

Viral Pandemics

Jack Fein, MD JD

VP Marist Center for Lifetime Studies



XINJIANG

QINGHAI

TIBET

SICHUAN

INNER MONGOLIA

JILIN

LIAONING

Hamin Mangha

HEIBEI

TIANJIN

SHANXI

SHANDONG

NINGXIA

GANSU

SHAANXI

Wuhan

JIANGSU

SHANGHAI

HUBEI

ANHUI

CHONGQING

ZHEJIANG

HUNAN

JIANGXI

YUNNAN

GUIZHOU

FUJIAN

GUANGXI

GUANGDONG

TAIWAN



守望相助 共克时艰

内蒙古医科大学附属医院



Major Human Pathogens

Gram positive Bacteria

Cocci

Staphylococcus
Streptococcus
Enterococcus

Rods

Listeria
Bacillus
Clostridium
Corynebacterium
Gardnerella
Propionibacterium

Branching

Actinomyces
Nocardia

No cell wall Pleomorphic

Mycoplasma

Acid Fast Bacilli

Mycobacterium tuberculosis
Mycobacterium leprae
Non-tuberculous Mycobacteria

RNA

Rhinovirus
Coxsackie
Enteroviruses
Poliovirus
Rotavirus
Norovirus
Hepatitis A
Hepatitis C
HIV

HTLV-1
Measles
Mumps
Rubella

Viruses

Influenza A, B
Parainfluenza
RSV
Human
metapneumovirus
Coronavirus
(MERS, SARS)
Ebola
Rabies

Vector borne
West Nile
Dengue
Chickengunya
Yellow Fever

DNA

Adenovirus
Herpes simplex
Varicella zoster
Cytomegalovirus
Epstein Barr virus
HHV8, HHV7, HHV6
Smallpox
Molluscum contagiosum
Hepatitis B
Parvovirus
Human papillomavirus
BK polyomavirus

Fungi

Yeast

Candida
Cryptococcus
Pneumocystis
Malassezia
Microsporidia

Mold

Aspergillus
Mucor
Rhizopus
Fusarium

Dimorphic

Coccidioides
Histoplasmosis
Blastomyces
Paracoccidioides
Sporothrix

Dermatophytes

Microsporum, Epidermophyllum, Trichophyton

Protozoa

GIGU

Entamoeba
Giardia
Cryptosporidium
Trichomonas

Blood

Plasmodium
Babesia

Tissue

Trypanosoma
Leishmania
Toxoplasma
Naegleria

Gram negative Bacteria

Rods

Enteric flora

E. coli
Klebsiella
Proteus
Serratia
Enterobacter

Respiratory Pathogens

Haemophilus
Bordetella
Legionella

Spiral

Campylobacter
Helicobacter

Opportunistic

Pseudomonas

Enteric pathogens

Shigella
Salmonella
Yersinia

Anaerobic

Bacteroides
Prevotella
Fusobacterium

Comma

Vibrio

Diplococci

Neisseria
Moraxella

Zoonotic

Brucella
Francisella
Campylobacter
Pasteurella
Bartonella
Yersinia
Coxiella
Chlamydia
psittaci
Rickettsia
Ehrlichia
Anaplasma
Borrelia
Leptospira

Spirochaetes

Treponema
Borrelia
Leptospira

Intracellular

Chlamydia
Chlamydia
Rickettsia
Coxiella
Legionella
Ehrlichia
Anaplasma
Bartonella
Brucella
Francisella
Shigella
Salmonella

Arthropods

Ticks

Vectors of Lyme borreliosis,
Relapsing Fever, RMSF,
other Rickettsia, Babesia,
Anaplasma, Ehrlichia

Lice (pediculosis)

Vectors of Epidemic typhus,
Trench Fever

Mites (scabies)

Vectors of Scrub typhus,
Rickettsialpox

Mosquitoes

Vectors of Malaria, Dengue,
Chikungunya, West Nile,
Yellow Fever

Fleas

Vectors of Cat-scratch fever,
Murine typhus, Bubonic
plague, Tularemia

Helminths

Trematodes (Flukes)

Schistosoma
(Schistosomiasis)
Clonorchis & Fasciola
(Liver Flukes)
Paragonimus (Lung Fluke)

Cestodes (Tapeworms)

Taenia saginata
(Beef Tapeworm)
Taenia Solium
(Pig Tapeworm)
Diphyllobothrium
(Fish Tapeworm)
Echinococcus
(Dog Tapeworm)

Nematodes (Roundworms)

Enterobius (Pinworm)
Trichuris (Whipworm)
Ascaris (Giant worm)
Ancylostoma & Necator
(Hookworm)
Strongyloides (Strongy)
Toxocara (Dog Ascaris)
Trichinella (Trichinosis)
Onchocerca (River
Blindness)
Loa Loa (Eye Worm)
Wuchereria & Brugia
(Elephantiasis)

Viruses

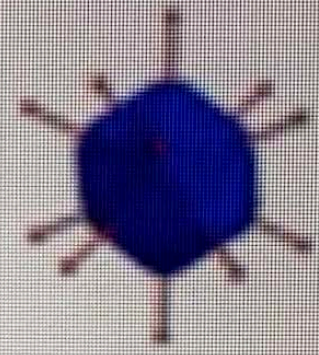
RNA

Rhinovirus
Coxsackie
Enteroviruses
Poliovirus
Rotavirus
Norovirus
Hepatitis A
Hepatitis C
HIV
HTLV-1
Measles
Mumps
Rubella

Influenza A, B
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(MERS, SARS)
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Epstein Barr virus
HHV6, HHV7, HHV8
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Molluscum contagiosum
Hepatitis B
Parvovirus
Human papillomavirus



