

***Webinar:  
Maintaining Immune Health  
in the Face of COVID-19 and  
Future Viruses***

Presentation Slides: George Kuchel, MD, FRCP, AGSF

# What is it about immune aging that makes older adults so vulnerable to COVID-19?

**George A. Kuchel, MD, FRCP, AGSF**

Travelers Chair in Geriatrics and Gerontology

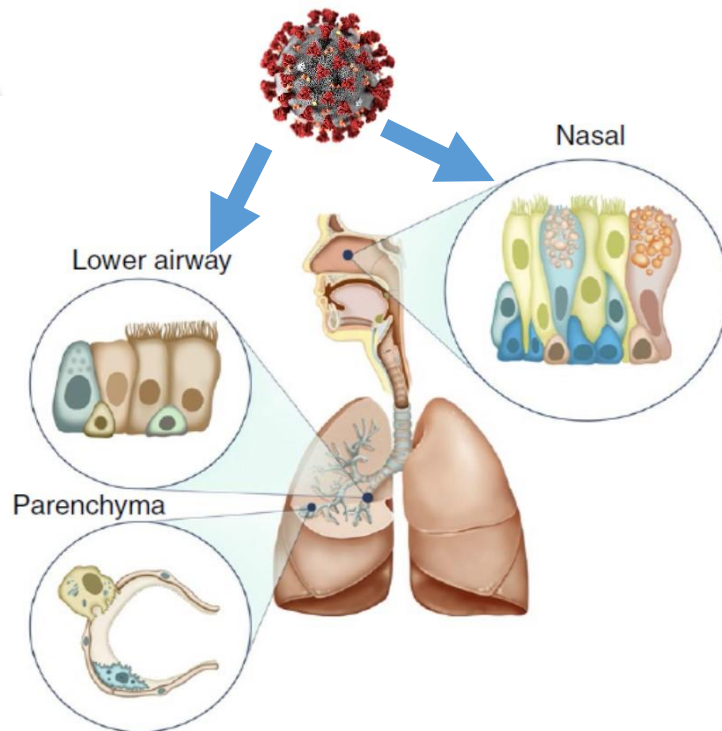
Director, UConn Center on Aging, University of Connecticut

Chief, Geriatric Medicine, UConn Health

[kuchel@uchc.edu](mailto:kuchel@uchc.edu)

# Vulnerability of Older Adults to COVID-19:

*Nearly all aspects of immune response and host defense are impacted by aging*



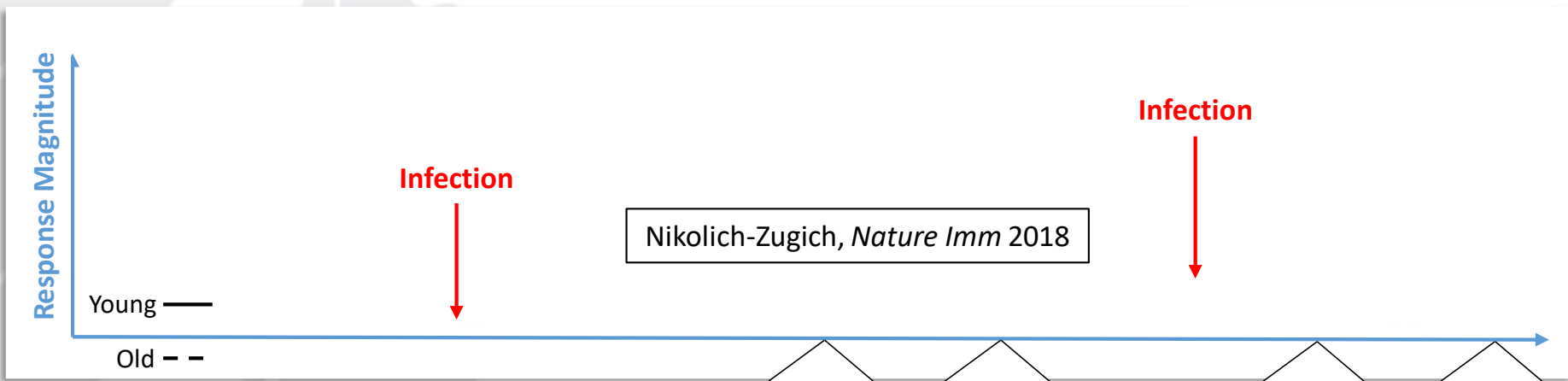
List of epithelial cells

Nasal	Lower airway	Parenchyma
 Goblet 1	 Basal 1	 Alveolar type I
 Goblet 2	 Basal 2	 Alveolar type II
 Ciliated 2	 Ciliated 1	
	 Club	

