First floor topics

- Does it matter where you go ?
  - one can change groups (in principle)

- what it means
  - seminar (small talk)
  - software project
  - masterarbeit
  - optional subjects (wahlpflicht)

- close contact with group members

- to do
 - talk to PhD students + students from last year

Names

- students who are still around
  - Björn Hansen, Jacques Kühl (projects and seminars now)
  - Birute Karsten (now with Rarey group)
  - Marvin Mundry (worked as HiWi)

- Doktoranden
  - Paul Reuter
  - Nasir Mahmood
  - Stefan Bienert
  - Gundolf Schenk
  - Thomas Margraf

- Seminars
  - anything

- Software projects
  - small groups, technical projects

- Mastersarbeit
  - 1 semester serious project
  - in one of our research areas / external projects

- Broad areas
  - evolution
  - RNA
 - protein simulation / comparison / prediction

Evolution simulations

Paul Reuter

Population dynamics simulation
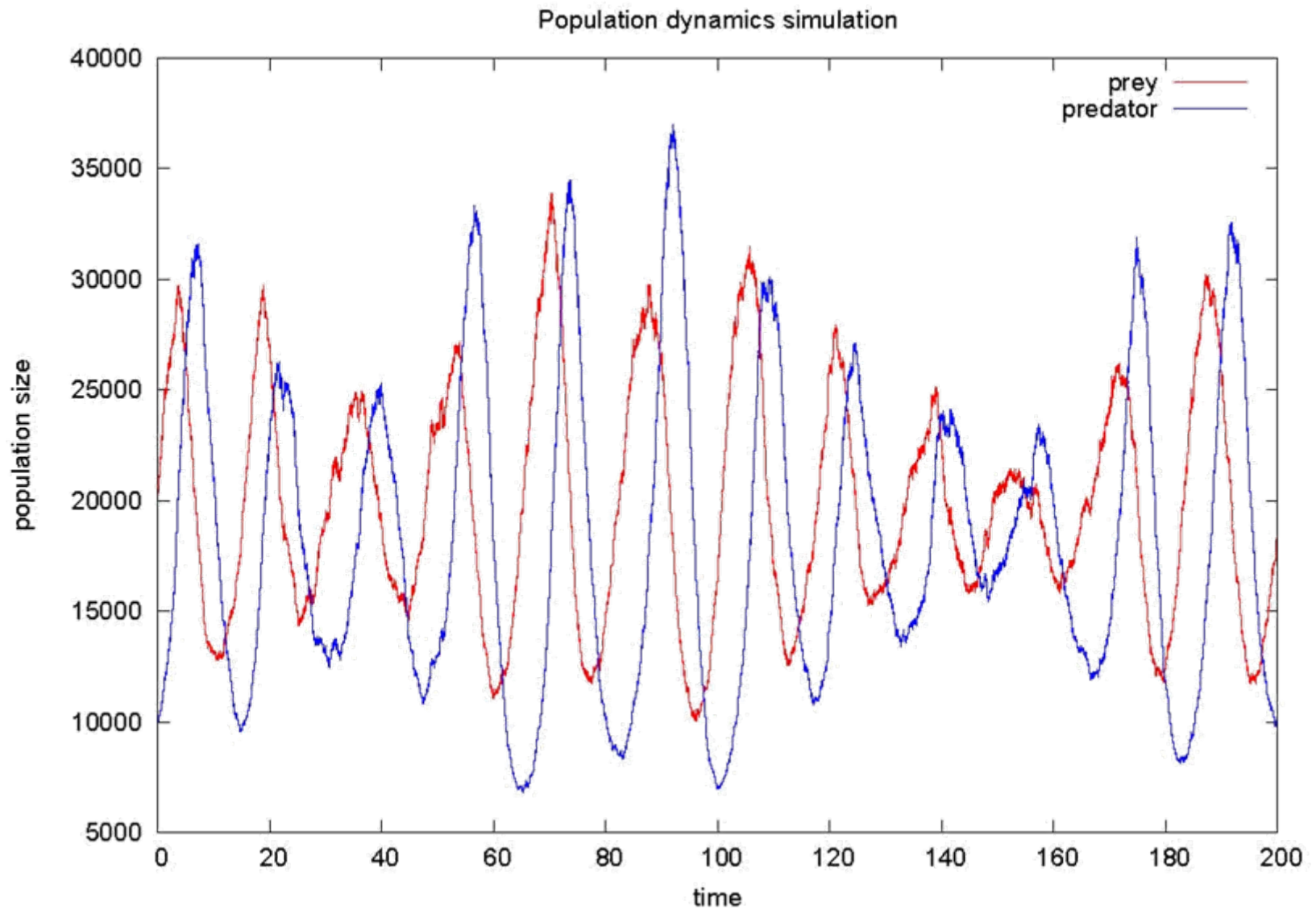
Evolution simulations