VIRAL PANDEMICS

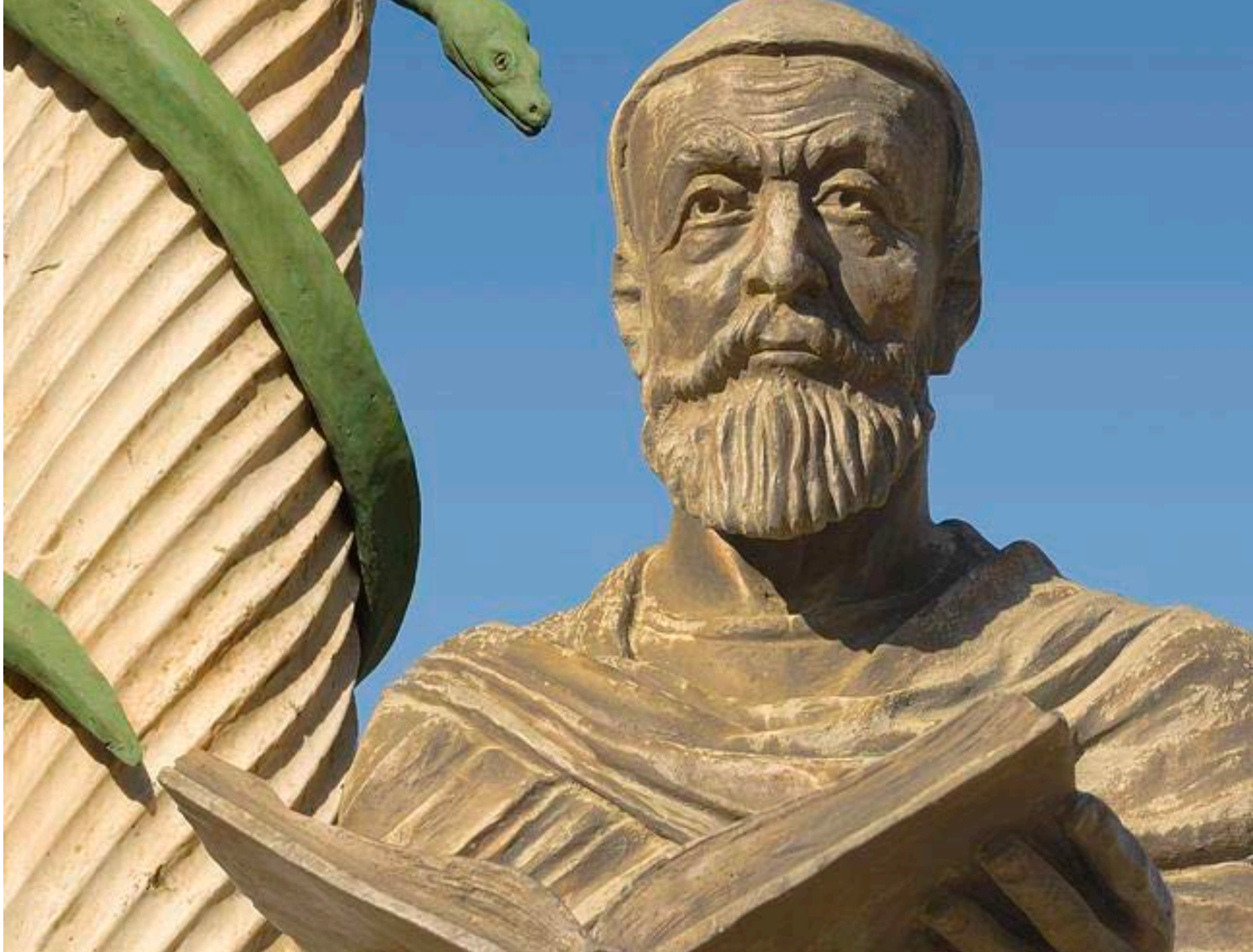
Smallpox

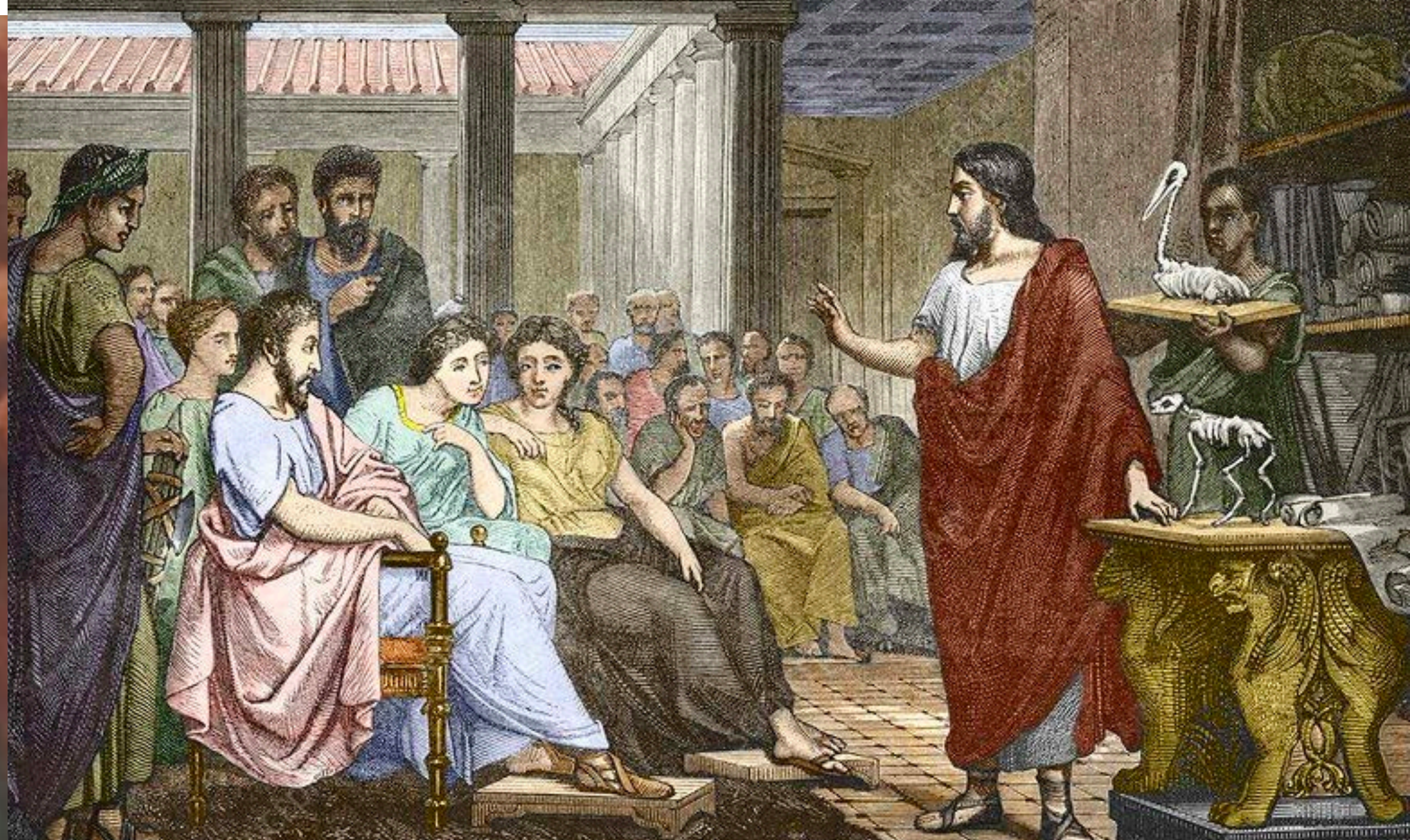
Influenza (Spanish Flu)



Coronaviruses—-Sars, Sars2









Gibbon's Decline and Fall of the Roman Empire

