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读书报告

报告人：郑文佳

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SCIENTIFIC REPORTS

OPEN

Ghrelin Facilitates GLUT2-, SGLT1- and SGLT2-mediated Intestinal Glucose Transport in Goldfish (*Carassius auratus*)

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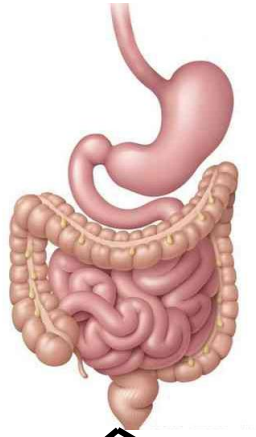
背景

Classical Glucoregulatory Hormones

Insulin

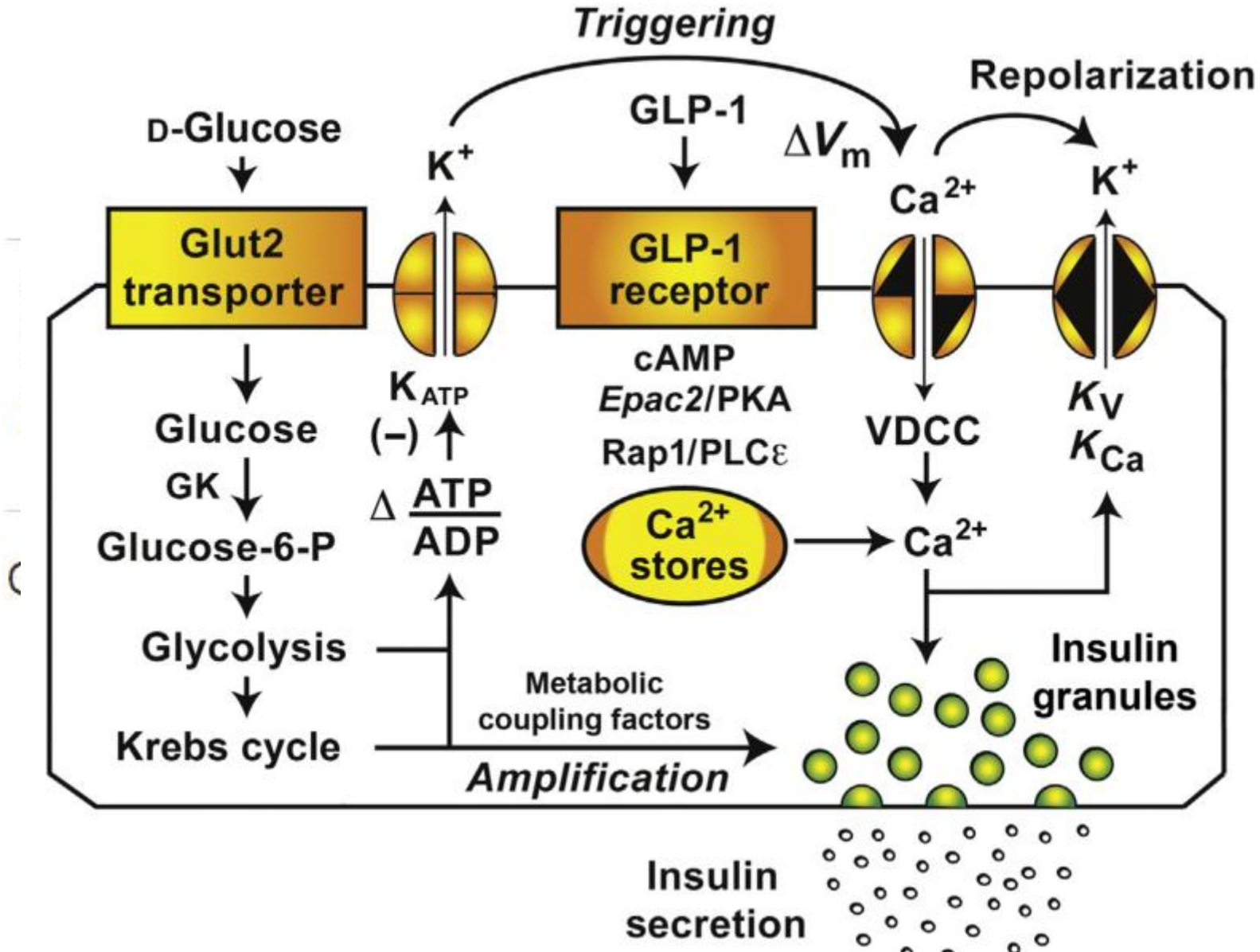
Glucagon



GLP-1

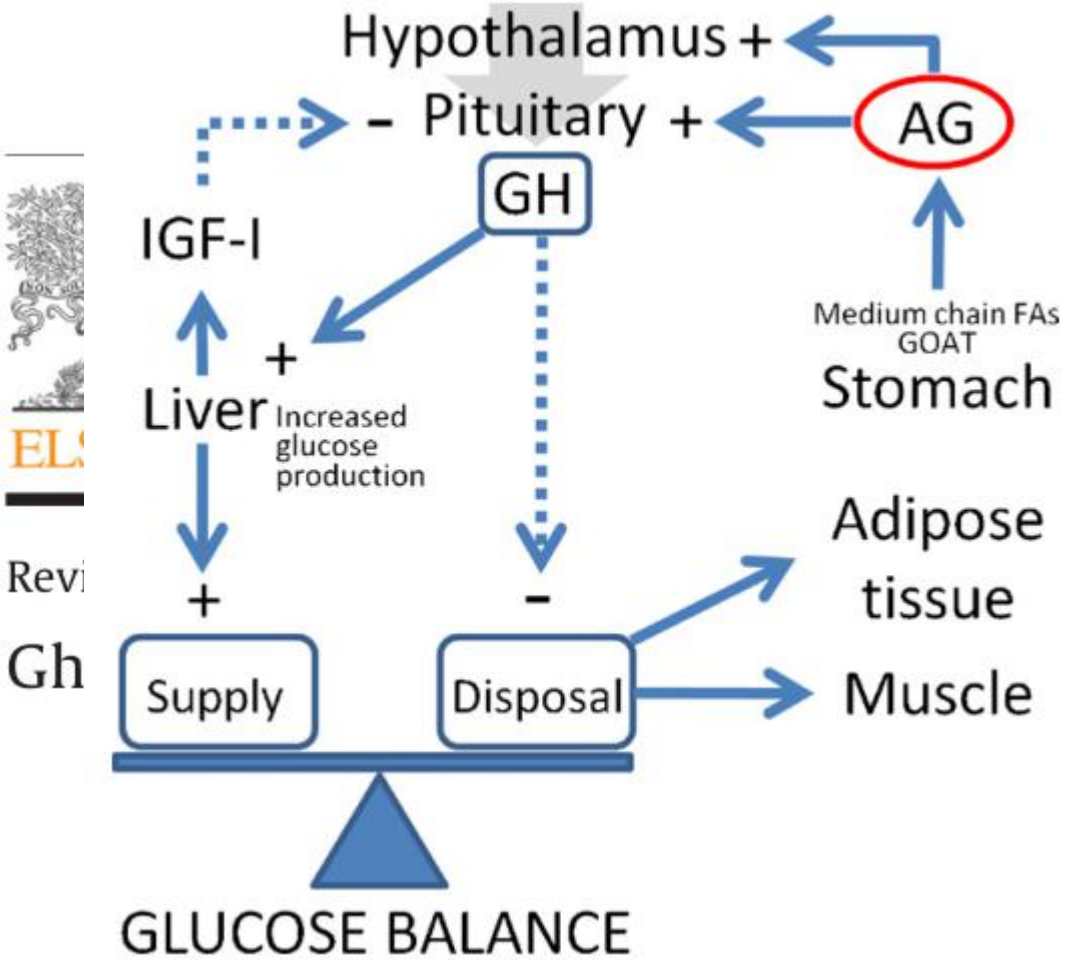
GIP

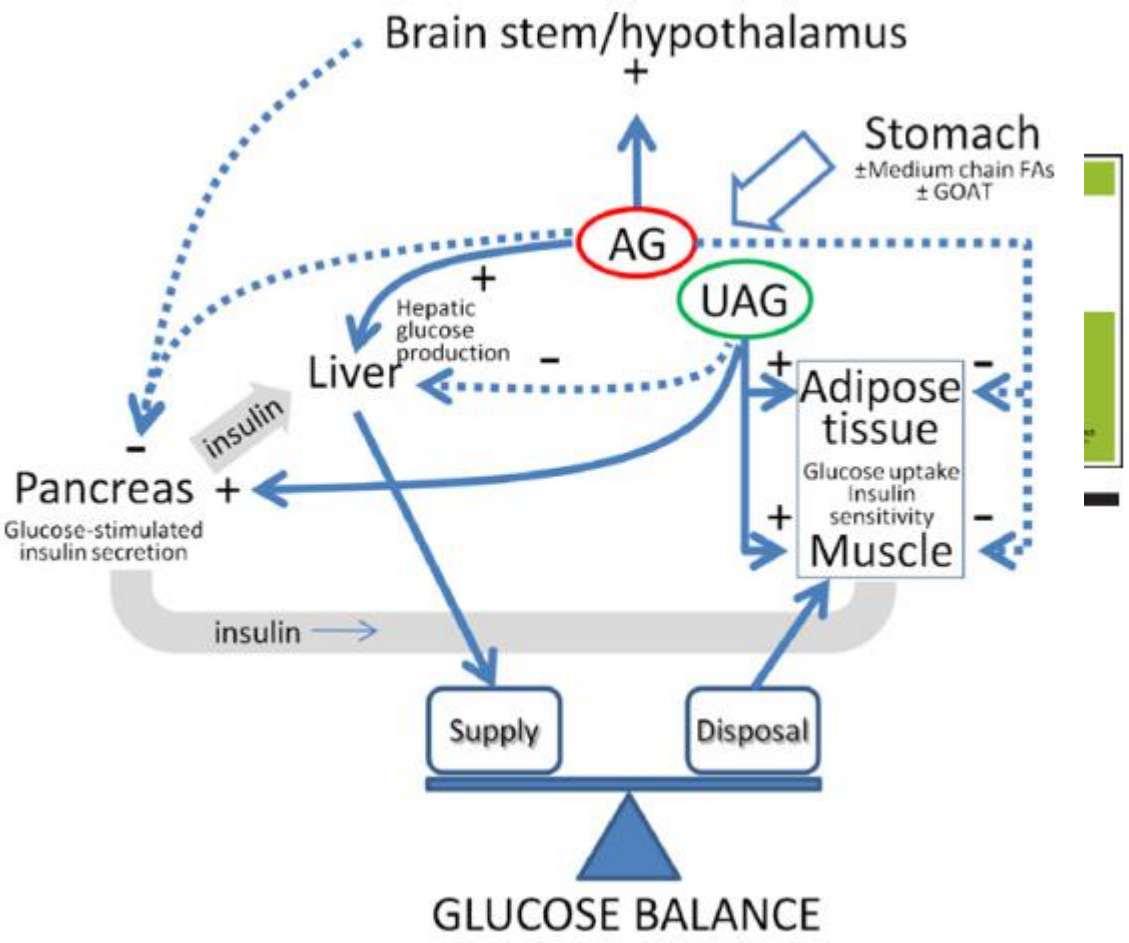
背景


Triggering
Repolarization
D-Glucose
GLP-1
ΔV_m
K^+
Ca^{2+}
K^+
