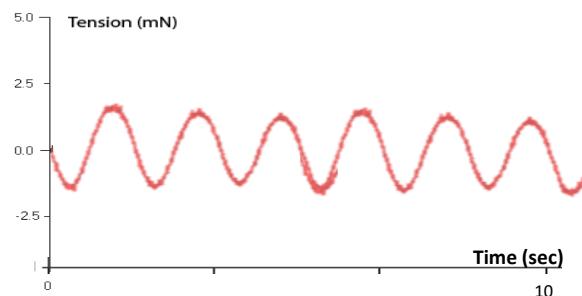
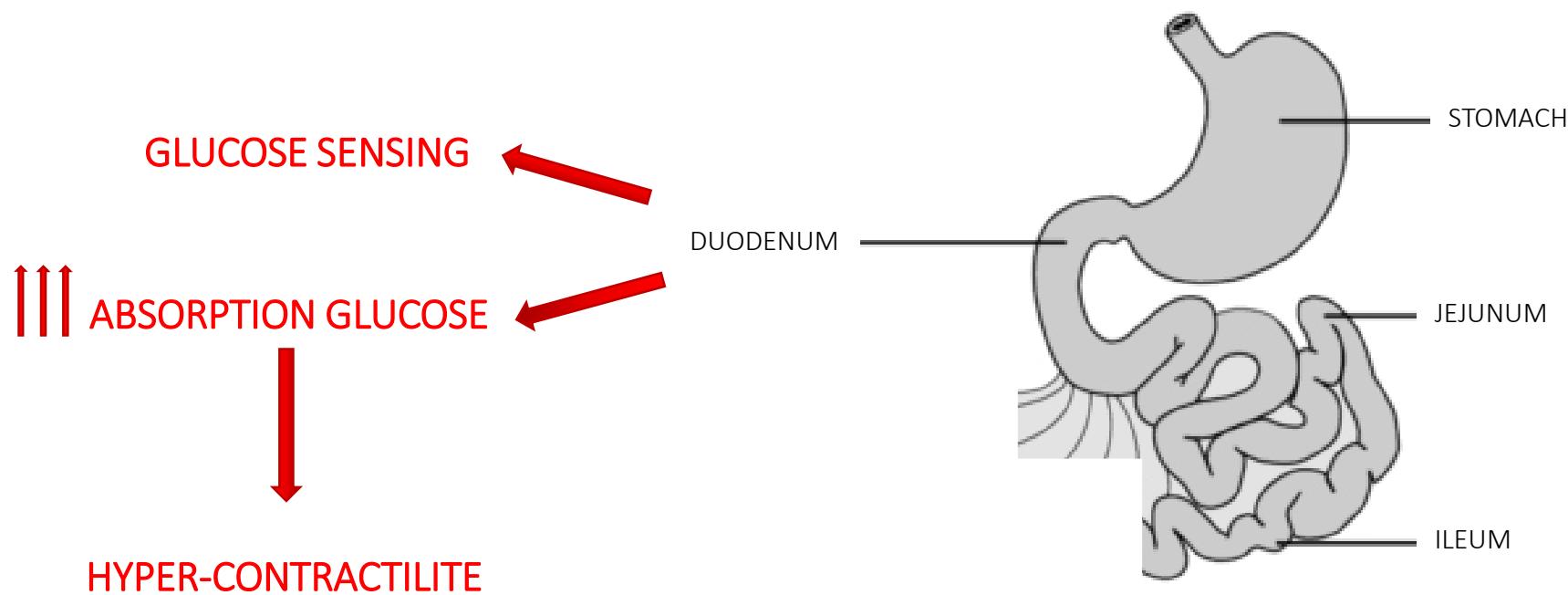
ILEUM