“Pestilence and famine contributed to fill up the measure of the calamities of Rome”

(Vol. 1, p.91)

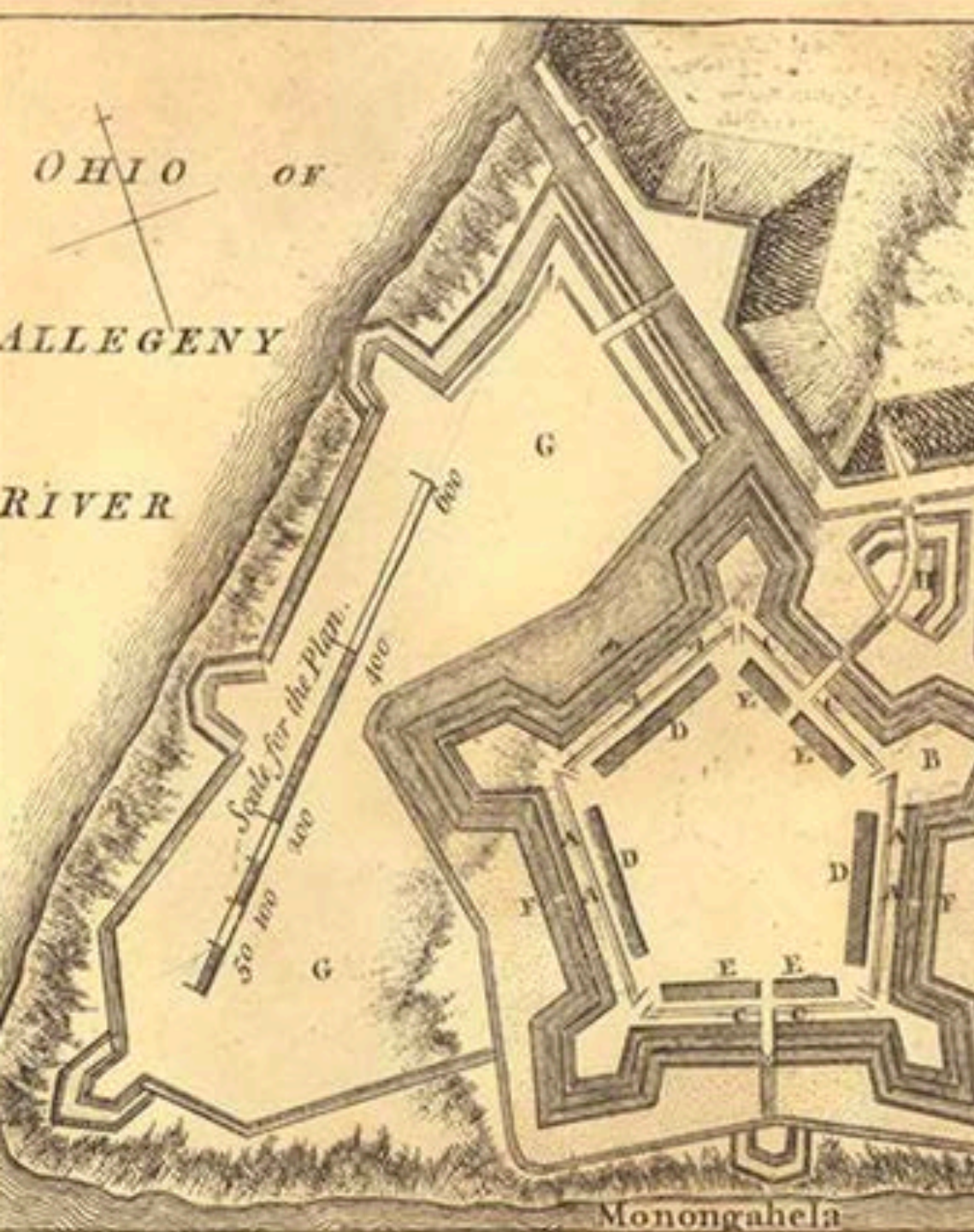
武蔵
鬼神を退く圖



Tametomo Banishes Onryo







P.S.