- Evolution applied to organisms ? No
- what makes a whole system evolve ?

- predator / prey, Hasen / Fuchs
  - do they evolve in isolation ?
- what is evolving ?
  - interaction parameters

- Paul's area
  - multi-level simulations
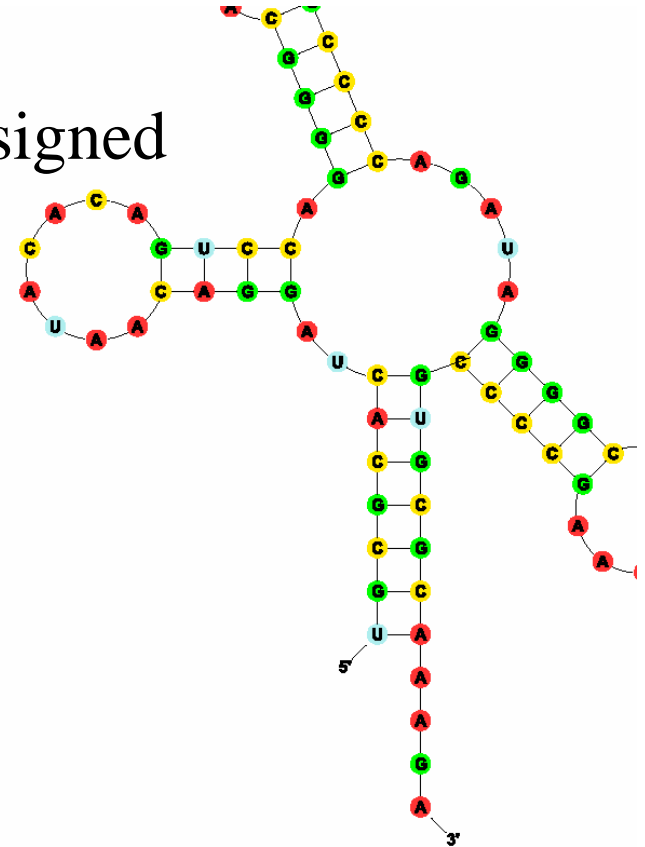   - differential equations + high level search

