

# OLLI Cinema



**Visit our concessions**

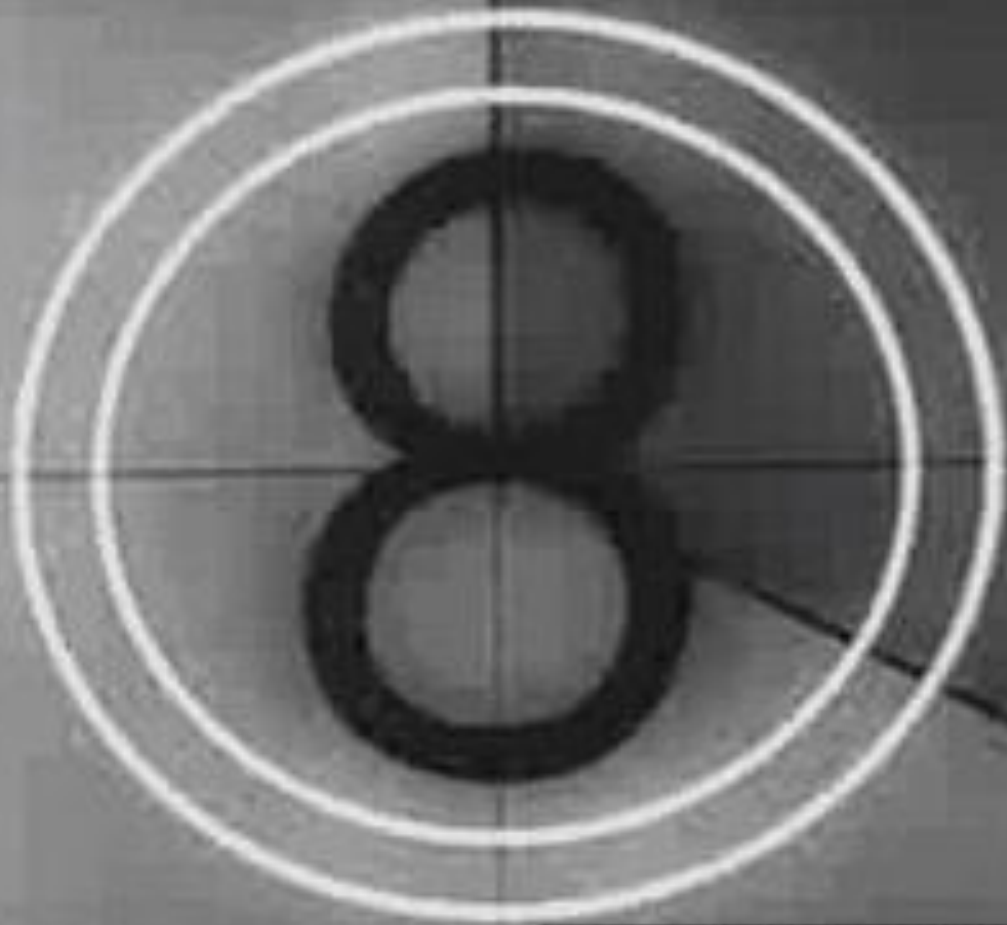
**Please claim your seats.**

**Mute your devices.**

**Show will start soon.**

**DIRECTOR**  
Néstor A. Ramírez MD





A stage with red curtains and a blue star containing text. The star is centered on the stage floor, which is lit with a yellow spotlight. The curtains are pulled back, revealing the stage.

Welcome !

Good  
Afternoon



# In Full Color:

White Plague (Tuberculosis)  
Yellow plague (Yellow fever)  
**Red plague (Smallpox)**  
Blue plague (Bubonic plague)  
Purple plague (Spanish flu)  
Black plague (Pneumonic plague)

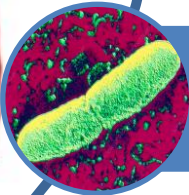
# Starring:



Rattus rattus

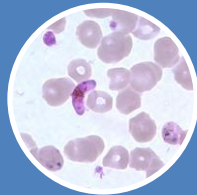


Xenopsylla cheopis



Yersinia pestis

# Co-Starring: (As themselves)



**Plasmodium  
falciparum**

**Malaria**



**Aedes  
aegypti**

**Yellow Fever**



**Vibrio  
cholerae**

**Cholera**





## Guest Appearances:



**Rickettsia  
prowasekii**  
**Typhus**

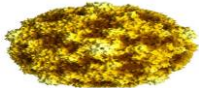


**Treponema  
pallidum**  
**Syphilis**

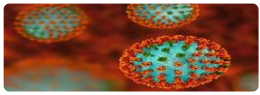


**Neisseria  
meningitidis**  
**Meningitis B**

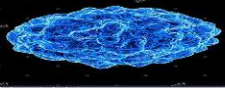
# Supported by Viral Billions



Yellow fever



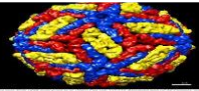
Influenza



Smallpox

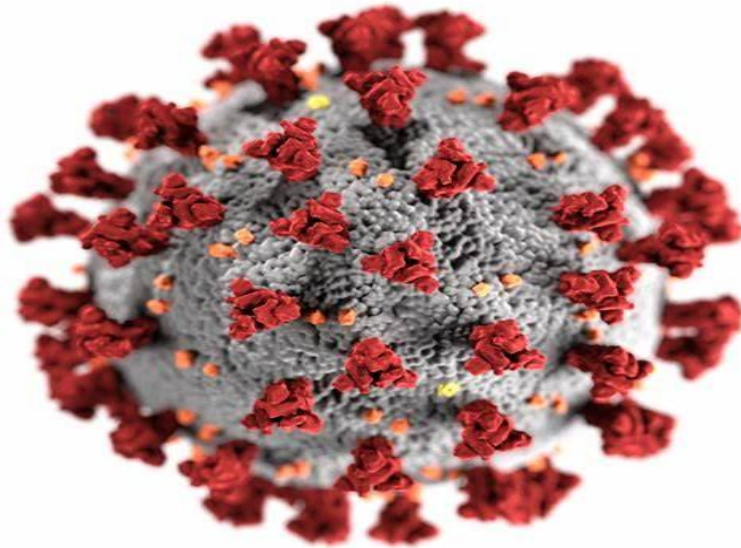


HIV/AIDS



Ebola, Zika, Dengue, Chikungunya

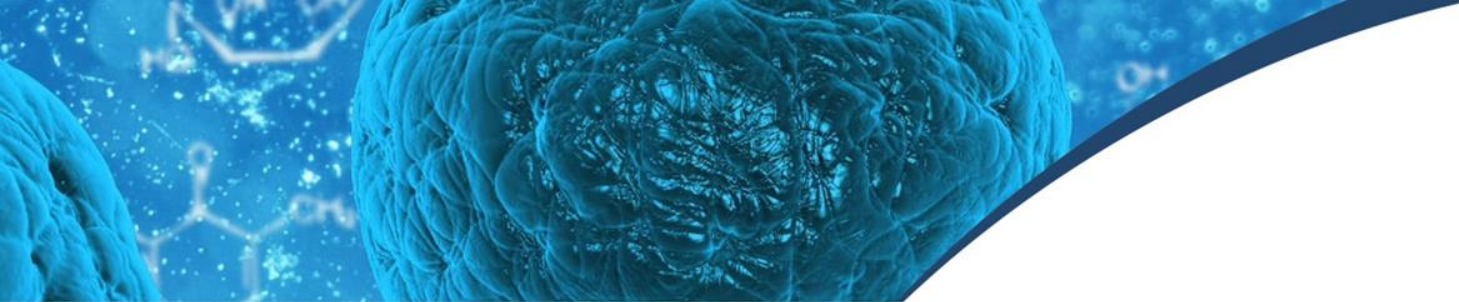
Featuring:



**CORONA virus as COVID-19**

The image features a pair of rich red, draped curtains that frame a central white area. The curtains are gathered at the top and bottom, creating a classic stage-like opening. The text is centered within this white space.

# Plagues, Pestilences Poxes and Pandemics



# **OLLI FALL 2020 SEMESTER**

## **SEPTEMBER 1, 2020 TO OCTOBER 20, 2020**

Néstor A. Ramírez, MD, MPH

The background of the slide features a blue-toned microscopic image of a spherical virus particle with a textured, bumpy surface. The particle is centered in the upper half of the frame. The background is filled with various chemical structures, including rings, chains, and functional groups, rendered in a lighter blue color. A large, dark blue curved line separates the top image from the text below.

# Plagues, Pestilences, Poxes and Pandemics.

Overview through History and Geography



## Purpose and Plan of this Program

**Provide a peripatetic, panoramic perusal of the particulars of the past, present and potential plagues, pestilences, poxes and pandemics that produce pervasive panic and persistently put peoples' permanence on this planet at prolonged peril, plus presenting possible positive principles of prevention.**



# Disclosures

- I regret that I have no financial conflicts of interest.
- I do not work for OLLI or the University of Illinois
- If a graphic is not in the public domain, I will give an attribution, when available.



# Disclosures

In the interest of full disclosure, when I was 12, I removed from my pillow the

**Under Penalty of Law this Tag NOT to be Removed!**

UNDER PENALTY OF LAW  
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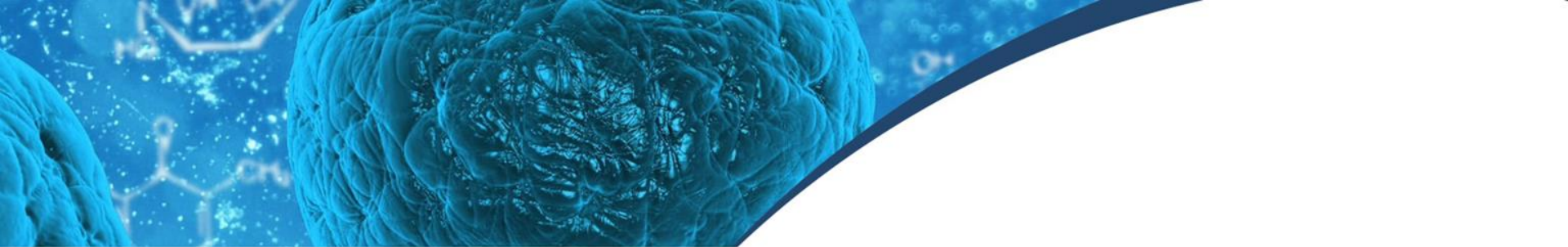
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# Course Overview