You will do well to try to inoculate the
Indians by means of Blankets, as well as to try
every other method that can serve to exterminate
this accursed Race. I should be very glad your
them Down by Force could take
Effect









100 DOSES Rx only
Smallpox Vaccine
Dried, Calf Lymph Type
Dryvax®
Dose: Approx. 2.5 µL Reconstituted
EYETH LABORATORIES
Marietta, PA 17547 U.S.A.
U.S. Govt. License No. 3
U0346-02-2



Eradication of Smallpox

The World Health Organization

..... Declares solemnly that the world and its peoples have won freedom from smallpox, which was a most devastating disease sweeping in epidemic form through many countries since earliest time, leaving death, blindness and disfigurement in its wake and which only a decade ago was rampant in Africa, Asia and South America.^[108]

December 9, 1979

SMALLPOX- LESSONS LEARNED

- Describe Disease (Galen)
- Protect Armies
- Personal Hygiene
- Vaccination
- Bioterrorism

INFLUENZA PANDEMICS

Spanish flu (1918 –1920)



Asian flu (1957–1958)

Hong Kong flu (1968–1969)

H1N1/09 flu pandemic (2009–2010)

February 1918 - April 1920

Infected 500 million people, about
a third of the world

Death toll 17 million - 50 million
(100 million)

One of the deadliest pandemics in
history



THE SPANISH FLU

Virus, origin, symptoms, outbreak, spread and contagion:
the true story of the 1918-1920 Great Influenza, the
deadliest pandemic in history

SEDITION BILL HAS BEEN SIGNED

**One of Most Drastic Measures
Ever Enacted to Catch
and Punish Enemy
Agent.**

TWENTY YEAR PENALTY

DON'T TALK



THE WEB
IS SPUN
FOR YOU
WITH
INVISIBLE
THREADS

**KEEP OUT OF IT
HELP TO DESTROY IT**

STOP = THINK

ASK YOURSELF IF WHAT
YOU WERE ABOUT TO SAY
MIGHT HELP THE ENEMY

SPIES ARE LISTENING

You had public health leaders telling people this was just the ordinary flu by another name. They simply didn't tell the people the truth about what was happening.—John Barry

Now King of Spain Has Spanish "Flu"

MADRID, Oct. 3.—(By the Associated Press.)—The health of King Alfonso, who is ill with influenza, continues poor today. Members of the royal family will leave San Sebastian today for Madrid, but the king will remain behind for a few days.

Unknown Disease in Spain.

(REUTER.)

LONDON, Monday Night.—Reuter's correspondent at Madrid says that King Alfonso, the Premier, and other Ministers, and 30 per cent of the population of Spain, are suffering from an unknown epidemic, the symptoms of which are high fever, pains in the chest, and diarrhoea. The disease is of a mild nature.