Stefan Bienert
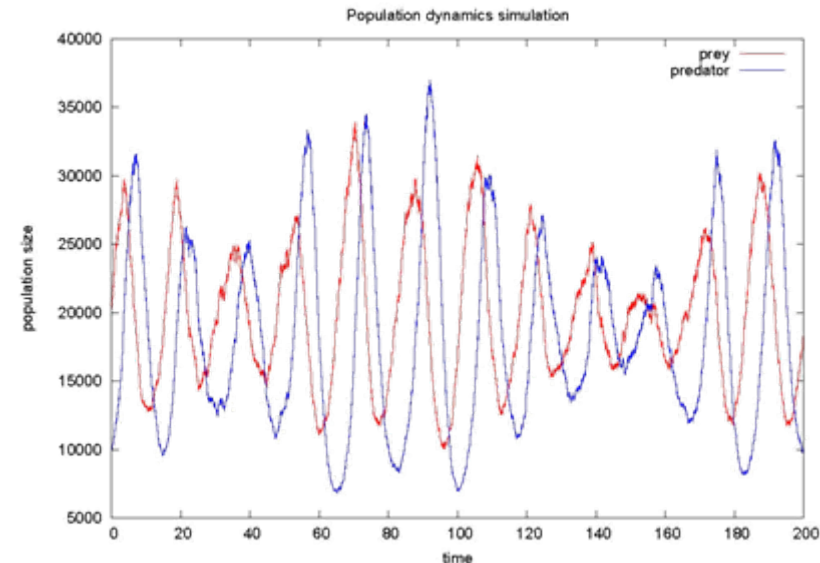
- Structure prediction
- Sequence design
- Work with biochemistry
  - finding riboswitches, sequence-based properties
- Side issues
  - drawing, pseudoknot removal

- Examples
  - structure prediction
  - sequence design
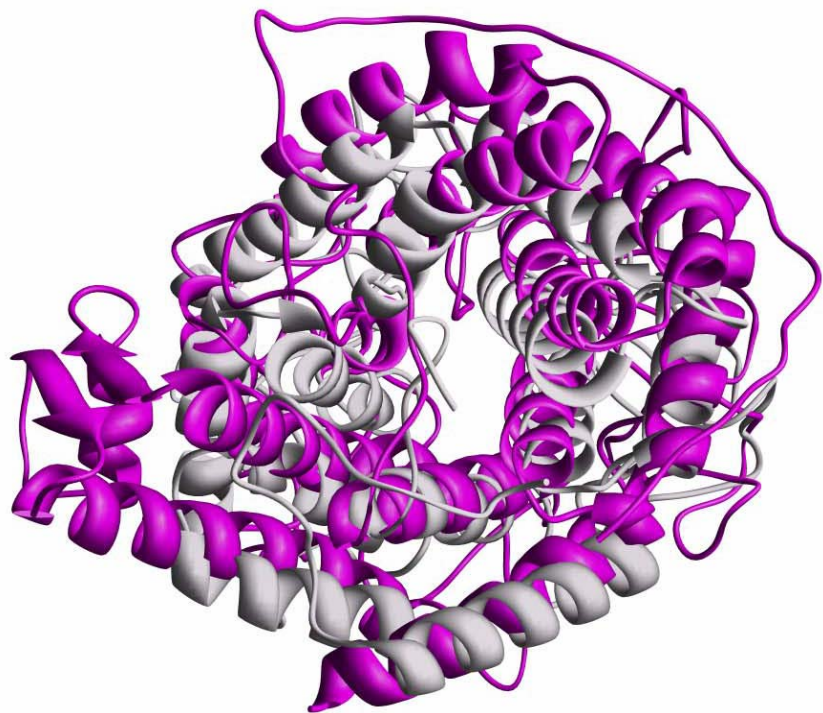
RNA