- Session 1 Sept. 1: Definitions, Biblical Plagues.
- Session 2 Sept. 8: The PLAGUE through time & place.
- Session 3 Sept. 15: Cholera, Yellow Fever, Malaria, etc.
- Session 4 Sept. 22: The Columbian Exchange.
- Session 5 Sept. 29: 20<sup>th</sup> Century Pandemics.
- Session 6 Oct. 6: HIV/AIDS
- Session 7 Oct. 13: 20<sup>th</sup> and 21<sup>st</sup> Century Viruses.
- Session 8 Oct. 20: Corona and other Coming plagues(?)

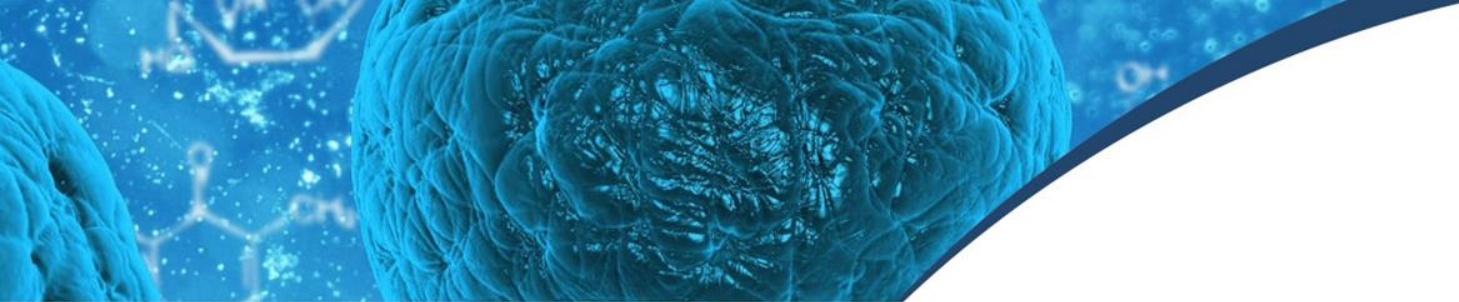


# **SESSION 1: SEPTEMBER 1, 2020**

Definitions and Clarification of Terms

Plagues and Pestilences in the Bible

Primitive Conception of Disease Origins and Causes



# EXPLANATION OF TERMS



# Definitions

- Greek and Latin roots.
- Definitions are descriptive.
- Some include others.
- Classification done by health offices.



# Endemic

- A disease or condition regularly found among a particular population or in a certain geographic area.
- Implies that the disease is consistently and continually present in that area or population.
- The numbers of sufferers from the condition are usually stable throughout time.



# Outbreak

- Sudden increase in occurrences of a disease in a particular time and place.
- Small and localized group or an entire continent.
- Four linked cases of a *rare* infectious disease may be considered an outbreak.



# Epidemic

- *Sudden and rapid* spread of disease to a large number of people in a population within a short period of time.
- Used for infectious diseases, and for diseases with an environmental origin.
- Erroneously used for smoking, vaping, opioids, etc.

