

# ***Role of NMDAR in Homocystein- induced Glomerular Injury***

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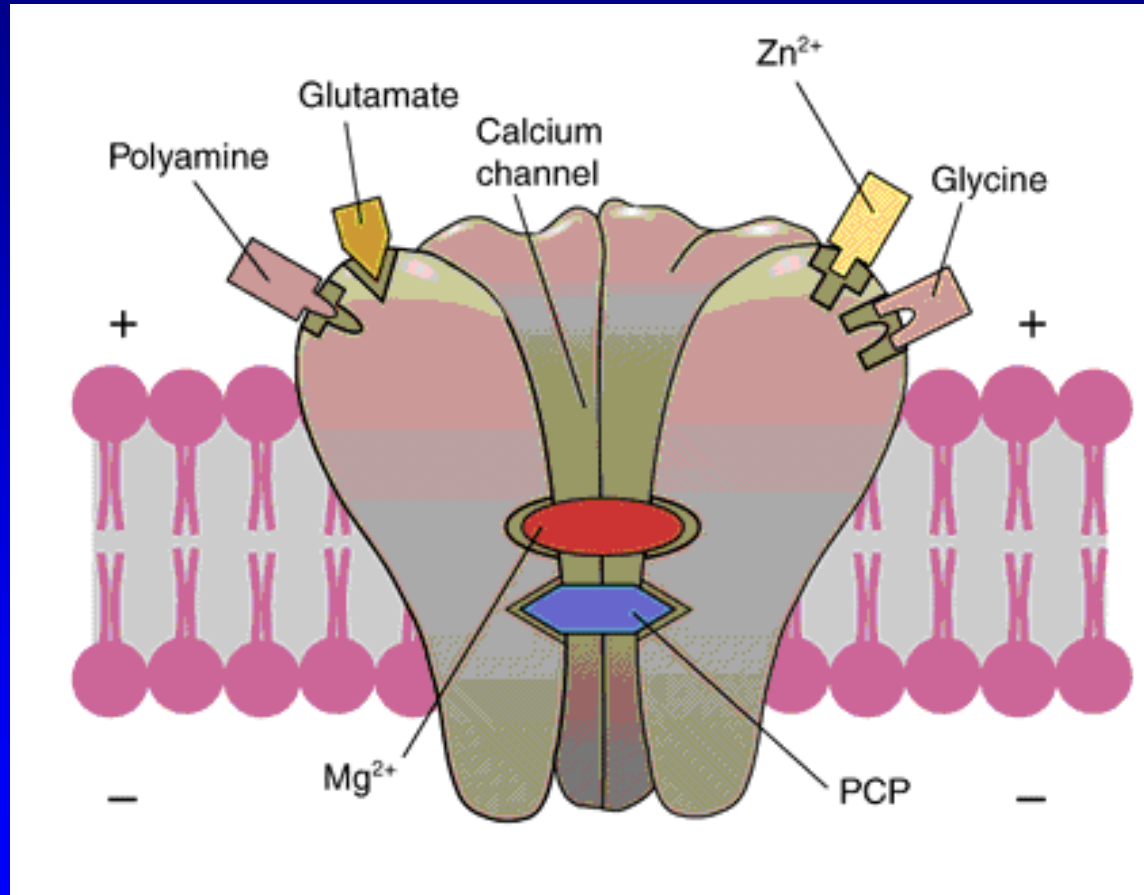
Summer Program for Undergraduates' Research (SPUR)  
Department of Pharmacology and Toxicology  
Virginia Commonwealth University

# Background

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- The N-methyl D-aspartate (NMDA) receptors are a glutamate receptor which has been found extensively expressed in the central nervous system.
- It has been reported that Hcys-induced damage is related with NMDA receptors.
- Our previous studies have shown that Hcys can induce glomerular injury.

