

Ebola in Gorillas – How Vaccinations may Reduce Mortality Rates

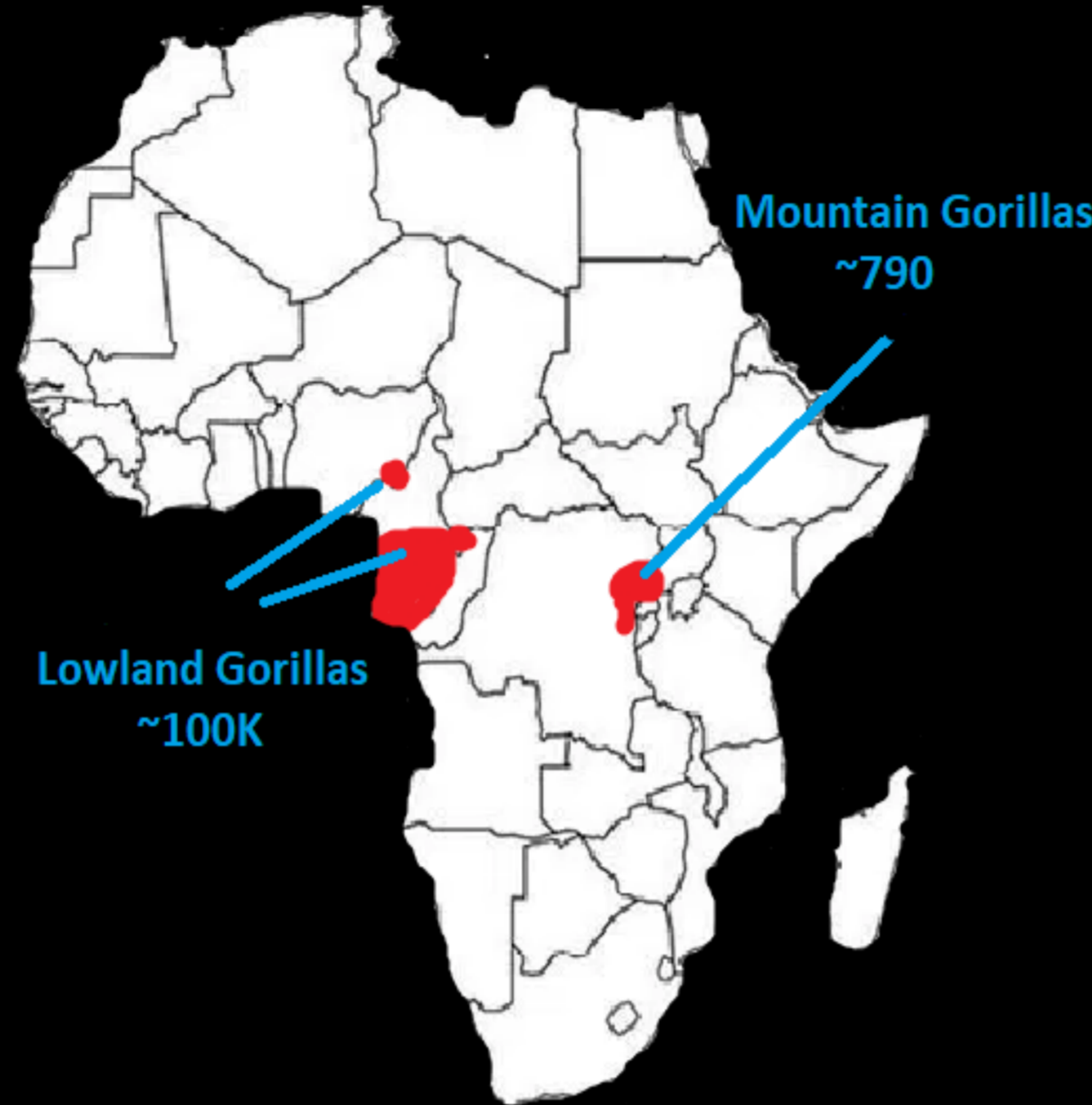


What is Ebola?