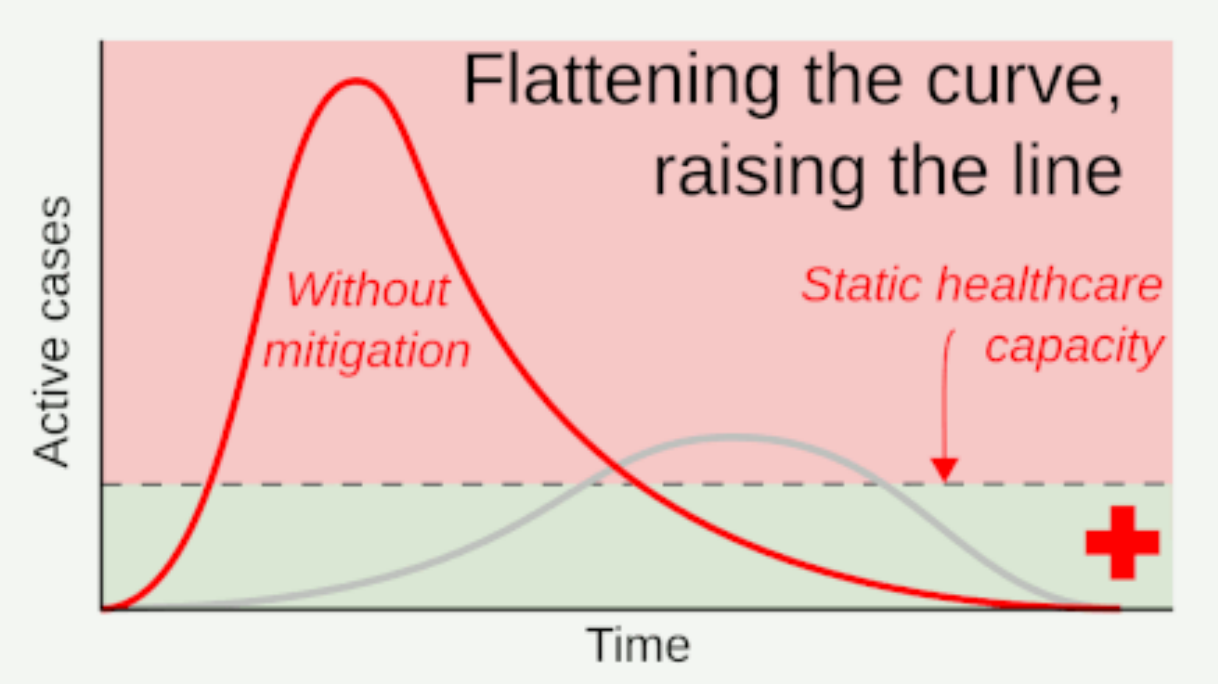




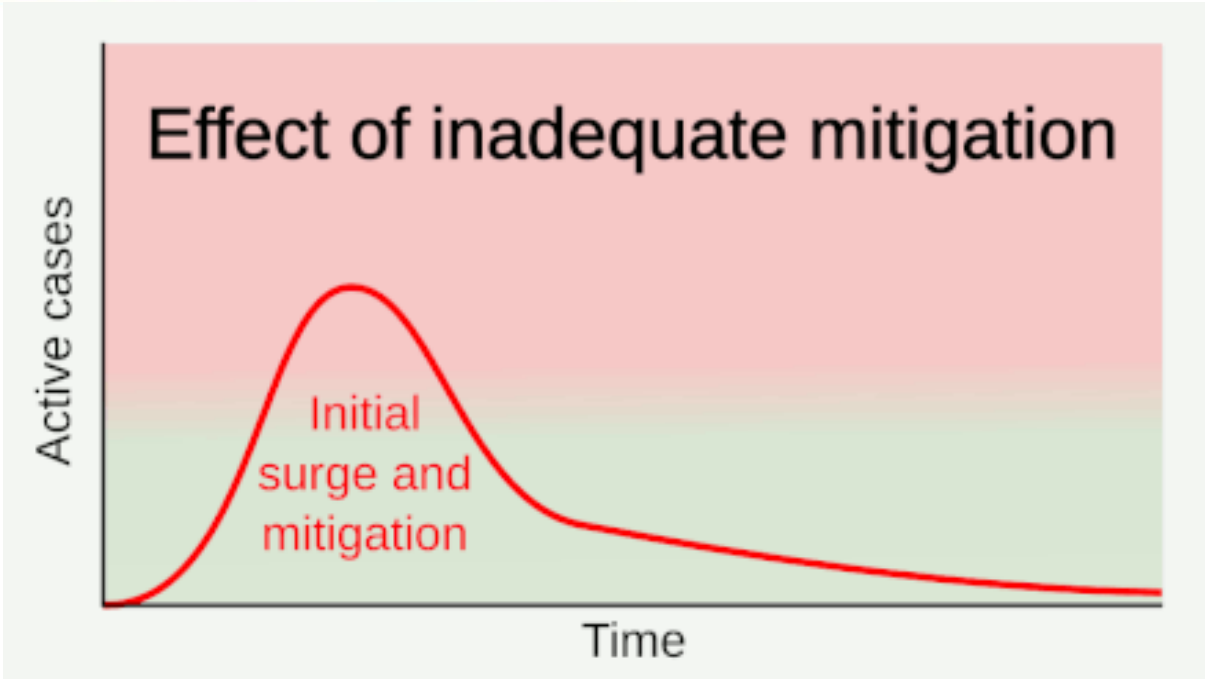
# Pandemic

- An epidemic that crosses international boundaries, usually affecting people on a worldwide scale.
- Near-global disease outbreaks when multiple countries across the world are infected.
- Term refers to **extent** of illness not **speed** of spread.

# Flattening the curve



# Inadequate Mitigation





# Zoonosis <sup>(1)</sup>

(plural zoonoses)

- Infectious disease by an agent (virus, bacteria, prion or parasite) that has jumped from animal to human.
- First infected human transmits the infectious agent to at least one other human, who then infects others.
- Of 1,415 human pathogens, **61%** are zoonotic.



## Zoonosis (2)

- Diseases that routinely involve animal to human transmission, such as rabies, are considered *direct zoonosis*.
- In *direct zoonosis* the disease is transmitted from animals to humans through media such as air (influenza) or through bites and saliva (rabies).



## Zoonosis (3)

- In *indirect zoonosis* transmission occurs via an intermediate species (vector), which carries the disease pathogen without getting sick.
- When humans infect animals, it is called reverse zoonosis, zooanthroponosis, or anthroponosis



# Plague

- A disastrous evil or affliction (Calamity).
- A destructively numerous influx or multiplication of a noxious animal (Infestation).
- An epidemic disease causing a high rate of mortality (Pestilence).



# Pox

- Any disease whose major symptom is eruptive pustules on the skin, such as small-pox, chicken-pox, or cow-pox, all of which can leave pockmarks.
- If the kind of pox was not specified, historically the "great pox" (syphilis) was what was meant.