Sungnak *et al.* Nature Med 2020

# Vulnerability of Older Adults to COVID-19:

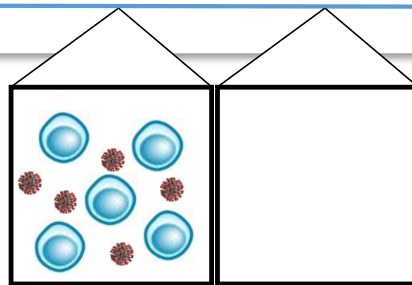
## *Impact of Immune Aging on Ability to Handle Familiar and Unfamiliar Pathogens*



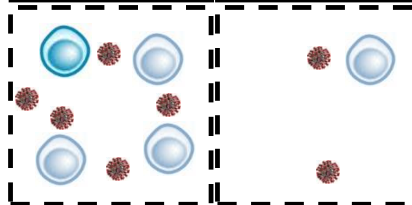
Acknowledgements to G Hargis & C Bonin, UConn

- Immune Cell
- Aged Immune Cell
- Pathogen

Younger Adult

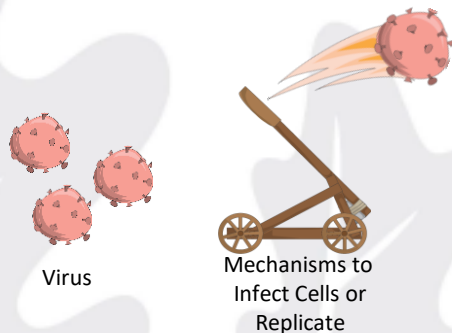


Older Adult



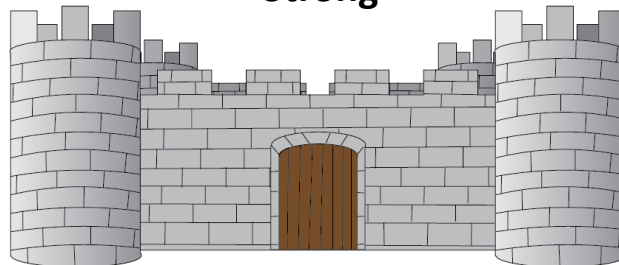
# Vulnerability of Older Adults: Must consider dynamic processes involving resilience mechanisms needed to maintain homeostasis in the face of a stressor (pathogen)