Glut2 transporter
GLP-1 receptor
K_{ATP}
cAMP
Epac2/PKA
Rap1/PLCε
VDCC
K_V
K_{Ca}
Glucose
(–)
GK
Glucose-6-P
Δ ATP/ADP
Ca^{2+} stores
Ca^{2+}
Glycolysis
Krebs cycle
Metabolic coupling factors
Amplification
Insulin granules
Insulin secretion

背景

Ghrelin and glucose homeostasis





背景

Ghrelin and glucose homeostasis

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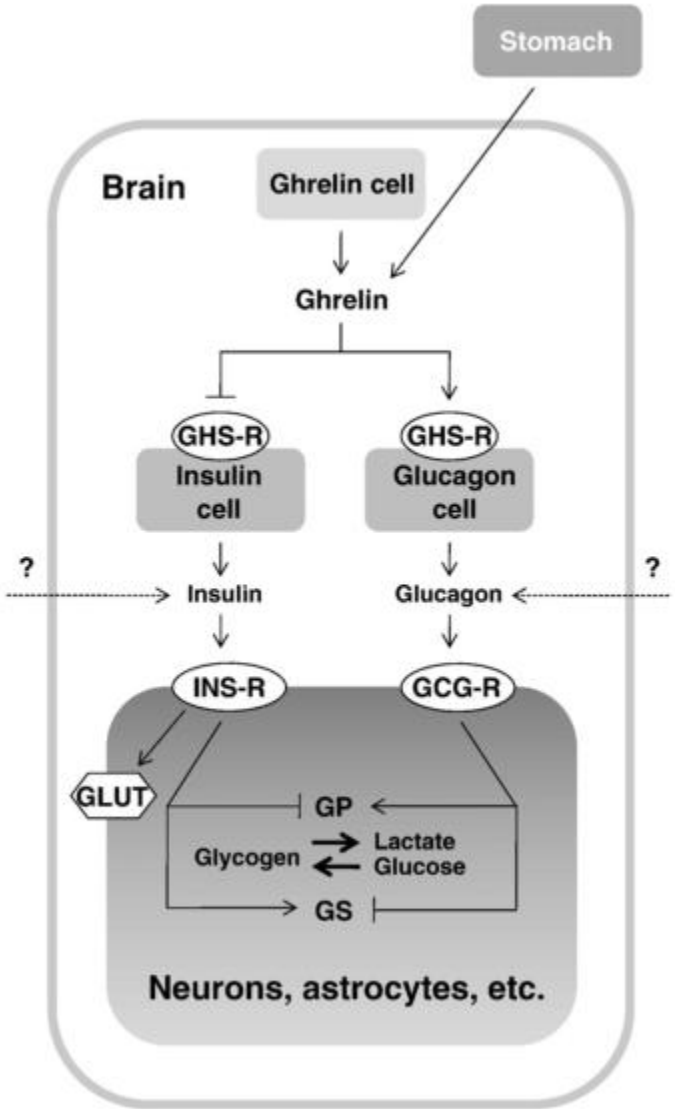
Comparative ology, Part A

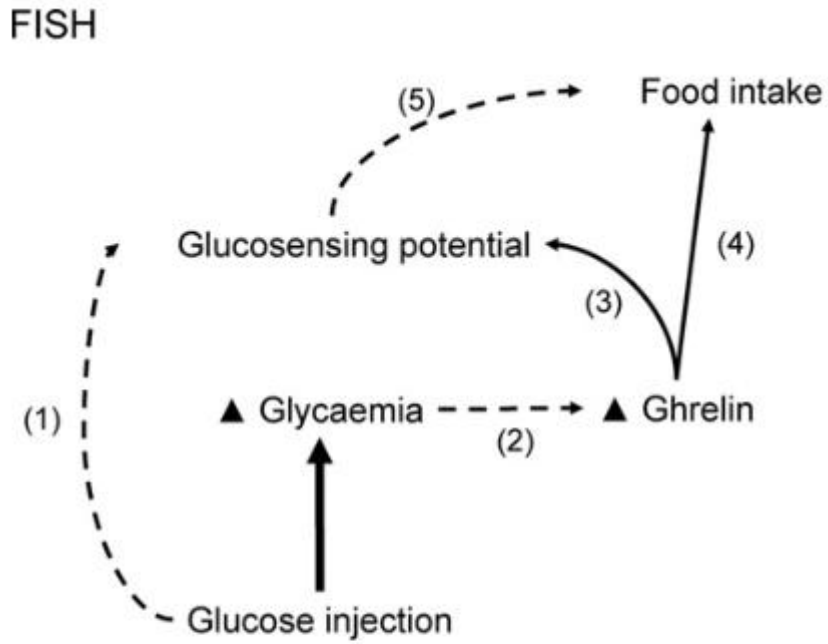
journal te/cbpa



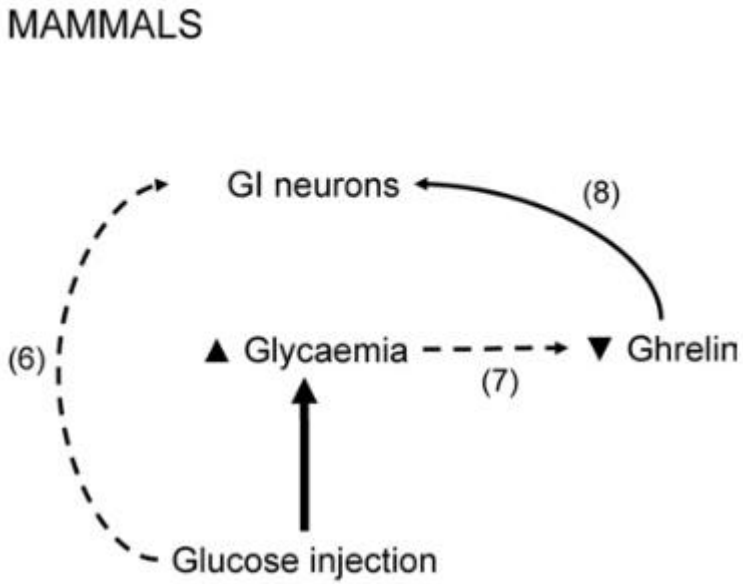
Ghrelin affects carbohydrate- insulin inhibition and glucagon stimulation in the z in

