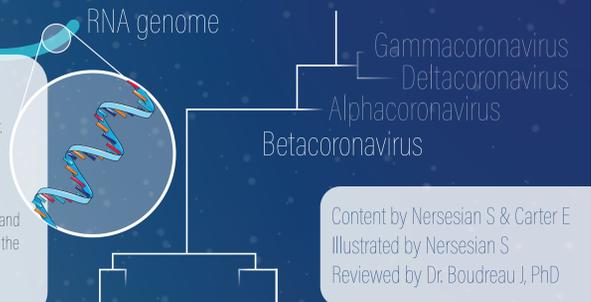


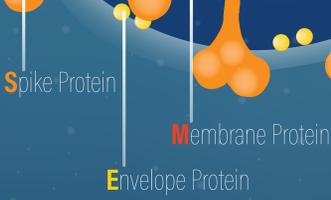
DEADLY CORONAVIRUSES

WHAT IS A CORONAVIRUS?

Coronaviruses are RNA viruses that are about 100-160nm in diameter. That is about 100x smaller than a cell! Their RNA genome is the blueprint to create more coronaviruses once inside a host cell. This includes structural proteins; the envelope glycoprotein spike (S), envelope (E) membrane (M) and nucleocapsid (N). The RNA genome also includes the machinery required to replicate the viral genome including 16 non-structural proteins.



Content by Nersesian S & Carter E
Illustrated by Nersesian S
Reviewed by Dr. Boudreau J, PhD



ORIGIN

TRANSMISSION

INCUBATION

SIGNS & SYMPTOMS

SARS

SARS-COV-1

2002 Human Host

BAT Natural Host

CIVET Intermediate Host



Each person infected will spread the virus to **1.7-1.9** people

You can be infected for **2-7 days** before symptoms appear



8,098 TOTAL INFECTIONS

774 DEATHS



COVID19

SARS-COV-2

2019 Human Host

BAT Natural Host

PANGOLIN Intermediate Host



Each person infected will spread the virus to **2-2.5** people

You can be infected for **2-14 days** before symptoms appear



25.1M* TOTAL INFECTIONS (August 2020)

844K* DEATHS (August 2020)



