

SNA INTEGRATIVO



MECANISMOS INTEGRADORES CENTRALES Y PERIFÉRICOS

Prof. Luis Gonzaga de Moura Junior

CROSSTALK

CROSSTALK

Viscero - visceral

Viscero - somático

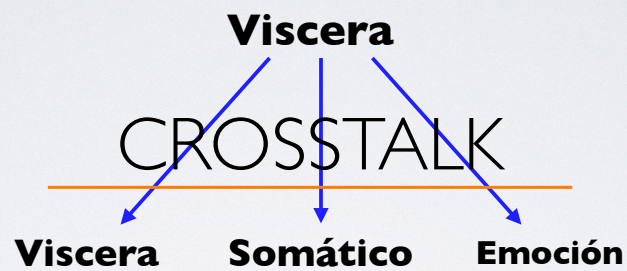
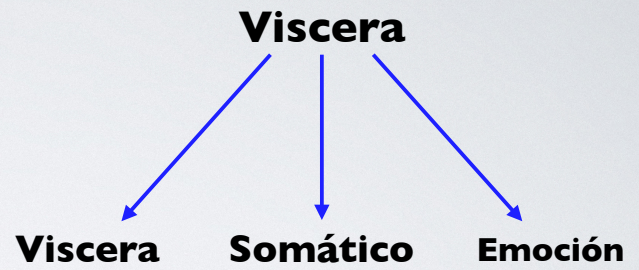
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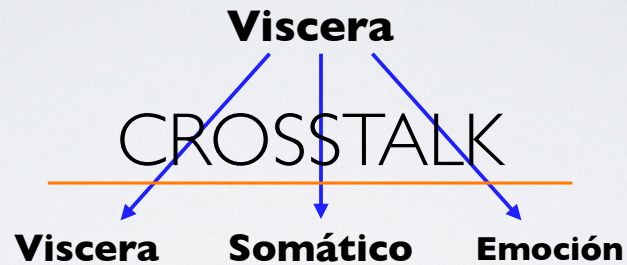
CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional





Vías de comunicación



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Asociación

Viscero - visceral

Viscero - somático

Viscero - emocional

Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Asociación

Viscero - visceral

Cardiovascular

Metabólico

Renal

Viscero - somático

Viscero - emocional

Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Asociación

Cardiovascular

Metabolico

Renal

Base patológica común

Asociación

Cardiovascular

Crosstalk

Metabolico

Renal

Base patológica común

Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Asociación

Cardiovascular

Crosstalk

Metabolico

Renal

Base patológica común



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity

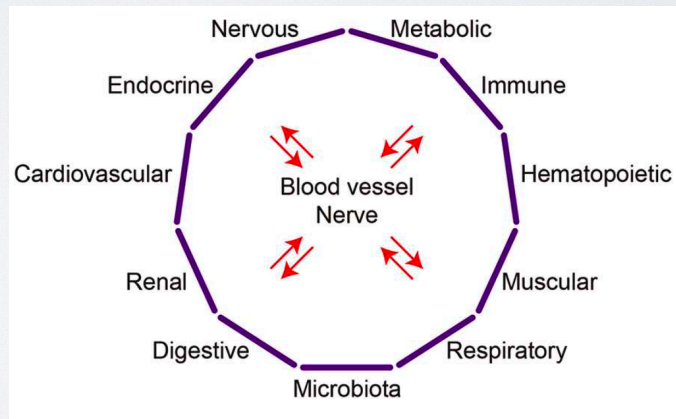


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

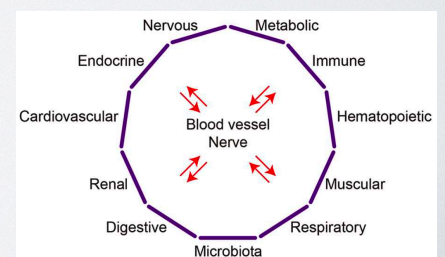
Viscero - emocional

Cardiovascular



Renal

Crosstalk





Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

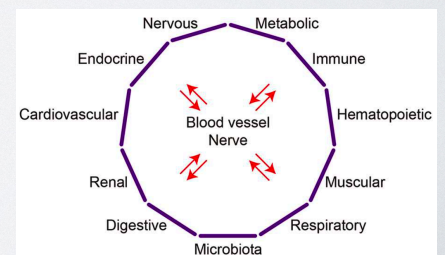
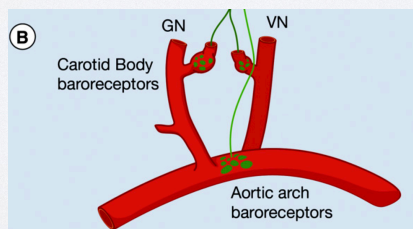
Viscero - emocional

Cardiovascular



Crosstalk

Renal



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

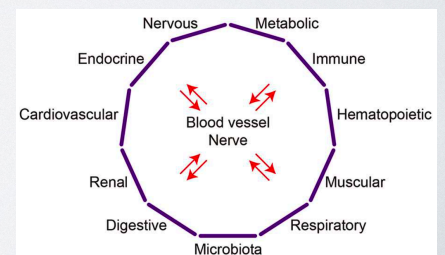
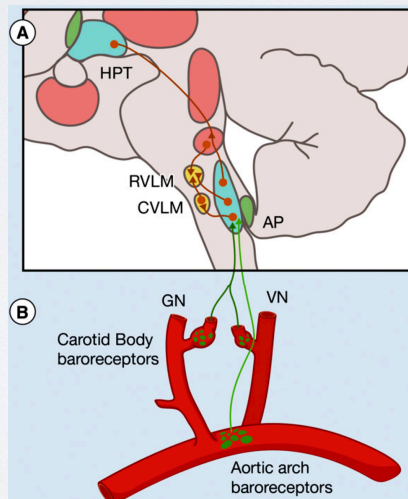
Viscero - emocional