# Pestilence

- An epidemic outbreak of a deadly and highly infectious disease.
- A pernicious evil and malignant influence or agent.



# Plagues in the Bible

**Old Testament:**  
Plague of Ashdod  
Plagues of Egypt

**New Testament:**  
Book of Revelation



# Plague of Ashdod <sup>(1)</sup>

Samuel Book 1 Chapters 4-6

- Philistines defeated the Israelites in battle at Shiloh.
- Stole the Ark of the Covenant, took it to Ashdod.
- Put it beside their god Dagon in his temple.



## Plague of Ashdod <sup>(2)</sup>

- The statue of Dagon was found face down with its head and hands cut off.
- Jehovah sent a plague to punish the Philistines.
- Struck them with lumps and tumors around their groins, and they died of that disease.

# Plague of Ashdod (3)

- Dagon defeated & fallen.
- Philistines find their god downed and mutilated.
- The Ark was intact.





# Latin Vulgate

Old Testament

1 Kings (1 Samuel) V: 6, 9, 12

- “The hand of the Lord was heavy upon Ashdod, and he destroyed them, and afflicted them with *emerods*,
- And in the villages and fields there came forth a multitude of mice, and there was confusion and a great mortality in the city.”



**The Plague of Ashdod**  
Nicolas Poussin ~1629

also known as

**The Miracle of the Ark  
in the Temple of Dagon**

The Louvre, 58 X 78 in.







# Latin Vulgate

Old Testament

1 Kings (1 Samuel) V: 6, 9, 12

“And while they were carrying the Ark about, the hand of the Lord came upon them with an exceeding great slaughter, and he smote the men of every city.”



# Latin Vulgate

Old Testament

1 Kings (1 Samuel) VI: 5

“And the men that did not die were afflicted with the *emerods* in their secret parts, and the cry of every city went up to heaven.”



# Latin Vulgate

Old Testament

1 Kings (1 Samuel) VI: 5

- “You shall make the likeness of your *emerods*, and the likeness of the mice that have destroyed the land.
- You shall make five golden *emerods*, and five golden mice; for the same plague hath been upon you all, and upon your lords.”



*“quinque anos aureos et quinque mures aureos”*



# **The Biblical Plagues of Egypt**

## **Book of Exodus Chapters 7-12**

**Inflicted on Egypt by the God of Israel  
to force Pharaoh to free the Israelites  
from slavery.**

# The First Plague



Nile water  
turned to  
blood

# The Second Plague



## Plague of Frogs

# The Third Plague



## Plague of Gnats and Lice



# The Fourth Plague



## Plague of Flies

# Fifth Plague



## Death of Livestock

# Sixth Plague



Sores in  
Humans  
and Animals

# Seventh Plague



## Hail of Fire

# Eighth Plague



## Hordes of Locusts

# Ninth Plague

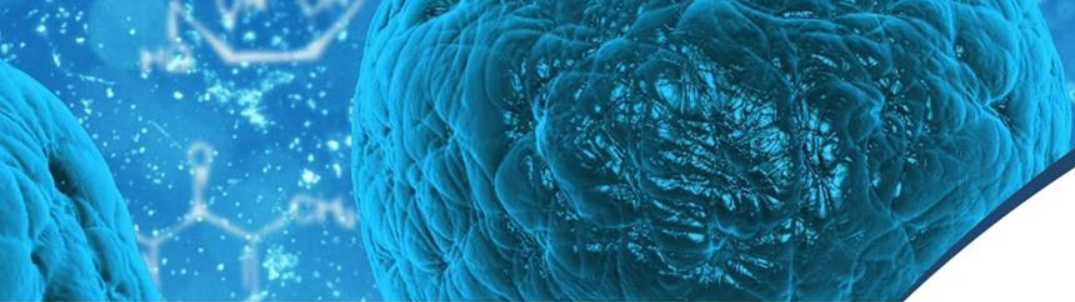


Darkness  
for 3 days

# Tenth Plague



## Death of Firstborns

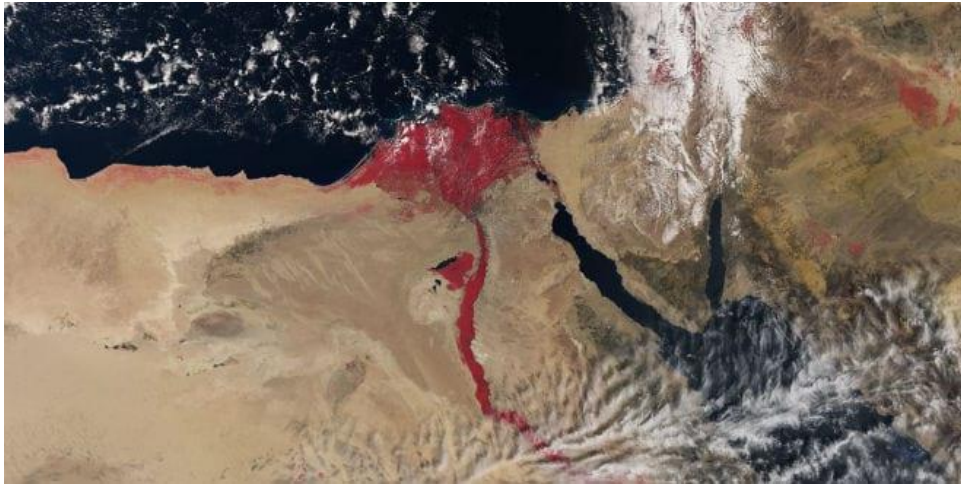


## Scientific Explanation for the 10 Plagues <sup>(1)</sup>

- The plagues were the result of a volcanic eruption on the island of Santorini around 1620-1600 BCE.
- Winds would have carried the volcanic ash during the summer, and the toxic acids and the mineral cinnabar could have turned the river a blood-like red color. <sup>(1)</sup>



