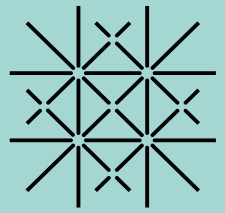


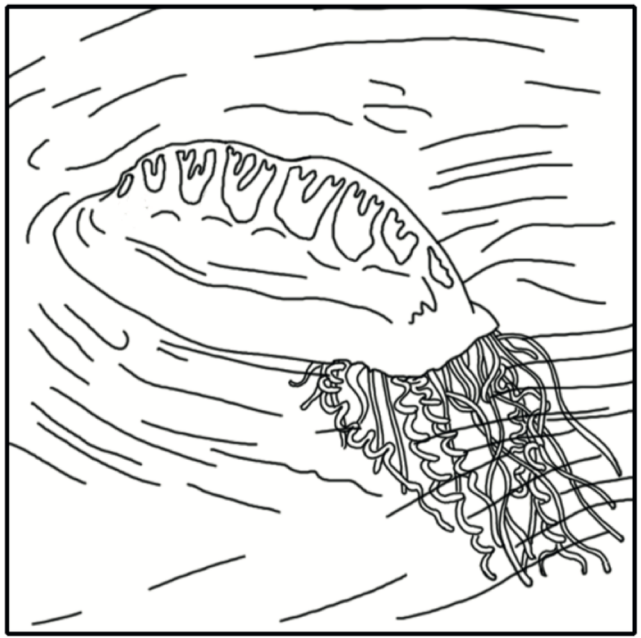
University
of Basel

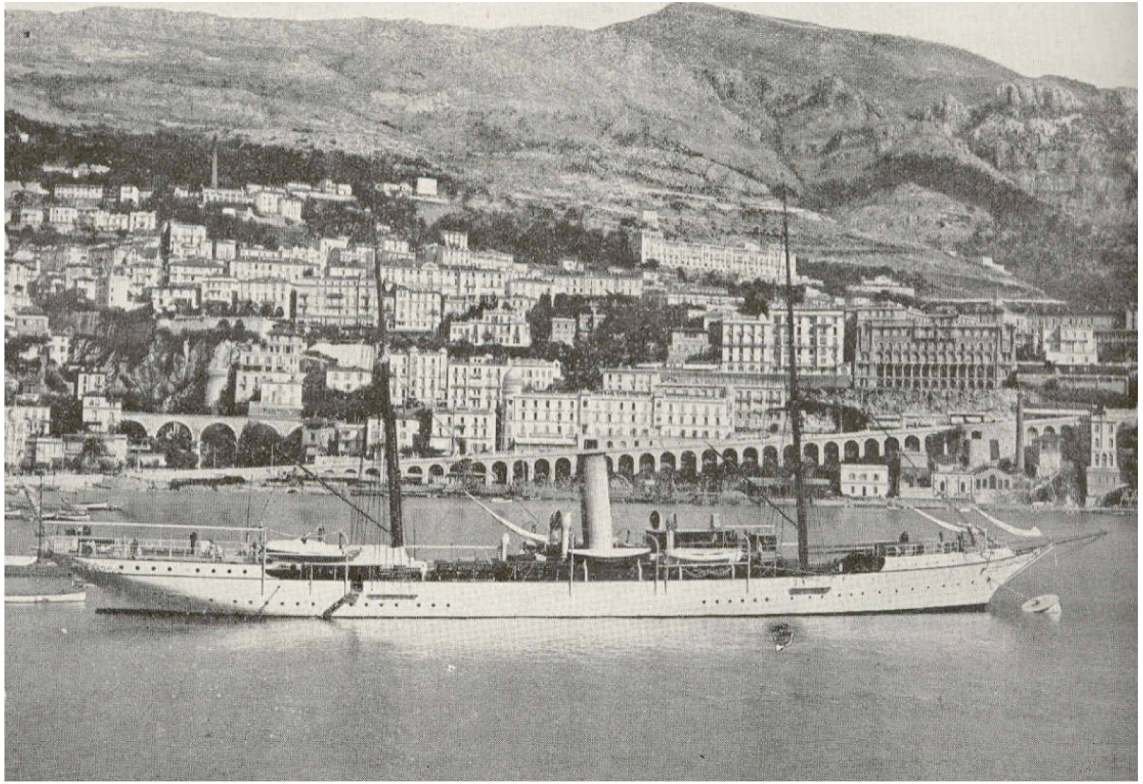
Jellyfishes and dogs: sleuthing allergies

Prof. Andreas J. Bircher

1901: The laboratory on a yacht

Objective: Find vaccine against toxins of specific jellyfish.





