

Preliminary schedule of lectures and tutorials. 2023

4th Sep Lecture 1: Intro. DNA helix discovery and basics of DNA/RNA molecules. Original idea of Ned Seeman. Top-down, bottom-up. Self-assembly (including DNA)

11th Sep Lecture 2: Structural Nucleic Acid (NA) nanotechnology (before origami). Immobile Holliday junction. Early examples of assemblies. Other structural motives (DX tiles etc).

14th Sep Tutorial for **Project 1**. Sequence design and secondary structure prediction tools: Nupack.

18th Sep Lecture 3: DNA walkers

21th Sep Q&A session for **Project 1**

25th Sep Lecture 4: DNA origami (2D, 3D, curvature and twist). DNA origami as templates

28th Sep Tutorial for **Project 2**. Helix-packing designs: 2D DNA origami, caDNAo.

2nd Oct Lecture 5: DNA for plasmonics and nanophotonics

5th Oct Q&A session for **Project 2**

9th Oct Lecture 6: NA based devices (before and post origami) (by Dr. Jacky Loo)

12th Oct Tutorial for **Project 3**. 3D DNA origami

16th Oct *Exam week. No lecture*

23rd Oct Lecture 7: DNA nanotech for biomedical applications (by Dr. Jacky Loo)

26th Oct Q&A session for **Project 3**

30th Nov Lecture 8. Wireframe DNA origami (design ideas, vHelix, Daedalus)

2nd Nov Tutorial for **Project 4**. TBA

6th Nov Lecture 9. DNA computing: computation theory basics, Adleman experiment, tilings. Data storage and other unconventional things.

9th Nov. Q&A session for **Project 4**.

13th Nov Lecture 10. Strand displacement systems, [artificial] chemical reaction networks

16th Nov Tutorial for **Project 5**. TBA

20th Nov Lecture 11. RNA nanotechnology: biochemistry basics

23rd Nov Q&A session for **Project 5**.

27th Nov Lecture 12. RNA nanotechnology: RNA tectonics, RNA origami