

# Emerging Diseases Global Warming and The Next Pandemic

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# Evolution Goes Both Ways

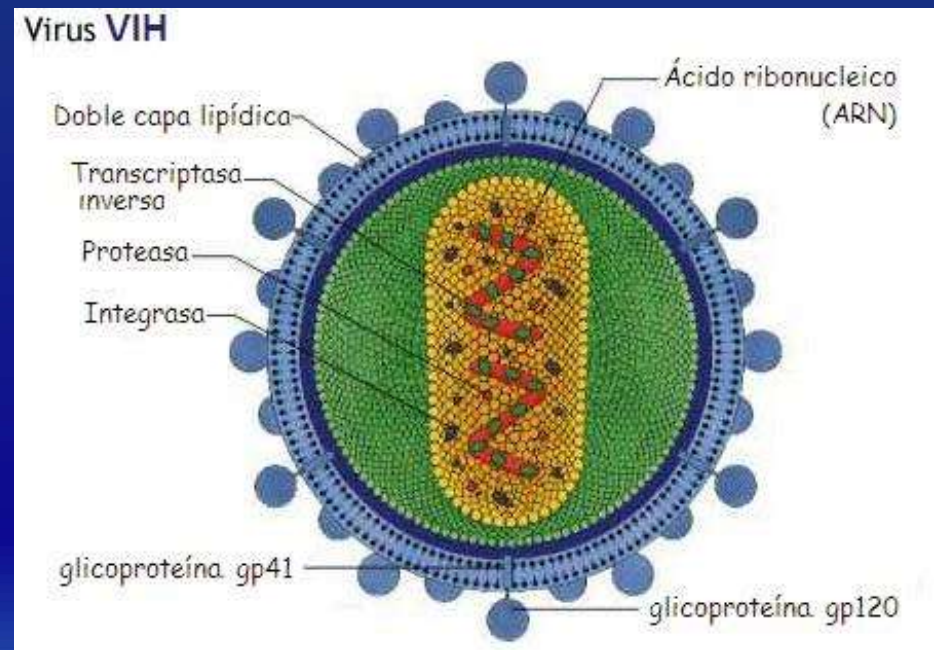
- Throughout history humans have existed side by side with bacteria and viruses
- From
- Bubonic Plague
- Small Pox
- TB
- We have evolved to resist them, and in response they have developed new ways fo infecting us.

# Human Immunodeficiency Virus HIV

## How the Virus Kills

- Virus attacks white blood cells
- Specifically targets CD4 cells
- CD4 cells crucial to fight infection
- CD 4 cells decrease
- The patient can no long fight infections

## HIV Virus



# A Brief History of AiDS

- 1970 HIV started to spread in humans
- 1980 100,000 to 300,000 people infected
- 1981 rare lung infection reported in gay young men in Los Angeles
- 1984 the retrovirus causing AIDS discovered
- 2005 65 million infections 25 million deaths 4.5 million new cases
- 2013 Estimated 35 million people alive with HIV
- 2016 18.2 million people are on Antiretroviral Therapy

It is widely believed HIV originated in the Congo around 1920 when HIV crossed species



What Would Happen if We Were Suddenly Exposed to  
Deadly Viruses and Bacteria that have been  
Absent for Thousands of Years that we have never  
Met Before

We May be About to Find Out

# Where Will the Next Pandemic Arise



Ebola  
Virus

# Ebola Virus Epidemics

- Fruit Bats are thought to be the natural Ebola Virus Host
- Ebola introduced into humans through close contact with blood secretions, tissue or body fluids
- Spread to humans through direct contact
- Acute Symptoms High Case Fatality Rate
- 2014 2016 West Africa Largest Outbreak to date
- Incubation period 2 to 21 days
- **Humans are not infectious until they are symptomatic**



