MODesign – iSBH-sgRNA Design Toolkit

MODesign is a four-script pipeline that helps you design **modular iSBH-sgRNA sensors**, rank the best candidates and generate cloning-ready iSBH-sgRNA oligos

Script	Purpose
Script_1a_MODesign_designing_spacer_star_sequences.py	Finds spacer / spacer* pairs that fold into the desired mini-hairpin. **Run first.**
Script_1b_MODesign.py	Combines a chosen spacer pair with your RNA trigger(s) to build modular iSBH-sgRNA designs. Code also gives you the option to select desired sizes lor the iSBH-sgRNA loop.
Script_2_MODesign_scoring_algorithm.py	Scores and ranks designs so you can pick the most promising ones for wet-lab testing.
Script_3_automating_ISBH_oligo_design.py	Outputs cloning oligos compatible with vectors 200234 (iSBH-sgRNA expression from U6 promoters), 200235 (small triggers complementary with loop and spacer * sequences to be expressed from a mammalian U6 promoter) & 200237 (1xCTS sequences for fluorescent reporters) and simulates final expected plasmid maps (after cloning).

Prerequisites

Requirement	Version	Notes
Python	2.7.x	Code won't run under Python ≥3.0 without edits.
NUPACK	3.2.2	Required for RNA folding; make sure the nupack binaries are in your $PATH. Please download this from Users must download it directly from https://www.nupack.org

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