背景

Ghrelin and glucose homeostasis



(1) Polakof et al. 2007
(2) Riley et al. 2009
(3) This study
(4) Jonsson et al 2010
(5) Polakof et al 2008ab



(6) Levin 2005
(7) McCowen et al 2002
(8) Kohno et al 2003

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DOMESTIC ANIMAL ENDOCRINOLOGY

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背景

Ghrelin and glucose homeostasis

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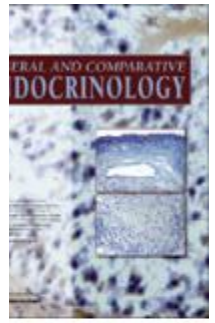
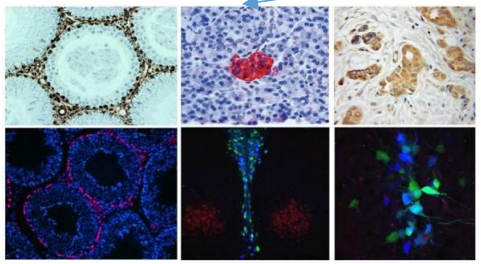
What is
of ghre

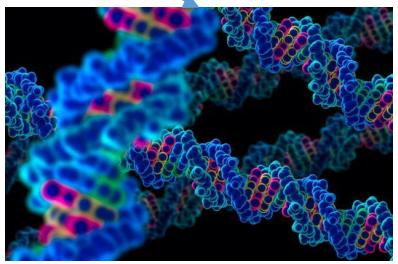


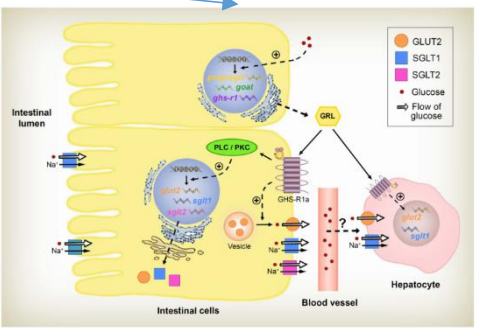
	Mammals	Aves	Amphibian	Fish
				
GH release	Stimulate /No effect	Stimulate	Stimulate	Stimulate /No effect?
Corticosteroids release	Stimulate /No effect	Stimulate	Stimulate	Stimulate
Feeding (ICV)	Stimulate /No effect	Inhibit	-	Stimulate /Inhibit
Feeding (IP, IV)	Stimulate /No effect	Inhibit /No effect	-	Stimulate /No effect
Plasma level during fasting	Increase (Fast response)	Increase (Fast response)	Increase (Slow response)	Increase (Slow response)
GI contraction	Contraction (In vivo)	Contraction (In vitro)	-	No effect (In vitro)
Drinking	Inhibit (IV, ICV)	Inhibit (ICV)	No effect (ICV)	Inhibit (IV, ICV)

Fig. 1. Comparisons of ghrelin's effects across vertebrates. Representative physiological effects of ghrelin and the results are summerized.