# NMDA receptor

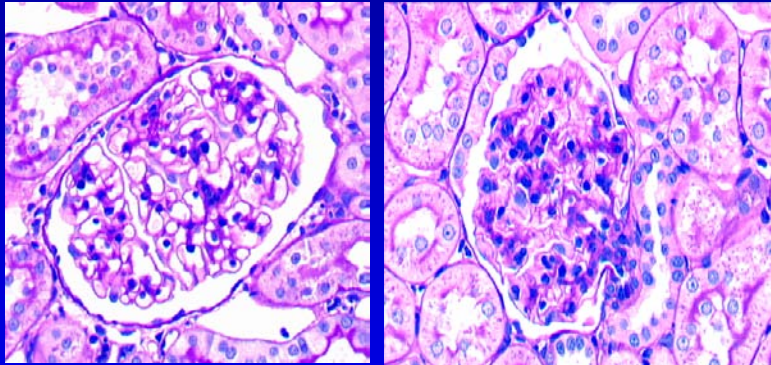


# Hyperhomocysteinemia-Induced Glomerular Damage

A

Control

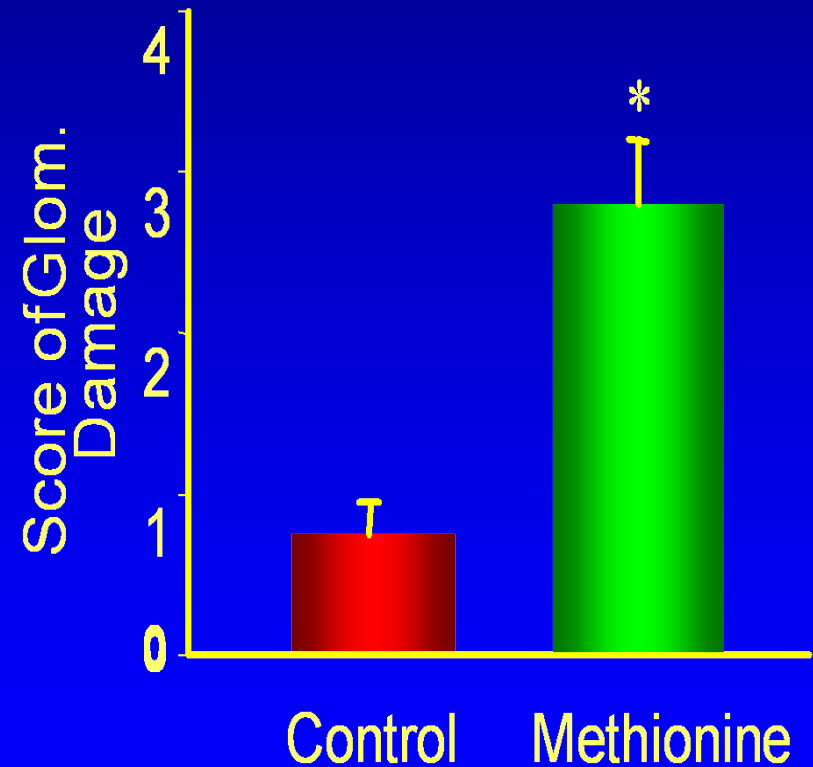
Methionine



1. Cell proliferation
2. Mesangial expansion
3. Capillary collapse

B

B



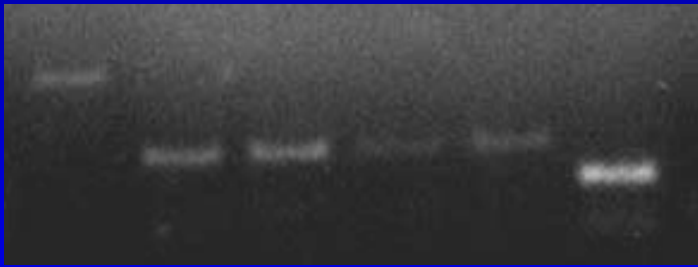
# Hypothesis

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- hHcys may induce glomerular sclerosis through the activation of NMDA Receptors and blocking the action of NMDAR will alleviate glomerular sclerosis.