# One Pandemic Already Here

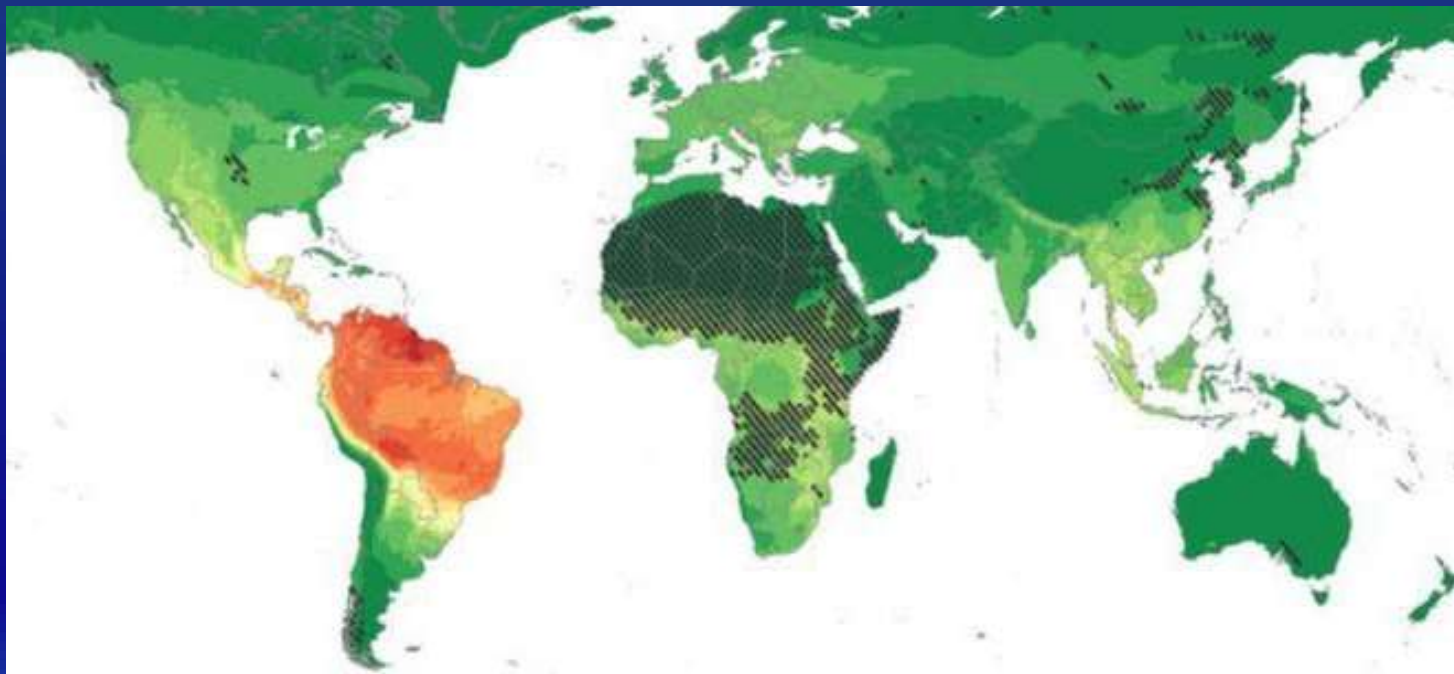


ZIKA

# What Do We Know About Zika

- Zika Spreads by the bite of an infected Aedes mosquito
- They bite during the day and night
- Zika can be passed from a pregnant woman to her fetus
- Multiple birth defects occur
- Local mosquito born Zika virus transmission has been reported in the Continental US

# Where Will the Next Threat Arise



# South America

- Tropical Countries most likely to harbor potential threats
- A hotbed of potential Killer Viruses
- Bats are the biggest threat carrying a higher proportion of viruses able to infect people than any other species
- Source of Zika virus





## IN a Different Climate

- Climate Change is Melting the Permafrost
- In the cold dark permafrost pathogens can survive
- Soils frozen for thousands of years are releasing ancient viruses and bacteria
- They can spring back to life as they thaw
- In 2016 Anthrax cases reported in Siberia due to permafrost thaw





# Conflict Areas and Infectious Diseases

- Diseases Controlled in in many areas are epidemic in many other areas.



War is Harmful  
To Flower <sup>War is</sup> and Trees  
Birds and Children  
And other Living Things