Rational design of DNA nanostructures for single molecule biosensing

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**Dataset - DNA Nanostructure – Nanopipette biosensing**

The main folder ‘DNA Nanostructure – Nanopipette biosensing’ consists of four subfolders and one excel file.

1. Ion current data – files in abf format, softwares such as Origin and MATLAB can be used to access these files.
2. DNA origami design – caDNAno json files can be opened with caDNAno software, oligo lists are provided in excel files.
3. 3-parameter classification – proFit source data files that can be opened via proFit software or excel.
4. AFM micrographs – raw micrographs obtained via the nanoscope software, can be opened with nanoscope analysis software.
5. Excel file “source data” - can be opened in excel.
6. Ion current data

This folder contains folders ‘**concentric squares**’ and ‘**CRP detection**’ which contains the ion current data for the experiments conducted with concentric square DNA origami samples and CRP carrier DNA origami samples respectively.

**Concentric squares:** The subfolder ‘concentric squares’ is further divided into **ConA**, **ConB,**  and **ConC** containing the respective data for the concentric square DNA origami samples.

**CRP detection:** And the subfolder ‘CRP detection’ contains the ion current data for nanopipette translocations carried out with unoccupied carriers, occupied carriers, CRP detection in plasma and control studies as indicated by their folder name. These folders are further divided as explained below.

**Unoccupied carriers:**

Contains ion current data collected upon translocation of carriers on its own (unoccupied). The folder also contains data collected at different carrier concentrations.

**Occupied carriers:**

Contains ion current data for translocation experiments conducted with the carriers in the presence of CRP. Data collected for different CRP concentrations upon incubation with carriers functionalized with two different CRP specific aptamers is provided.

**CRP detection in plasma:**

This folder contains the translocation data collected for carrier molecules incubated with CRP in 5% plasma. Data for three concentrations of CRP is included.

**Control studies:**

Contains data collected for nanopipette translocation control studies conducted with carrier molecules functionalized with non-specific aptamer and carrier molecules with specific aptamer exposed to non-specific target. The folder also contains data for carrier molecules in the presence of low and high concentration of CaCl2.

**Lambda DNA:**

The folder also contains the ion current data for lambda DNA translocation experiments.

1. DNA origami design

This folder contains the DNA origami routing design for all the different DNA origami used in this paper, in cadnano json file format and the scaffold sequences with list of oligos (excel files) used for the DNA origami construction. These are provided in two folders caDNAno files and scaffold and oligo list respectively.

1. 3-Parameter classification

All the source data files for the 3 parameter classification experiments both in buffer and plasma are provided here. The folder is divided into subfolders

**Aptamer 1 -** contains data for carriers containing aptamer 1 incubated with various concentrations of CRP in buffer.

**Aptamer 2 -** contains data for carriers containing aptamer 2 incubated with various concentrations of CRP in buffer.

**CRP detection in plasma -** contains data for CRP detection in plasma samples, carriers containing aptamer 1 incubated with various concentrations of CRP was used.

1. AFM micrographs

The folder contains the raw micrographs of concentric square samples, CRP protein and carriers incubated with CRP in separate subfolders.

1. Source data excel file

This excel file contains all the source data for the main figures and supplementary figures provided in separate sheets within the excel file.