- The Ebola virus is a highly infectious and **often fatal** disease
- Symptoms include fever, internal bleeding, headache, muscle pain, weakness, fatigue, vomiting, diarrhoea, abdominal pain, & seizures
- First discovered in 1976 at the Ebola River in the Democratic Republic of Congo

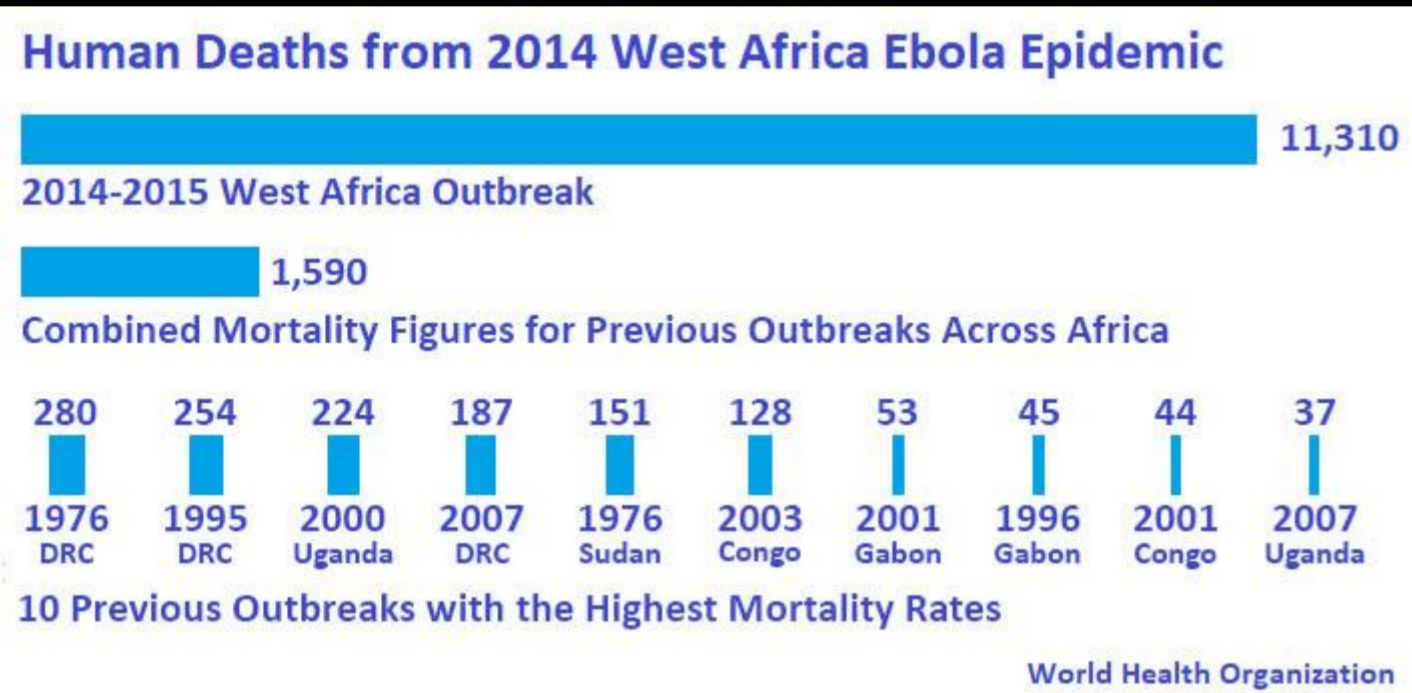
About Gorillas:

- Native to Sub-Saharan Africa
- **Critically Endangered**
- Shares 98% of their DNA with humans
- Herbivores – eat fruit, shoots, roots, and tree bark
- Sleep in nests they build on the ground or in trees
- 40% of gorilla infants die within the first 3 years of life
- It is estimated that female gorillas give birth once every 5 years
- They are a **keystone species** - transport large seeds and pollen throughout the forest, enhancing overall biodiversity



Ebola in Gorillas

- **1/3** of gorilla populations have been **killed** by the virus since the 1990's
- Can have as many as **5,000 casualties** in a single outbreak
- **95% mortality rate** whereas humans have a 50% mortality rate
- Quick transmission via bodily fluids as gorillas are highly social animals – can also be transferred through shared food sources, or from other animals
- Corpses remain infected for days
- Gorilla carcasses have been found to have **multiple strains** of Ebola within their system
- **At risk of human transfer** through poaching, bush meat, tourism, illegal wildlife trade, & deforestation
- **If gorillas are protected, then humans will be too**



Other Affected Animals
Chimpanzees
Monkeys
Fruit Bats
Forest Antelope
Duikers
Porcupines

Strain of Ebola	Who it affects	Endemic Locations	Within Wild Gorilla Range
Zaire	All primates & wild ungulates	Democratic Republic of Congo, Republic of Congo, & Gabon	Yes
Sudan	All primates & wild ungulates	Sudan & Uganda	Yes
Taï	All primates	Côte d'Ivoire	Yes
Bundibugyo	All primates	Uganda	Yes
Reston	Nonhuman primates and pigs	United States of America	No

Rabies Vaccine:

Rabies was **eradicated** throughout western and central Europe through vaccinated bait traps for foxes

How the vaccine works:

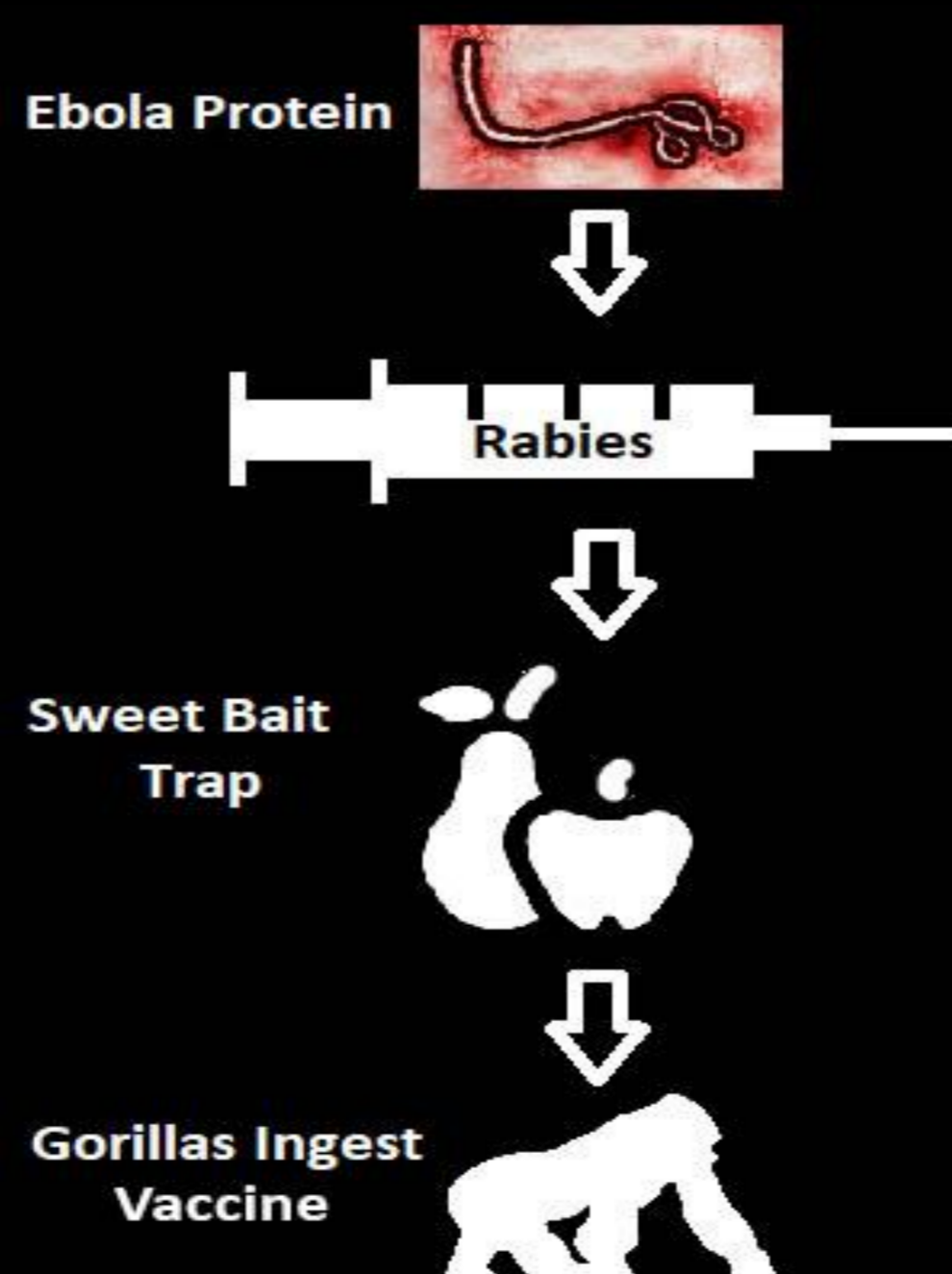
- Insert a protein from the Ebola virus into an already existing rabies vaccine
- Put the vaccine into gorilla's food source

Potential Problems:

- Keeping the vaccination cool in the tropical heat – will **deteriorate**
- The need for **booster shots** – the vaccine only lasts for 3 months
- Gorillas are notoriously **picky eaters** – may not take the bait
- Ensuring all gorillas within a group get the vaccination

Previous Ebola Vaccination Trials

- Immunization was given to 10 chimpanzee test subjects with **100% effectiveness** and no negative health complications
- Trial was stopped early when a **ban** on use of **chimpanzees** in **biomedical research** began
- As chimpanzees and gorillas are so closely related, it is assumed that if the vaccine works on **chimpanzees**, then it would also work on **gorillas**



Why do it?

Vaccinating gorillas against Ebola won't only protect them, but may also protect humans from another epidemic

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