

Ella.

Your immunoassay  
problem solver.

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## Meet Ella.

Immunoassays come with lots of challenges. Even after multiple steps, hours in the lab and hours analyzing data, results are only acceptable at best. Ella's your immunoassay problem solver. Her Simple Plex assays are hands-free, single or multi-analyte with no cross-reactivity, and reproducible even across multiple labs. All those issues you deal with every day? Gone.



## What problems can Ella solve for you?

- You need better reproducibility in your lab and across multiple labs
- You want a less hands-on, more automated assay
- You want to measure endogenous levels at high and low concentrations
- You don't have much sample to work with
- You'd like to multiplex without cross-reactivity

# How she does it

Ella does immunoassays in a microfluidic Simple Plex cartridge. It's like using a pre-kitted immunoassay, except everything's pre-loaded on the cartridge — even the calibration curve! All you need to do is add your sample and buffers and put the cartridge in Ella.

The immunoassay part works like this: sample runs through a microfluidic channel that binds your protein of interest. Next, Ella washes off unbound analyte and adds a detection reagent. Because each channel has three Glass Nano Reactors (GNRs) coated with a capture antibody, you get triplicate answers for each sample. Answers are then generated from the factory-calibrated standard curve that comes with every cartridge. Sound familiar? It's the same immunoassay you're used to, just without the errors that come with traditional assays.

- 1 Sample is routed through microfluidic channels.
- 2 Capture antibody captures target analyte.
- 3 Stringent wash removes unbound analyte.
- 4 Detection antibody migrates through microfluidic channel.
- 5 Stringent wash removes unbound detection antibody.
- 6 Scan GNRs.

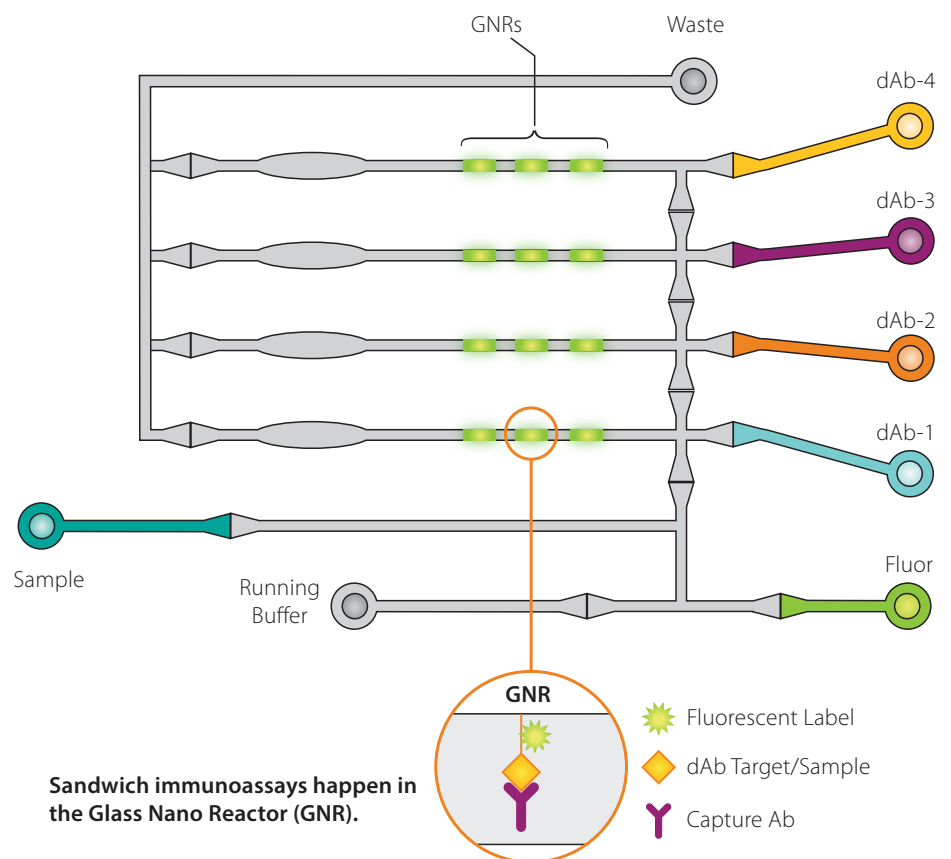
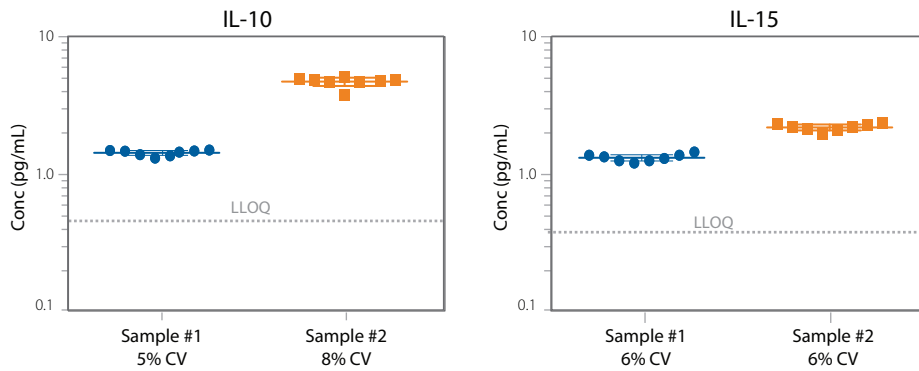