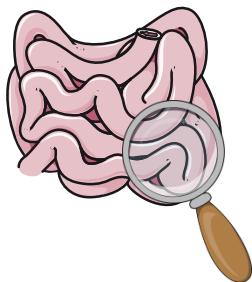




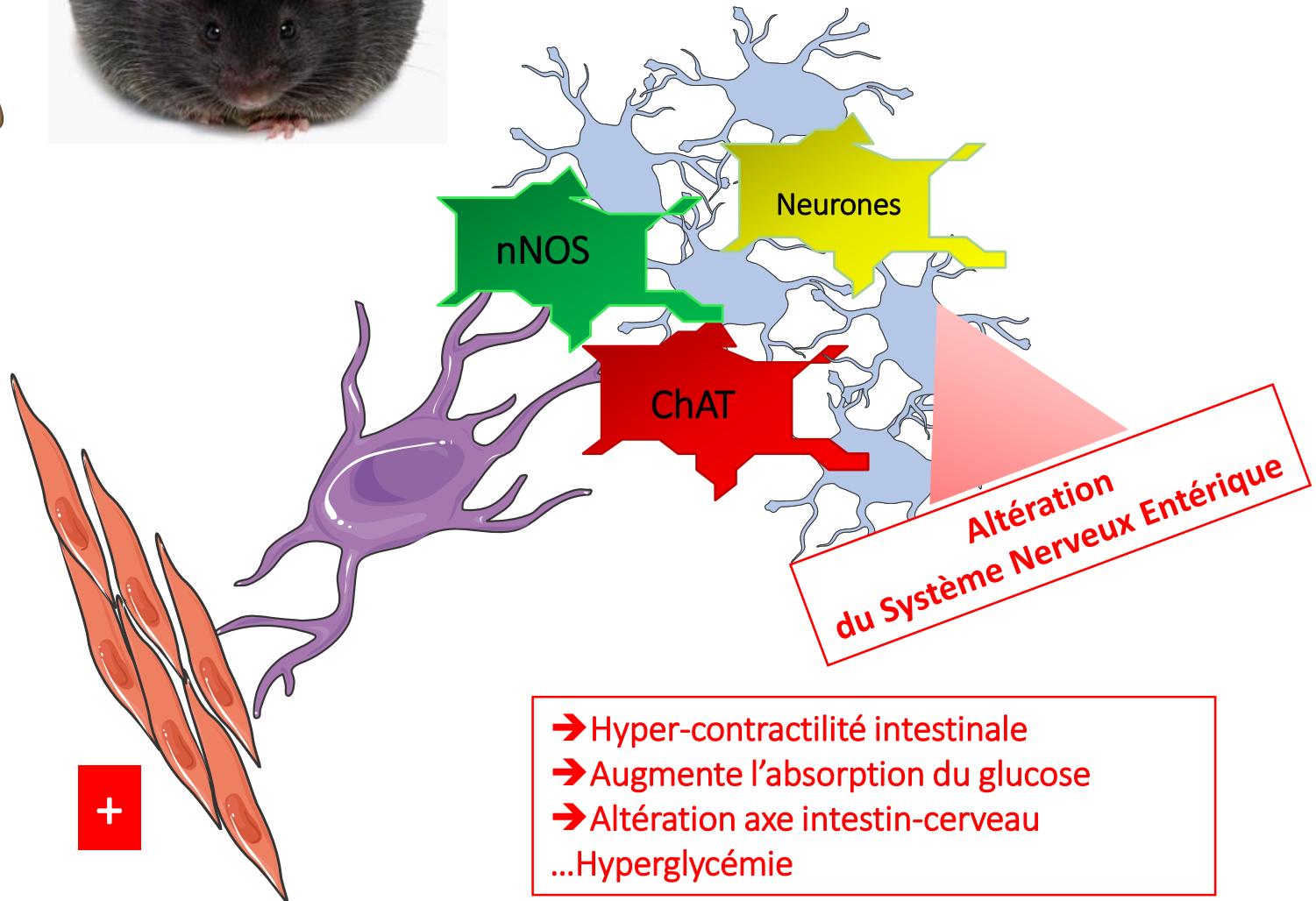