Stefan Bienert

natural
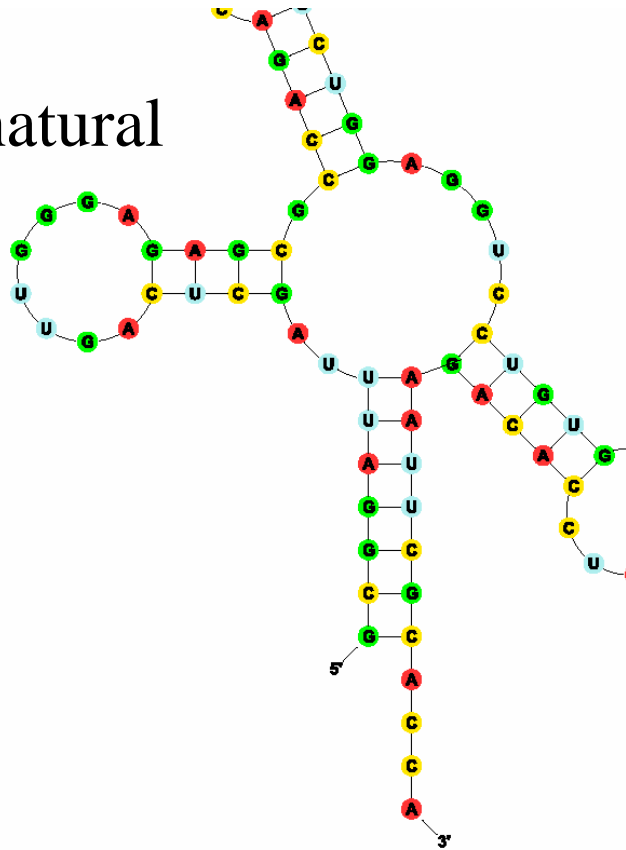
designed

RNA