First Wave

Started in Fort Riley, Kansas

Troops being moved by rail

Disease spread from Kansas

to Australia

After July the First Wave receded

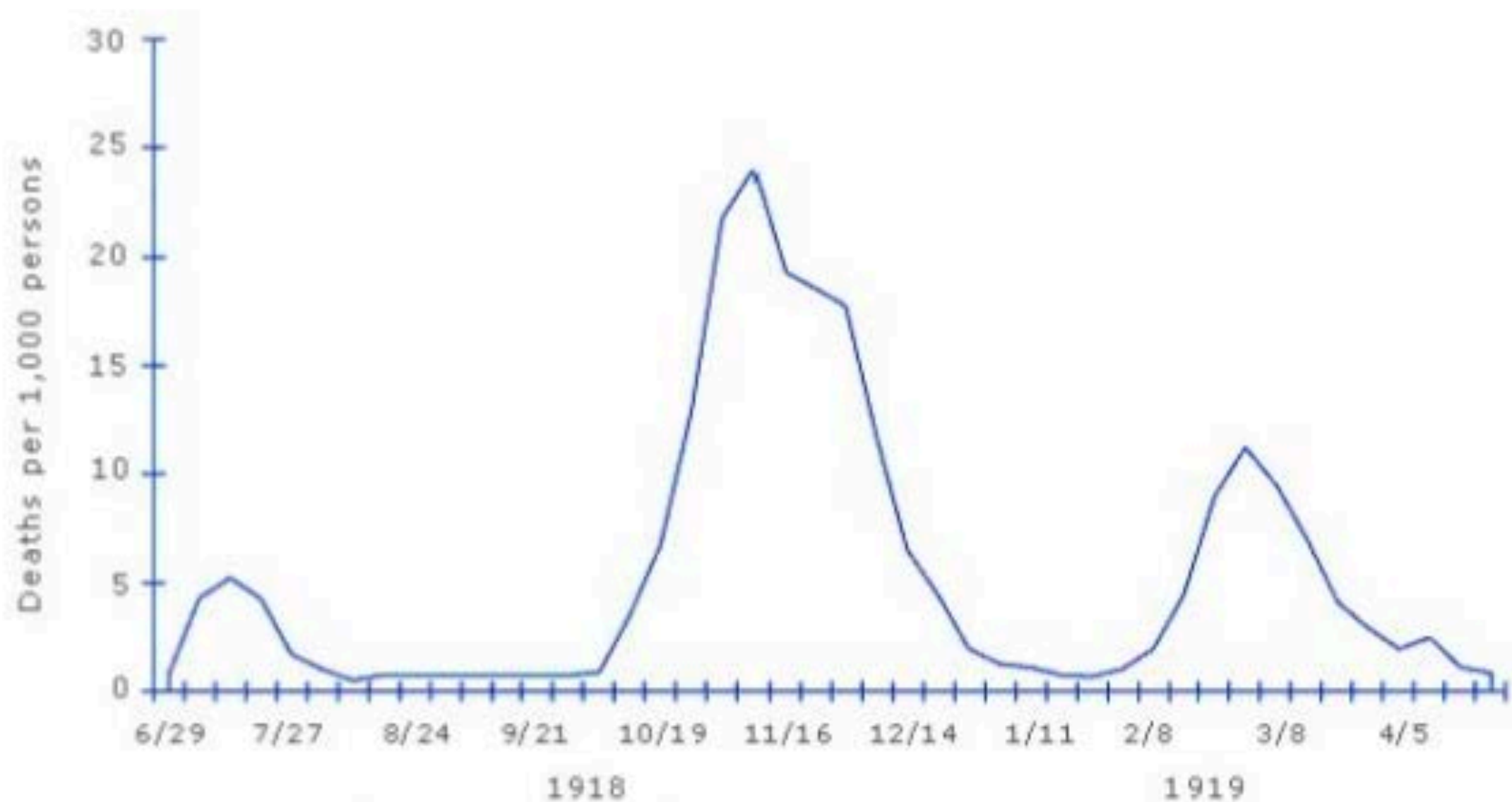
Good data from military records

Low mortality,- thru June 1918





Pandemic Waves (1918-1919)



Virulence of the 1918 Pandemic

Troop transports placed people in close contact

30% of U.S. physicians were deployed to military service

Censorship misled public

No vaccines, antibiotics, mechanical ventilation

No centralized coordination



Spanish Influenza can be prevented easier than it can be cured.

At the first sign of a shiver or sneeze, take



Standard cold remedy for 20 years—in tablet form—safe, sure, no opiates—breaks up a cold in 24 hours—relieves grip in 3 days. Money back if it fails. The genuine box has a Red top with Mr. Hill's name on it.



WONDERFUL DISINFECTANT
Kills "Flu" Germs

PHENOL is a wonderfully effective disinfectant, much stronger than Carbolic Acid, with none of its disagreeable odor. Its germ-killing properties are recognized by leading doctors, who strongly recommend its use during the present epidemic. Full instructions with a generous bottle, 50c.

Service Day and Night

Knowlton's Drug Store
11 EASTING STREET N. PHONE EXT. 604

SPANISH 'FLU
DON'T GET ALARMED!
SPRAY AND DISINFECT.

CN with (Coro-Noleum)
The Standard Disinfectant

West Disinfecting Co.
1240 GRANVILLE STREET
Phone Sey. 1451

Influenza!

should be carefully guarded against. A mild spray and gargle mixture of water and

JOHNSON'S ANODYNE LINIMENT

for the nose and throat with an occasional dose taken internally may safeguard you from serious results and halt the evil in its first stage. This famous old physician's prescription is an

Enemy to Germs

PATRIOTIC DRIVE AGAINST THE "FLU"

As onion sets arrived today, California, too, they need more there. At the Bessemer Transfer yard, South Beach, there will be the price, enough to supply the town.

So take a trip out Westinghouse St. And see what you can buy! With what is left from Liberty Bonds. Lay it your whole supply.

Eat More ONIONS

One of the Best Preventatives for Influenza.

Car Load of Onions will be on sale on siding at Bessemer Freight Station

TODAY and TOMORROW
Will Be Sold Direct from Car
Bring Your Own Sacks or Baskets if Possible
THE PRICES ARE RIGHT

J. W. GARDOCKY, Grower

Hayes' Healing Honey

STOPS THE TICKLE
HEALS THE THROAT
CURES THE COUGH

Its Soothing Healing Effect soon gives relief. Price 30c. Sold by all Druggists. If your Druggist should not have it in stock, he will order it from his nearest Wholesale Druggist.



For **COLDS GRIP or INFLUENZA**

Take **BROMO QUININE**

Laxative Tablets

Always Buy Genuine is special in this Ad.

E. W. Grove

SPANISH INFLUENZA

RUB IN AND INHALE

Dr. Jones' Liniment

GENERALLY KNOWN AS

BEAVER OIL

and get relief. Good for cold in chest and catarrh. It reduces swellings, inflammation, and is a powerful disinfectant and preventative. Dr. Jones' Liniment is good for the soldier boys in training, in the home, shop, store in fact everywhere. Always good to have on hand as a first aid measure.

All Druggists - - - 30 and 55 Cents

During and After INFLUENZA

The Old Reliable Round Package

HORLICK'S MALTED MILK

Very Nutritious, Digestible

The REAL Food-Drink, Instantly prepared. Made by the ORIGINAL Horlick process and from carefully selected materials. Used successfully over 1/4 century. Endorsed by physicians everywhere.

Specify **Horlick's** The Original Others Are Imitations

By Royal Warrants of Appointment during Three Successive Reigns

JEYES' FLUID

THE BEST DISINFECTANT

Guard against Influenza,
Scarlet Fever, Small Pox, Measles and all Infectious Diseases by the daily use of

Jeyes' Fluid

The Ideal Disinfectant.
Safe. Efficient. Economical.