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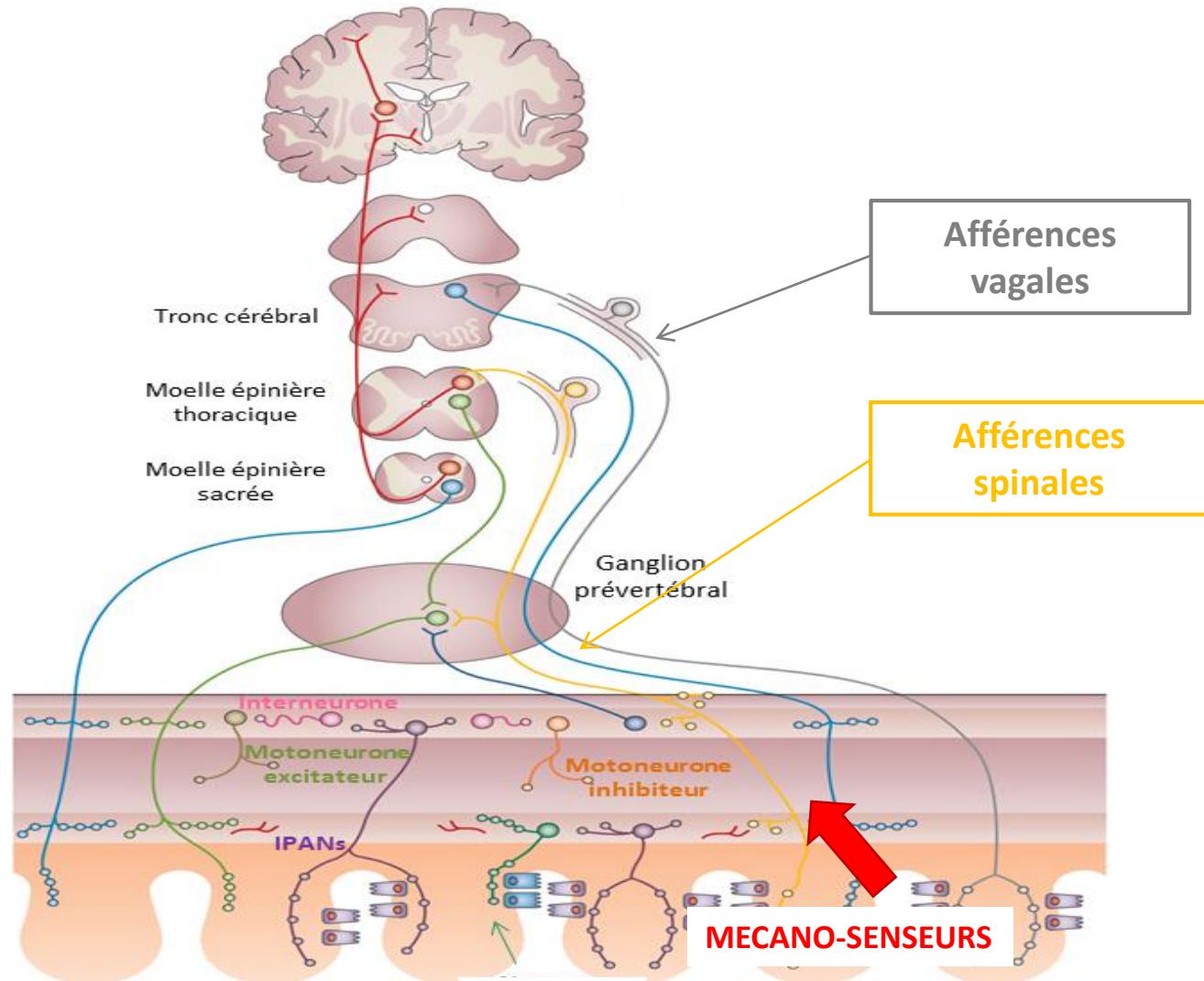