Figure 1. Simple Plex immunoassays on Ella.

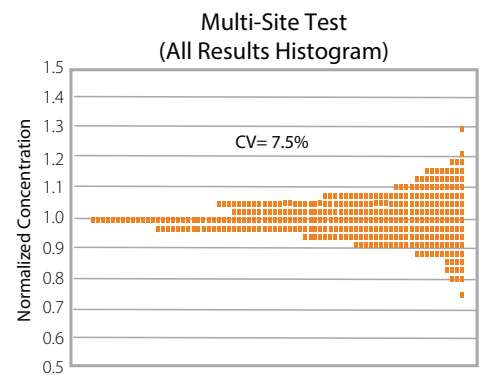
# Reproducibility in the single digits

Getting good immunoassay reproducibility is tricky with all the multiple, manual steps. Automation instrumentation adds to it too. With Ella, everything happens on the Simple Plex cartridge so each immunoassay is run the same way every time. There aren't any manual steps, washes or reagent additions. Translation? Way less variability and you'll get low single-digit CVs.



**Figure 2.** Reproducibility comparison between two samples near LLOQ for, IL-10 and IL-15.

When it's time to develop and transfer your immunoassay to other labs, sites or a contract research organization, Ella makes it easy. Because Simple Plex assays are precisely controlled in the cartridge, there's no chance for pipetting errors. You'll get the same reproducible answers across multiple users and multiple sites. Simply put, you'll get consistent answers anywhere, by anyone on any Ella.

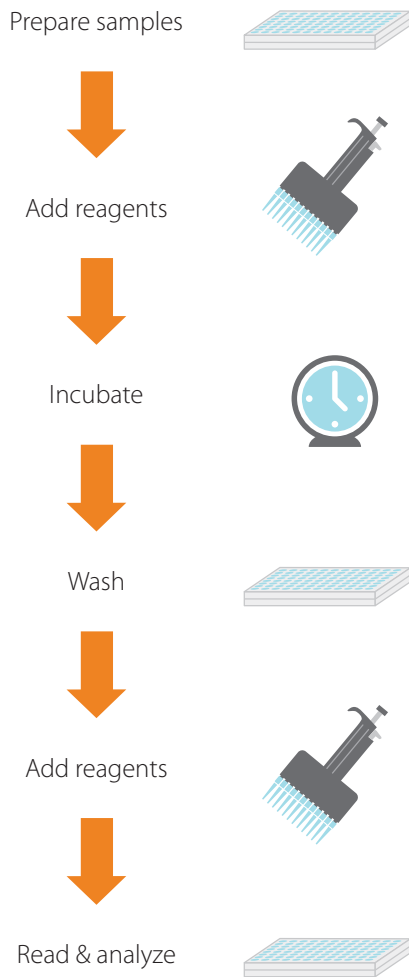


**Figure 3.** Testing across 3 sites, 11 users and 9 Ella instruments. 4 different assays were processed for CCL2, IL-6, TNF  $\alpha$  and VEGF-A. Eight unique serum samples with 2 controls for a total of 704 answers.

# Hands-off, automated immunoassays

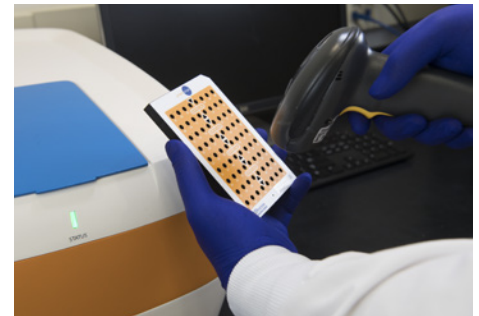
You're in a race to make that next discovery, and Ella can help you get there faster. There's no need to split your time between running assays in the lab and analyzing answers at your desk. Simply add your sample and buffers to the Simple Plex cartridge, put it in Ella and start your run. There's only 10–15 minutes of hands-on assay prep time, and she gives you fully analyzed answers in an hour!