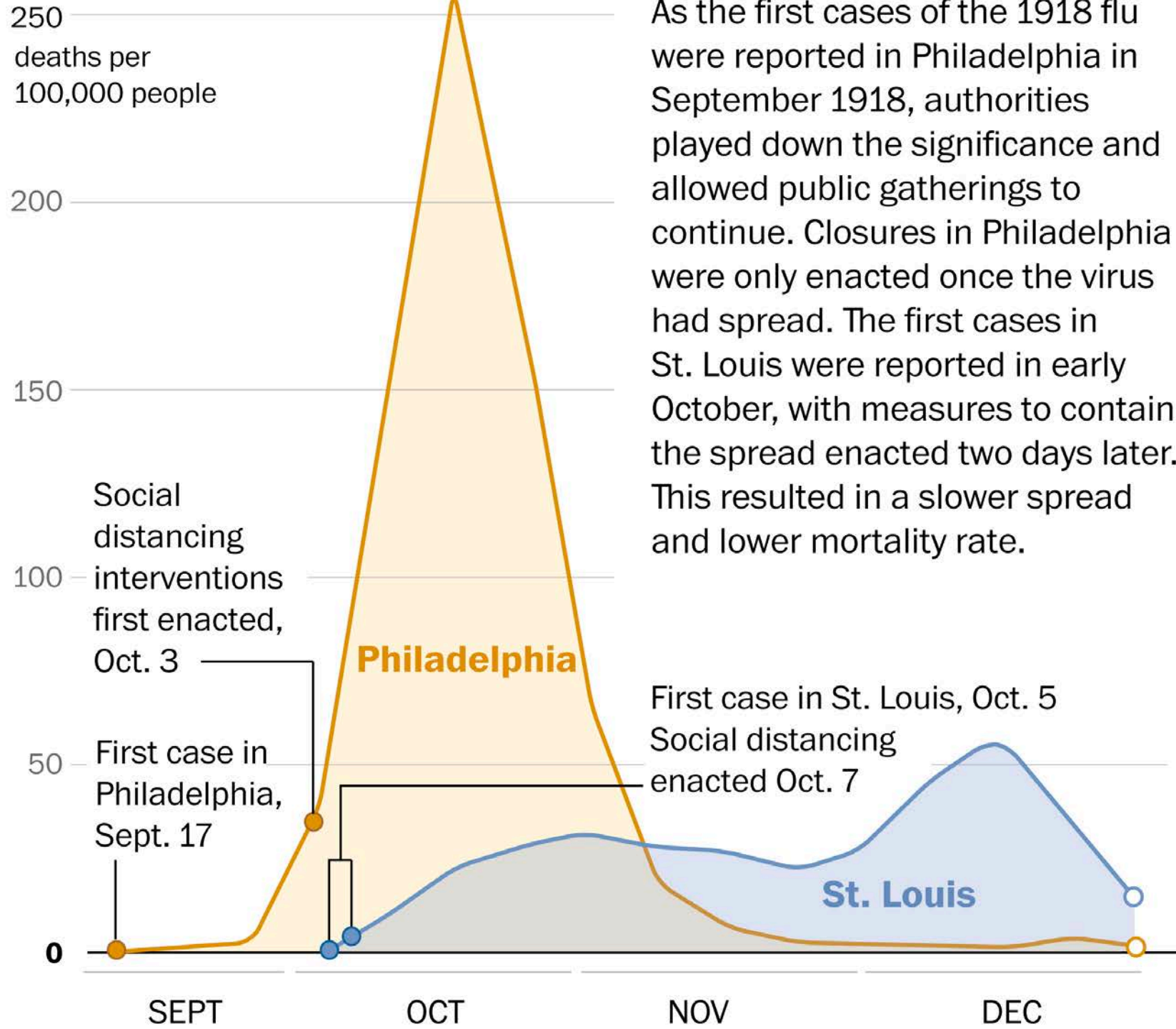
USE it in your Bath.
SPRAY the atmosphere of the Home, Factory, Office, Cinema, etc.
DISINFECT all Lavatories, Sinks and Drains.

Invaluable for use in Schools.
All Chemists sell Jeyes' Fluid and Jeyes' Cyllin Soap.

JEYES' SANITARY COMPOUNDS Co., Ltd.
64, Cannon Street, London.



**WEAR A MASK
OR GO TO JAIL**



As the first cases of the 1918 flu were reported in Philadelphia in September 1918, authorities played down the significance and allowed public gatherings to continue. Closures in Philadelphia were only enacted once the virus had spread. The first cases in St. Louis were reported in early October, with measures to contain the spread enacted two days later. This resulted in a slower spread and lower mortality rate.

Spanish Flu Pandemic Ends

Spanish Flu Pandemic Ends

By the summer of 1919, the flu pandemic came to an end, as those that were infected either died or developed immunity.