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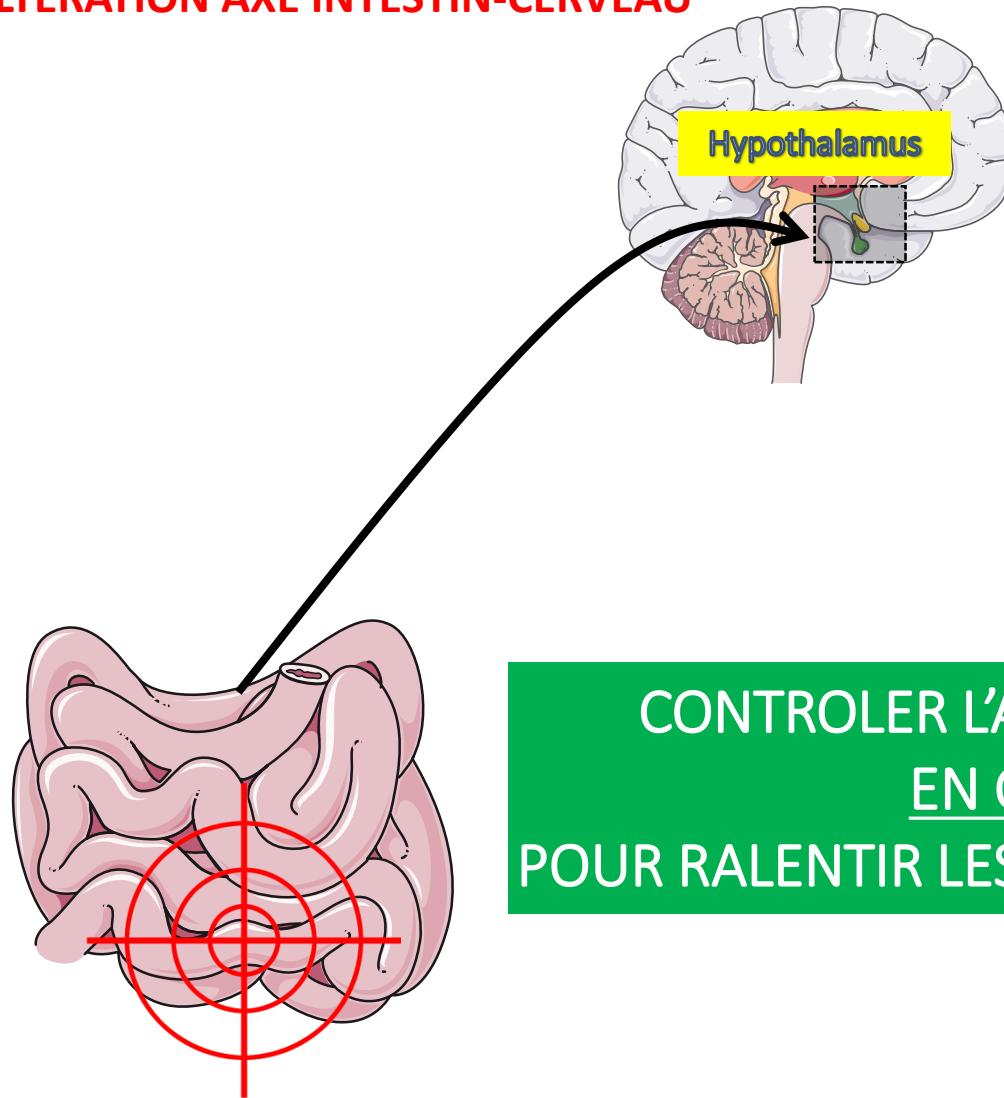
L'INTESTIN SE CONTRACTE...