**Traditional ELISA:**  
80–120 min setup,  
3–6 hr for answers

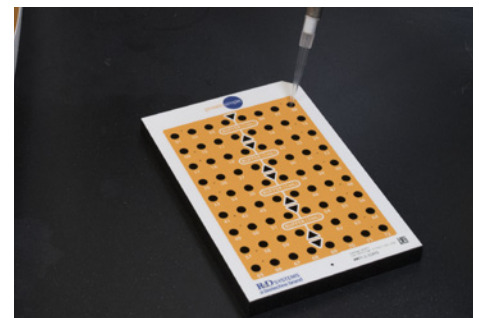


**Ella:**  
10–15 min setup,  
1 hr for answers

Scan barcode



Add samples and  
wash buffer



Run cartridge

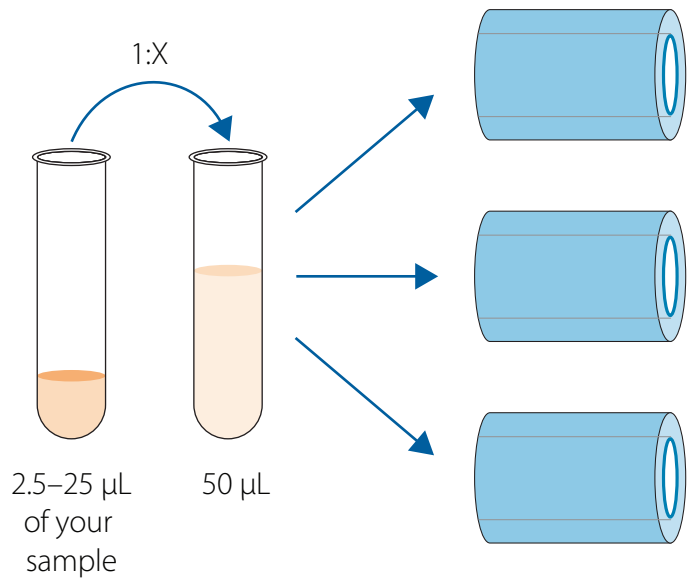


**Figure 4.** Comparison of ELISA and Simple Plex assay workflows.

# More info from precious samples

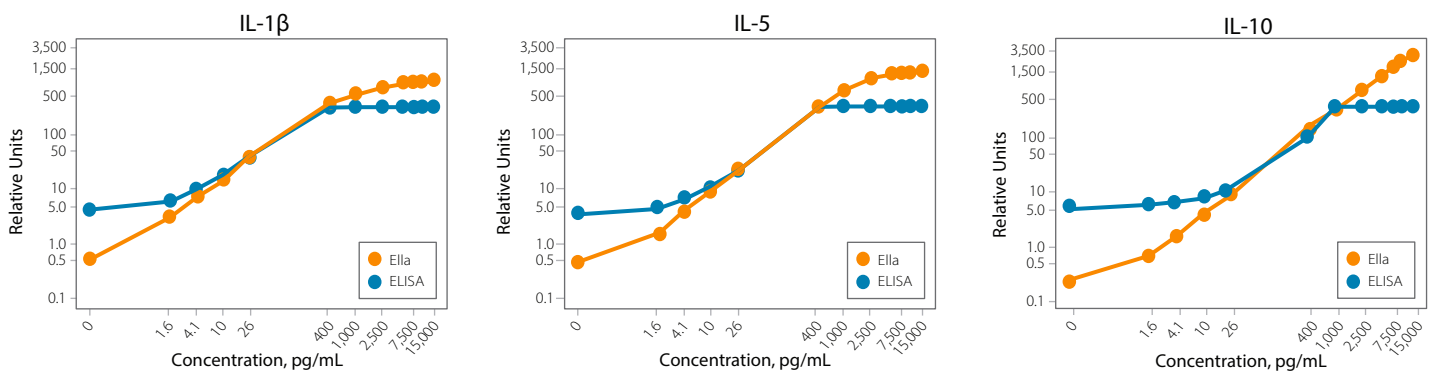
Given you spend hours collecting it or thousands of dollars to get it — that sample is the most precious thing in your lab. Ella's a sample conservationist. She only needs 50  $\mu\text{L}$  of diluted sample and given her high sensitivity that equates to 2.5–25  $\mu\text{L}$  of your precious sample. For each small aliquot of precious sample, the microfluidic design produces 3 answers, one for each of the three Glass Nano Reactors

Ella's also volume-independent. There's none of the variability that comes with pipetting error volume discrepancies. She precisely controls the volume on every assay, so every sample is handled the same way. That also means you'll get CVs in the single digits.