Cardiovascular



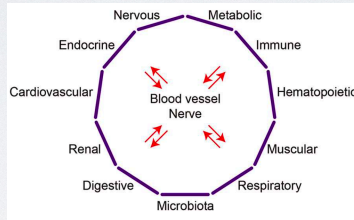
Crosstalk

Renal





Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



Síndrome
Metabólico

Crosstalk

Obesidad
central

Hiperactividad
simpática

Dislipidemia

Hipertensión

Resistencia a la
insulina

CROSSTALK

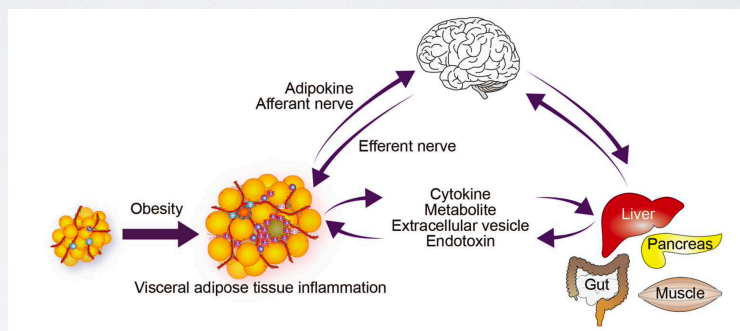
Viscero - visceral

Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

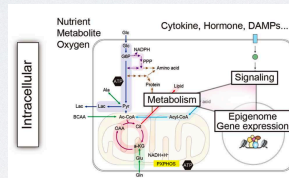
Viscero - somático

Viscero - emocional





Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

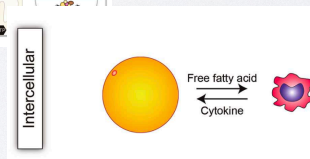
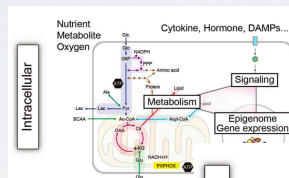
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Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity

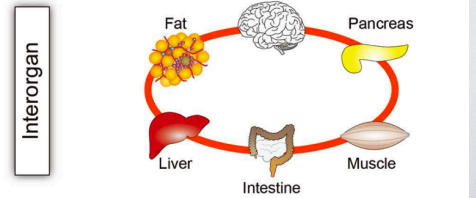
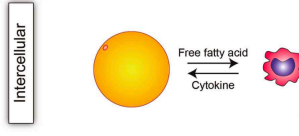
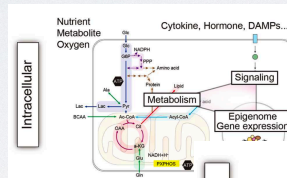


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity

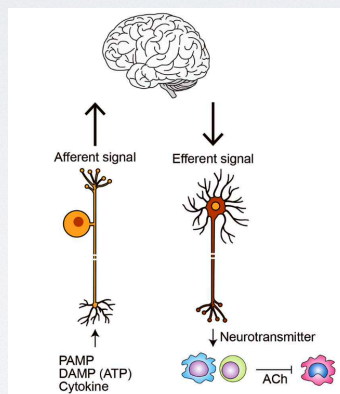


CROSSTALK

Viscero - visceral

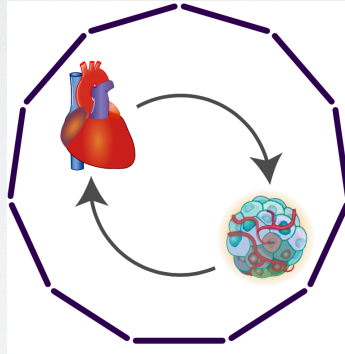
Viscero - somático

Viscero - emocional





Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity



CROSSTALK

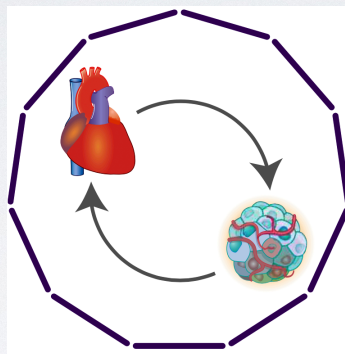
Viscero - visceral

Viscero - somático

Viscero - emocional



Organ System Crosstalk in Cardiometabolic Disease in the Age of Multimorbidity

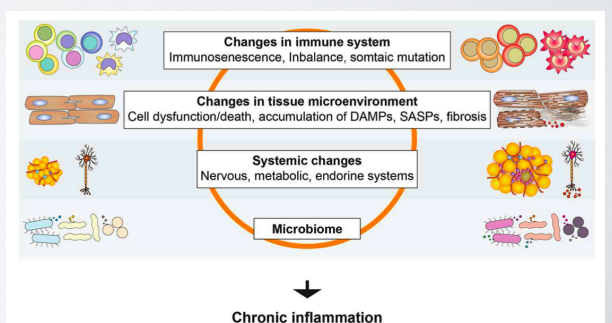


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional





Pancreas-Brain Crosstalk

Battuvshin Lkhagvasuren¹, Onanong Mee-inta², Zi-Wei Zhao², Tetsuya Hiramoto³, Damdindorj Boldbaatar¹ and Yu-Min Kuo^{2,4*}



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Pancreas-Brain Crosstalk

Battuvshin Lkhagvasuren¹, Onanong Mee-inta², Zi-Wei Zhao², Tetsuya Hiramoto³, Damdindorj Boldbaatar¹ and Yu-Min Kuo^{2,4*}