Yacht Princess Alice II

Physalia physalis

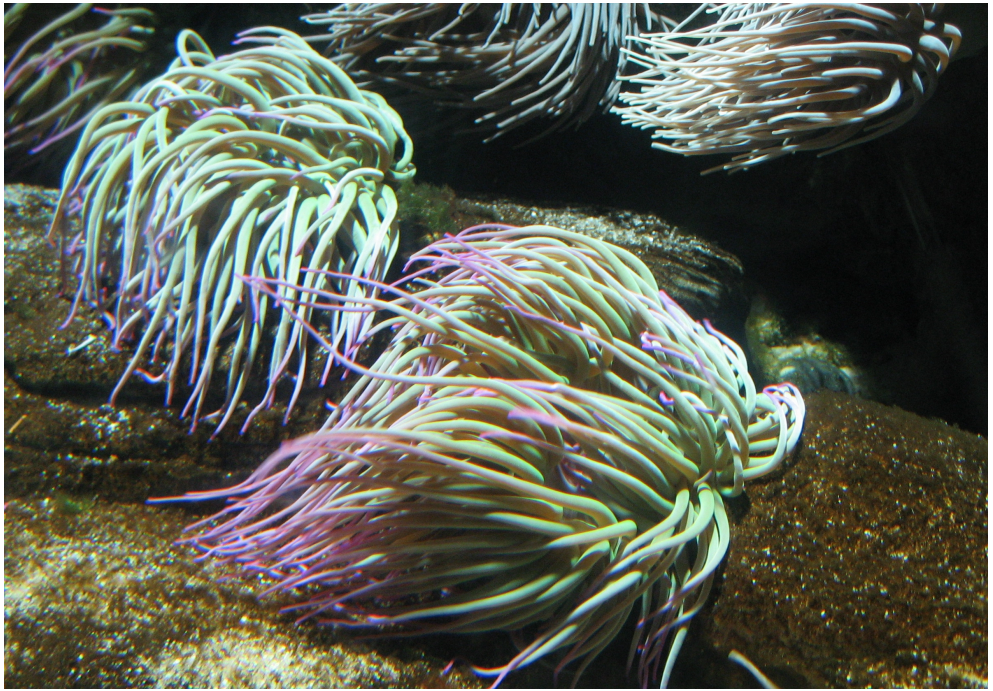
Source: Freshwater and Marine Image Bank

Description of experiment

Animals were injected repeatedly with low non-toxic doses.

The result expected was immunity. However, the animals developed severe symptoms and some died.

Further experiments



In later experiments Richet and Portier used the toxins of an easier available species (Anemonia sulcata)

The experiment with Neptun

- Large, healthy male dog
- First day: injection of a non toxic dose of actinium toxin

→ No reaction

- After 22 days: same small dose

→ Very severe symptoms and death

The birth of a new concept

- IgG = Immunglobulin G
- IgE = Immunglobulin E

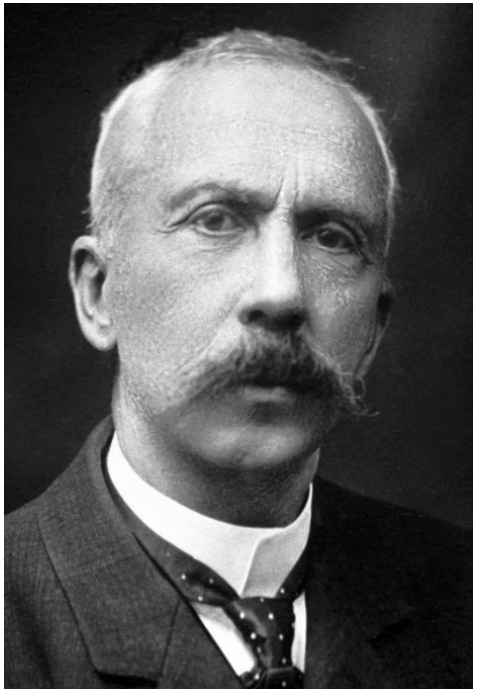
Instead of protection → development of hypersensitivity

A new phenomenon

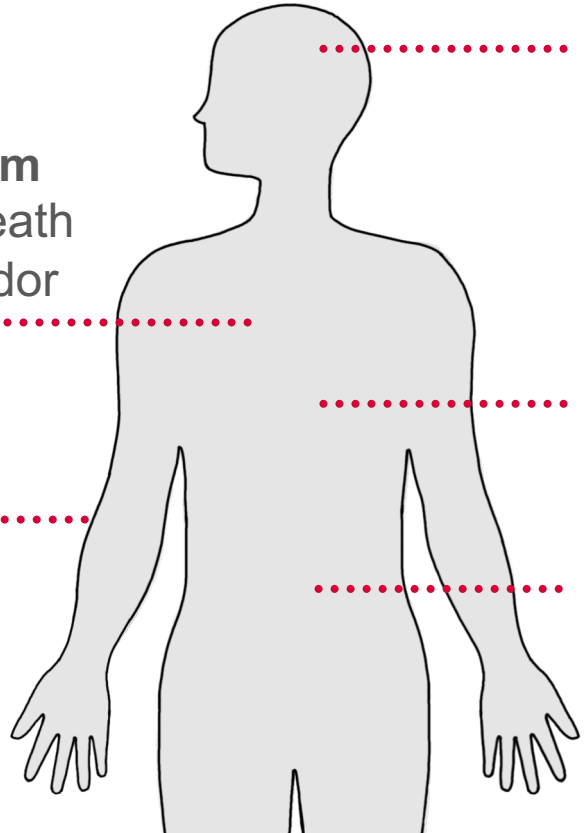
Anaphylaxis = severe immediate hypersensitivity reaction

Phylaxis = guardian; against protection

Charles Richet received the Nobel Prize in Medicine 1913



Anaphylaxis: Possible symptoms



Central nervous system
- Loss of consciousness
- Headache
- Anxiety

Respiratory system
- Shortness of breath
- Wheezes or stridor

Heart and vasculature
- Fast or slow heart rate
- Low blood pressure

Skin
- Hives
- Itch
- Flushing

Gastrointestinal
- Crampy abdominal pain
- Diarrhea

Anaphylaxis: Common elicitors

- Venoms (eg bees, wasps)
- Food (eg peanuts)
- Medication (eg antibiotics)