...QUEL SERAIT L'INTERET DE CETTE « MECANO-DETECTION » DES CONTRACTIONS POUR LE MAINTIEN DE LA GLYCEMIE ???



HYPER-MOTRICITE DUODENALE

= ALTERATION AXE INTESTIN-CERVEAU



**CONTROLER L'AXE « INTESTIN-CERVEAU »
EN CIBLANT LE SNE
POUR RALEMENTIR LES CONTRACTIONS DUODENALES**

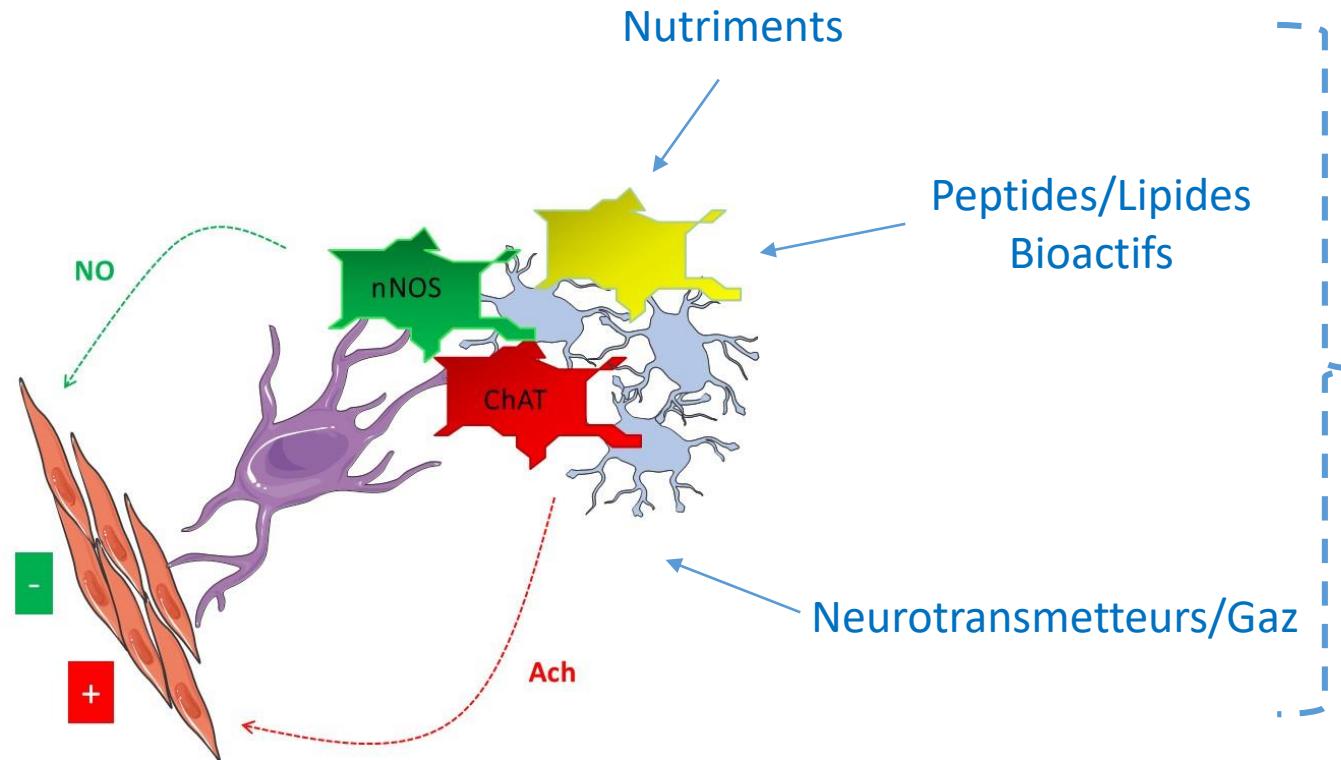
Review