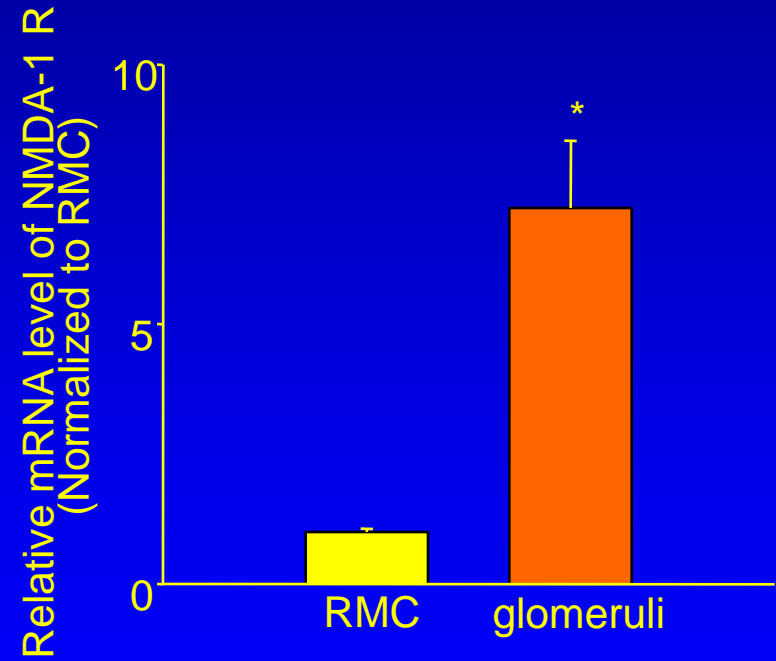
# Confirmation of NMDAR in Glomeruli

A



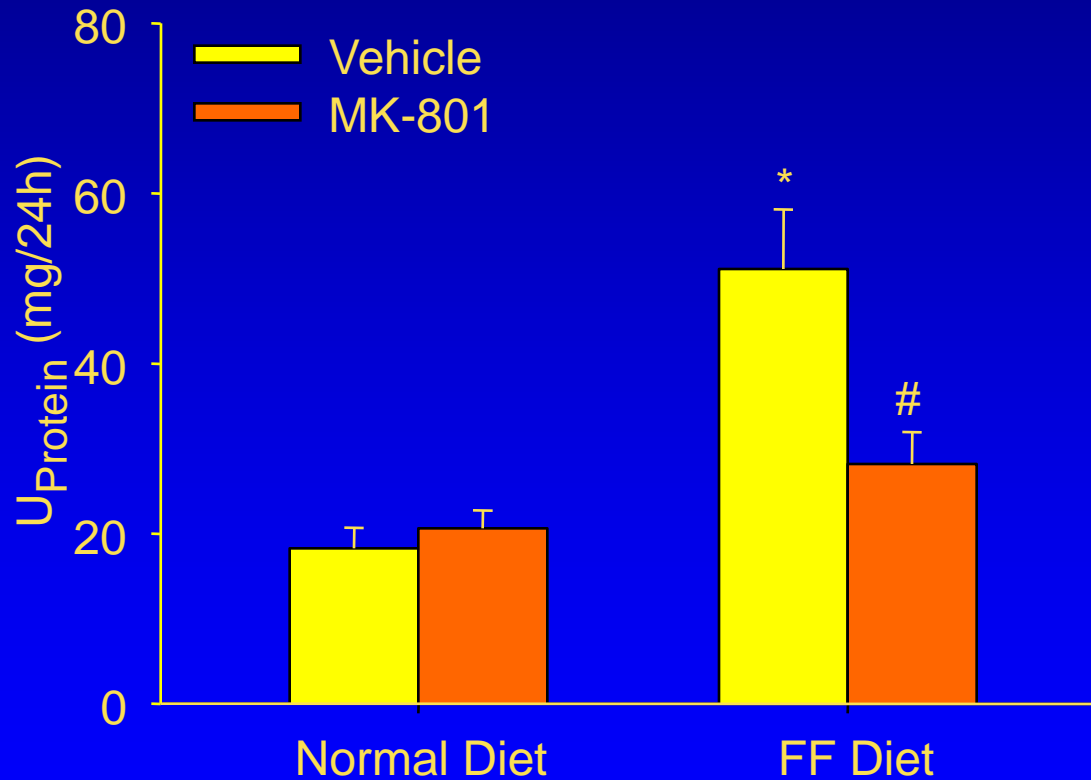
NMDA R1  
NMDA R2A  
NMDA R2B  
NMDA R2C  
NMDA R2D  
 $\beta$ -actin