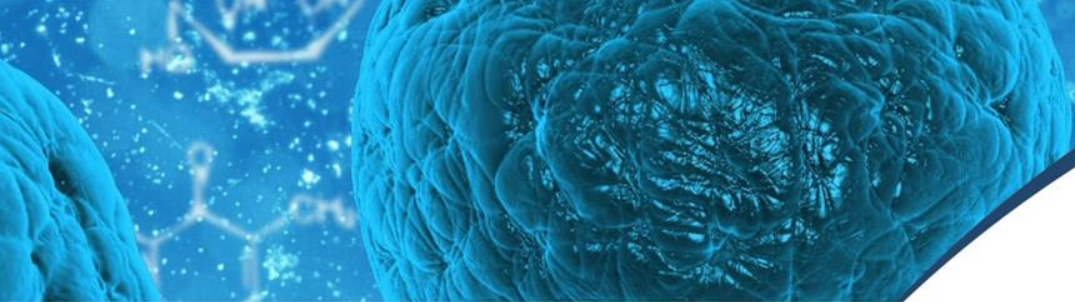
# Red Waters



European Space Agency 2016 (vegetation growth)

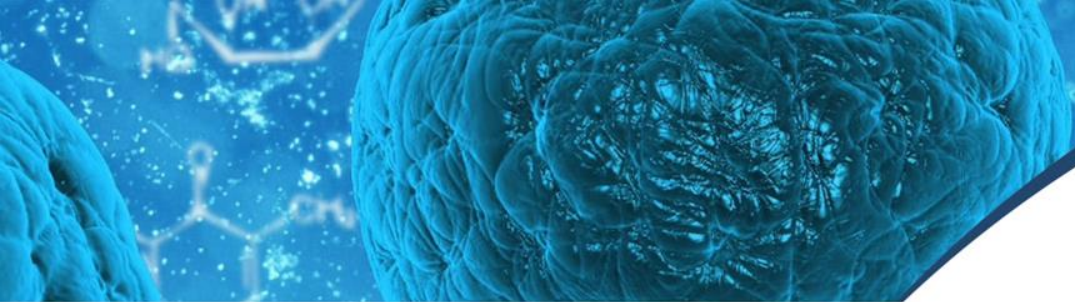


Red mud sludge Hungary 2009



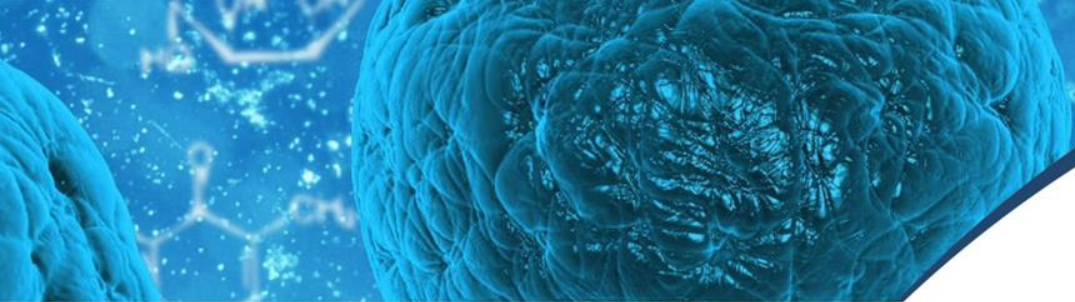
## Scientific Explanation for the 10 Plagues (2)

- The accumulated acidity in the water killed fish and caused frogs to leap out and search for clean water. (2)
- The grass would have been contaminated, poisoning the animals that ate it. (5)
- Insects would have burrowed eggs in the bodies of dead animals which generated larvae and adult insects. (3, & 4)



## Scientific Explanation for the 10 Plagues <sup>(3)</sup>

- Volcanic ash affected the weather, with acid rain landing on people's skin and causing boils. (6)
- Humidity from the rain and hail would have created optimal conditions for locusts to thrive. (7 & 8)
- Volcanic eruptions could also explain the several days of darkness. (9)



## Scientific Explanation for the 10 Plagues (4)

First-born children could have been sacrificed out of desperation, in the hopes that such a meaningful sacrifice would lead their gods to stop punishing them. (10)



