Main Seminar
Hot Topics in Bioinformatics

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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 chose 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*

Topic Selection III

- 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!