**Figure 5.** Ella conserves sample by splitting sample into three GNR vessels which in turn generates a triplicate result.

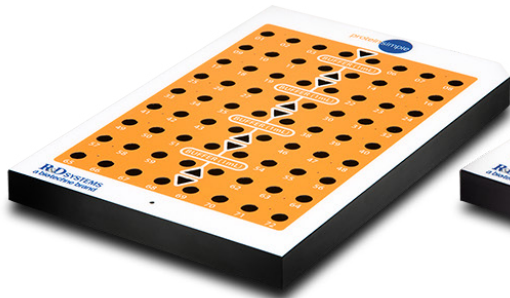
Ella uses fluorescence detection so she also stretches what you can do with your samples. Now not only can you detect low endogenous levels of proteins, but you can measure those proteins across a wider and more sensitive detection range too.



**Figure 6.** Dynamic range comparison between Ella (orange) and traditional ELISA for IL-1  $\beta$ , IL-5, IL-10 and IL-12.

# Simple your plex

Need the flexibility to pick your plex or an upgrade path that doesn't lock you into a platform when your assays change? Ella has three Simple Plex cartridges that let you choose what you want to do, when you want to do it. Use the 32x4 and 16x4 formats for multiplexing, or the 72x1 for a single-analyte assays.



72x1 cartridge



32x4 cartridge



16x4 cartridge

## Max out your data points

Because each sample is run in triplicate and the standard curve is built in, the 72x1 format lets you run 72 samples and get 72 answers. Compare that to your 96-well immunoassay!

CARTRIDGE	NUMBER OF ANALYTES	NUMBER OF SAMPLES	NUMBER OF ANSWERS*
72x1	1	72	72
16x4	4	16	64
32x4	4	32	128

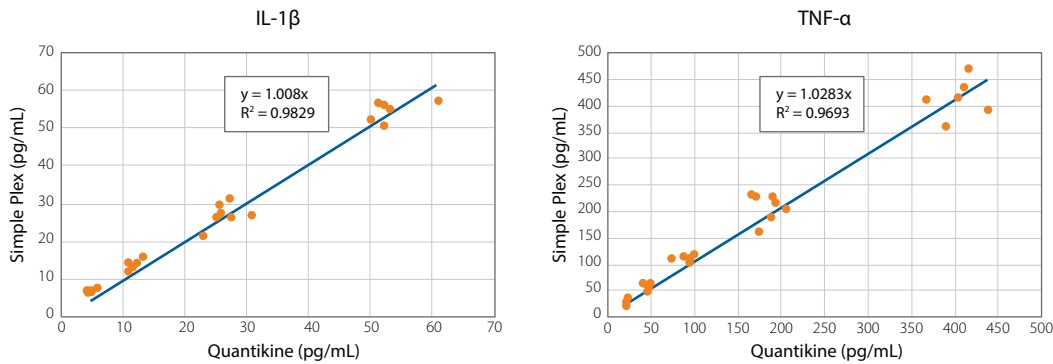
**Table 1.** Simple Plex cartridge options. \*Less any controls.

## Multiplex without cross-reactivity

Worried about immunoassay interference? The Simple Plex 16x4 and 32x4 cartridges split each sample into four channels and run a single assay in each. That means you get four answers per sample, multiplexed data and no cross-reactivity.

# Powered by R&D Systems

Did we say Simple Plex assays are powered by R&D Systems and are correlated against Quantikine® assays? That means you'll get the quality you already know and trust plus all the power Ella and Simple Plex assays can give you. So when you're ready to make the move to Ella, you can do it with confidence.



**Figure 7.** Correlation data between Simple Plex and corresponding Quantikine assay.

Our Simple Plex assay list is just too big to fit on one page and we add to it every day — [proteinsimple.com/simple-plex-assays](http://proteinsimple.com/simple-plex-assays) shows the full list. Have an assay that isn't working or you didn't see on the list? Ask us. We'd be happy to develop it once we get a handle on what you need.



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For a complete list of analytes, go to  
[proteinsimple.com/simple-plex-assays](http://proteinsimple.com/simple-plex-assays)



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