

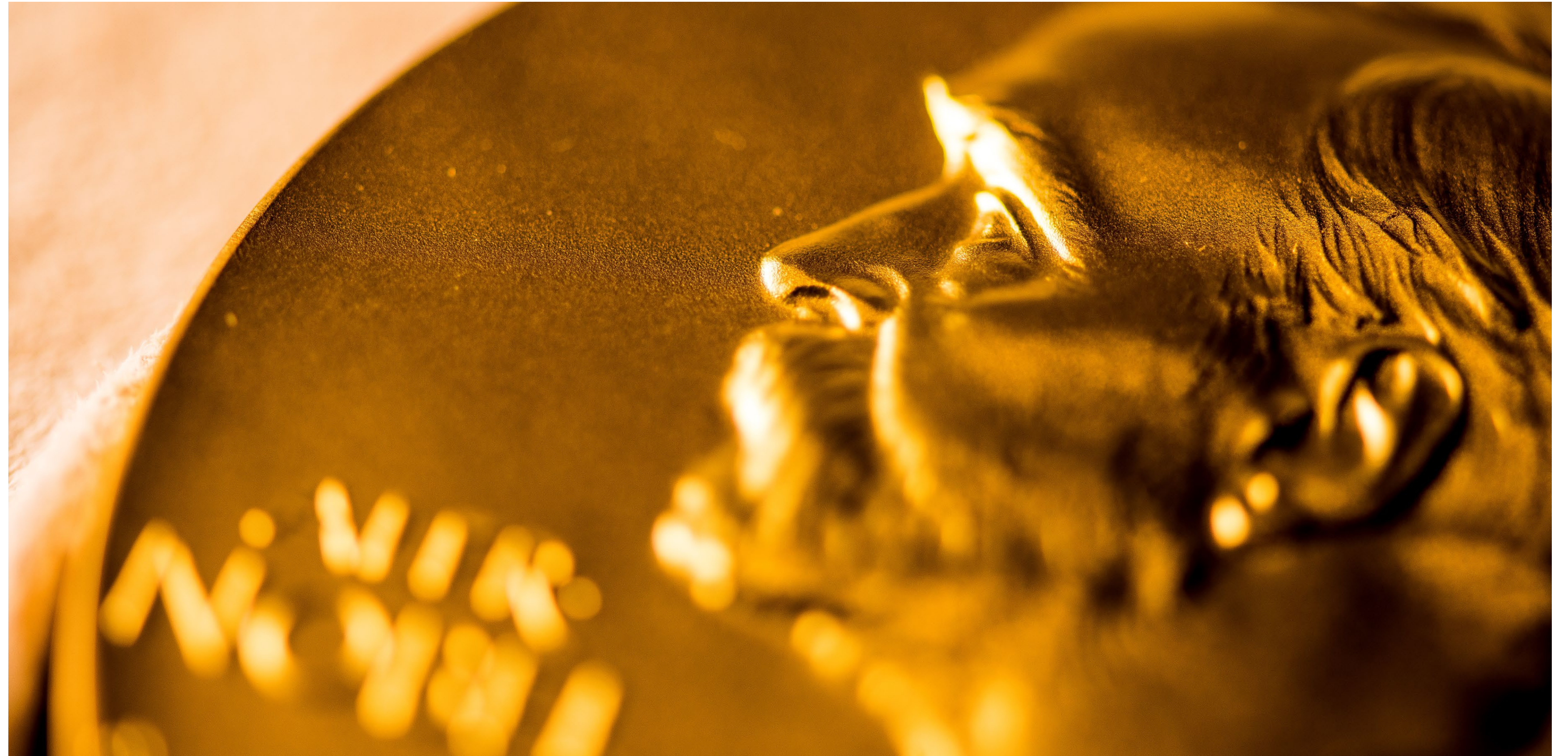
THE  
NOBEL  
PRIZE

# Medicine Prize 2019

How cells adapt to oxygen  
availability

# The Nobel Prize in Physiology or Medicine

“the person who shall have made the most important discovery within the domain of physiology or medicine”



## Who is rewarded with the Medicine Prize?

People who have either made a discovery about how organisms work or have helped find a cure for a disease.



# The 2019 Medicine Prize

What happens in cells if they receive too much or too little oxygen?