Recreate HINI

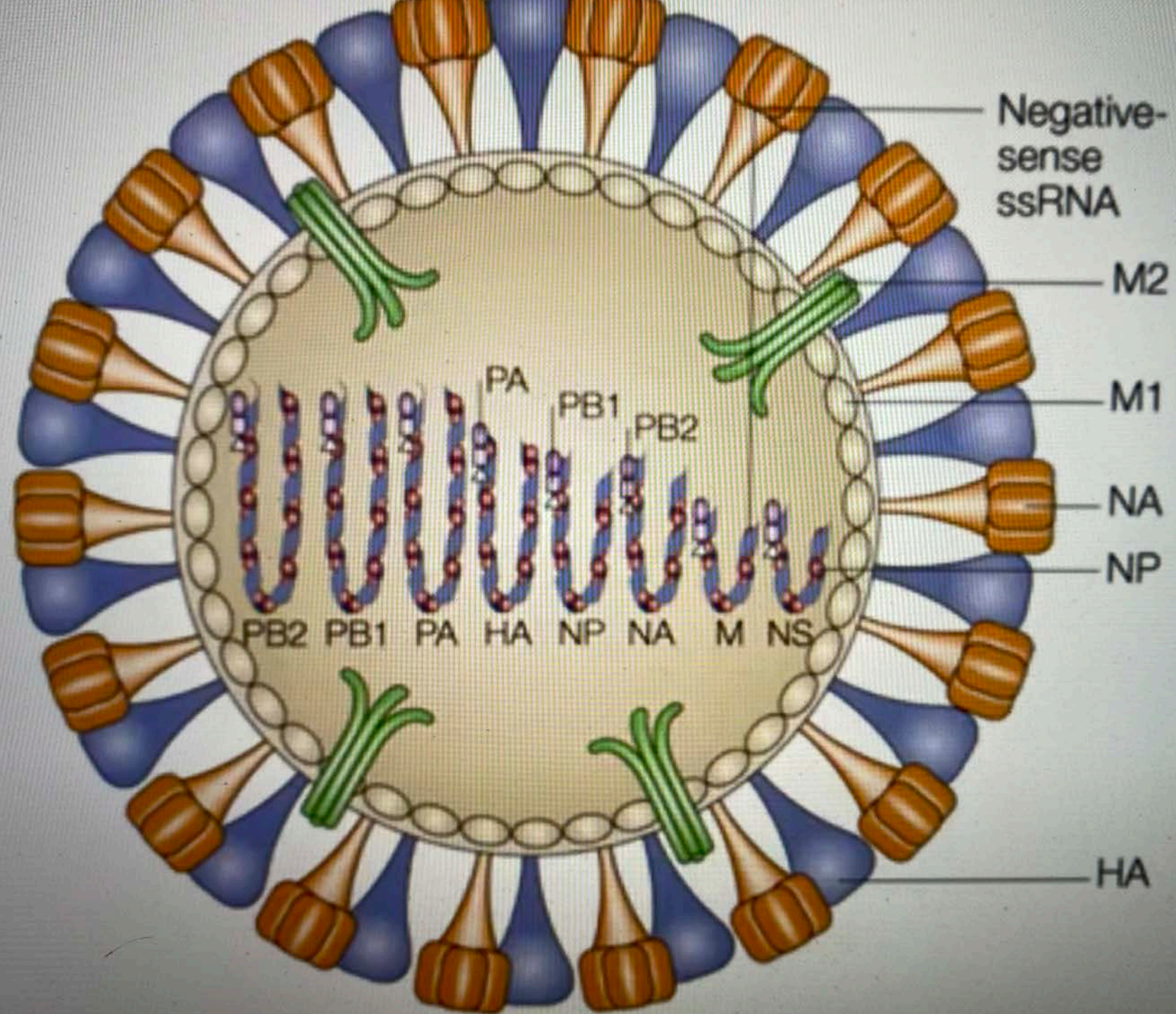
Hultin-Permafrost to AFIP-analysis of critical gene structure

Skehel- Synthesized HA₂ protein

Tumpey - genetic sequence of 1918 strain reconstructed



At the Centers for Disease Control and Prevention, Terrence Tumpey examines a reconstructed version of the Spanish flu.



INFLUENZA VACCINES

1933 - Virus Isolated

1938 - Salk, Francis : First Vaccine

1944 - Military Use

1945 - Civilian Use

1947 - New Strains Require New Vaccines Mutations

SPANISH FLU- LESSONS LEARNED

Isolation

Quarantine

Disinfectants

Limit Public Gatherings

Inform public

Support public health agencies

Vulnerable poor

Coronavirus Pandemic 2019

Dec. 1, 2019, - Wuhan China- 1st case

Oct. 10, 2020 - WHO estimate, 10% infection rate worldwide

Dec. 18, 2020z- Worldwide-75.5 million cases , 1.67 million deaths

U.S. -

U.S. Preparation for Coronavirus

After 9/11- U.S. stockpiled :

Botulism (at), anthrax and smallpox(vc)