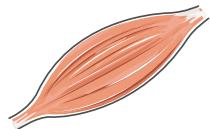
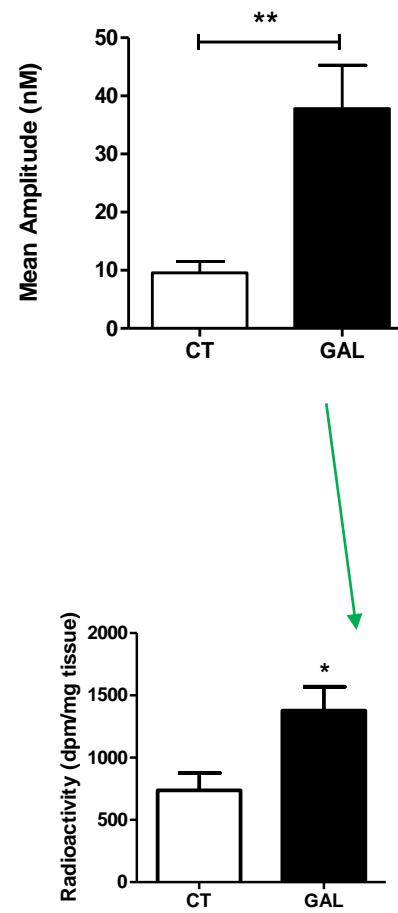
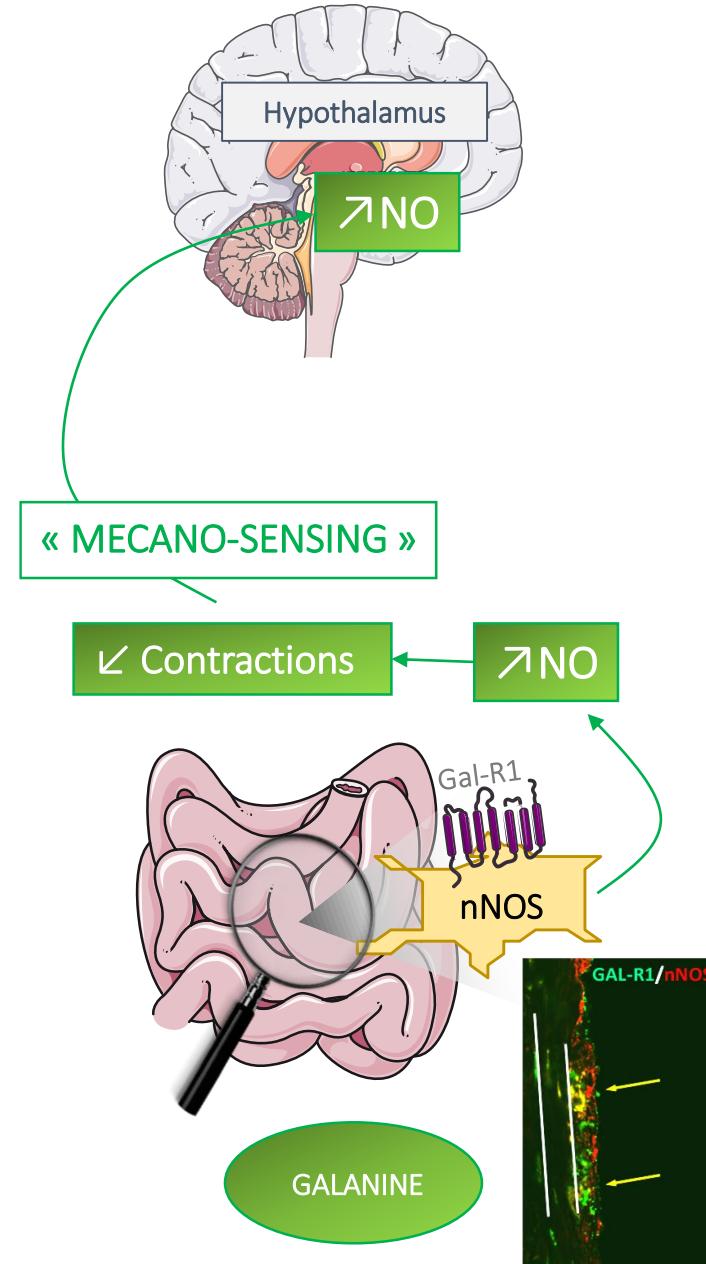
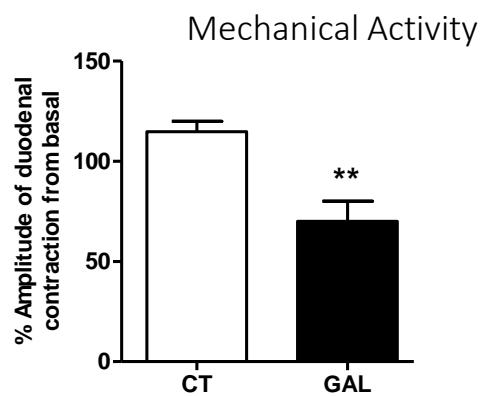
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Targeting the Enteric Nervous System to Treat Metabolic Disorders? "Enterosynes" as Therapeutic Gut Factors

