

## Plague — Past and Present

Yoshifumi Takeda M.D. & Ph.D.

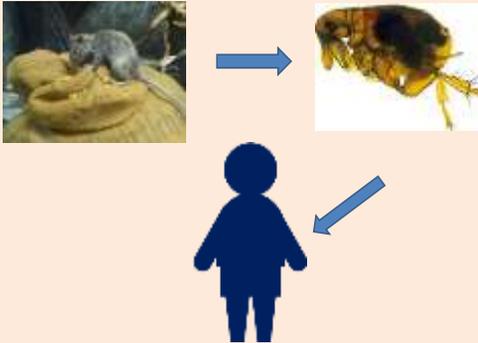
Emeritus Member and Ex-Director  
National Institute of Infectious Diseases

2014. 11. 6.

## Bubonic Plague

Plague is a bacterial disease, caused by *Yersinia pestis*, which primarily affects wild rodents. It is from one rodent to another by fleas. Humans bitten by an infected flea usually develop a bubonic form of plague, which is characterized by a bubo, i. e. a swelling of the lymph node draining the flea bite site. Initial symptoms of bubonic plague appear 7-10 days after infection. (WHO)

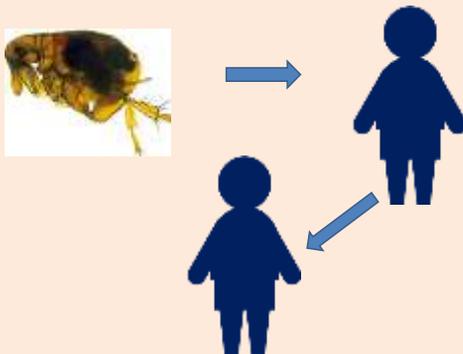
### Transmission of plague bacillus (1)



## Pneumonic Plague

If the bacteria reach the lungs, the patient develops pneumonia (pneumonic plague), which is then transmissible from person to person through infected droplets spread by coughing. (WHO)

### Transmission of plague bacillus (2)



If diagnosed early, bubonic plague can be successfully treated with antibiotics. Pneumonic plague, on the other hand, is one of the most deadly infectious diseases; patients can die 24 hours after infection. The mortality rate depends on how soon treatment is started, but is always high. (WHO)

## Outbreaks of the Plague

- The 1<sup>st</sup> pandemic, 541 ~ 750, spreading from Egypt to the Mediterranean and northwestern Europe
- The 2<sup>nd</sup> pandemic, 1345 ~ 1840, spreading from Central Asia to the Mediterranean and Europe
- The 3<sup>rd</sup> pandemic, 1866 ~ 1960s, spreading from China to various places around the world

## Great Plague after 14<sup>th</sup> Century

- Great plague of Seville: 1647~1652
- Great plague of London: 1665~1666
- Great plague of Vienna: 1679~early1680
- Great northern war plague: 1708~1712
- Great plague of Marseille: 1720~1722

## Great Plague of Seville

The great plague of Seville, 1647~1652, was a massive outbreak of disease in Spain. The city of Seville and its rural districts lost 150,000 people of a total population of 600,000.

Altogether Spain lost 500,000 people, out of a population of slightly fewer than 10,000,000.

## Great Plague of London

Outbreak of plague in London during 1665~1666 killed about 100,000 people, which is about 15% of London's population.

This outbreak was the last of the major epidemic of the plague to occur in UK.

## Great Plague of Vienna

Outbreak of plague in Vienna, Austria in 1679~early 1680s killed about 76,000 people in the city.

This outbreak was originated in the Ottoman Empire (Turkey and areas of the Balkans) and moved into North Africa Bohemia, Poland, Hungary and Alustralia.



Plague tower in Vienna

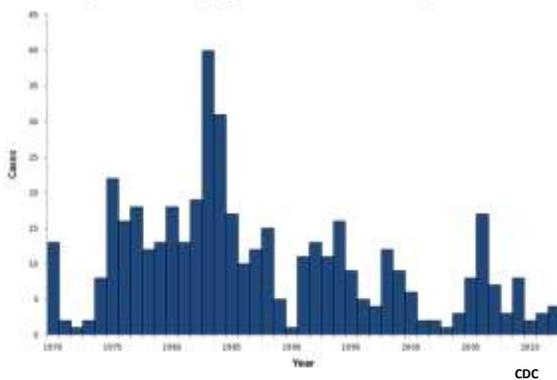
## Great Plague of Marseille

Outbreak of plague in Marseille, France in 1720  
~1722 killed about 100,000 people in the city  
 and the surrounding provinces.

This outbreak was the last of the significant  
 European outbreaks of plague.



Reported human plague cases-- United States, 1970-2012



Reported cases of human plague--United States, 1970-2012



Plague is not the past disease, but is still a  
 problem in some countries or districts.