2016- NSC Guidebook Infectious Disease Threats

Tier 1 respiratory pathogen's -

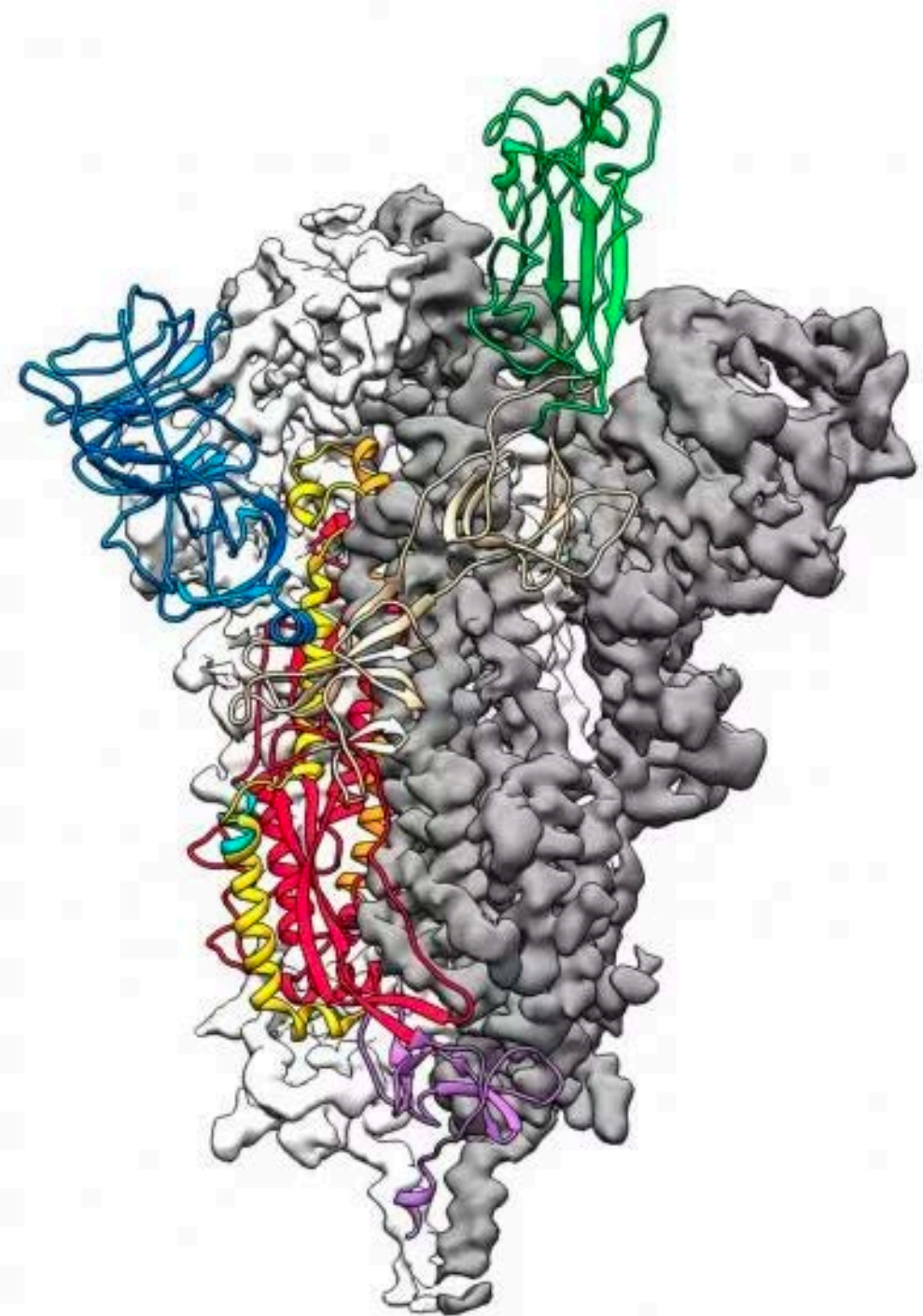
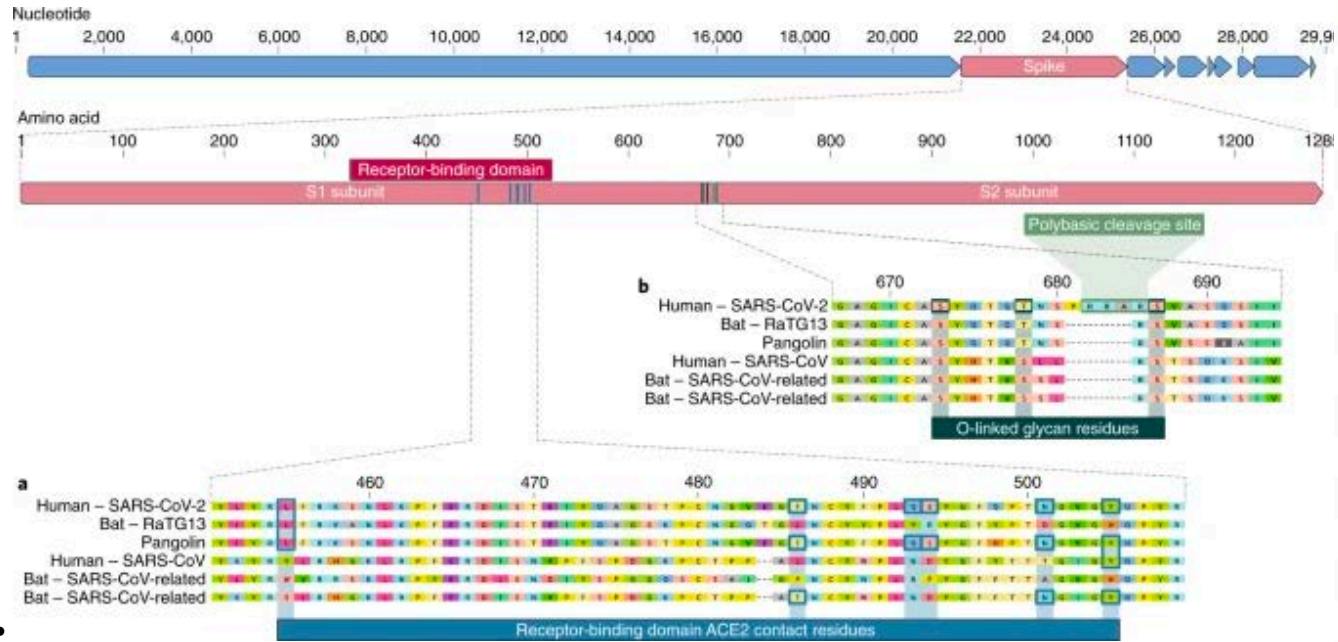
Smallpox, Influenza, Coronaviruses

2018 - NSC Pandemic Response Office disbanded

2019 - Crimson Contagion Exercise-failed

Virology on Steroids

THE SPIKE PROTEIN



Tony Fauci

Happy Birthday



Stay Safe - Happy Holidays

Dr. Jack Fein

Marist Center for Lifetime Studies



The Microscope.



The Telescope

- Smallpox- took thousands of years to control
- Influenza Took a century to control
- Sars took 20 years to control
- Coronavirus took a year from genome to vaccine