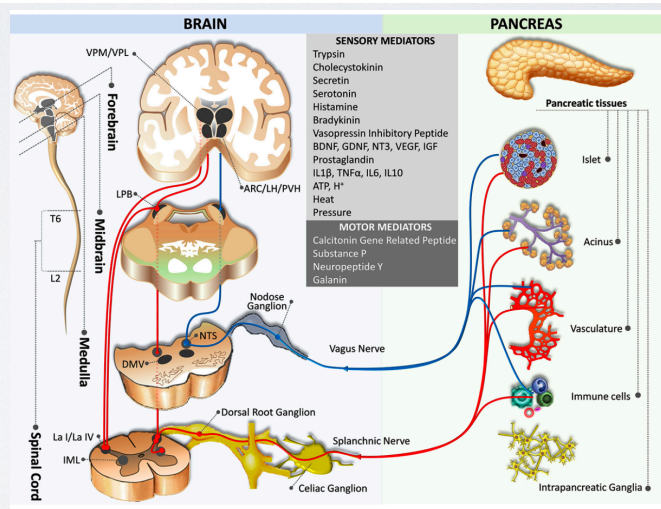


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

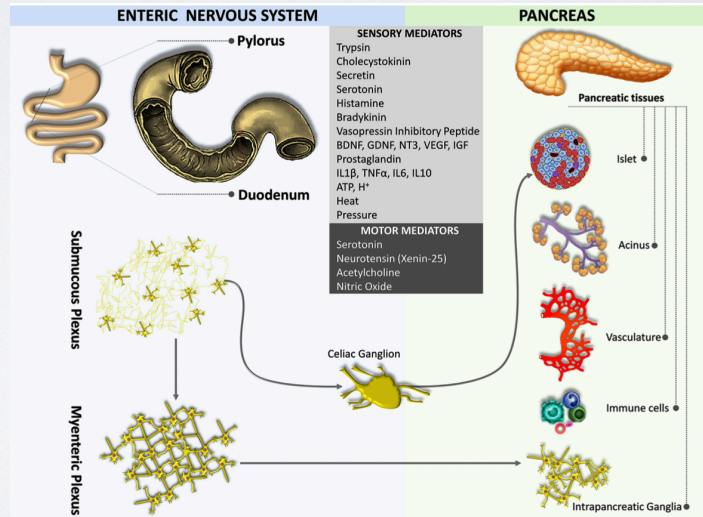
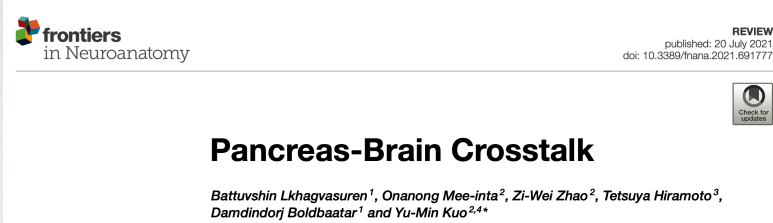


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

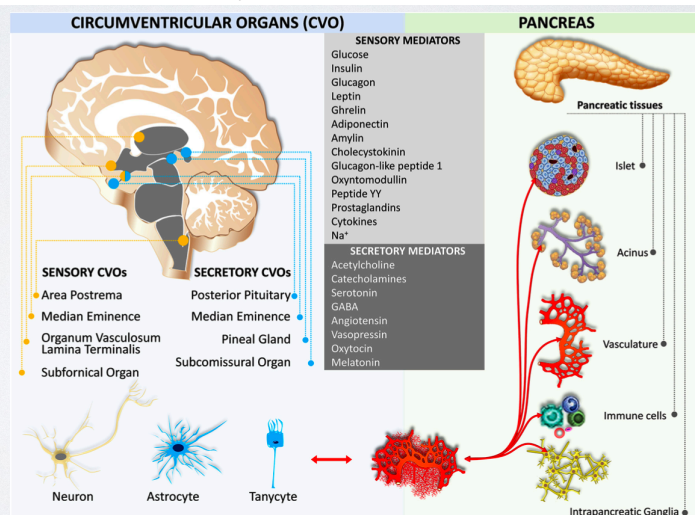
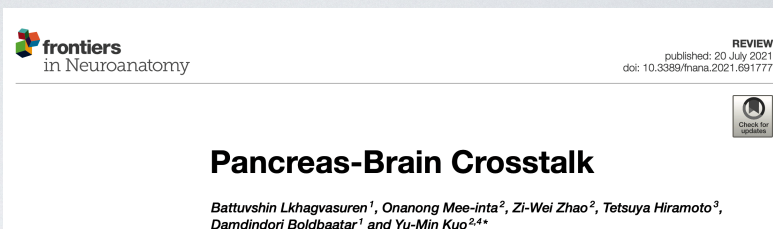


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional





CROSSTALK

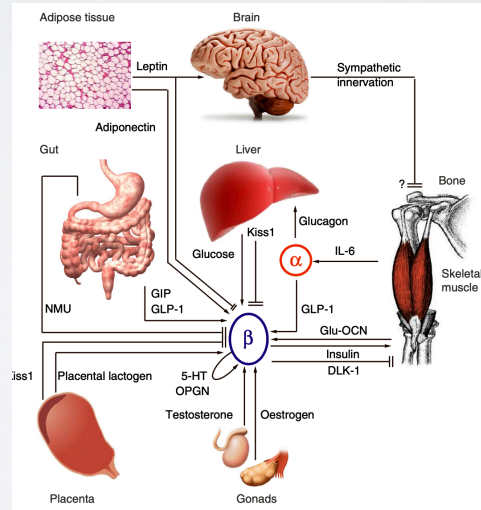
Viscero - visceral

Viscero - somático

Viscero - emocional

Pancreas-Brain Crosstalk

Battuvshin Lkhagvasuren¹, Onanong Mee-inta², Zi-Wei Zhao², Tetsuya Hiramoto³, Damdindorj Boldbaatar¹ and Yu-Min Kuo^{2,4*}



REVIEWS

The brain–joint axis in osteoarthritis: nerves, circadian clocks and beyond



CROSSTALK

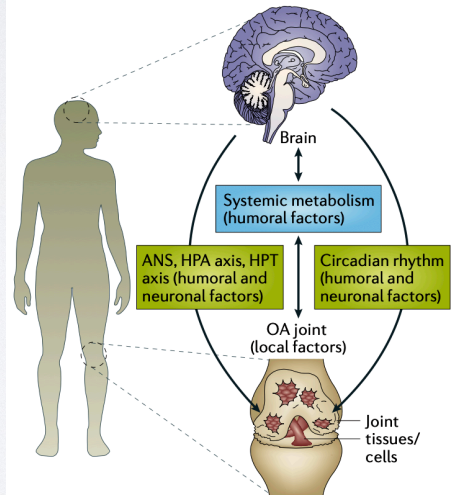
Viscero - visceral

Viscero - somático

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REVIEWS

The brain–joint axis in osteoarthritis:
nerves, circadian clocks and beyond



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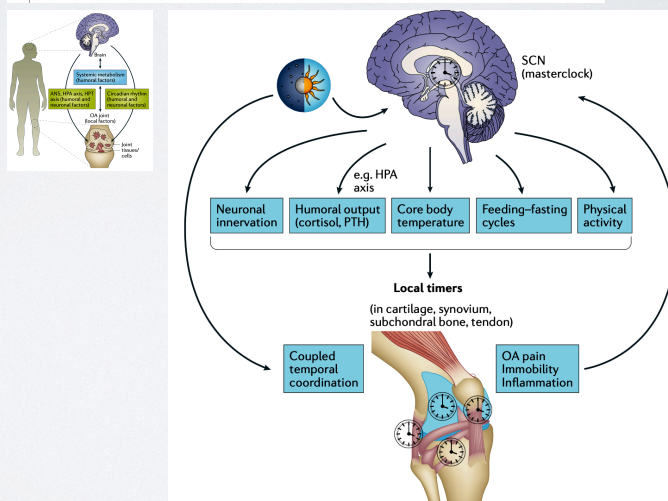
Viscero - visceral

