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Kinetic assay with waveRAPID grating-coupled interferometry waveCreoptix system

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We use this protocol and it's working

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Disclaimer

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Abstract

This protocol outlines the setup of kinetic binding assays using the Creoptix waveRAPID grating-coupled interferometry system. The method covers automated sample handling in 96- or 384-well formats, including DMSO corrections, control samples, and buffer blanks, enabling high-throughput molecular interaction measurements.

Materials

10x HBS-P: HBS-P Buffer 10× **Cytiva** **Catalog #**BR100671

DMSO: Pierce™ Dimethylsulfoxide (DMSO), Sequencing Grade **Thermo Scientific** **Catalog #**10127403

Echo 384 well plate:
Echo® Qualified 384-Well Polypropylene Microplate 2.0 **Beckman Coulter** **Catalog #**001-14555

Creoptix 384 well plate: 240 µl 384 Deepwell Plate, Square Wells **StarLab** **Catalog #**E2384-2400

Creoptix 96 well plate:
PlateOne 96 well Conical Bottom (V) Plates, max. Working Volume 320 µl **StarLab** **Catalog #**S1833-9600

Safety warnings

Do not set the Flow Cell Temperature below 10 and/or 15°C. Lower temperature causes to the condensation in the chip.

Before start

Once the concentration value is specified in the method, it can not be changed in the evaluation part.

RAPID kinetics assay

5m

1 Variables that are for RAPID kinetic assay steps indicated the table.

	A	B
	Variable	Abbrevation for variable
	Running buffer+DMSO %	**[X]**
	Sample concentration	**[Y]**
	Association and dissociation duration	**[Z]**
	Flow rate	**[F]**

These specifics will differ for each protein target.

2 Build the method in the **Measure tab**/ RAPID kinetics.

2.1 In the Wizard choose the correct sample container type for the experiment: 48 vials, 96 or 384 well plate.

2.2 Enter the details of samples including sample name, concentration, and molecular weight.

2.3 Enter the configuration details for the method. Specify flow rate **[F]** and association and dissociation duration **[Z]**.

2.4 In the Reagent Rack section, choose 10 startup cycles.

2.5 Select Blanks: 1 blank after every 5 samples.

2.6 Choose DMSO correction (0.5%DMSO added to running buffer) as DMSO calibration solution at the beginning, end + every 10 th sample.

2.7 Enter a control sample and indicate its molecular weight and repeats depending on the sample size.
(i.e. For 96 samples, choose 1 sample injection after 50 th sample.)

2.8 Select DMSO wash: 1 DMSO wash ([M] 50 % volume DMSO) after every 5 samples.

2.9 Click create series.

3 Check the required buffer volume from cycles tab within the configuration. Prepare running
buffer including DMSO [X] about 200 ml more than calculated buffer volume.

3.1 Degas the running buffer with DMSO% for 2 minutes. 2m

4 **Sample preparation**

4.1 Transfer samples from [M] 100 millimolar (mM) stocks 1536LDV to 96 or 384 well plate and add running buffer +DMSO% **[X]** to make final µM sample concentration **[Y]**.

5 **Blank, DMSO calibration solution, and Control preparation**

5.1 Go to the Autosampler section within the configuration and prepare other solution (running buffer as blank and start-ups, DMSO calibration solution and control sample).

5.2 Place the samples according to the series in autosampler.

6 Run 2x Priming and Chip Prime steps in **Device**/Chip Prime

7 Go to the **Series**/Run Measurement.

Protocol references

Kartal Ö, Andres F, Lai MP, Nehme R, Cottier K. waveRAPID-A Robust Assay for High-Throughput Kinetic Screens with the Creoptix WAVEsystem. SLAS Discov. 2021 Sep;26(8):995-1003. doi: 10.1177/24725552211013827. Epub 2021 May 28. PMID: 34049465.