

## Balto Brings the Serum to Nome

### *What the story teaches:*

That antibodies were the first antibiotics (against diphtheria, tetanus, streptococcus). All were first made in animals like rabbits, sheep, and horses. Antibodies bind free antigen, so any species' antibodies can be used to neutralize that antigen in any other species (just about). But large doses of a foreign serum can cause Type III immune complex disease, because the recipient will make their own antibodies against the foreign antibodies while those foreign antibodies are still circulating (what is the half-life of IgG?), leading to complexes that deposit in high-filtration sites like the renal glomeruli, joints, pleura, peritoneum, and skin; where they activate complement and cause inflammation. As it became practical most of these therapeutic animal sera were replaced by human sera or even monoclonals.

### **The Story, from Wikipedia:**

**Balto** (1922 – March 14, 1933) was an Alaskan Malamute sled dog who led his team on the final leg of the 1925 serum run to Nome, in which diphtheria antitoxin was transported from Anchorage, Alaska to Nome by dog sled to combat an outbreak of the disease. The run is commemorated by the annual Iditarod Trail Sled Dog Race.

In January 1925, doctors realized that a potentially deadly diphtheria epidemic was poised to sweep through Nome's young people. The only serum that could stop the outbreak was in Anchorage, nearly 1,600 km away. The only two aircraft that could quickly deliver the medicine had been dismantled for the winter; after considering alternatives, officials decided to move the medicine by sled dog. The serum was transported by train from Anchorage to Nenana, where the first musher embarked as part of a relay aimed at delivering the needed serum to Nome. More than 20 mushers took part, facing a blizzard with  $-47^{\circ}\text{C}$  temperatures and strong winds. News coverage of the race was worldwide.

On February 2, 1925, the Norwegian Gunnar Kaasen drove his team, led by Balto (named after Samuel Balto, a Norwegian explorer and adventurer,) into Nome. The longest and most hazardous stretch of the run was actually covered by another Norwegian, Leonhard Seppala and his dog team, led by Togo. They came from Nome towards the end of the run and picked up the serum from musher Henry Ivanoff. The serum was later passed to Kaasen.



Kaasen did not consider Balto a particularly good lead dog, but Balto proved himself on the Iditarod trail, saving his team from certain death in the Topkok River. Balto was also able to stay on the trail in near whiteout conditions in which Kaasen admitted he could barely see his hand in front of his face. After the mission's success, Balto and Kaasen became celebrities. A statue of the husky by Frederick Roth was erected in New York City's Central Park in 1926.



Balto and his companions were bought by vaudeville sideshow operators and toured the country for the next two years. Hearing of this, Cleveland, Ohio residents raised \$2,000 to purchase the seven dogs and gave them a permanent home at the Cleveland Zoo in March 1927. They received a hero's welcome, attracting more than 15,000 visitors on their first day in the zoo. Balto died in Cleveland on March 14, 1933, at 11 years old; his body was stuffed and placed on display in the Cleveland Museum of Natural History.

Students at the University of Michigan School of Public Health have done their homework about Balto and diphtheria, and have a fascinating blog page about it. <https://umichsph.wordpress.com/2016/03/10/balto-and-the-nome-serum-run/>

## **The not-wholly-authentic movie:**

*Balto* is an animated film produced by Steven Spielberg's Amblimation animation studio, distributed by Universal Pictures, and originally released to movie theatres in 1995. Balto is very loosely based on a true story about the dog, Balto, who helped save children from the diphtheria epidemic in the 1925 serum run to Nome. The film's poor performance at the box office led to the closure of Amblimation, but it became a cult-classic and it was fairly successful when it was released on video, spawning two sequels: *Balto II: Wolf Quest* and *Balto III: Wings of Change*. *Balto* stars (the voices of) Kevin Bacon and Bob Hoskins, and should be available from Amazon.com and other sellers. (*Wikipedia*)

The kids' **book**:

### **The Bravest Dog Ever: The True Story of Balto**

Random House, 1989  
48 pages. For kids 4-8.