Main Seminar
Hot Topics in Bioinformatics

Alexandros Stamatakis
Preliminaries

- Seminar talks: 35 minutes + 10 minutes questions
- English or German
  - If you give the talk in English, I will judge language quality mildly
- Reports: 8 pages in English or German
  - If you write the report in English, I will judge language quality mildly
  - Use Latex template (Springer LNCS) indicated on course web-page
- Criteria: Structure, Clarity, Precision of presentation
  - Use figures and drawings
  - Writing & Presentation skills very important if you consider a scientific career
  - check general writing tips and links on the course web page
- Grade: ½ talk + ½ report
- Grades: In the seminar my grading is very strict regarding language and presentation quality in the report & the presentation
Preliminaries II

• Don't underestimate the seminar 3 ECTS = 90 hours per semester
• No plagiarism
  → I am likely to notice!
  → I have caught someone almost every year thus far!
• Start working on the seminar on time!
• Know the background of the paper, that is, any algorithms/theories cited therein!
Topic Assignments

- To be determined
Deadlines

• Topic selection: **May 5** → via email
• Supervisor assignment by Alexis via email after all topics are set
• Meet with supervisor **at least twice** before your presentation!
• Talk slots: to be determined, two blocks toward the end of the semester (July)
• Meet with supervisor **at least once** before handing in report
• Report Deadline – reports via email to me: **September 29**
Presentation Slots

• One or two blocks toward end of the semester
• Will decide on days and dates via email → make sure you have been included in the email list
Schedule

- Today → how to give a scientific talk and write a report (Alexis)
- Presentations: To be announced
Topic selection

- I'd like to give you as much freedom as possible
- This will allow you to choose a topic you like
- If you like a topic, you will give a better presentation and write a better report

- Topic selection
  - Pick any of the papers mentioned in the course
  - Pick any topic of the course and ask me for a paper
  - Contact one of my lab members that taught last semester (Lukas, Benoit, Alexey) and ask them for a paper on their topic
  - Pick any interesting COVID-19 paper
  - Pick any interesting ancient DNA paper
Course Topics

- **Sequence Analysis**
  - Indexing techniques & suffix trees
  - Operations on strings
  - Sequence alignment
- **Phylogenetics**
  - Parsimony
  - Likelihood
  - Parallel computing in phylogenetics
  - Discrete operations on trees
  - Bayesian Inference
- **Population Genetics**
  - Coalescent models/method
  - Mixed phylogenetic & pop. gen. approaches
Topic Selection II

• Chose a recent paper you find interesting from the following journals
  
  • *Bioinformatics*
  • *BMC Bioinformatics*
  • *IEEE Transactions on Comp. Biol. & Bioinformatics*
  • *Systematic Biology*
  • *Molecular Biology and Evolution*
  • *BMC Algorithms for Molecular Biology*
  • *Nucleic Acids Research*
You may also present a Bioinformatics topic that was not presented in the winter class (e.g., coalescent simulations in population genetics or protein structure prediction) in a more teaching like manner.

Do you think that it will work like this?
Reports

- Examples of good reports and nice slides from summer 2015, 2016, 2021 are available on the course web page

http://sco.h-its.org/exelixis/web/teaching/BioinformaticsModule.html
Supervision

- To talk to your supervisors make an appointment via email.
- Don't wait until the very last minute before your presentation to make an appointment → make them straight after the topic assignment.
- You will be assigned one of my lab members to help you with preparing the talk, the presentation & the report.
- They can come to KIT to meet you, except if you want to visit our fancy institute in Heidelberg one day, you can also meet virtually depending on the pandemic.
- Meetings with supervisors must take place.
Your tasks

- Think about, search and select a topic by May 5
- Contact your supervisors (once assigned) immediately to schedule meetings! A total of at least three meetings are required!