Agile® R100

Label-free Kinetic Characterization

Information-rich kinetic binding data is at your fingertips with Agile R100, the **personal assay system for small molecule and protein drug discovery research**. Easy to learn and use, Agile R100 detects binding interactions in complex samples with just a 10 µL drop of sample. Characterize your candidates earlier in the drug discovery process – and reduce costly mistakes further down the line.

Validate Hits At Your Bench… and On Your Timeline.

Label-free binding interactions in complex samples.

- Kinetics
- Affinity
- Concentration
- Quantitation

Save Time, Cost, and Resources.

Simple: Label-free reduces assay complexity and cost

Small volumes: Use just a 10 µL drop of sample

Sensitive: Unprecedented 11-log dynamic range

Complex samples: Sense directly in DMSO, tissue lysate

Small molecules: Characterize molecules ≥ 10 Da

Nanomed

FEATURES

Why Agile R100?

Kinetic binding data lets you understand more about your drug's potential residence time, toxicity, and selectivity, but previous systems are limited by sensitivity and sample requirements. Agile R100 is the first personal assay system that makes it easy to get accurate label-free analysis for small molecules and proteins at your bench… and on your schedule.

At last, sensitive results. With an unprecedented 11-log dynamic range, you can use a single platform to measure and develop weakly-binding fragments into high-affinity compounds with accuracy and reliability.

Kick labels to the curb. In addition to increasing assay development time and cost, labels can interfere with the functional activity of a drug and produce misleading results. Go label-free and simplify your assay design to have confidence in your candidate selection.

With just a 10 µL drop of sample… you can get more data from less material. Agile R100 lets you preserve precious reagents and resources and reduce your cost to data.

Microfluidics-free design means no clogging or difficult maintenance that requires annoying service contracts.

Real-time data for on-the-fly protocol changes and immediate answers. Viewing interactions as they occur provides real-time insight as your experiment runs, instead of waiting until the end. This combined with Agile R100's single-sample format enables mid-experiment changes to assay protocol that is impossible on other platforms.

Easy to use. If you can run an ELISA, then you can run Agile R100. Your sample is applied directly to the sensor surface, which eliminates the need to learn complicated system components and processes. Just take Agile R100 out of the box, plug it into a laptop, and you're ready to start.

Breakthrough orthogonal technique. Agile R100 uses a proprietary electrical technique rather than an optical one, making it an excellent orthogonal option to validate your hits, especially when optical methods might not w

How It Works

At the heart of Agile R100 is a biosensor chip built with **proprietary Field Effect Biosensing (FEB) technology**. FEB, an electrical technique, measures the current across graphene biosensor to which targets are immobilized (Figure 1). Any interaction or binding that occurs on the surface causes a change in conductance that is monitored in real-time (Figure 2), enabling accurate kinetic, affinity, and concentration measurements.

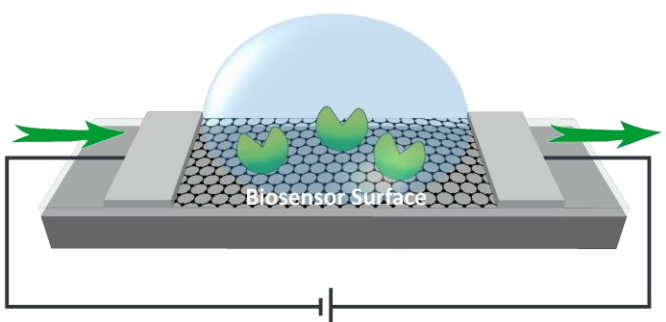


Figure 1

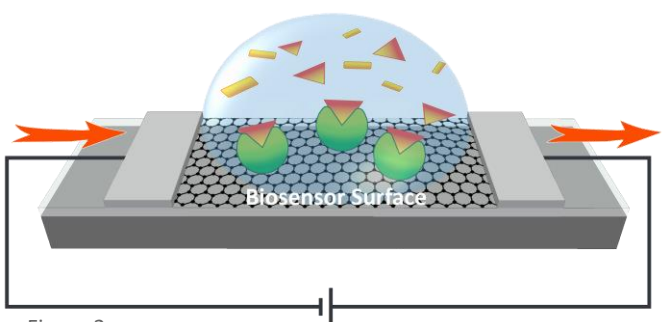


Figure 2

Agile R100 only registers a signal change when molecules bind to or dissociate from the immobilized target. Small molecules and proteins can be measured directly in solvents, detergents, cell fractions, or tissue lysate, significantly reducing sample prep time.