# The Nobel Laureates

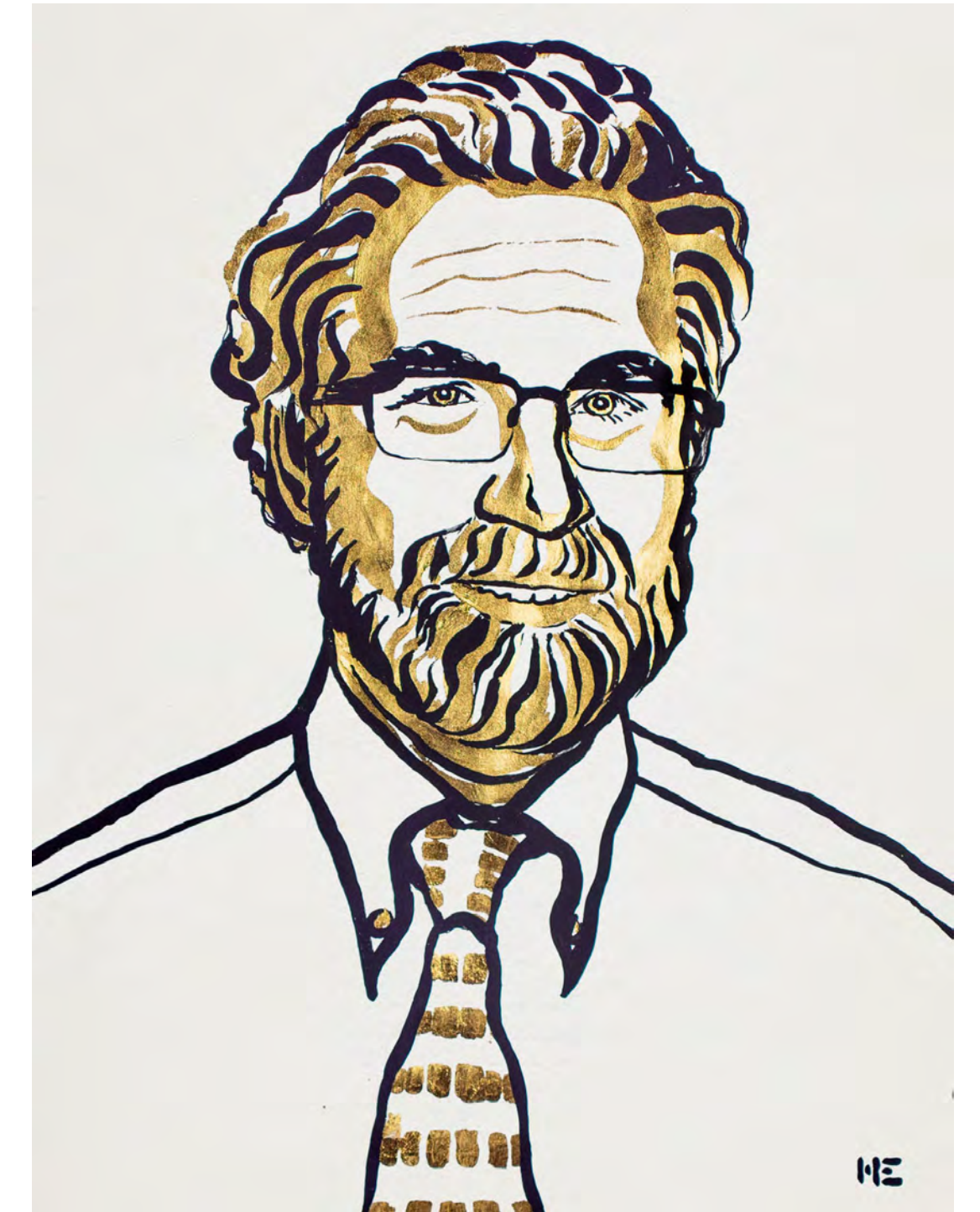
"for their discoveries of how cells sense and adapt to oxygen availability"