Viscero - somático

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REVIEWS

The brain–joint axis in osteoarthritis:
nerves, circadian clocks and beyond



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

CROSSTALK

Neuroimmune crosstalk in the pathophysiology of hypertension

Viscero - visceral

Viscero - somático

Viscero - emocional

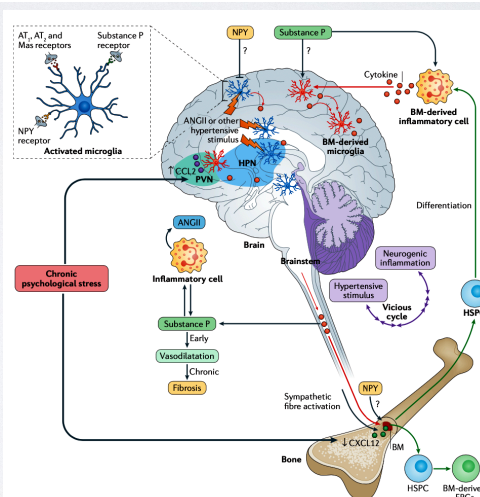
CROSSTALK

Neuroimmune crosstalk in the pathophysiology of hypertension

Viscero - visceral

Viscero - somático

Viscero - emocional



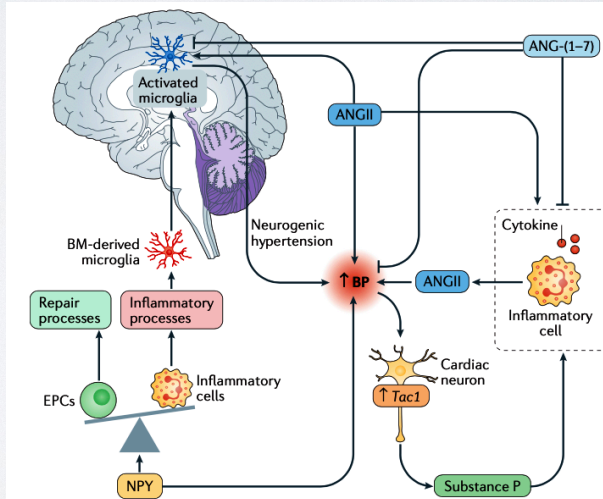
CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Neuroimmune crosstalk in the pathophysiology of hypertension



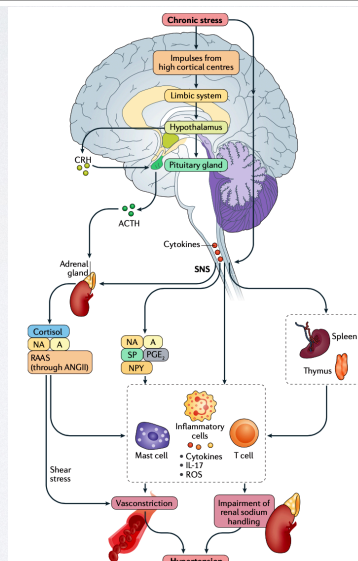
CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Neuroimmune crosstalk in the pathophysiology of hypertension



THE SLEEP-IMMUNE CROSSTALK IN HEALTH AND DISEASE

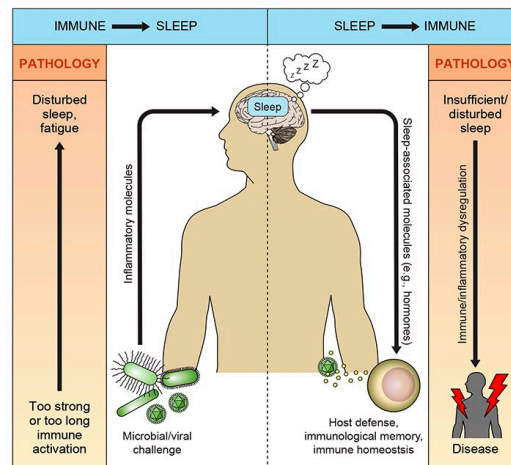
Luciana Besedovsky, Tanja Lange, and Monika Haack

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Physiological Reviews © 2019



Visceral Influences on Brain and Behavior

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

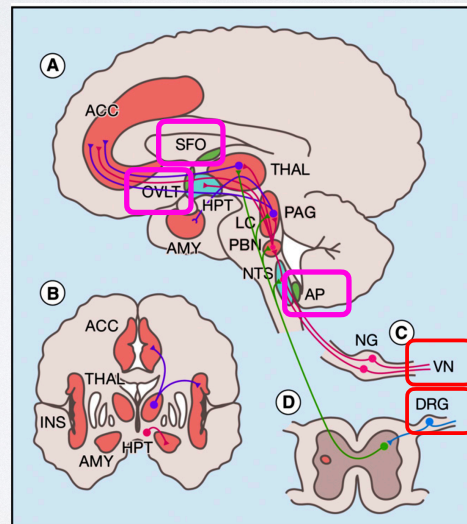
Visceral Influences on Brain and Behavior

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



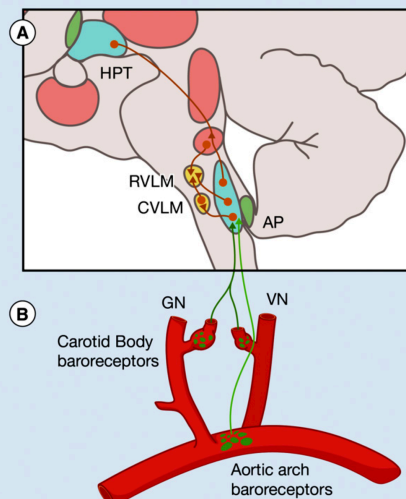
Visceral Influences on Brain and Behavior