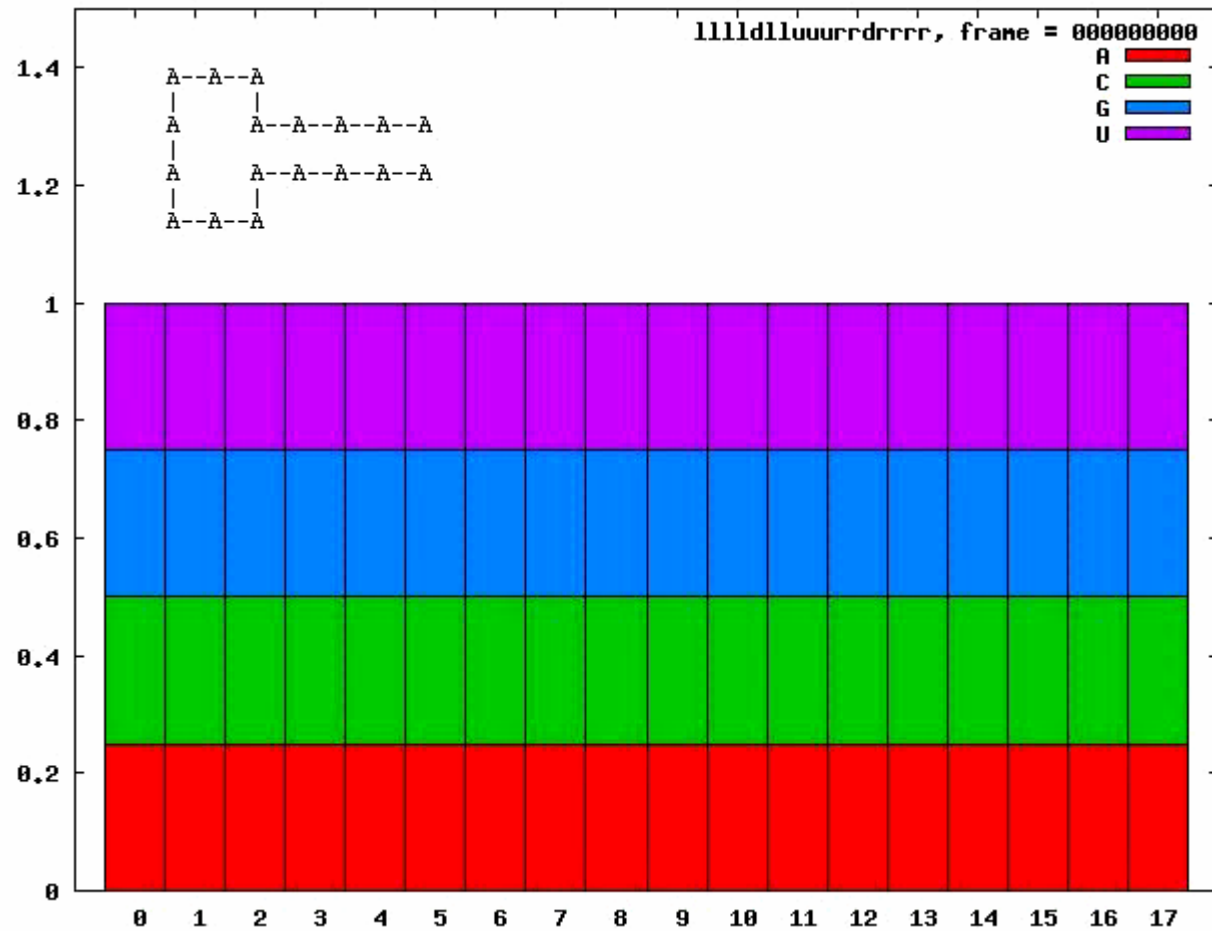
movie from Marco Matthies
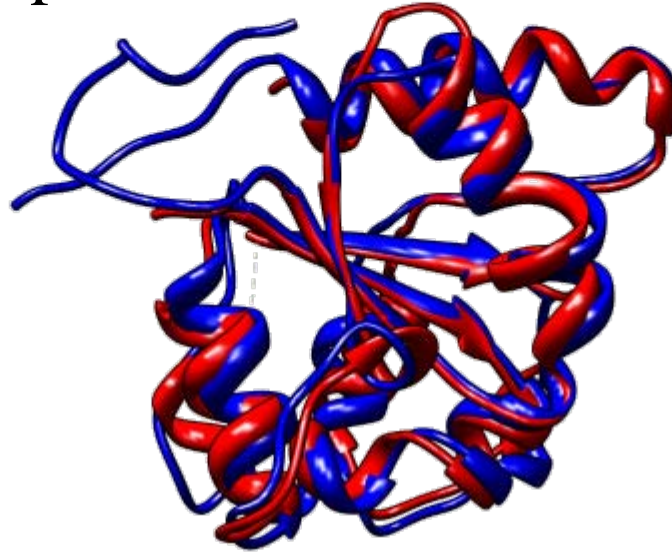
Proteins