William G. Kaelin Jr  
Born: 1957, USA



Sir Peter J. Ratcliffe  
Born: 1954, United Kingdom



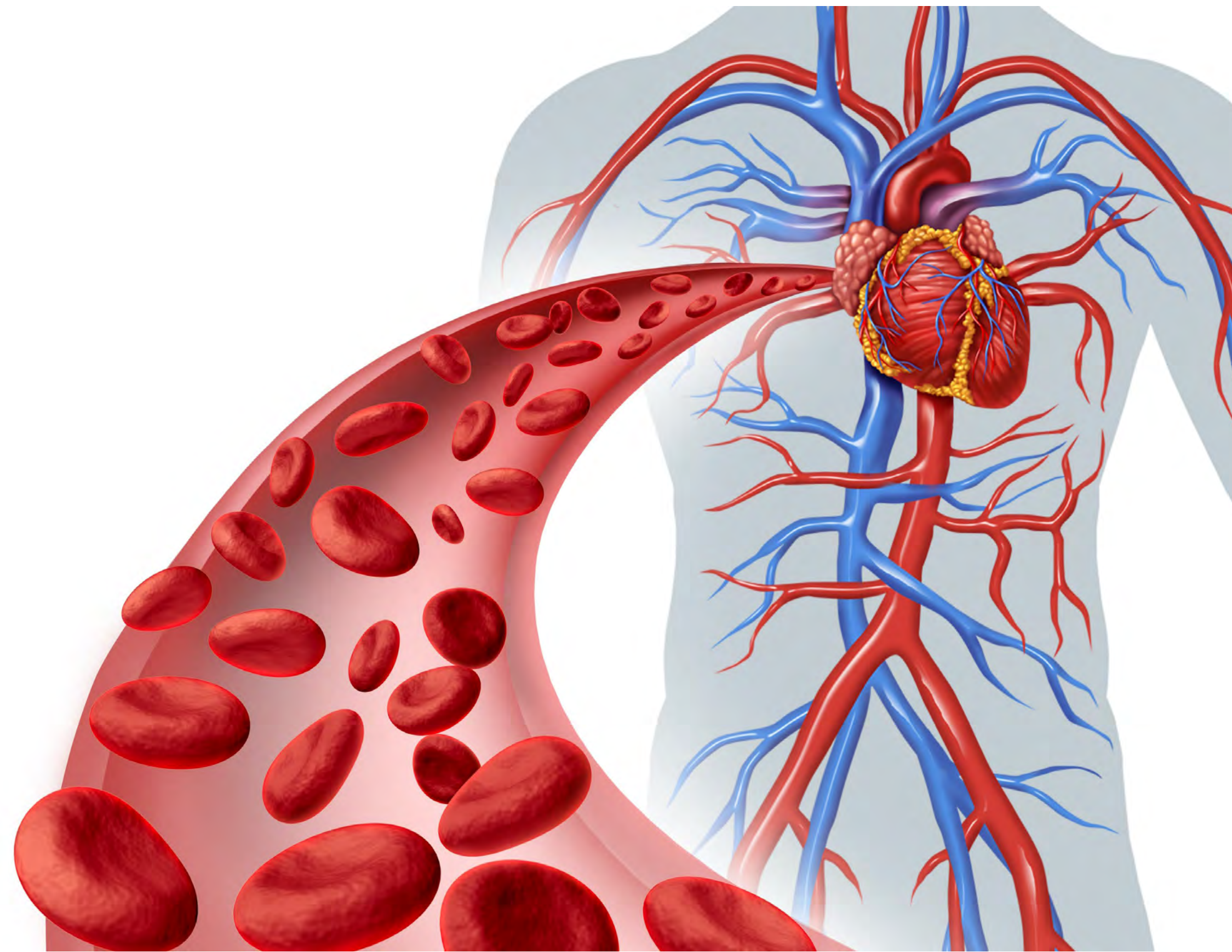
Gregg L. Semenza  
Born: 1956, USA

# All cells in the body need oxygen

Just as a candle needs oxygen in order to burn, cells in the body need oxygen in order to live.