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



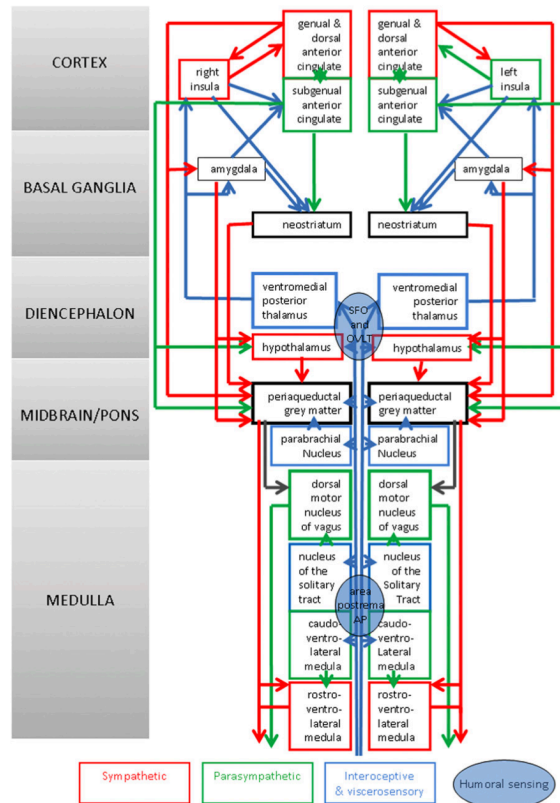
BAROREFLEX	
↑BP ⇒ ↓HR ⇌ vasodilatation	
INPUTS	
Baroreceptors	carotid bodies, aortic arch
Chemosensing	carotid bodies, HPT, AP
Renin Angiotensin	HPT, AP, NTS, RVLM
Cytokines	HPT, AP, NTS, RVLM
Descending (mental stress-induced suppression)	ACC, INS, AMY, PAG
OUTPUTS	
Sympathetic	CVLM inhibition of RVLM output to spinal sympathetic preganglionic neurons ⇒ vasodilatation
Parasympathetic	NTS to nucleus ambiguus of vagus nerve ⇒ ↓HR

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Baroreceptor Modulation of the Cardiovascular System, Pain, Consciousness, and Cognition

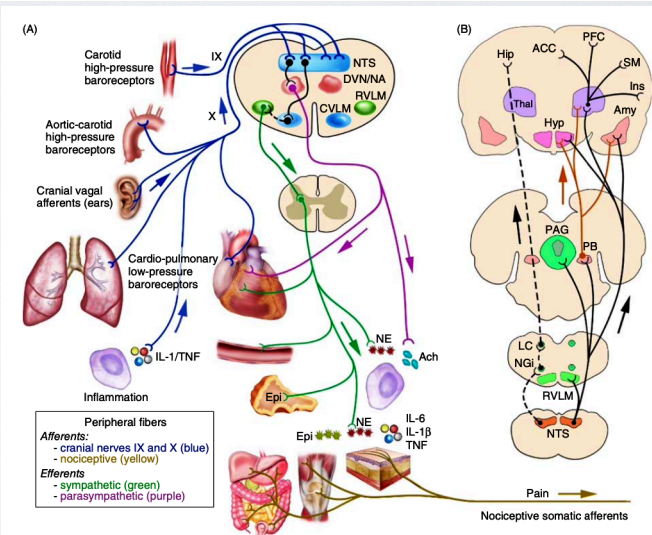
Heberto Suarez-Roca,^{*1} Negmeldeen Mamoun,² Martin I. Sigurdson,³ and William Maixner¹

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Baroreceptor Modulation of the Cardiovascular System, Pain, Consciousness, and Cognition

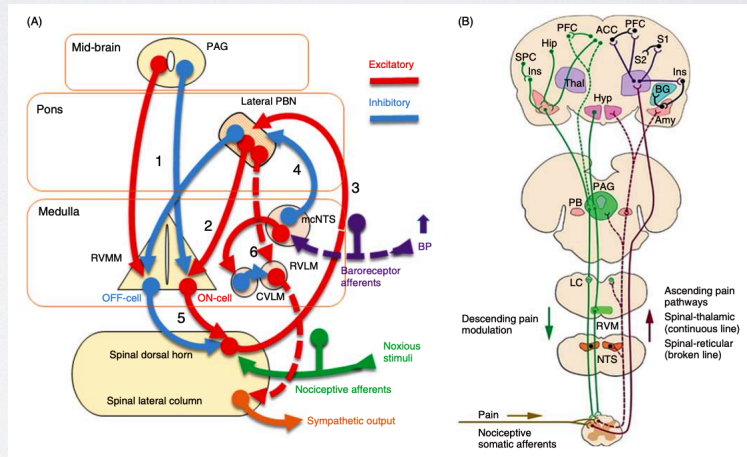
Heberto Suarez-Roca,^{*1} Negmeldeen Mamoun,² Martin I. Sigurdson,³ and William Maixner¹

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Autonomic nervous system and inflammation interaction in endometriosis-associated pain

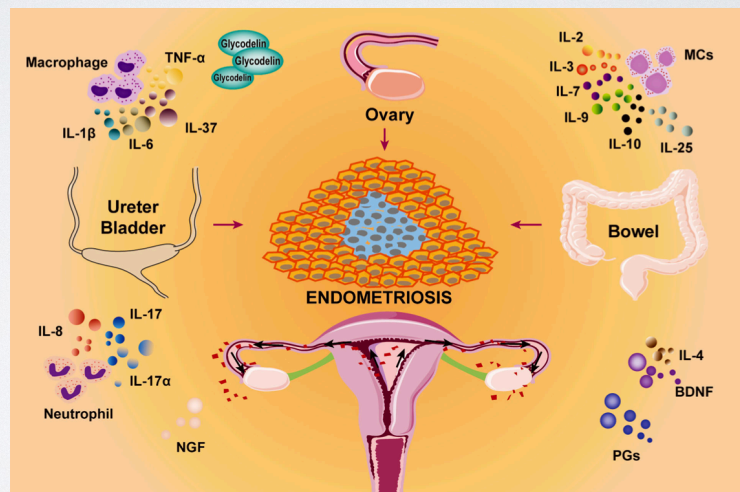
Yajing Wei^{1†}, Yanchun Liang^{1†}, Haishan Lin², Yujing Dai² and Shuzhong Yao^{1*}

CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Autonomic nervous system and inflammation interaction in endometriosis-associated pain

Yajing Wei^{1†}, Yanchun Liang^{1†}, Haishan Lin², Yujing Dai² and Shuzhong Yao^{1*}

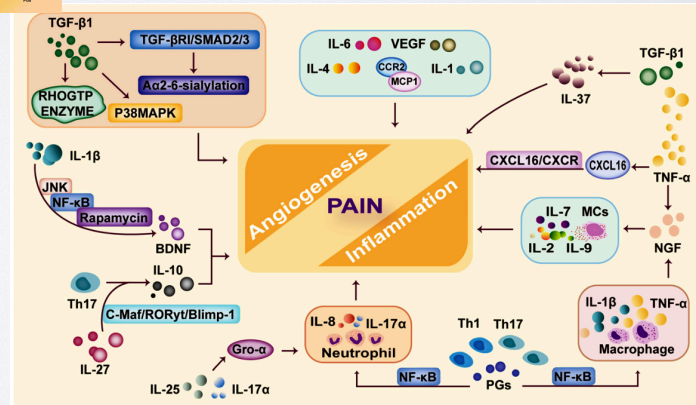


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



Visceral pain, mechanisms, and implications in musculoskeletal clinical practice

E.A. Pacheco-Carroza

Health Sciences Faculty, Universidad San Sebastián, General Lagos 1022 Valdivia, 56 2632500, Chile

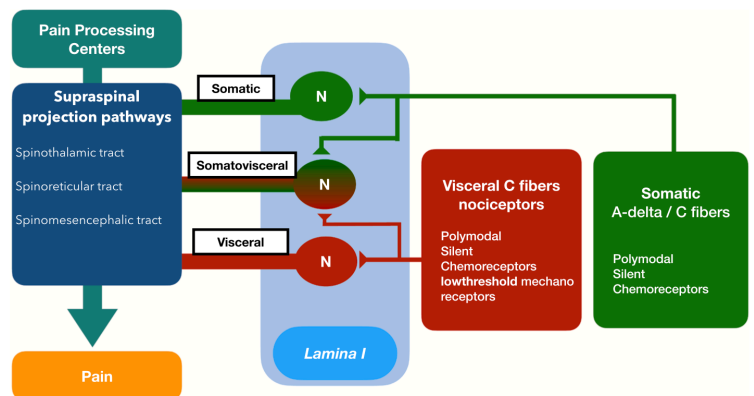


CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Contents lists available at [ScienceDirect](https://www.sciencedirect.com/journal/medical-hypotheses)

Medical Hypotheses

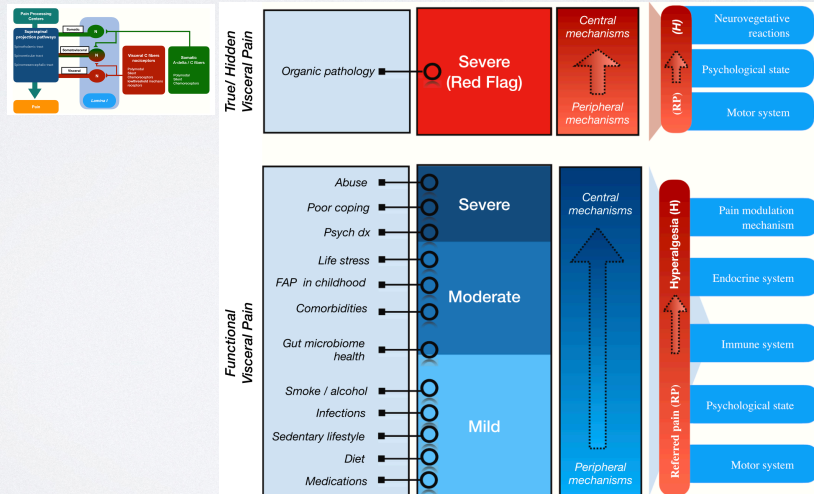
journal homepage: www.elsevier.com/locate/mehy

Check for updates

Visceral pain, mechanisms, and implications in musculoskeletal clinical practice

E.A. Pacheco-Carroza

Health Sciences Faculty, Universidad San Sebastián, General Lagos 1022 Valdivia, 56 2632500, Chile



CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional

Zhao et al. *Journal of Neuroinflammation* (2018) 15:339
<https://doi.org/10.1186/s12974-018-1382-3>

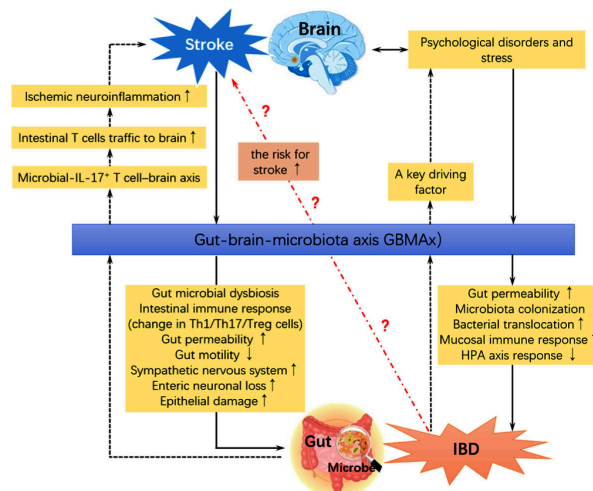
Journal of Neuroinflammation

REVIEW

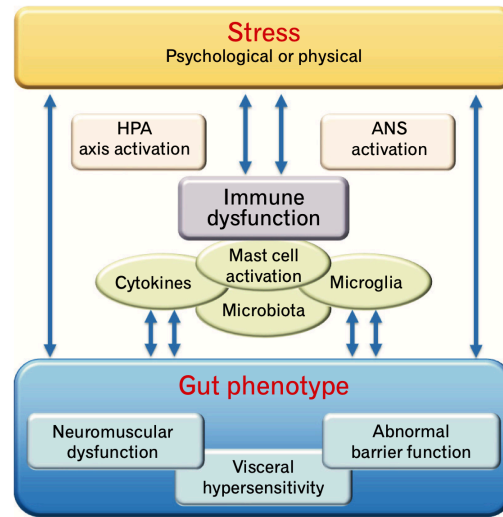
Open Access



Bidirectional gut-brain-microbiota axis as a potential link between inflammatory bowel disease and ischemic stroke