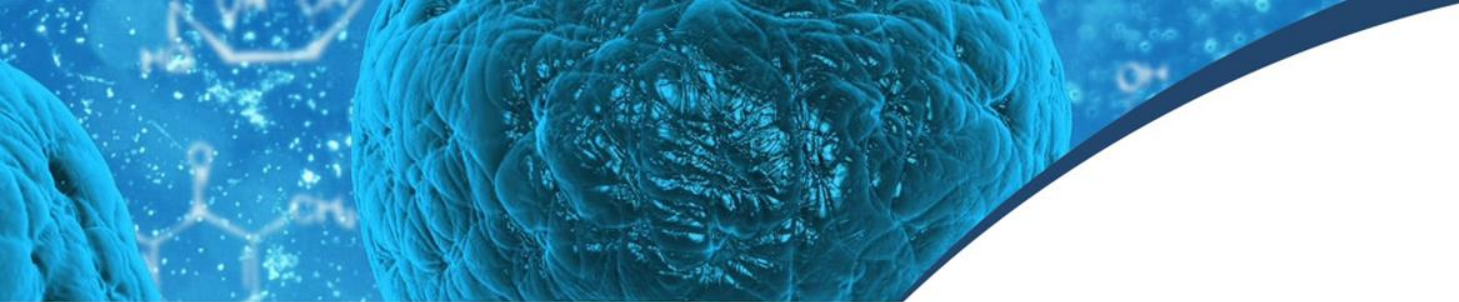
# Other Old Testament Plagues <sup>(1)</sup>

- **Numbers 16:** God punished the Israelites in the wilderness for rebelling against Moses and Aaron.
- 250 killed by the ground splitting apart when God struck Ko'hath, Dathan, Abiram and their followers.
- 14,700 killed by Jehovah's plague.



## Other Old Testament Plagues <sup>(2)</sup>

- **2 Samuel 24:** Jehovah punishes David for his sinful pride in counting his troops.
- David given choice of 7 years of famine, 3 months of fleeing from his enemies, or 3 days of pestilence.
- He chose the 3 days, and God sent a pestilence (Angel of death) that killed 70,000 persons.



# LEPROSY

# Leprosy, What It Is

- Chronic Infectious Disease.
- Transmissible but not easily contagious.
- Debilitating and deforming.
- Appearance may be repulsive or scary.
- **Treatable.**



# Leprosy, What It Isn't

- Biblical curse.
- Punishment for evil behavior.
- Inherited.
- Untreatable or Incurable.
- Extremely contagious.
- Rotting away of face or extremities.

# Leprosy <sup>(1)</sup>

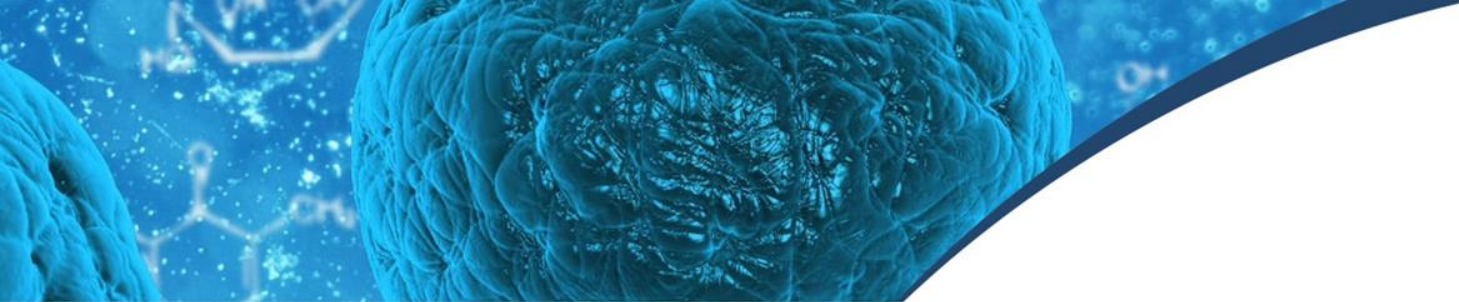
- Also known as Hansen's disease (HD).
- Infection by *Mycobacterium leprae*.
- Infected person may remain asymptomatic for 5 to 20 years.
- Infection can lead to damage of the nerves, respiratory tract, skin, and eyes.

# Leprosy (2)

- About 95% of people with *Mycobacterium leprae* contact **do not** develop the disease.
- Does not spread during pregnancy to baby
- Does not spread through sexual contact.
- More common among people in poverty.

# Leprosy <sup>(3)</sup>

- Nerve damage results in a loss of feeling pain.
- May lose extremities from repeated injuries or infection.
- Physical and neurological damage may be irreversible.
- May present with diffuse granulomatous skin lesions: nodules, macules, or papules.



Lazarettos

# EXTREME ISOLATION

# Why Leprosariums?

15<sup>th</sup> to 19<sup>th</sup> Century  
Europeans were terrified of  
contracting leprosy in their  
outlying empires.

Medical & intellectual elites were  
inspired by the ignorant &  
superstitious Middle Ages.

The answer, to them,  
obviously lay in  
**compulsory mass**  
**isolation.**

# Lazarettos (1)

- A lazaretto or lazaret is a quarantine station for maritime travelers.
- Used for quarantine of cholera, plague, yellow fever or other diseases.
- A leper colony administered by a Christian religious order was often called a lazaret house.