MERS

MERS-COV

2012 Human Host

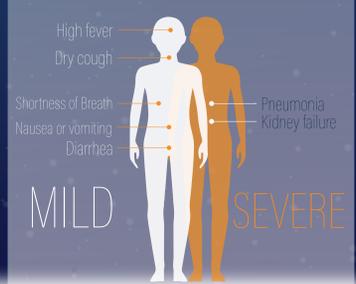
BAT Natural Host

CAMEL Intermediate Host



Each person infected will spread the virus to **0.7** people

You can be infected for **2-14 days** before symptoms appear

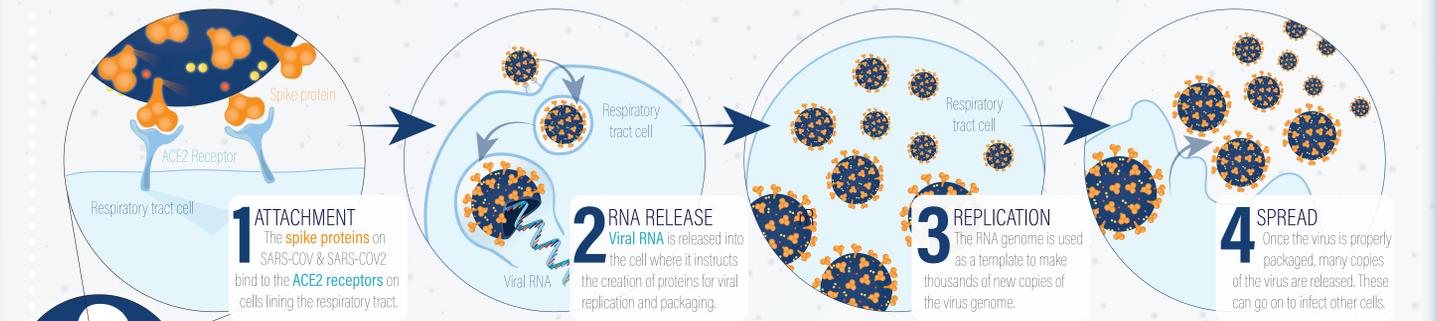


2,494 TOTAL INFECTIONS

858 DEATHS



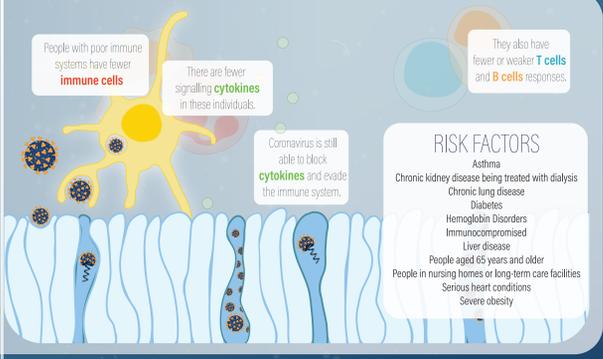
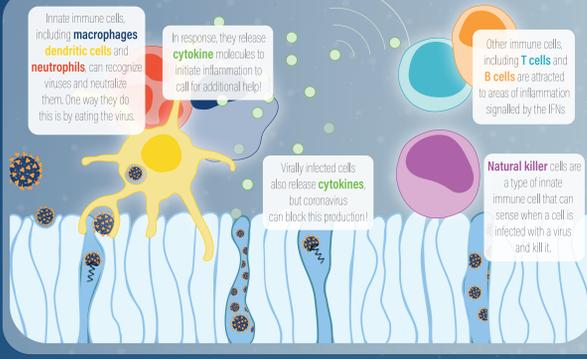
CORONAVIRUS LIFE CYCLE & INFECTION



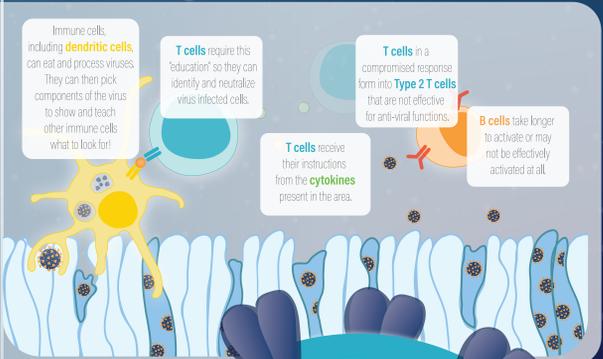
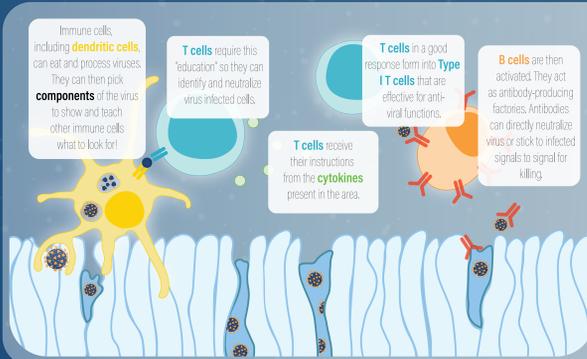
COMPETENT IMMUNE SYSTEM

COMPROMISED IMMUNE SYSTEM

EARLY INNATE IMMUNE RESPONSE



LATER ADAPTIVE IMMUNE RESPONSE



BUILDING IMMUNITY THROUGH IMMUNE MEMORY

Some immune cells develop with the sole purpose of persisting - survive and replicating for as long as they can. This includes **memory T and B cells**. These cells stay within circulation surveying for that same virus they fought to show up again. While we don't understand how memory functions against all coronaviruses, studies have shown that **memory T cells** were present in patients for up to 6 years after SARS-COV infection. Immune memory is the concept that describes why vaccines can be extremely useful - introducing the immune system to parts of a virus without putting in any active or live viruses.

& YOUR IMMUNE SYSTEM