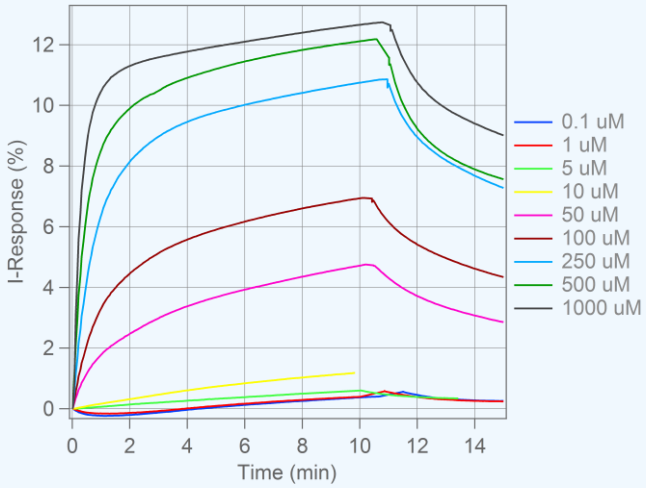
APPLICATIONS

KINETIC CHARACTERIZATION

Kinetic binding data at the early stages of drug discovery can provide advance insight into the biological activity profile of your compounds. Easily run assays at your bench in a free afternoon to characterize lead compounds and make confident decisions regarding your candidates.

Agile R100 features:

- Characterization of small molecules ≥10 Da
- 11-log dynamic range from fM to mM provides large working range of concentrations on a single platform
- Non-optical, electrical technique can detect interactions in up to 10% DMSO
- Sense in as little as 2 minutes and get clear data for interactions with fast association rates
- Functionalize with just 0.5 ng of material
- Full standard curve with just one biosensor chip
- Dissociation measurements enable off-rate ranking



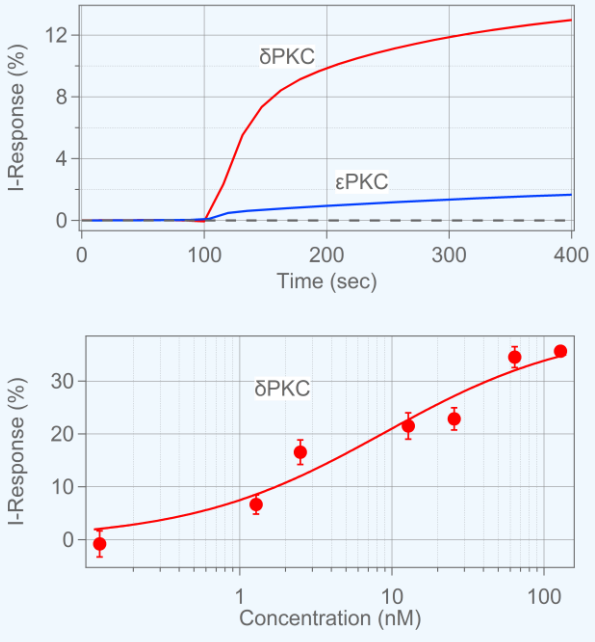
Agile Plus software-generated overlay plot displays a full kinetic characterization using COOH Agile biosensors. A concentration series of small molecule SPD304 is measured against immobilized TNFα, a cell signaling protein used as a therapeutic target. These curves show the concentration dependence of the biomolecular interaction, and the evaluation software provides k_{on}, k_{off}, and $K_{D.}$

PROTEIN-PROTEIN INTERACTIONS

The use of labels produce unwanted interactions that can lead to false conclusions. Agile R100's **label-free** methodology eliminates the need for tags, dyes, or other specialized materials, reducing resources needed for assay development and simplifying assay design. Easily characterize the interactions you need to translate *in vitro* biomolecular activity to *in vivo* drug efficacy.