## SARS-CoV-2 VIRUS

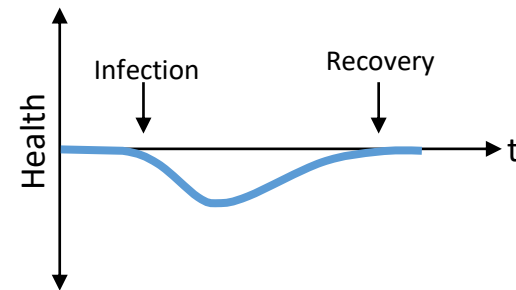


## IMMUNE DEFENSES

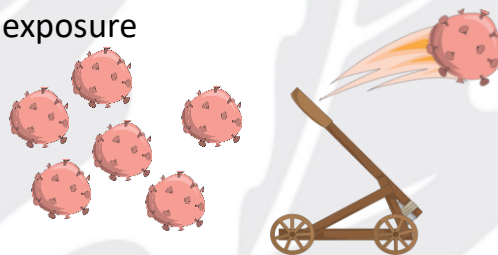
Strong



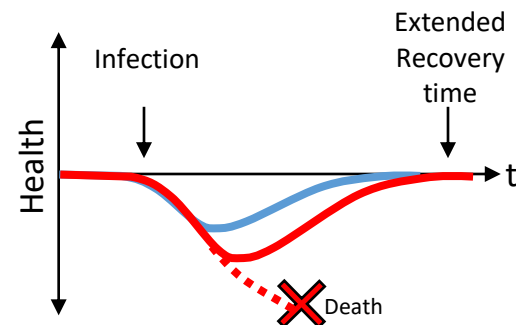
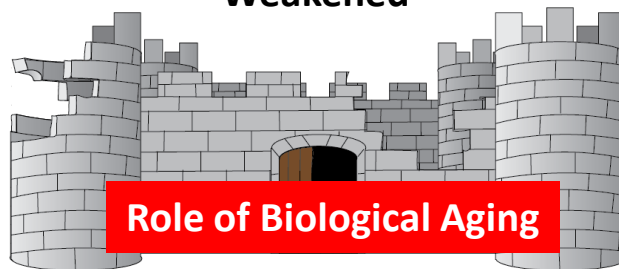
## HEALTH & FUNCTION



Virus virulence, quantity, length of exposure

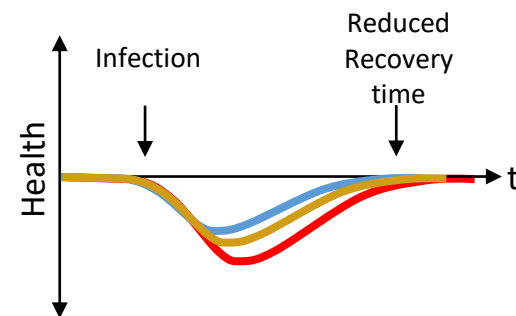
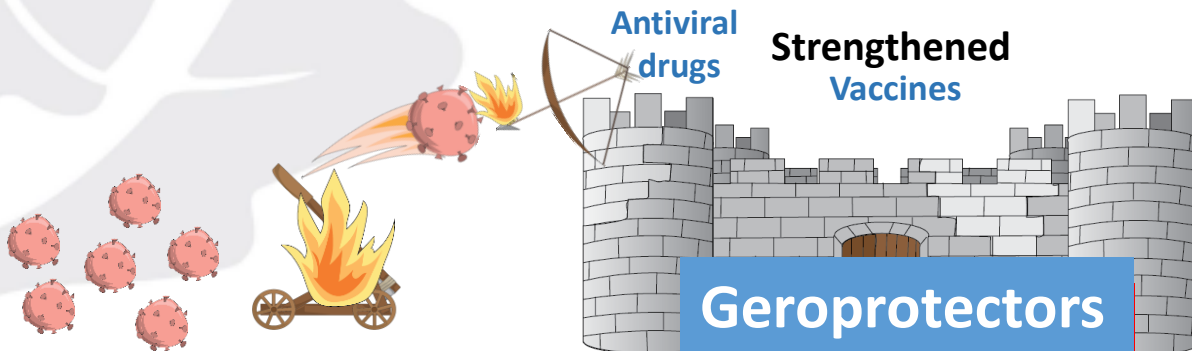


Weakened



Antiviral drugs

Strengthened Vaccines

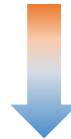


# Potential Role of Another Geroprotector (Metformin) in Reducing Onset and Progression of Multiple Chronic Diseases

*TAME Trial (Targeting Aging with Metformin)*

**Inclusion Criteria: Age 65-80, nondiabetic, some comorbidities allowed; n = 3,000**

**Double blind placebo-controlled trial**



**Primary Outcome: TIME TO MAJOR DISEASES (FDA)**

**Secondary Outcome: FUNCTIONAL AGING**

**Tertiary Outcomes: BIOMARKERS (NIA)**

**Impact of Metformin on Flu Vaccine Responses (VEME-AFAR/NIA, Jenna Bartley, PhD - UConn)**

# Potential Role of One Geroprotector (RTB101) in Reducing Respiratory Infections

Phase 2b: RTB101 reduces the incidence of respiratory tract infections caused by multiple viruses including coronavirus

