香港城市大學
City University of Hong Kong

Discovery Enriched Curriculum on DNA-Based Teaching and Learning

Project Number: 6000495

Principal Investigator: Dr Peggy Pik Kwan LO

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Abstract:

The proposed project introduces an innovative teaching and learning method on the basis of DNA modeling platform

which involves students doing projects through 3D computer graphics programs including HyperChem, 3D ChemDraw and Blender. To enforce discovery and innovation, this teaching and learning platform facilitates students to explore, discover and understand easily on a highly abstractive concept of structural DNA nanotechnology in terms of taking a single-stranded DNA strand as a molecular building block for the construction of highly complex 3D DNA nanostructures/models with different sizes, shapes and functions. Finally, students are able to play around the DNA molecules on the modeling software in order to systemically design and engineer their thermodynamically stable 3D DNA models. To evaluate project deliverables, students will be challenged by active learning exercises including (1) writing a scientific report in respect of DNA nanostructure's design, computational DNA modeling, and its potential biological applications in life sciences; (2) participating in a UG and PG Students' Conference on Discoveries in Biological, Chemical and Environmental Sciences which is organized by BCH every year. This project would allow students accomplish multi-disciplinary knowledge in chemistry, engineering, computation and material sciences.