

Dr Rui Wang, MD, PhD

Vice-President Research Lakehead University 955 Oliver Road - Ontario

Ricercatore fondamentale nello studio dei microrganismi produttori di H₂S.

Grazie alla sua scoperta, sappiamo che l'idrogeno solforato è il **terzo metabolita gassoso prodotto nelle nostre cellule** dove svolge un ruolo importante nel regolare alcune funzioni fisiologiche.

Riportiamo di seguito, in lingua originale, i principali studi di ricerca del Dr. Rui Wang e la relativa bibliografia.

Research Interests

1. Gasotransmitters in cardiovascular system.

- The interaction among carbon monoxide (CO), nitric oxide (NO) and hydrogen sulfide (H₂S) on the vascular contraction and ion channel modulations
- Regulation of the endogenous generation of gasotransmitters from blood vessels with physiological or pharmacological interventions
- The specific molecular targets of gasotransmitter on their target proteins
- The altered gasotransmitter metabolism and cardiovascular functions in diabetes or hypertension.

2. Molecular basis and structure-function relationship of voltage-gated K (K_v) channels and ATP-sensitive (K ATP) channels in vascular smooth muscle cells (SMCs). With this study, the regulating mechanisms and the structure-function relationship of K_v and K ATP channels in peripheral vascular SMCs will be better understood.

3. Health applications of novel nutraceutical and herb products. I am interested in exploring Prairie natural resources and Chinese herbs for their specific nutritional and therapeutic values for cardiovascular health, anti-oxidant protection, anti-cancer therapy, and impotence improvement. Extraction and purification of active components from herbs, insects, and other natural resources will be performed.

Major techniques used in my laboratory:

1. Handling and measurement of gasotransmitters.
2. Cardiovascular functions of whole animal – rats
3. Vascular and penile tissue contractility assay
4. Langendorff heart perfusion and ischemia model
5. Cell culture and proliferation
6. Patch-clamp study on ion channels

7. Gene cloning and expression (transient and permanent)
8. Extraction of bioactive components from herbs

Publications

- Yang W, Yang G, Jia X, Wu L, Wang R. (2005) Activation of K ATP channels by **H₂S** in insulin-secreting cells and the underlying mechanisms. *J. Physiol. (Lond)* 569:519-531. (IF, 4.3)
- Tang G, Wu L, Liang W, Wang R. (2005) Direct stimulation of K ATP channels by exogenous and endogenous **hydrogen sulfide** in vascular smooth muscle. *Mol. Pharmacol.* 68: 1757-1764. (IF, 5.7)
- Yang G, Cao K, Wang R. (2004) Cystathionine g-lyase overexpression inhibits cell proliferation via a **H₂S**-dependent modulation of ERK1/2 phosphorylation and p21 Cip/WAK-1 . *J. Biol. Chem.* 279: 49199-49205. (IF, 6.5)
- Zhao W, Ndisang JF, and Wang R. Modulation of endogenous production of **H₂S** in rat tissues. *Can. J. Physiol. Pharmacol.*, 81: 848-853, 2003
- Wang R. (2003) The gasotransmitter role of **hydrogen sulfide**. *Antioxidant Redox Signal.*, 5:493-501.
- Wang R. (2002) Two's company, three's a crowd - Can **H₂S** be the third endogenous gaseous transmitter? *FASEB J.*, 16: 1792-1798
- Zhao W and Wang R. (2002) **H₂S**-induced vasorelaxation and underlying cellular and molecular mechanisms. *Am. J. Physiol.*, 283: H474-H480.