Mechanisms of Stress-induced Visceral Pain



CROSSTALK

Viscero - visceral

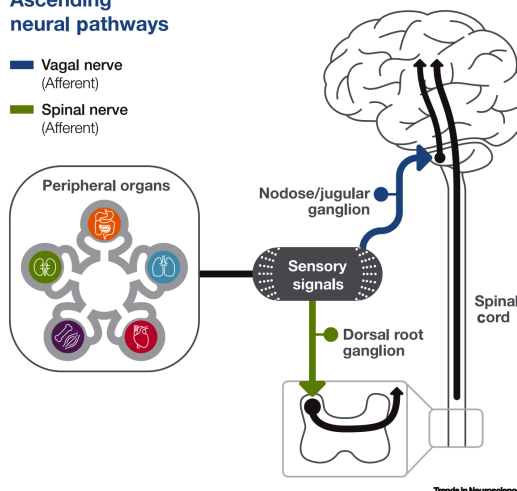
Viscero - somático

Viscero - emocional

The Emerging Science of Interoception: Sensing, Integrating, Interpreting, and Regulating Signals within the Self

Ascending neural pathways

■ Vagal nerve (Afferent)
■ Spinal nerve (Afferent)



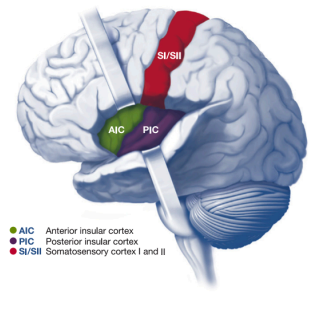
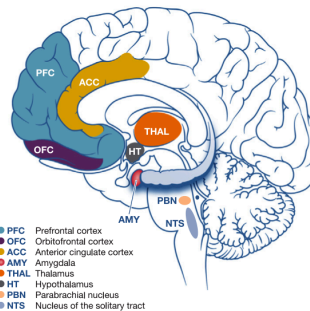
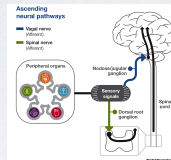
CROSSTALK

Viscero - visceral

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The Emerging Science of Interoception: Sensing, Integrating, Interpreting, and Regulating Signals within the Self



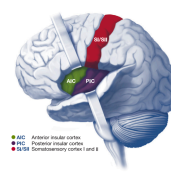
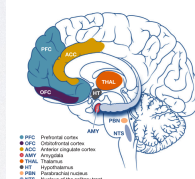
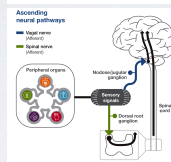
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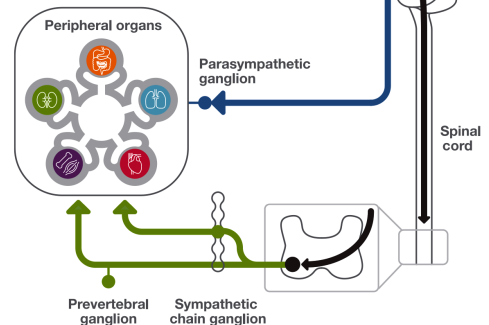
Viscero - emocional

The Emerging Science of Interoception: Sensing, Integrating, Interpreting, and Regulating Signals within the Self



Descending neural pathways

- Vagus nerve (Parasympathetic efferent)
- Spinal nerves (Sympathetic efferent)



CROSSTALK

Viscero - visceral

Viscero - somático

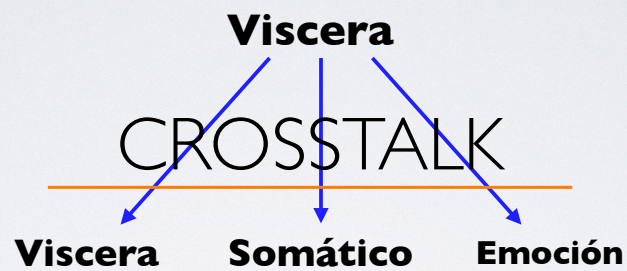
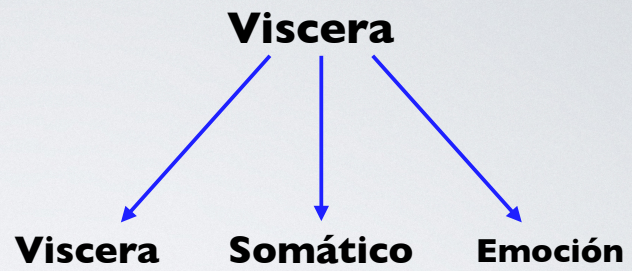
Viscero - emocional