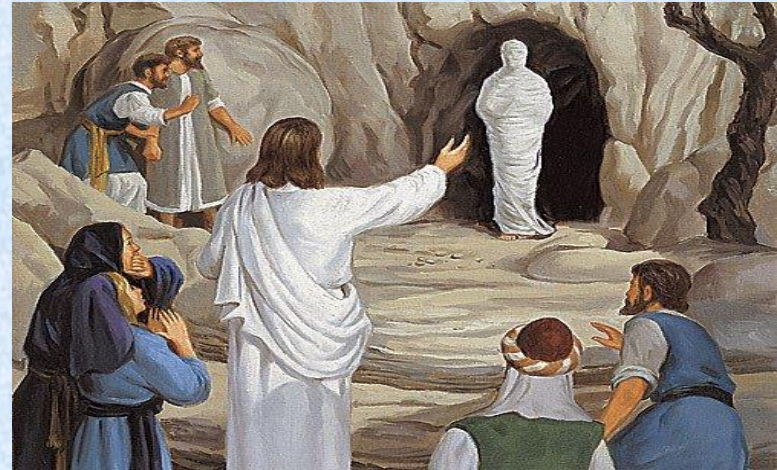
## Lazarettos (2)

- Called leprosariums when used for leprosy.
- Located in distant areas or remote islands.
- Usually run by religious orders or pious groups.
- Had own currency, to be used **ONLY** inside the leprosariums.



# Lazarus and the Gospels (1)

- Was resuscitated by Jesus (John 11:11-44).
- Name is Latinized from the Aramaic “Eleazar”.
- Lazarus of Bethany, brother of Mary & Martha.



# Lazarus and the Gospels (2)

- Lazarus in Luke (16:19–31) was a beggar whose sores the dogs licked.
- Inspired The Order of St. Lazarus.
- NOT Lazarus of Bethany.





## The Order of Saint Lazarus (1)

- In the Crusades an army made up of diseased men, fought fiercely and formidably despite their ailments.
- They had many former Templars in their ranks, but their battles were catastrophic and many Lazarites died.

# The Order of Saint Lazarus (2)

- By 13th Century, Templars with leprosy were made to switch to the Order of St. Lazarus.
- In 1291, with the other four military Orders, the Lazarites fought bravely to protect Acre.
- All the military members of the Order of Saint Lazarus in Acre were killed defending the city.

# The Order of Saint Lazarus <sup>(3)</sup>

- 1250: Had >300 leprosaria throughout Europe.
- 1253: Started to recruit non-leprous knights.
- 1265: Pope Clement IV put all lepers in Christendom under the control of the Order.

# Leprosarium Warning Signs (1)



# Leprosarium Warning Signs



# Lesions of Leprosy





# Carville Leprosarium



All persons diagnosed with Hansen's disease in the U.S. were required by law to be quarantined and treated.



# The New Testament



# The Revelation of St. John the Divine

- The last book of the New Testament is a prophetic revelation concerning a cataclysm with universal or widespread destruction or disaster.
- The imagery of the 4 Horsemen of the Apocalypse is associated with the catastrophic end of the world.



# Apocalypse

- Apocalypse (ἀποκάλυψις), Greek word meaning "**revelation**", an unveiling or unfolding of things not previously known and which could only be known by the unveiling.
- Apocalyptic literature details the authors' visions of the end times as revealed by an angel or other heavenly messenger.

# The 4 Horsemen

- **White:** Pestilence
- **Red:** War
- **Black:** Famine
- **Ashen:** Death and Hades

*“Authority was given to them over a fourth of the earth, to kill with sword and with **famine** and with **pestilence** and by the wild beasts of the earth.”*





## “Biblical” Proportions

- Pertaining to a natural disaster or other cataclysmic event so immense that it brings to mind biblical accounts of horrific catastrophes.
- Pertaining to a thing or occurrence having vast upheavals in size, extent, or consequences.



# Biblical Proportions

## God's Killings

- About 2.8 million people.
- Plagues, floods, earthquakes, fires, walls, animals, other humans, the Angel of God.
- Ethiopians, Egyptians, Canaanites, Philistines, Syrians, Israelites, etc.

Reznik, Sieradzki, Markovitz 2015



## Concepts of Disease

- Conceived as a divine punishment for wrongdoings.
- Retribution upon humans for offending the gods.
- Needed sacrifices, offerings, repayment, penance.
- Show of gods' power and humans' weakness.





# Concepts of Disease

- People had no concept of transmission or contagion.
- A disease could only be transferred if there was a visible stigma, like leprosy or smallpox.
- Treatments were based on appeasing the gods.
- Prayers, herbs, chants and sacrifices were common.



# Shakesperian Curses

- “A pox upon him” (All's Well That Ends Well).
- “Boils and plagues plaster you o'er, that you may be abhorr'd.” (Coriolanus).
- “Thou art a boil, a plague sore, an embossed carbuncle” (King Lear).
- “A pox o’ your throat, you bawling, blasphemous, incharitable dog!” (The Tempest).



# Recap of Session 1

- Epidemiologic definitions.
- Plagues in the Bible: Old Testament.
- Plagues in the Bible: New Testament.
- Primitive conceptions of diseases.