B



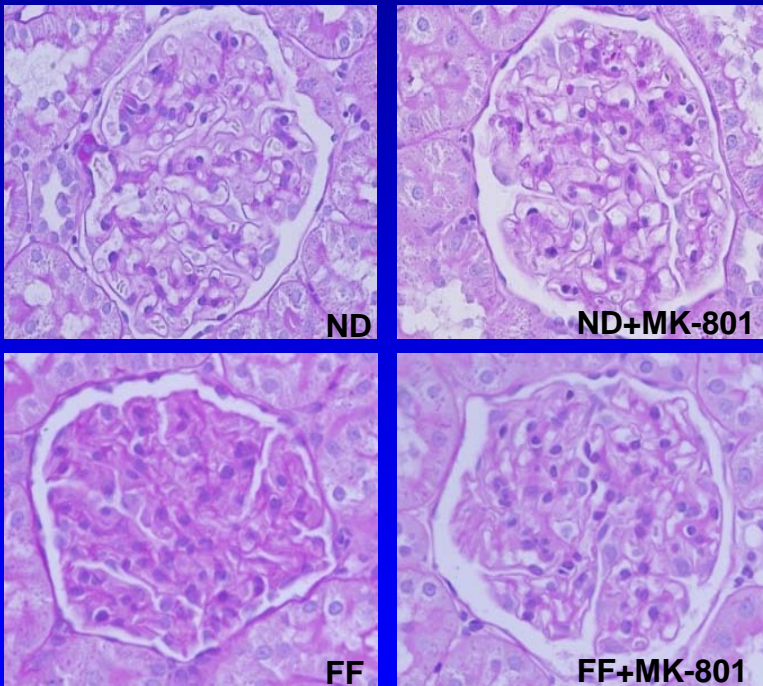
# Effect of MK-801 on Hcy-induced Proteinuria

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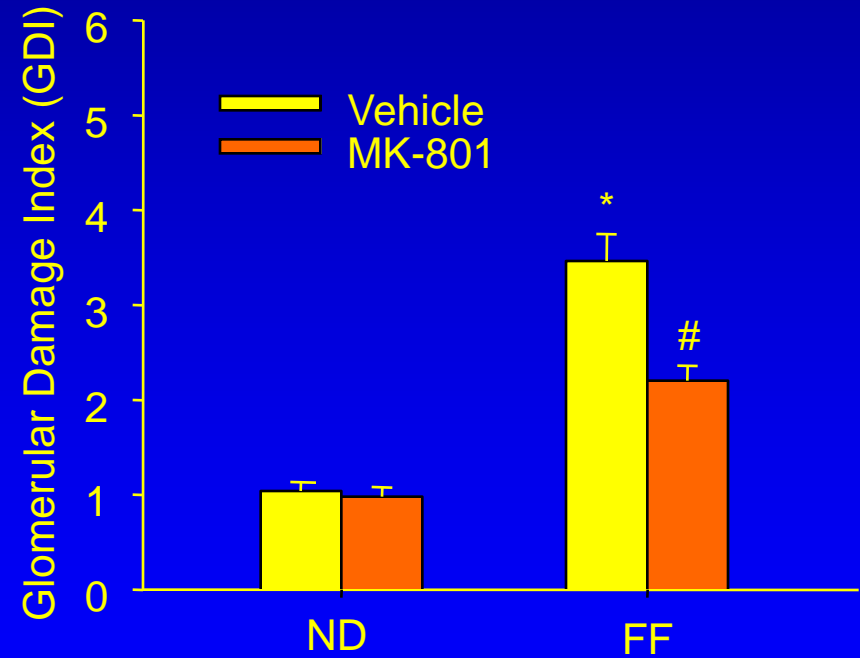


