

Robert Mallet, PhD  
Graduate School of Biomedical Sciences  
Physiology & Anatomy  
Email: Robert.Mallet@unthsc.edu



## Area of Expertise

Dr. Robert Mallet's research focuses on developing treatments to protect the heart and brain from heart attack, stroke, and cardiac arrest. These three diseases, which result from interruptions in the blood flow to the heart and/or brain, are among the leading causes of death and disability in the United States. Dr. Mallet's team has discovered that breathing air containing reduced amounts of oxygen, for a few daily exposures lasting a few minutes each, causes adaptations in the heart and brain that make these organs much more resistant to interruptions in their blood flow. As a result, the damage to the heart and brain inflicted by temporary loss of blood flow is greatly decreased, enabling these vital organs to recover and resume their normal function.

Current work in the Mallet laboratory is studying the favorable changes in the brain's and heart's biochemical makeup which underlie the adaptations to low oxygen, so that these adaptations can be safely harnessed to help human patients survive and recover from strokes, heart attacks, and cardiac arrest.

## Qualifications

PhD in Physiology, George Washington University  
BS in Biology, Catholic University of America

## Recent Publications

### **Inline flow sensor for ventriculoperitoneal shunts: Experimental evaluation in swine**

Qin, C., Yurvati, A., Williams, A. G., Eskildsen, D., Mallet, R. T. & Dasgupta, P. K., 1 May 2019, In : Medical Engineering and Physics. 67, p. 66-72 7 p.

### **Hemorrhage simulated by lower body negative pressure provokes an oxidative stress response in healthy young adults**

Park, F. S., Kay, V. L., Sprick, J. D., Rosenberg, A. J., Anderson, G. K., Mallet, R. T. & Rickards, C. A., 1 Mar 2019, In : Experimental Biology and Medicine. 244, 3, p. 272-278 7 p.

### **Ischaemic and hypoxic conditioning: potential for protection of vital organs**

Sprick, J. D., Mallet, R. T., Przyklenk, K. & Rickards, C. A., 1 Mar 2019, In : Experimental Physiology. 104, 3, p. 278-294 17 p.

### **Intermittent hypoxia training: Powerful, non-invasive cerebroprotection against ethanol withdrawal excitotoxicity**

Jung, E. & Mallet, R. T., 1 Oct 2018, In : Respiratory Physiology and Neurobiology. 256, p. 67-78 12 p.

### **Cardioprotection by intermittent hypoxia conditioning: Evidence, mechanisms, and therapeutic potential**

Mallet, R. T., Manukhina, E. B., Ruelas, S. S., Caffrey, J. L. & Downey, H. F., 1 Aug 2018, In : American Journal of Physiology - Heart and Circulatory Physiology. 315, 2, p. H216-H232

### **Pyruvate-enriched resuscitation for shock**

Mallet, R. T., Yurvati, A. & Bünger, R., 1 May 2018, In : Experimental Biology and Medicine. 243, 8, p. 663-664 2 p.

### **An in vitro oxygen-glucose deprivation model for studying ischemia-reperfusion injury of neuronal cells**

Ryou, M. G. & Mallet, R. T., 1 Jan 2018, *Methods in Molecular Biology*. Humana Press Inc., p. 229-235 7 p. (Methods in Molecular Biology; vol. 1717).

### **Pyruvate enhancement of cardiac performance: Cellular mechanisms and clinical application**

Mallet, R. T., Yurvati, A. & Bünger, R., 1 Jan 2018, In : Experimental Biology and Medicine. 243, 2, p. 198-210 13 p.

**Enhanced cerebral perfusion during brief exposures to cyclic intermittent hypoxemia**

Liu, X., Xu, D., Hall, J. R., Ross, S. E., Chen, S., Liu, H., Mallet, R. T. & Shi, X., 1 Dec 2017, In : Journal of applied physiology (Bethesda, Md. : 1985). 123, 6, p. 1689-1697 9 p.

**Erythropoietin: Endogenous Protection of Ischemic Brain**

Mallet, R. T., Ryou, M. G. & Ryou, M. G., 1 Jan 2017, *Vitamins and Hormones*. Academic Press Inc., p. 197-232 36 p. (Vitamins and Hormones; vol. 105).

**Sponsored Projects**

**Anti-Inflammatory Effects of Pyruvate - Fortified Resuscitation in Pulmonary Tissue During Hypoxia with TCOM Student Charla Baker**

Mallet, R.

Intramural Research(UNTHSC)

1/09/13 → 31/08/14

**Cardioprotective Mechanisms of Intermittent, Normobaric Hypoxia (For: Yang Jiang)**

Mallet, R. & Yurvati, A.

Intramural Research(UNTHSC)

1/06/16 → 31/05/17

**Cell Irradiation Services for Healthpoint Biotherapeutics**

Mallet, R.

Smith and Nephew

1/01/12 → 31/12/16

**Impact of Cardiac Arrest and Resuscitation on Myocardial Structure and Protein Biochemistry**

Mallet, R.

Intramural Research(UNTHSC)

1/10/14 → 30/09/15

**Intermittent Hypoxia Induction of Nrf2 Gene Program in Rat Myocardium (For: Azaan Ramani)**

Mallet, R.

Intramural Research(UNTHSC)

1/03/16 → 28/02/17

**Intermittent Hypoxia Protects Brain from Ethanol Withdrawal: Mechanisms and Therapy**

Jung, E. ( & Mallet, R.

NIAAA: National Institute on Alcohol Abuse and Alcoholism

5/03/10 → 29/02/12

**Intermittent Hypoxia: Salvaging Cerebral Function after Ischemic Stroke**

Mallet, R.

Intramural Research(UNTHSC)

1/07/16 → 31/08/17

**Novel Split Chest Drain Improves Post Surgical Thoracic Drainage**

Yurvati, A. & Mallet, R.

Intramural Research(UNTHSC)

15/01/12 → 14/01/13

**Pyruvate-enriched Resuscitation to Reduce Inflammation and Free Radical Production During Simulated Hemorrhage**

Rickards, C., Yurvati, A. & Mallet, R.

William & Ella Owens Med Research Foun

1/06/17 → 31/12/17

**Pyruvate: Powerful Brain Protection after Cardiac Arrest**  
Mallet, R., Yurvati, A., Yurvati, A., Simecka, J. & Yang, S.  
NINDS: Neurological Disorders & Stroke  
1/08/11 → 31/07/15

**Pyruvate: Powerful Brain Protection after Cardiac Arrest (For: Dr. Gary Scott)**  
Mallet, R. & Yang, S.  
NINDS: Neurological Disorders & Stroke  
1/02/13 → 31/07/15

**Renal inflammation triggered by inhaled particulate matter (For: Bryan McGee)**  
Mallet, R.  
Intramural Research(UNTHSC)  
5/06/17 → 31/05/18

**Texas Center of Minority Health, Education, Research and Outreach - Admin/Development Core**  
Vishwanatha, J., Jones, H., He, J., Basha, R., Nandy, K., Mallet, R., Krishnamoorthy, R. & Simecka, J.  
NIMHD: Natl Institute on Minority Health  
23/09/17 → 31/05/22

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23/09/17 → 31/05/22