Guangdong province, China
Map of the Silk Road

1] Northern route - Westward to Black Sea
2] Central route - Westward to Persia, Mediterranean Sea, Rome
3] Southern route - Westward to Afghanistan, Iran, India
4] Eastward to Siam
Siberian marmot
Transmission of *Yersinia pestis*

*Blocked versus unblocked fleas*

Uninfected normal male with fresh bloodmeal

*Y. pestis*-infected blocked female. Fresh blood can only be seen in the esophagus but not in the midgut which instead contains dark colored digestion products from previous bloodmeals.

*from Hinnebusch et al., Science (1996) 273:367*
Forms of *Y. pestis* disease-bubonic plague

- Infection spreads to regional lymph node
- Bubo (Greek for groin)
- Bubo(es) very painful due to swelling and bursting 2-6 days after flea bite
- Formation of bubo preceded by chills, fever, malaise, confusion, nausea, pain in back and limbs
- Bacteria in blood and organs secrete toxins, cause death
Epidemiology of *Yersinia pestis*
Forms of *Y. pestis* disease—pneumonic plague

- X-ray shows infection in lower left lobe on the 2nd day of infection
- Death within 2 days if untreated
- Convulsions, stupor, delirium
- Highly contagious
Distribution of *Yersinia pestis*, 2000

36 Known and probable foci of plague. Plague is now largely focal in distribution. It spreads rapidly in conditions of war and other catastrophes, e.g. earthquakes. Epidemics still occur from time to time.