

## Preliminary schedule of lectures and tutorials. 2022

**5<sup>th</sup> 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)

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

**15<sup>rd</sup> Sep** Tutorial for project 1. Sequence design and secondary structure prediction tools: Nupack.

**19<sup>th</sup> Sep** Lecture 3: DNA walkers

**21<sup>th</sup> Sep** Q&A session for project 1

**26<sup>th</sup> Sep** Lecture 4: DNA origami (2D, 3D, curvature and twist). DNA origami as templates

**29<sup>th</sup> Sep** Tutorial for project 2. Helix-packing designs: Cadnano + CanDo/Aksimentiev, Chimera.

**3<sup>rd</sup> Oct** Lecture 5: DNA for plasmonics and nanophotonics

**6<sup>th</sup> Oct** Q&A session for project 2

**10<sup>th</sup> Oct** Lecture 6: NA based devices (before and post origami) (by Dr. Jacky Loo)

**13<sup>th</sup> Oct** Tutorial for project 3. 3D DNA origami

**17<sup>th</sup> Oct** *Exam week. No lecture*

**24<sup>th</sup> Oct** Lecture 7: DNA nanotech for biomedical applications (by Dr. Jacky Loo)

**27<sup>th</sup> Oct** Q&A session for project 3

**31<sup>th</sup> Nov** Lecture 8. Wireframe DNA origami (design ideas, vHelix, Daedalus)

**3<sup>rd</sup> Nov** Tutorial for project 4. TBA

**7<sup>th</sup> Nov** Lecture 9. DNA computing: computation theory basics, Adleman experiment, tilings. Data storage and other unconventional things.

**10<sup>th</sup> Nov.** Q&A session for project 4.

**14<sup>th</sup> Nov** Lecture 10. Strand displacement systems, [artificial] chemical reaction networks

**17<sup>th</sup> Nov** Tutorial for project 5. TBA

**21<sup>th</sup> Nov** Lecture 11. RNA nanotechnology: biochemistry basics

**24<sup>th</sup> Nov** Q&A session for project 4.

**28<sup>th</sup> Nov** Lecture 12. RNA nanotechnology: RNA tectonics, RNA origami