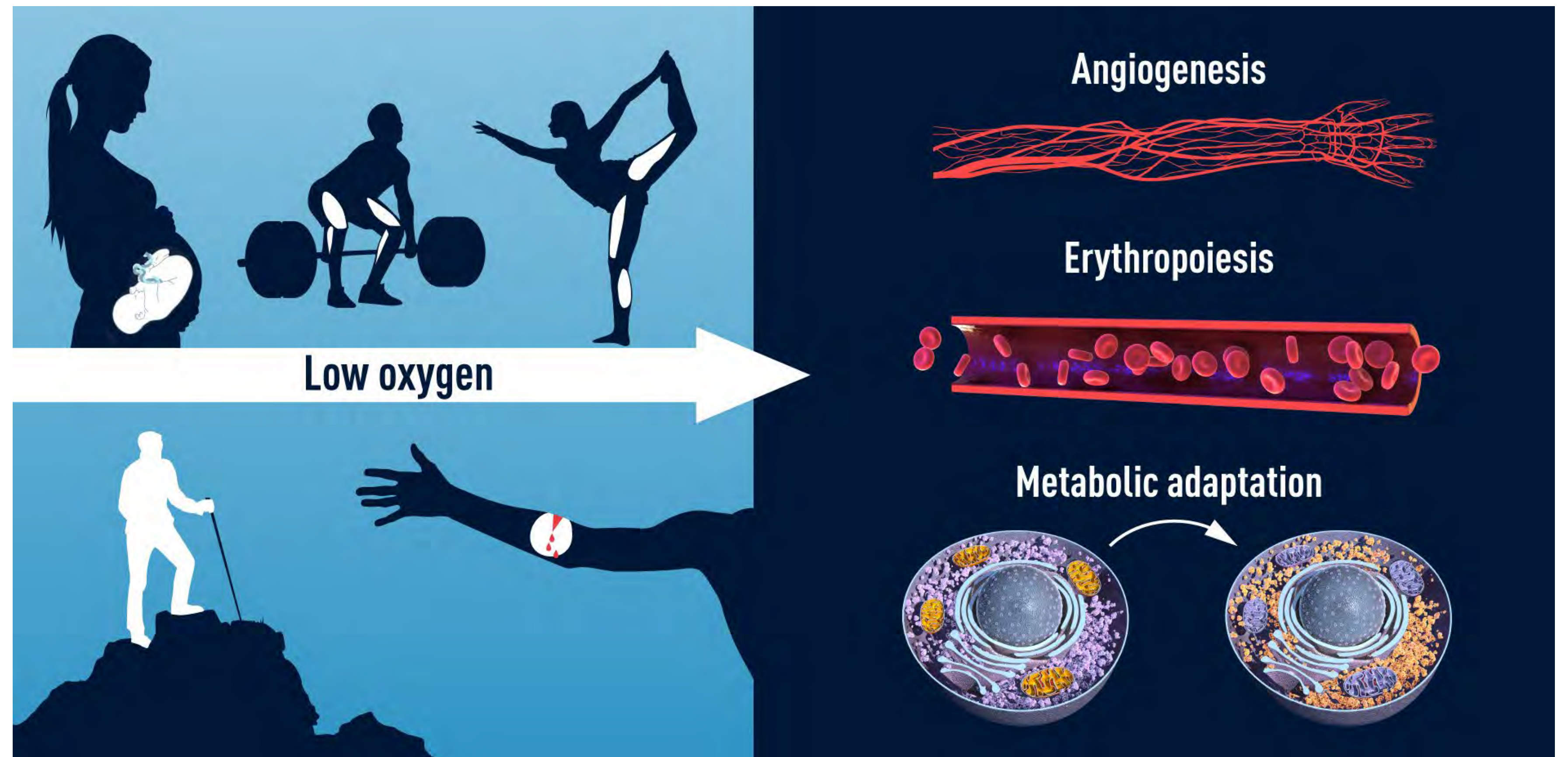
# Transporting oxygen through the body



Red blood cells transport oxygen to all of the cells in our body.

# Variations in oxygen availability lead to adaptation

The body must adapt quickly if oxygen levels change inside the body, or in the atmosphere.