Gundolf Schenk
Nasir Mahmood
Thomas Margraf
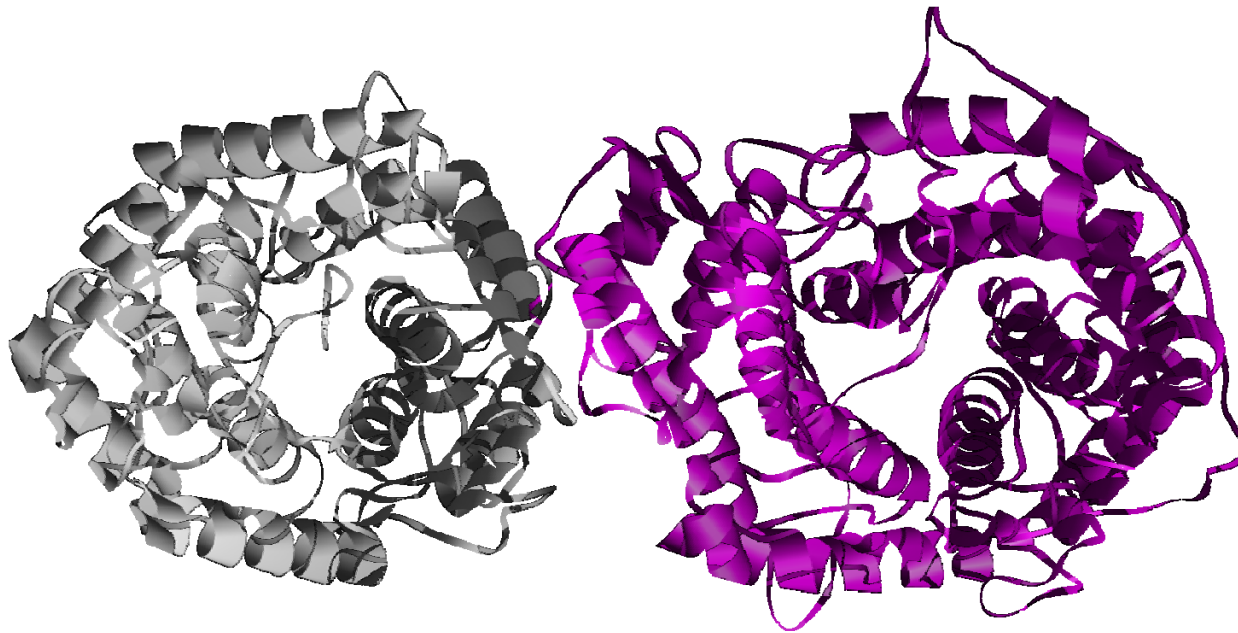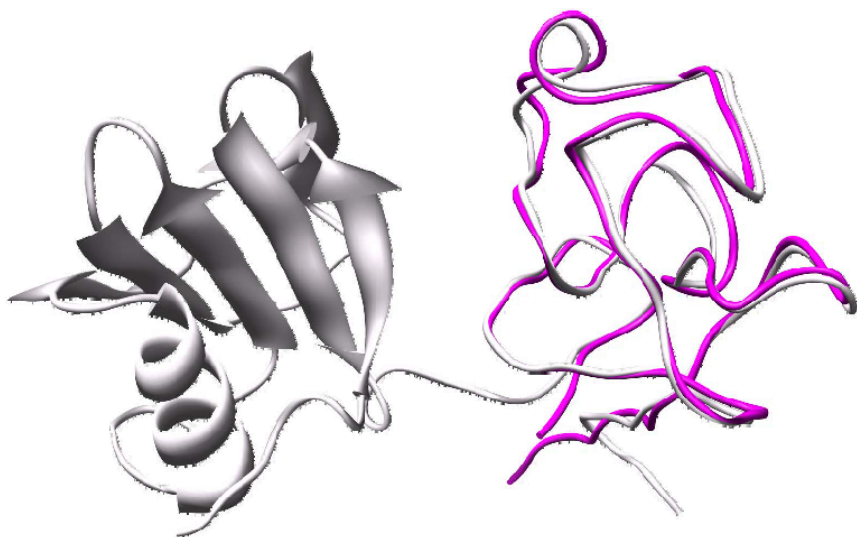
- very fast
- handles missing pieces..
- what is more interesting ?

