# Genetic Fine Structure

- Just after Watson-Crick discovery of DNA 3D helizal structure

- Benzer: testing linear structure of genetic material

- Usual experiment at the time: estimate distance from measures of recombination frequency

- Benzer's approach: "do they touch?" rather than "how far apart are they?"

Micoorganism model – T4 phage

DNA

Protein

Head

Collar

Tail

Long Tail Fibres

Base Plate

2D

3D
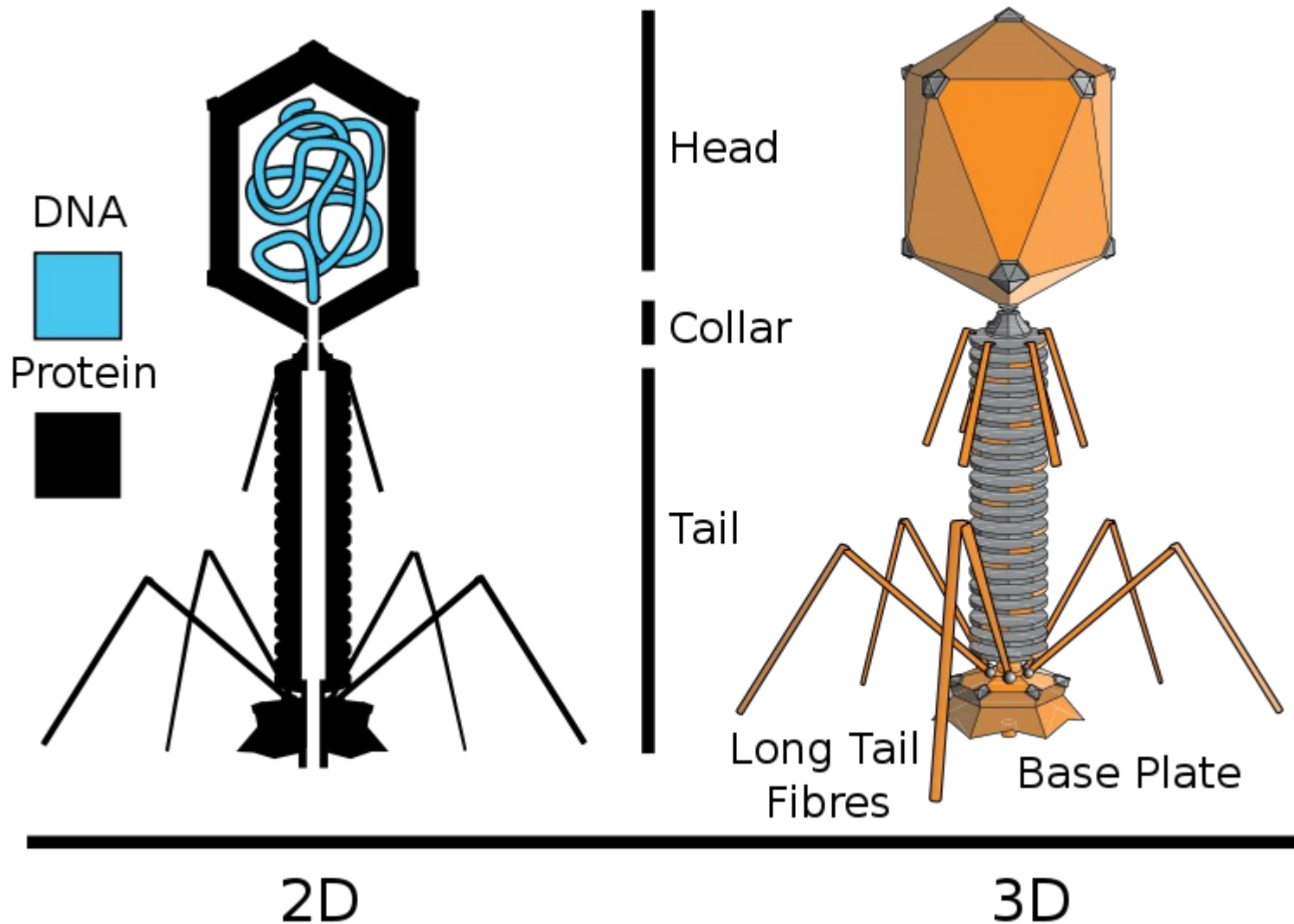
Microorganism model

- rII region of T4 phage
- Crossing by co-infection of bacterial host
- non-reversible mutants: probably deletions
- cross & see whether standard type arises
- if it does, parts do not overlap
- T4 multiplies much faster and in much greater numbers than most other genetic models

Linear pattern

- Build square table with mutants
- 0: no standard type arises in cross
- 1: standard type arises in cross
- Test for compatibility with linear order:
- after diagonal, intersecting first, non-intersecting later
- experiments with 145 mutants