Agile R100 features:

- Sense in detergents, solvents, cell fractions, or tissue lysate
- High-quality quantitative kinetic analysis including, k_{on}, k_{off}, and K_D
- High sensitivity down to 100 fM, enabling detection of tight-binding compounds
- Fast measurements enable quick kinetic characterization of unstable proteins
- Just a 10 µL drop of sample lets you get more data with less material
- Regenerate each biosensor chip up to 10 times



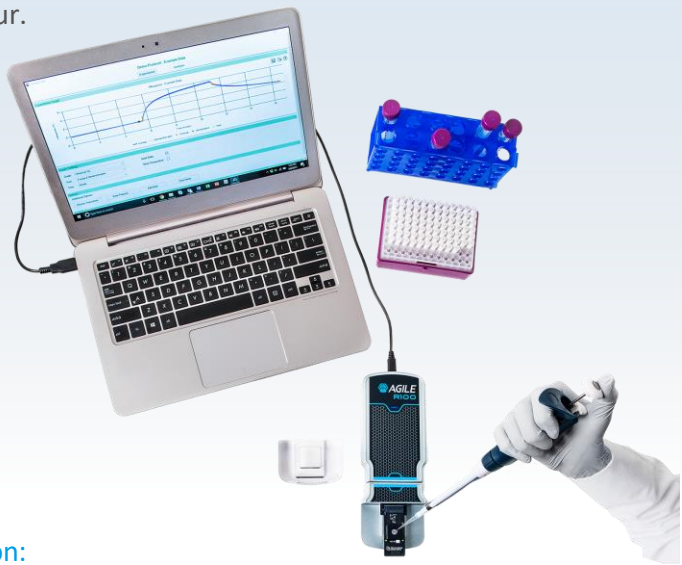
Binding activity and selectivity of peptides *in vitro*. Data taken with Agile R100. Top figure shows selectivity of dPKC and ePKC binding to yMARCKS-Cargo. Bottom figure shows a standard curve of dPKC binding to yMARCKS-Cargo. Qvit, N., et al. [2016] Angewandte Chemie.

ACHIEVE MORE

Agile Plus Software

Powerful, real-time Agile Plus software makes running assays and data analysis easy. Designed to work seamlessly with Agile R100, it is easy to learn and use. **Preloaded protocols** let you quickly set up your assay and run an experiment. The intuitive interface **guides you through the process** and **automates the analysis** so you can get to information-rich data faster. The **real-time data** display lets you visualize interactions as they occur.

- **Mid-experiment protocol modification capabilities** lets you adjust test parameters in response to live outputted data.
- **Automated analysis** can be run at any time for instant understanding of your results.
- **Built-in PDF reporting** streamlines data sharing.
- **Easy CSV data exporting** for additional analysis options on other software platforms.
- **No limit on software installation** for flexibility of use across computers.



Publications referencing use of Agile R100 for *in vitro* kinetic characterization:

- Afsahi, S., *et al*. ***Novel Graphene-Based Biosensor for Early Detection of Zika Virus Infection.*** *Biosensors and Bioelectronics.* 2017. doi:10.1016/j.bios.2017.08.051.
- Lerner M.B., *et al*. ***Towards Novel Graphene-Enabled Diagnostics Assays with Improved Signal to Noise Ratio***. *MRS Advances.* 2017. doi:10.1557/adv.2017.431.
- Franco, A., *et al*. ***Correcting Mitochondrial Fusion by Manipulating Mitofusin Conformations.*** *Nature*. 2016. doi:0.1038/nature20156.
- Qvit N., *et al*. ***Communications Engineered Substrate-Specific Delta PKC Antagonists to Enhance Cardiac Therapeutics***. Angewandte. 2016:1-9. doi:10.1002/anie.201605429.

Our goal is to help you fully characterize and explore your biomolecules to make better decisions earlier.
We're here to help you achieve the kinetic binding data you need when you need it. Contact us to learn more!

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