Proteins

- TLR / toll-like receptors

48 % sequence id
1o77

another TLR

Proteins

- TLR / toll-like receptors

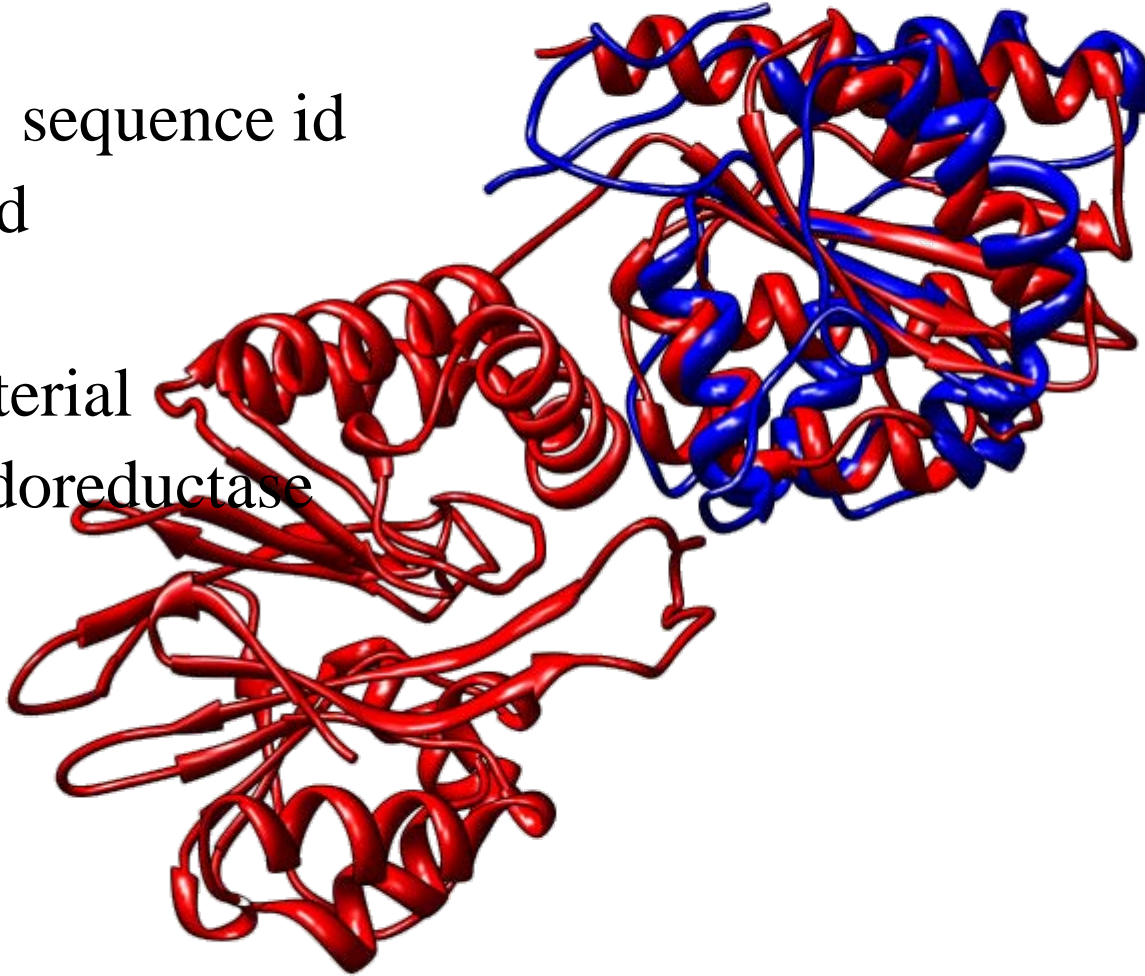6 % sequence id
2qxy

response regulator
T. Maritima
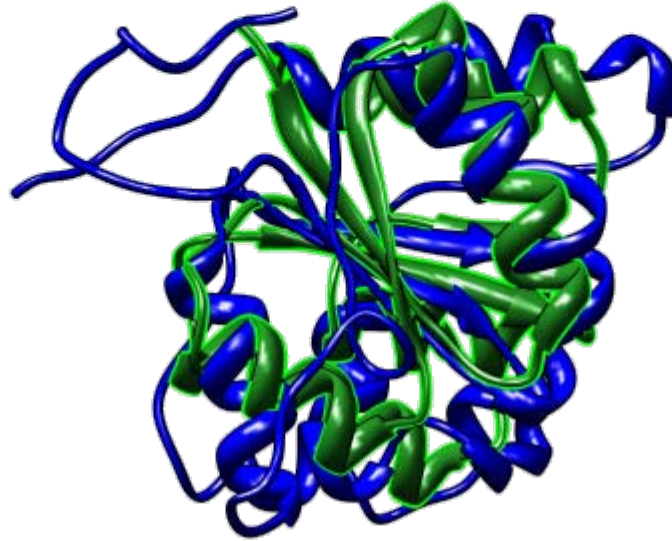
Proteins

- TLR / toll-like receptors
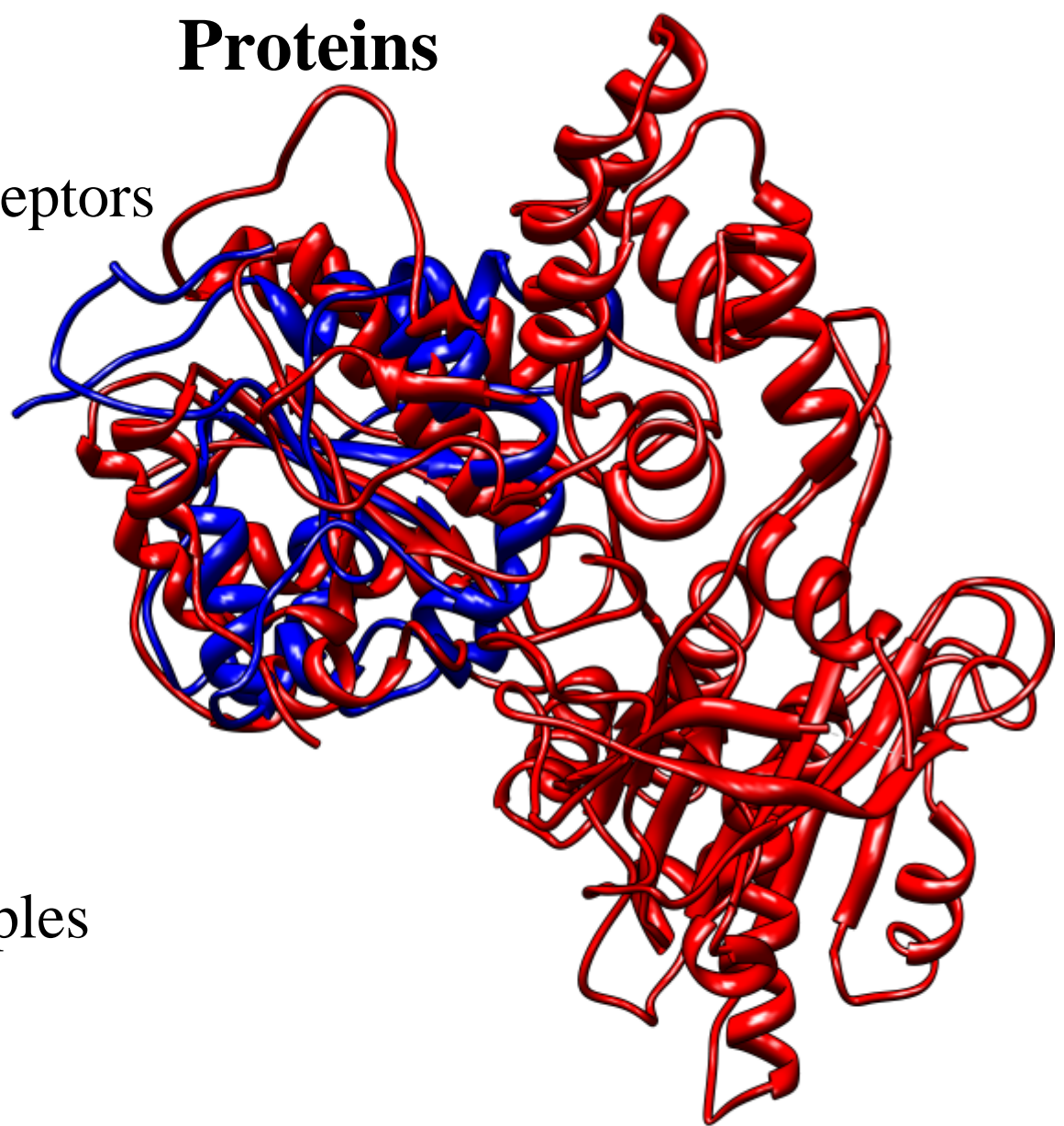
9 % sequence id
1e5d

bacterial
oxidoreductase

Proteins

- TLR / toll-like receptors

7 % sequence id
1ja0

rat
oxidoreductase

- 100's more examples

- how are they calculated ?

Proteins

Jörn Lenz

kinases

Research themes
- structural phylogenies
- structure prediction
- sequence design

Typical projects
- phylogeny / distance embedding
- force fields for structure prediction