# The benefit

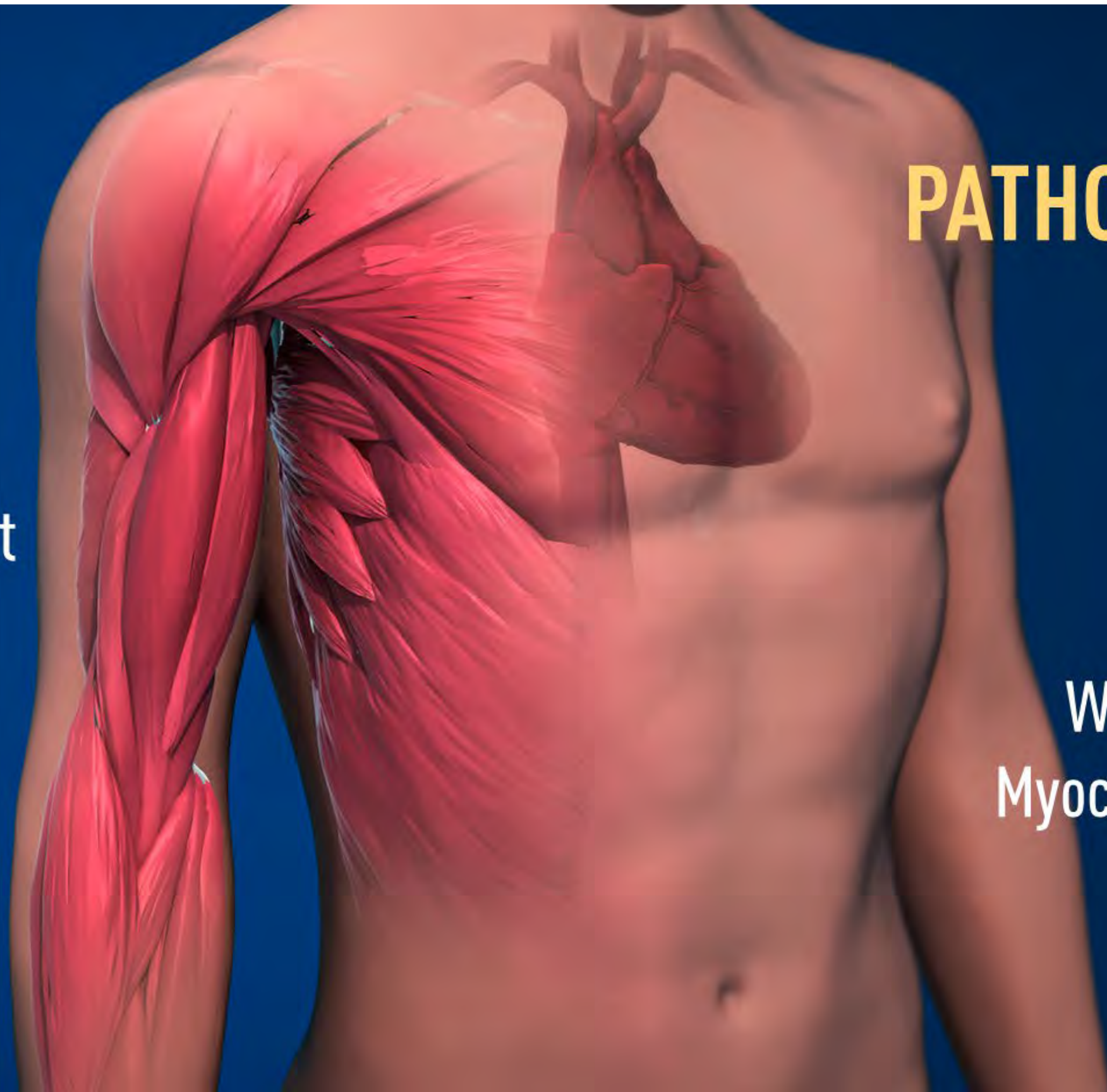
The Nobel Laureates' discoveries have given us new knowledge about human physiology – that is, how our organs and tissues function.

## PHYSIOLOGY

Metabolism  
Exercise  
Embryonic development  
Immune response  
Altitude adaptation  
Respiration

## PATHOPHYSIOLOGY

Anemia  
Cancer  
Stroke  
Infection  
Wound healing  
Myocardial infarction





PHOTOGRAPHER: CATHERINE KING

“We make  
knowledge.  
That’s what I do.”

Sir Peter J. Ratcliffe, 2019 Nobel Laureate

THE  
NOBEL  
PRIZE

FOR THE GREATEST  
BENEFIT TO  
HUMANKIND

Nobel Prize Lessons