内容



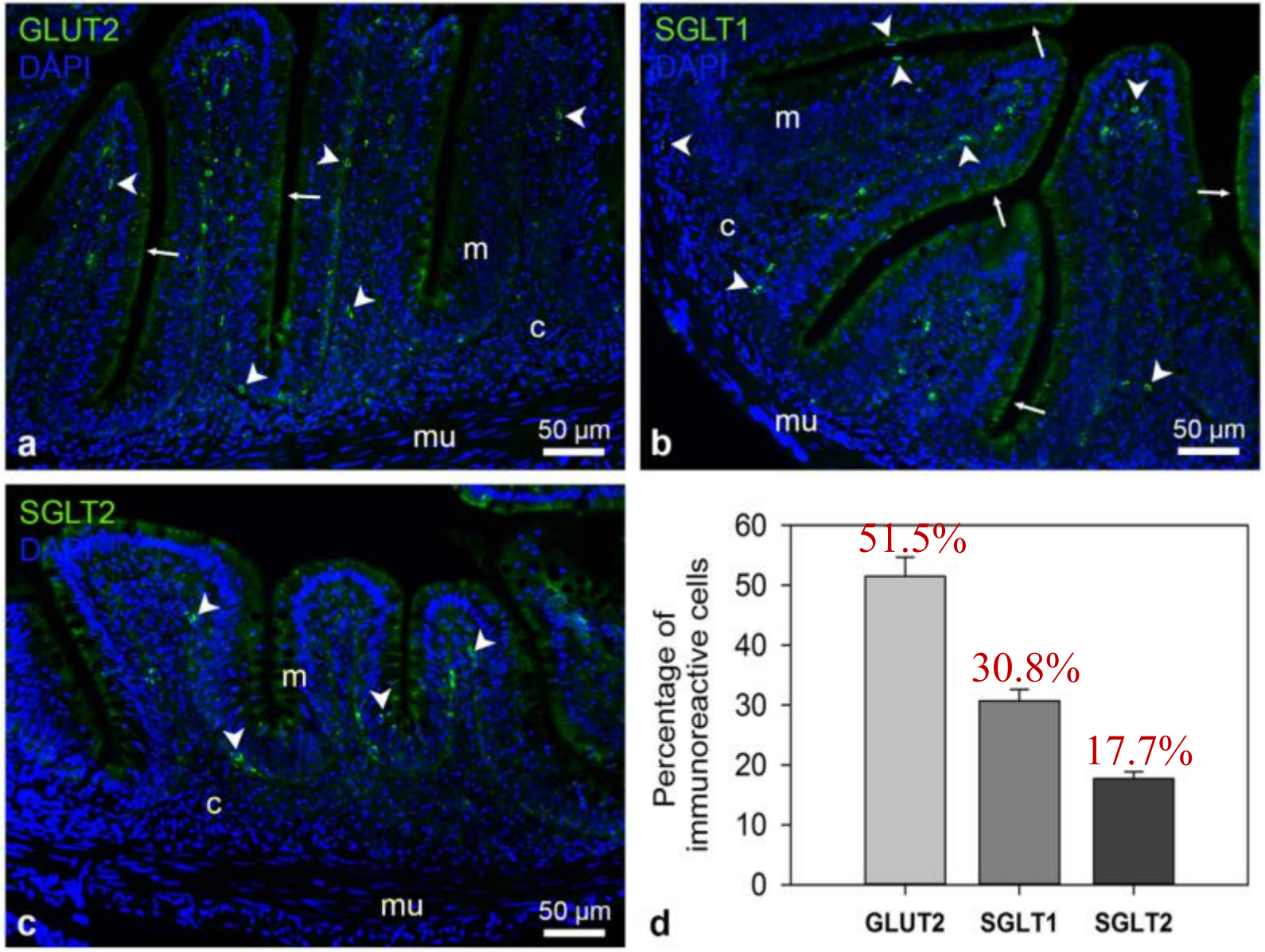




Immunohistochemistry **Gene** **Protein** **signal pathway**

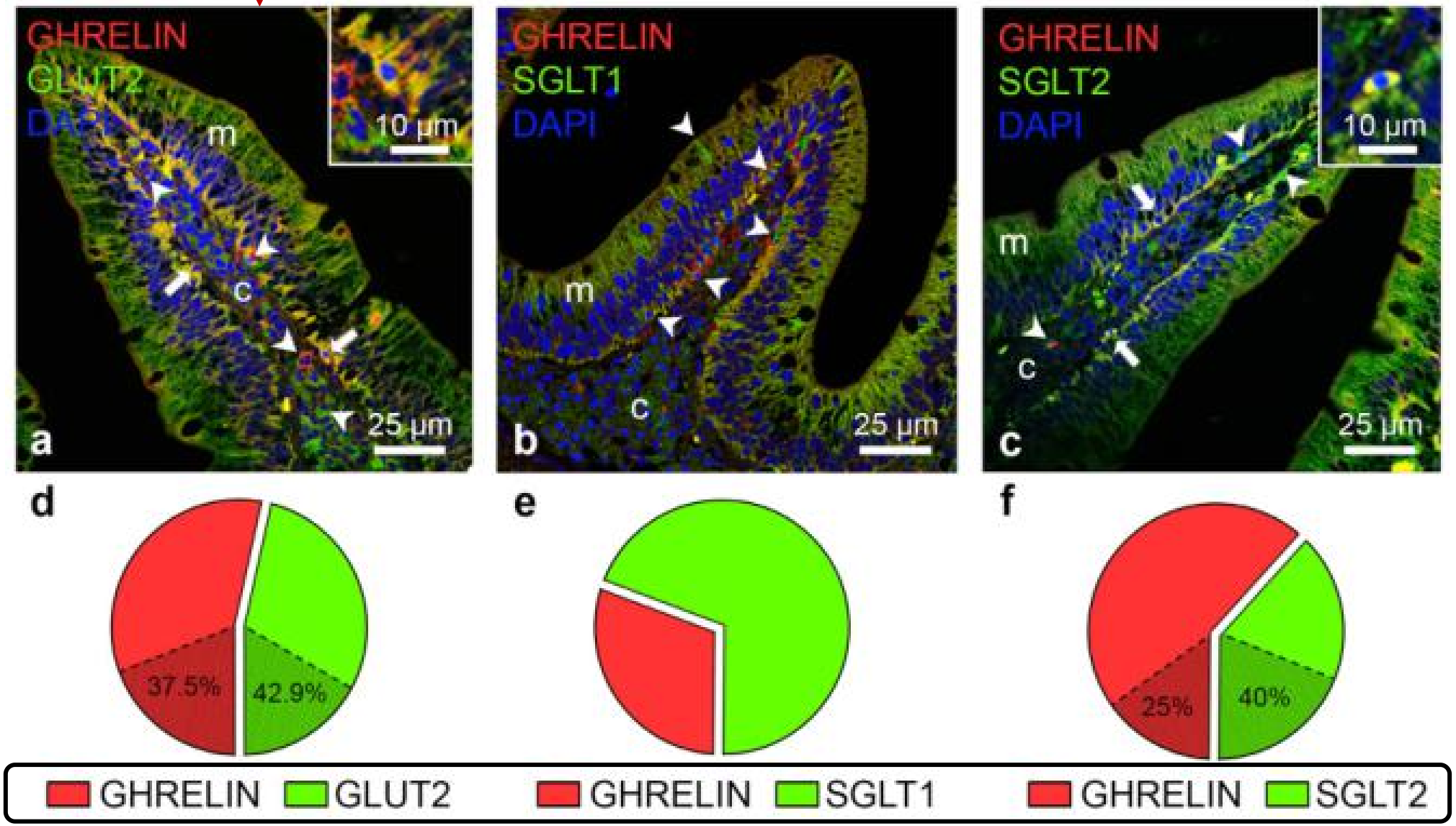
结果

1 The glucose transporters GLUT2, SGLT1 and SGLT2 are present in the goldfish intestine.



结果

2 Ghrelin, GOAT and GHS-R1a colocalize GLUT2, SGLT1 and/or SGLT2 in the goldfish intestine.



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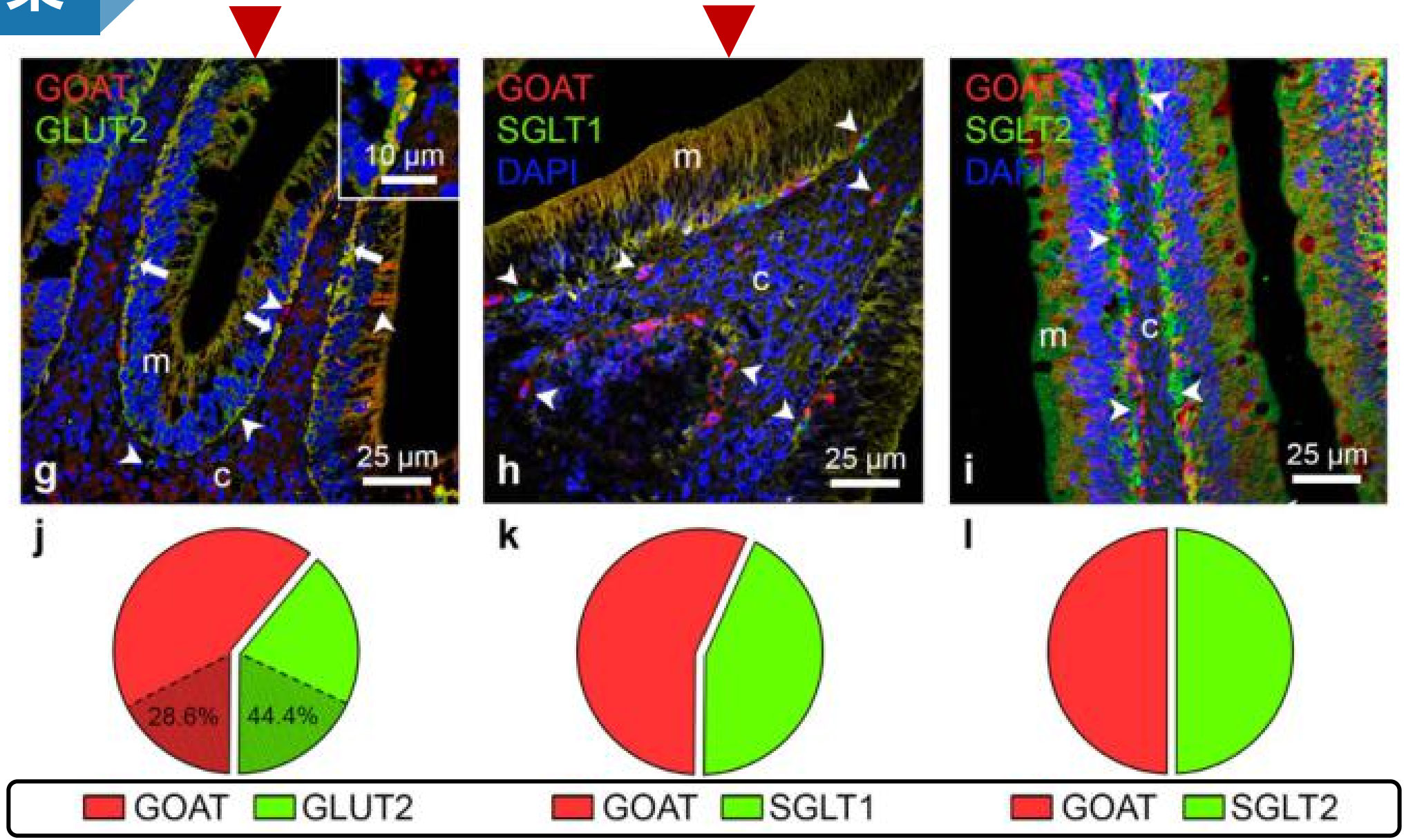