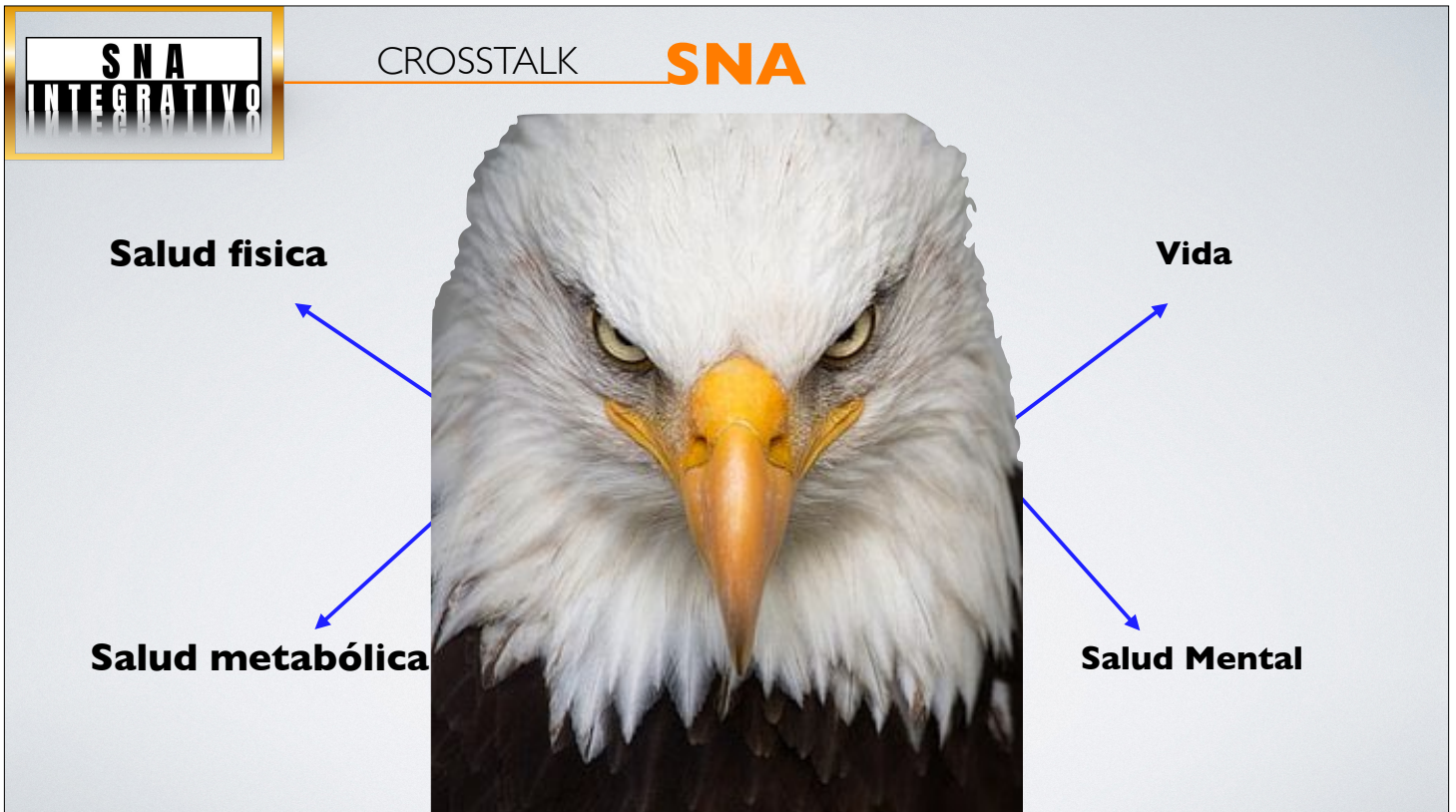
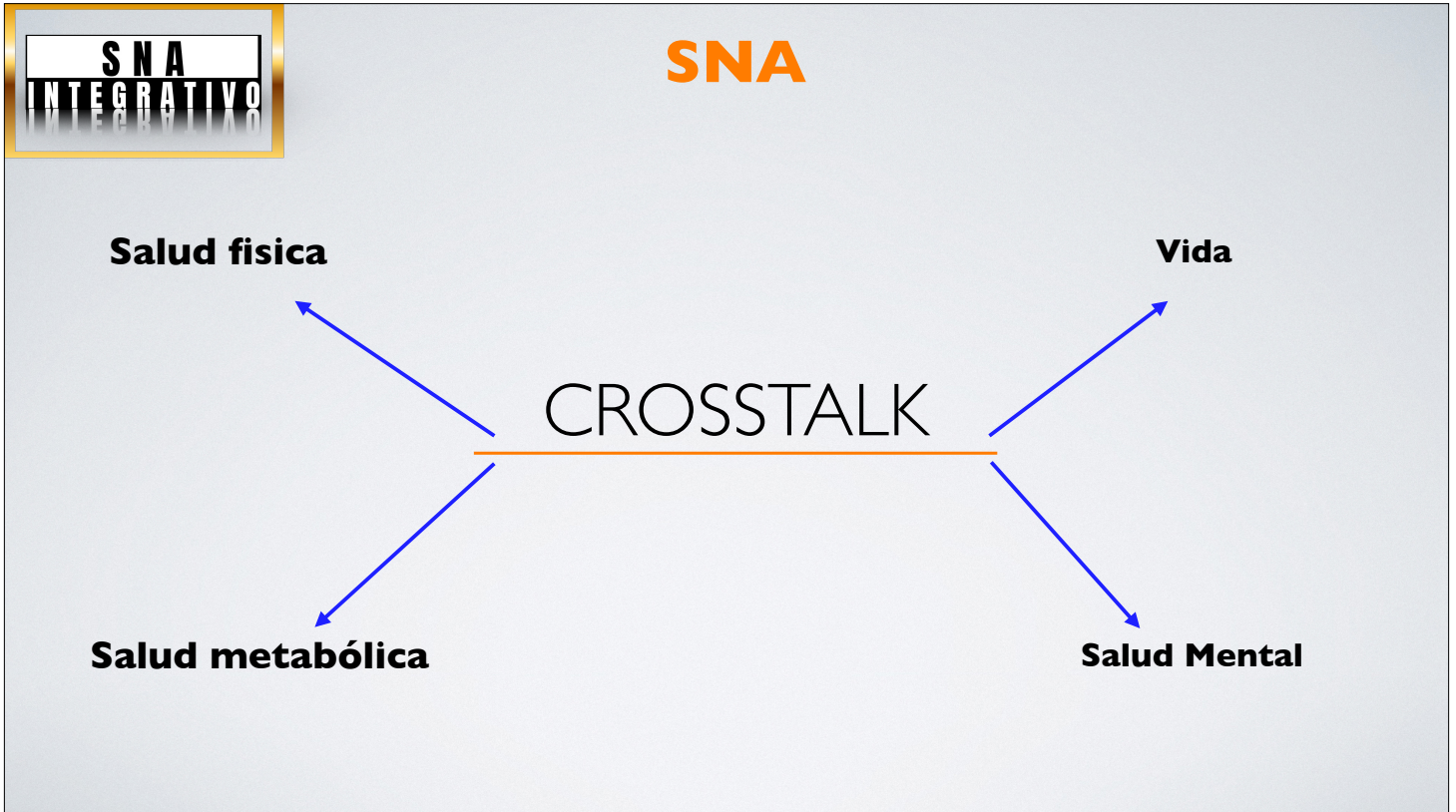
CROSSTALK

Viscero - visceral

Viscero - somático

Viscero - emocional







**“Encontraremos un camino,
y si no, lo crearemos.”**

