60-Minute Discussion Session Plan
Lecture 3: Genome Assembly

Course: BINF301 — Computational Biology
Instructor: Tom Michoel
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0-8 min — Warm-Up

Warm-up prompts:

- "Which part of genome assembly feels the most intuitive to you: OLC, De Bruijn graphs, or error correction?"
- "What slide image from the pre-read stood out as confusing or interesting?"

8-20 min — Guided Concept Walkthrough

Purpose: Establish a shared understanding before deeper work.

Walkthrough topics:

- What genome assembly is (Slide 3).
- Two algorithms: Overlap-Layout-Consensus (Slides 5-12) vs. De Bruijn Graphs (Slides 13-25).
- Why repeats cause problems (Slide 4).

Guiding prompts:

- "How would you describe the main difference between an OLC graph and a De Bruijn graph?"
- "Why does OLC look for a Hamiltonian path, while De Bruijn graphs use an Eulerian path?"
- "What happens when sequencing is not perfect?" (Slide 18)

20-40 min — Mini Case / Exercises Block

Students work collaboratively on structured exercises, see handout.

40-55 min — Open Reflection & Deep Dive

Prompts:

- "Which concept was hardest today: overlaps, repeat resolution, Eulerian vs. Hamiltonian paths?"
- "What causes tangles in De Bruijn graphs? Biological repeats? Sequencing errors?"
- "Why are error-correction methods (Slides 27-38) essential before assembly?"

55-60 min — Wrap-Up

Prompts:

- "One key insight from today?"
- "Which algorithm (OLC vs DBG) feels more intuitive to you and why?"
- "What should we revisit next lecture?"