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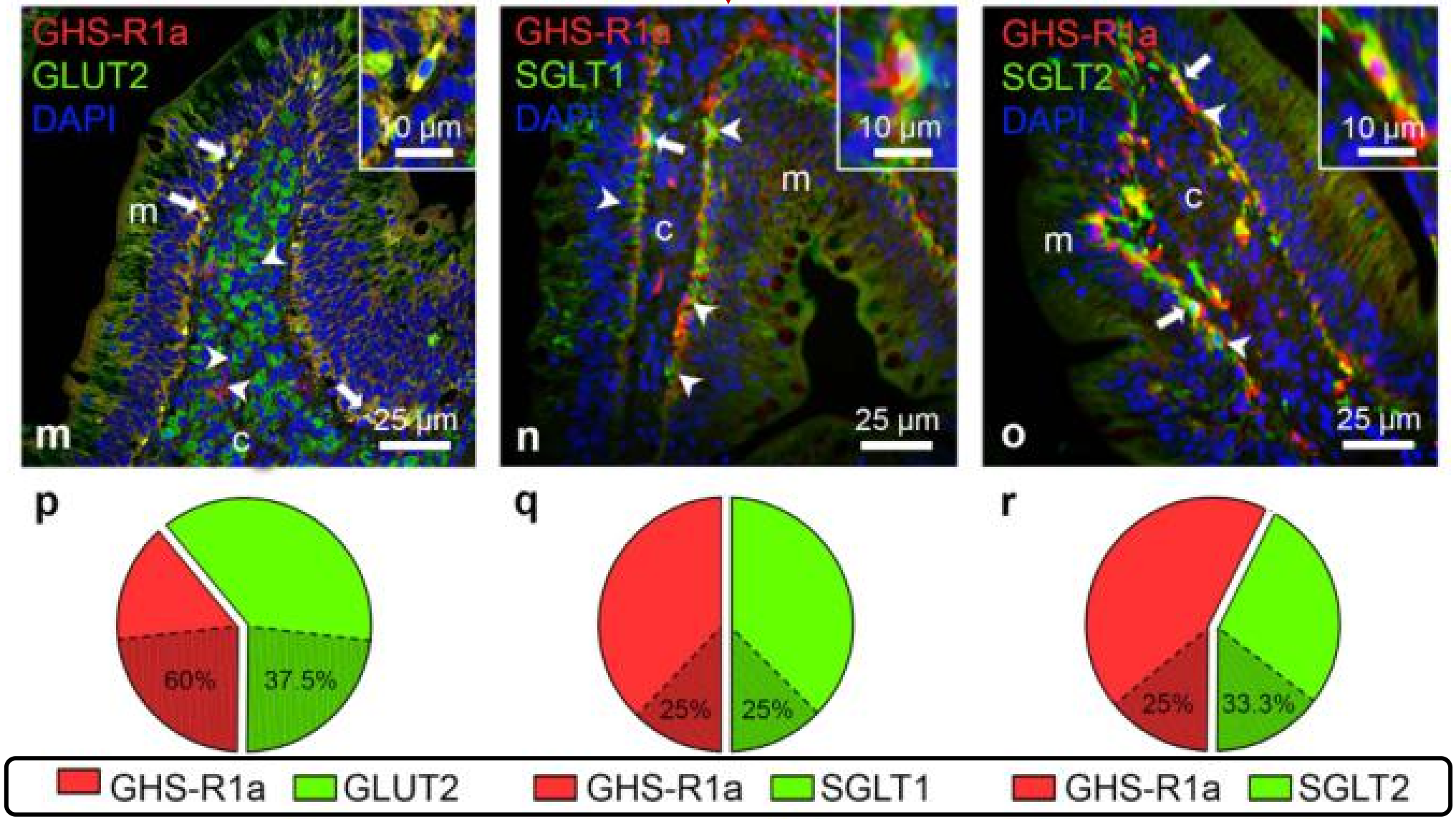
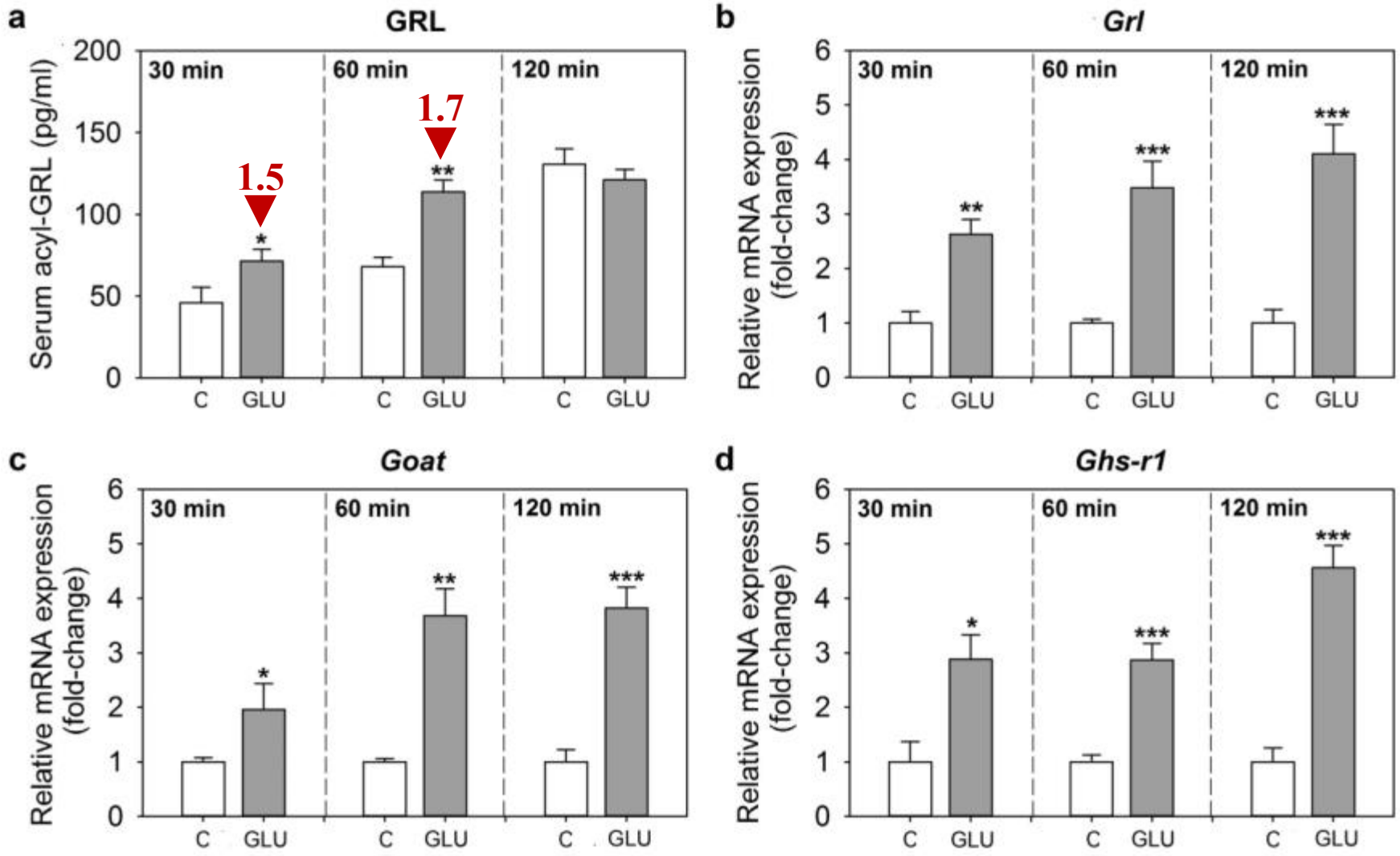