Claude Knauf^{a,b} Anne Abot^{a,b} Eve Wemelle^{a,b} Patrice D. Canj^{b,c}

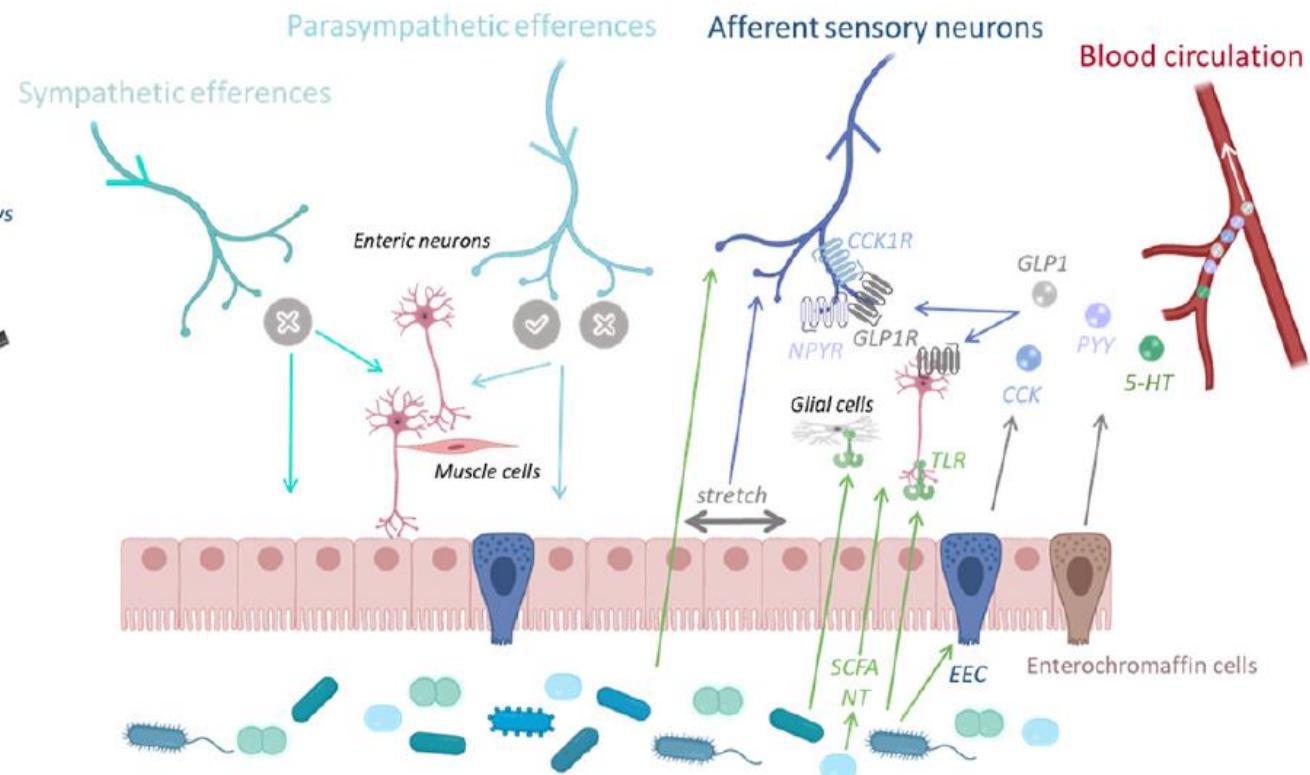
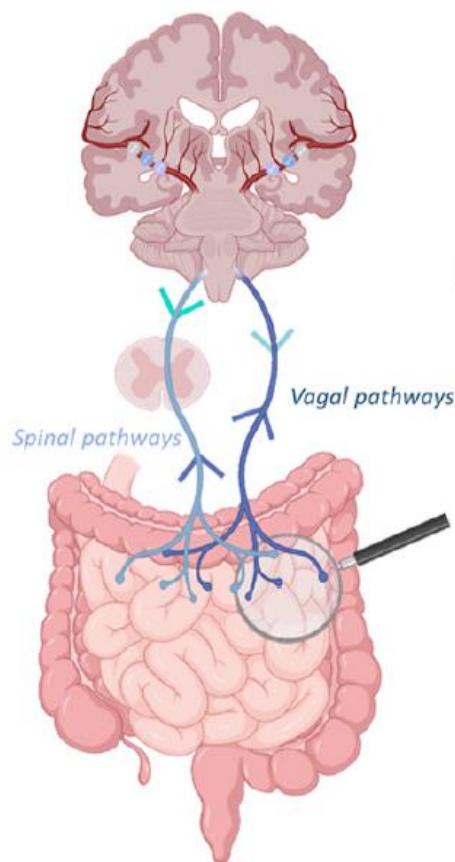




Interactions between the microbiota and enteric nervous system during gut-brain disorders

Steven Fried ^{a,b}, Eve Wemelle ^{a,b}, Patrice D. Cani ^{b,c}, Claude Knauf ^{a,b,*}

Neuropharmacology 197 (2021) 108721



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