# Morphological Change of Hcy-induced Glomerular Injury

A



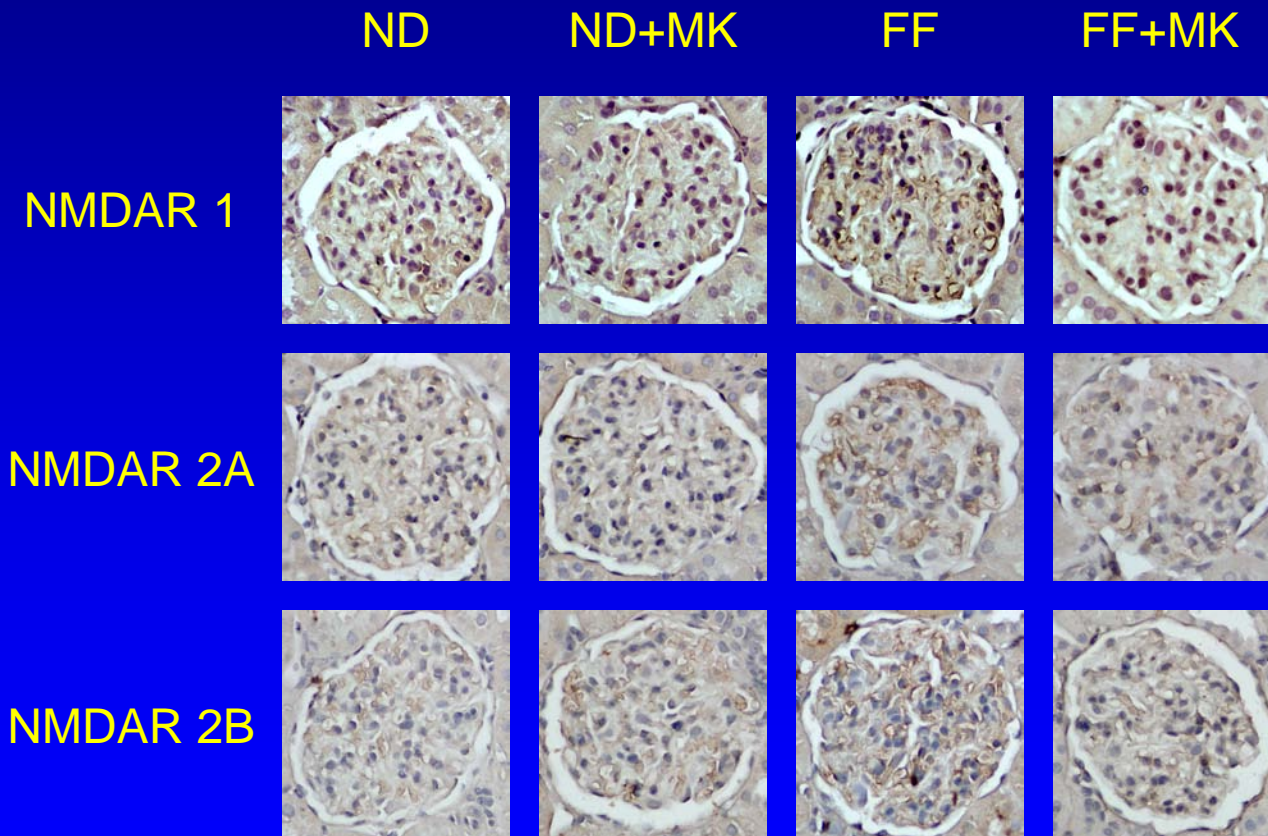
B



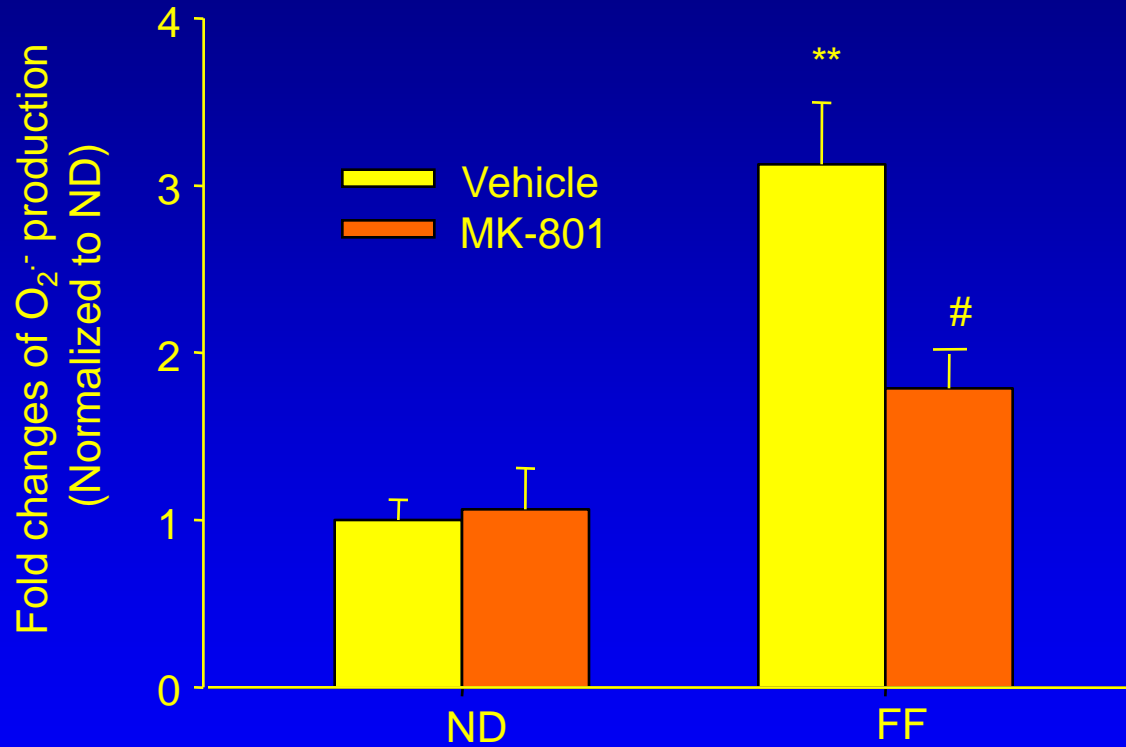


# Effect of MK-801 on NMDARs Expression

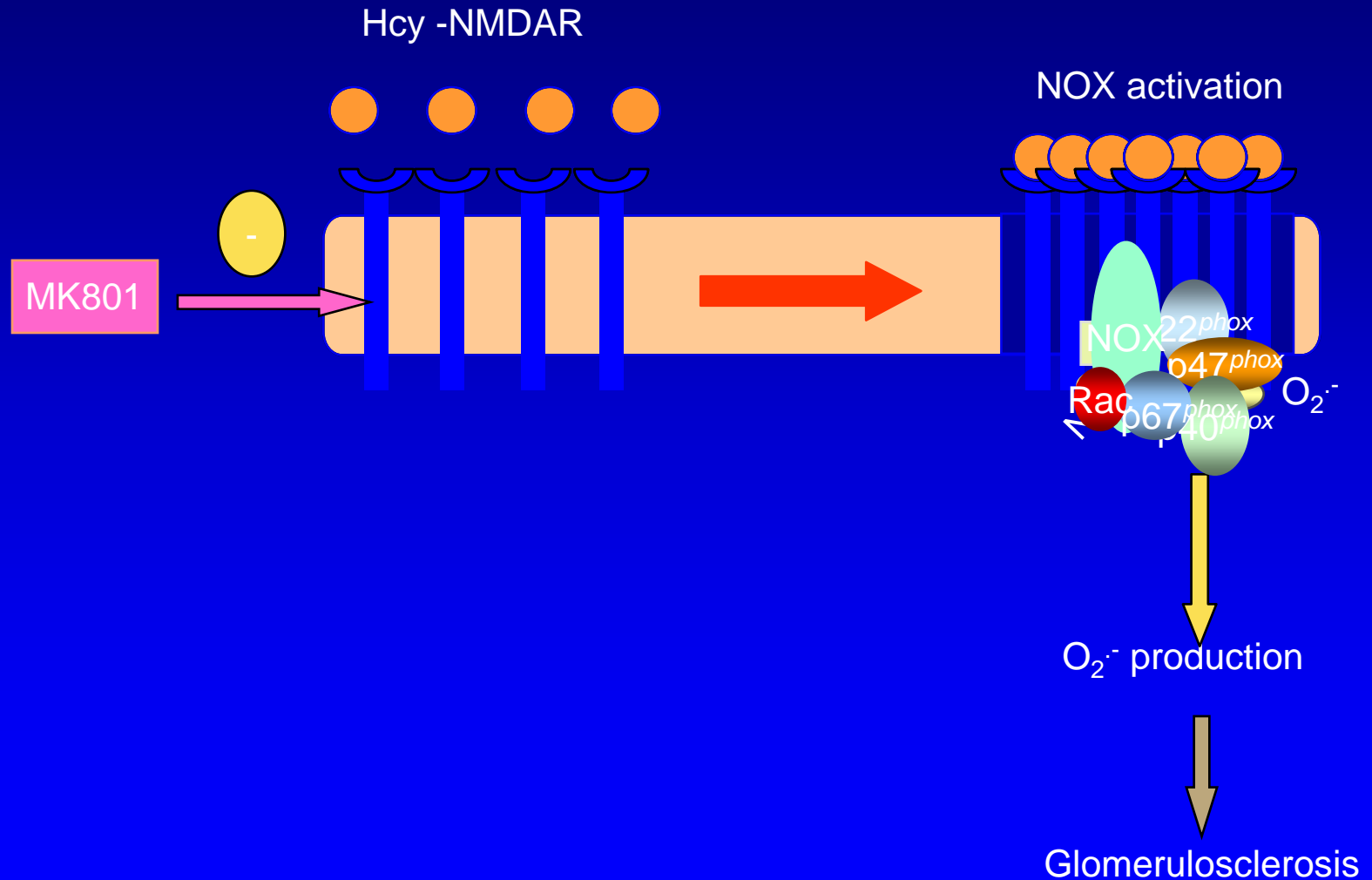
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# Effect of MK-801 on Hcy-induced Superoxide Production



# Conclusion



# Acknowledgment

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Dr. Prof. Pin-Lan Li

My mentor, Chun (Peter) Zhang

Li lab

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Virginia Commonwealth University

NIH