结果

3 Glucose upregulates the ghrelinergic system in goldfish intestine in vivo.

C: control

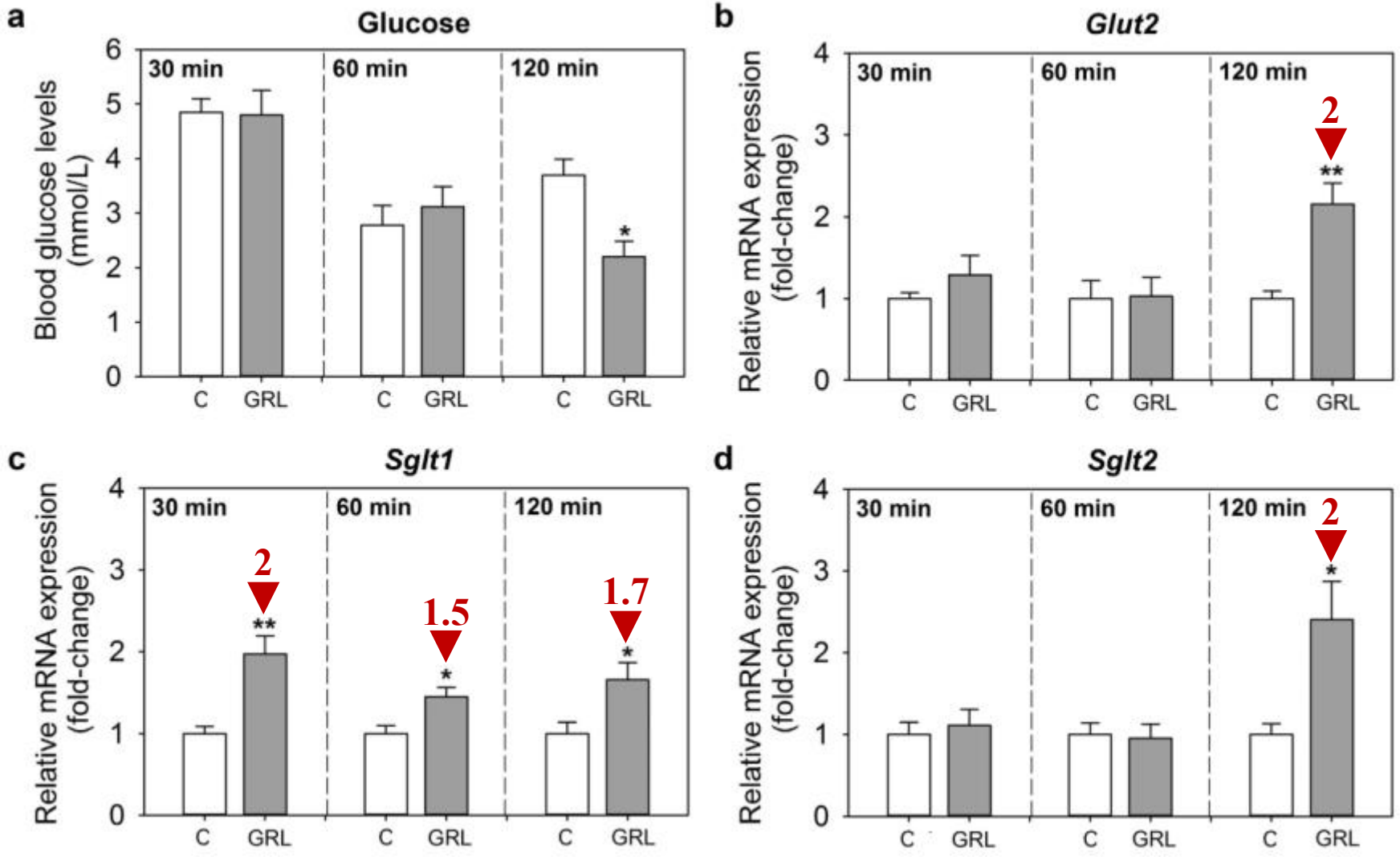
GLU: 2 mg/g bw



120 min

结果

4 Ghrelin increases GLUT2, SGLT1 and SGLT2 in goldfish intestine in vivo and in vitro.



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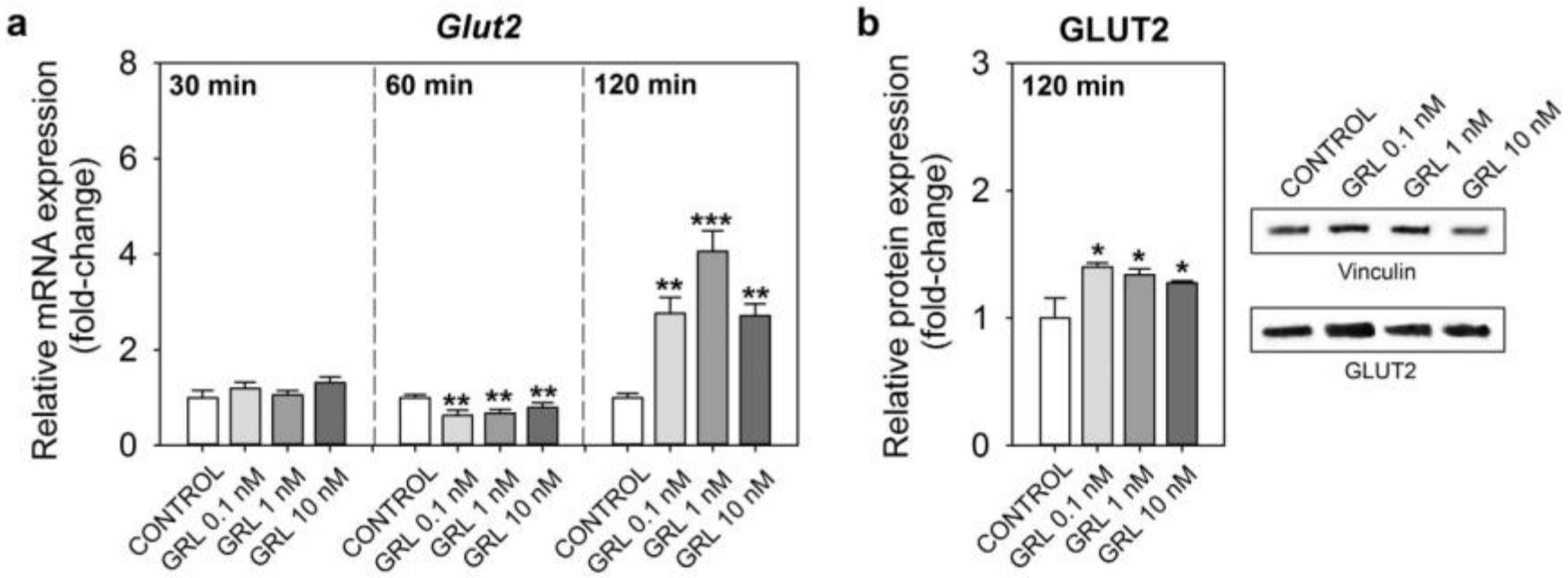

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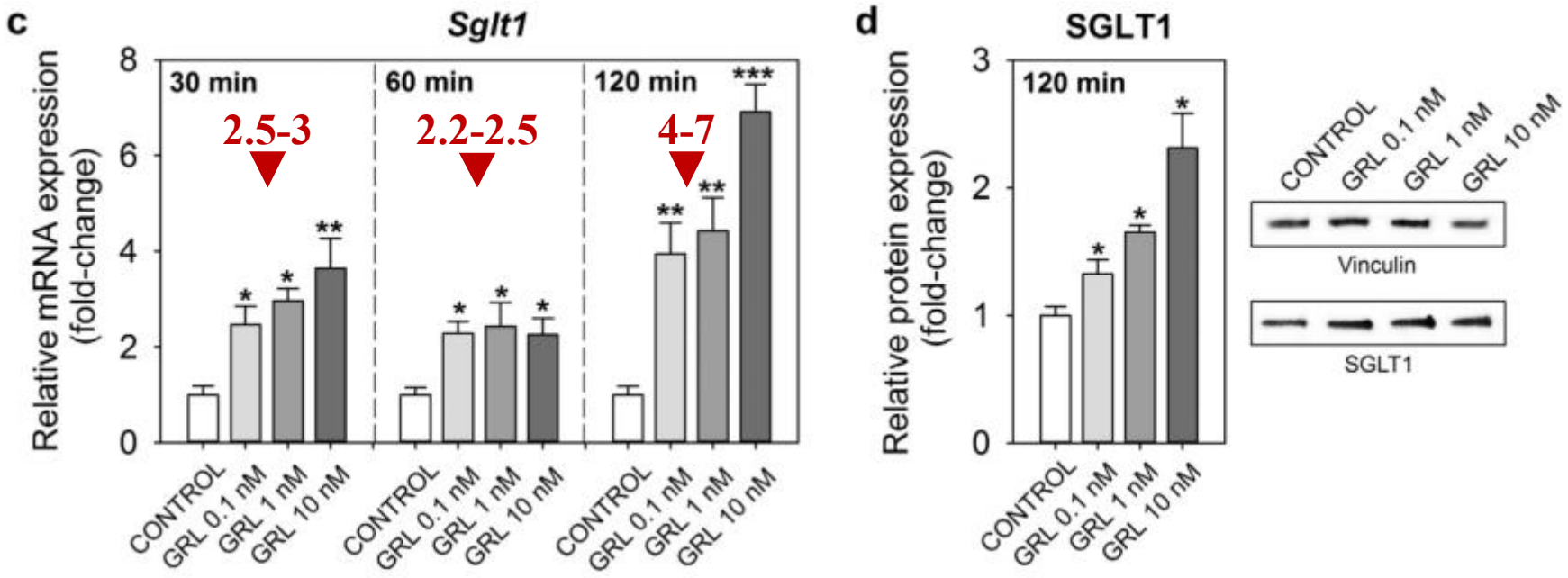

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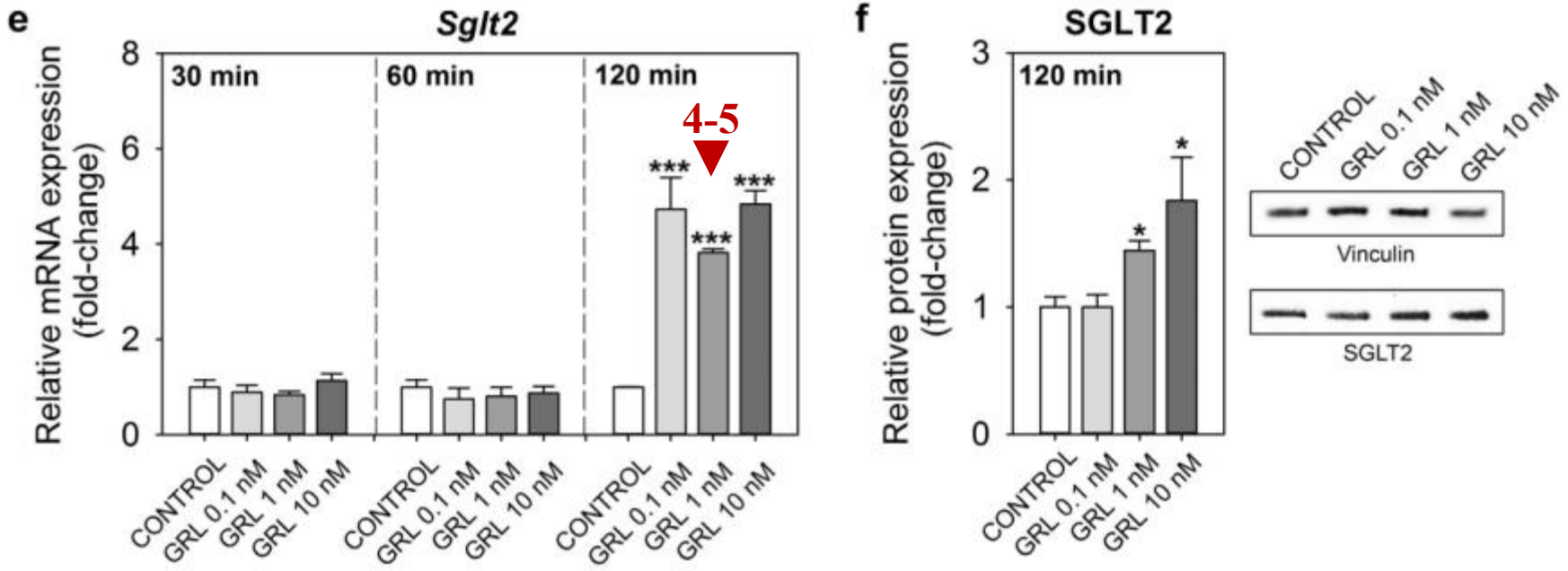
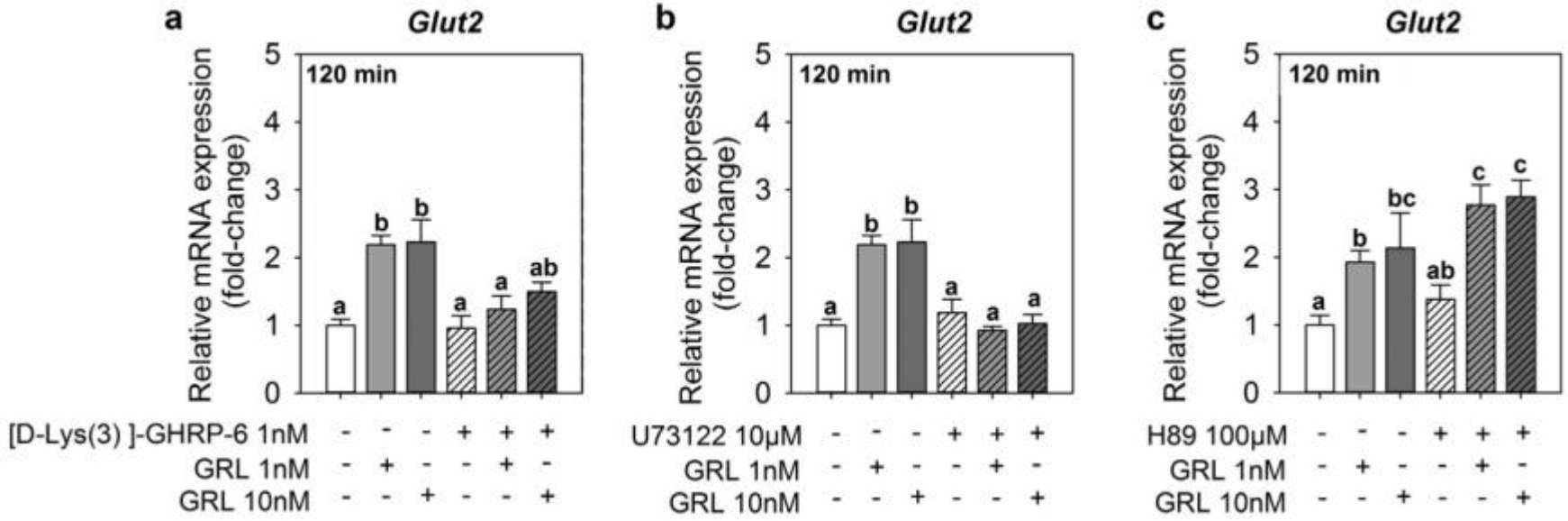


结果

5 GHS-R1a and the PLC/PKC intracellular signal transduction pathways are involved in the ghrelin-induced upregulation of glucose transporter expression.



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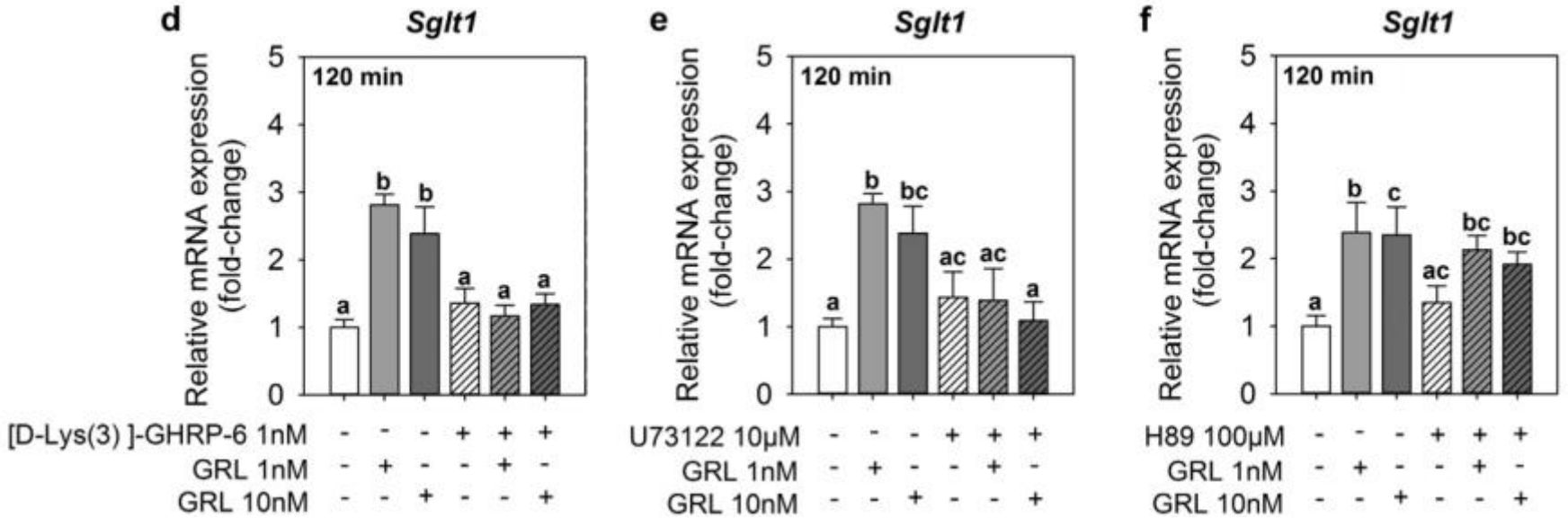

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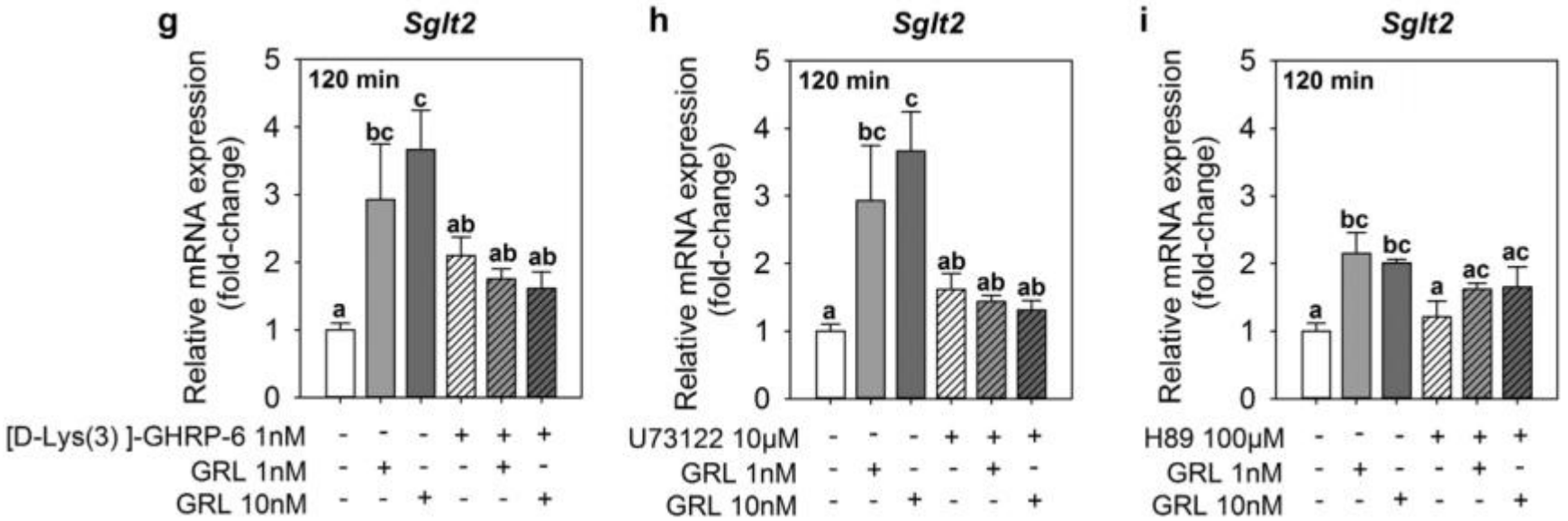
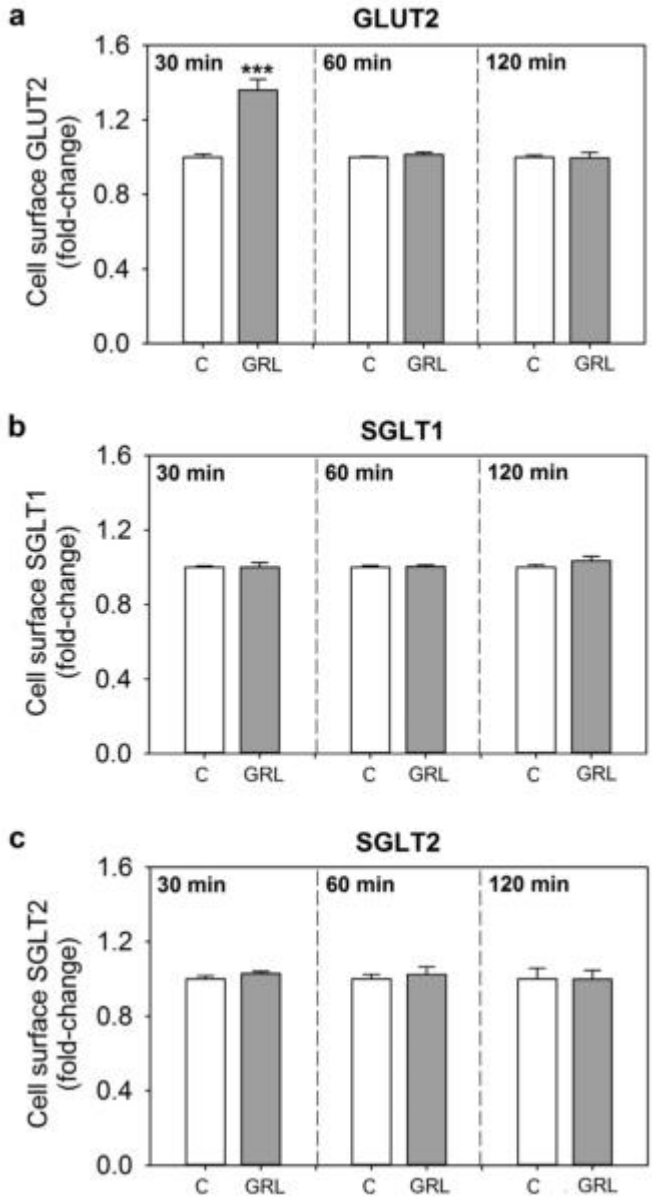


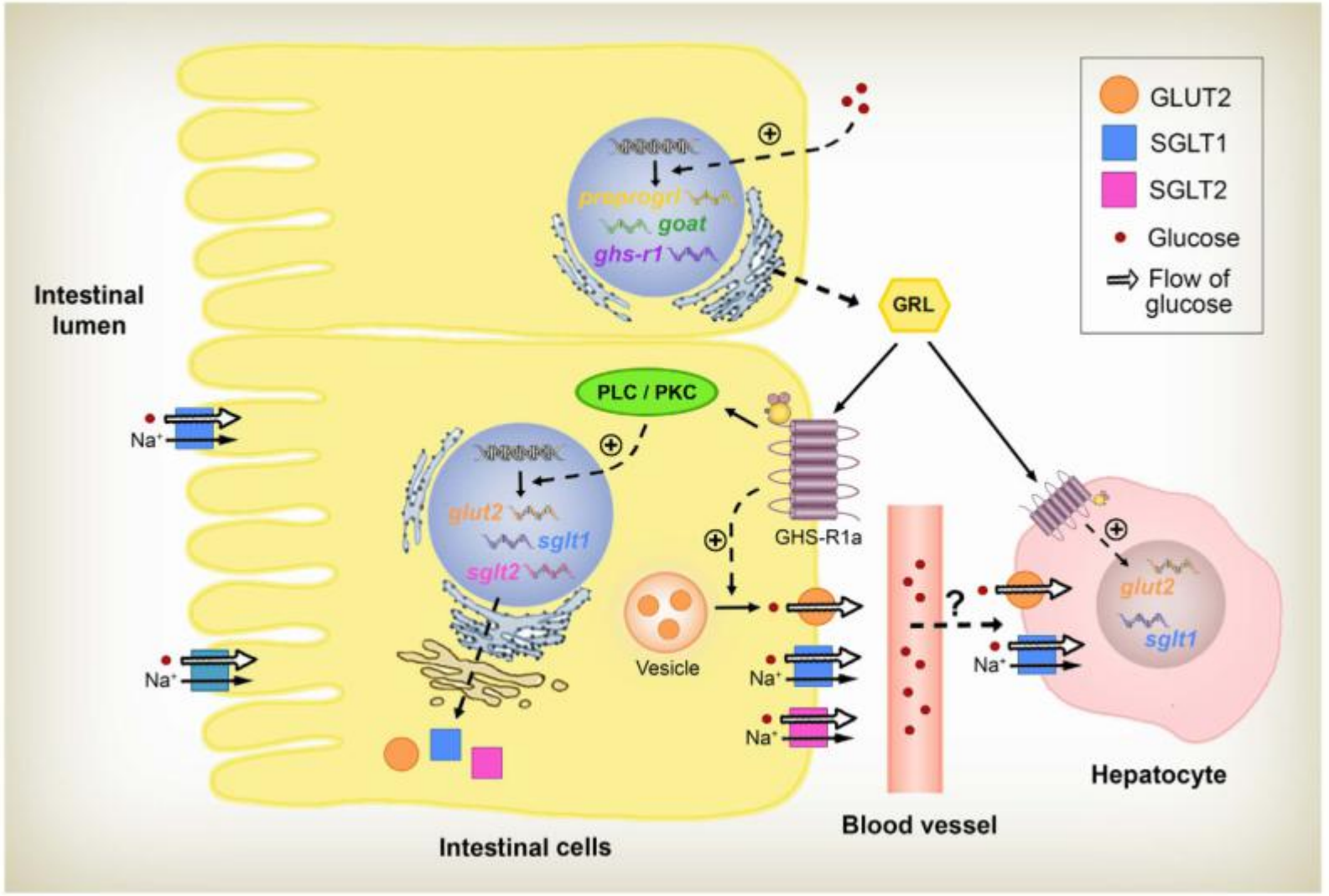
结果

6 Ghrelin stimulates the translocation of GLUT2, but not SGLT1 and SGLT2, into the plasma membrane of goldfish intestinal cells.



总结

Schematic representation of the proposed ghrelinergic regulation of glucose transport machinery in the intestinal cells of goldfish.



感悟

视野

角度

THANKS