

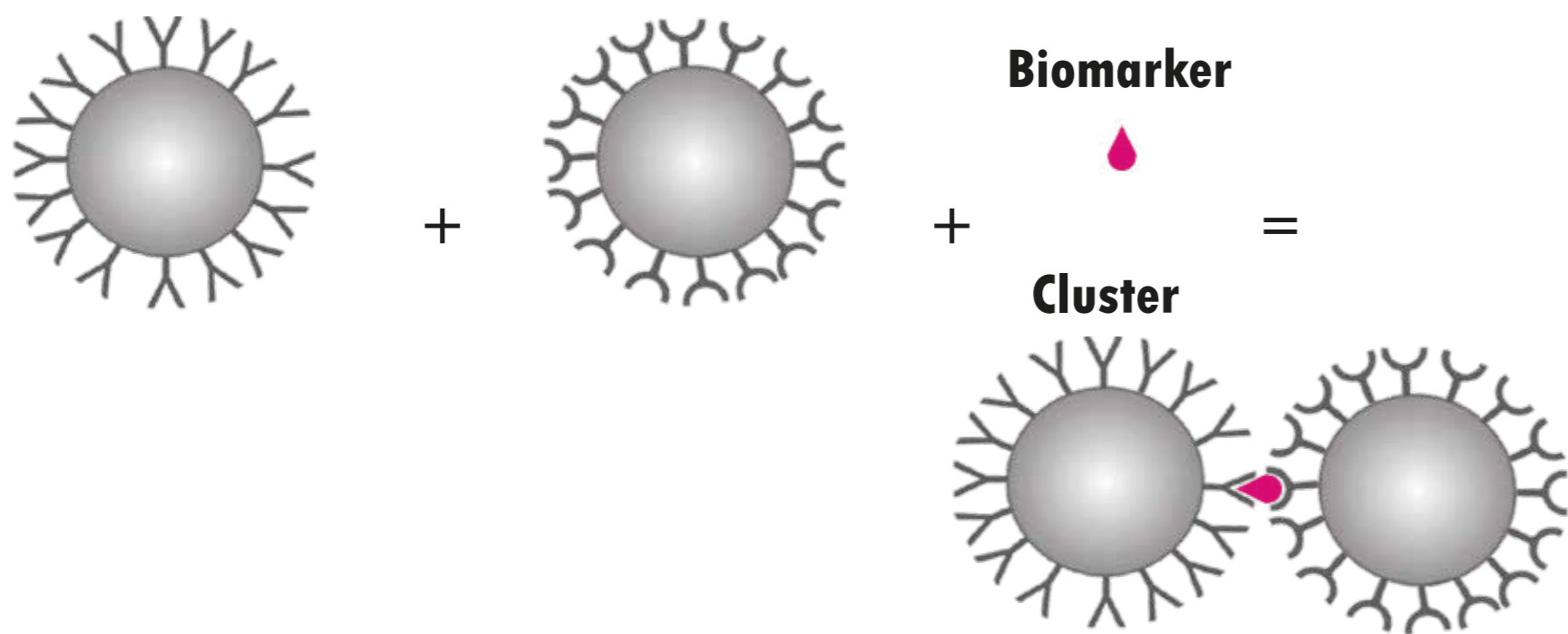
Your Lab At Home

Optomagnetic Cluster Assay

Core of the assay: Magnetic particles

The core element of our sensor technology are the magnetic particles. The particles are coated with antibodies which bind very specifically to the biomarker NT-proBNP. Because of the binding, clusters of particles are formed, mediated by the biomarker.

Magnetic particles coated with antibodies



Severe heart failure > More NT-proBNP in the blood > More clusters in the assay

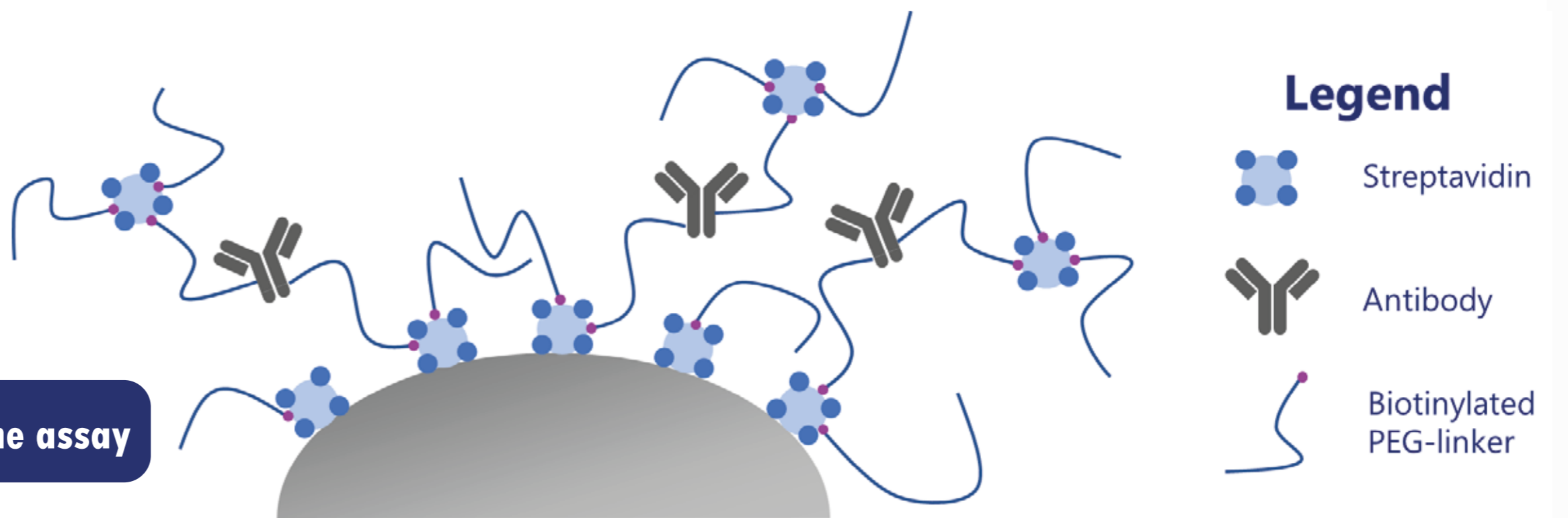
Why magnetic particles?

- Making the very small NT-proBNP visible
- We can control the movement of the particles with external magnets,

Special surface architecture

To prevent non-specific binding, a special surface architecture with polymer networks is needed:

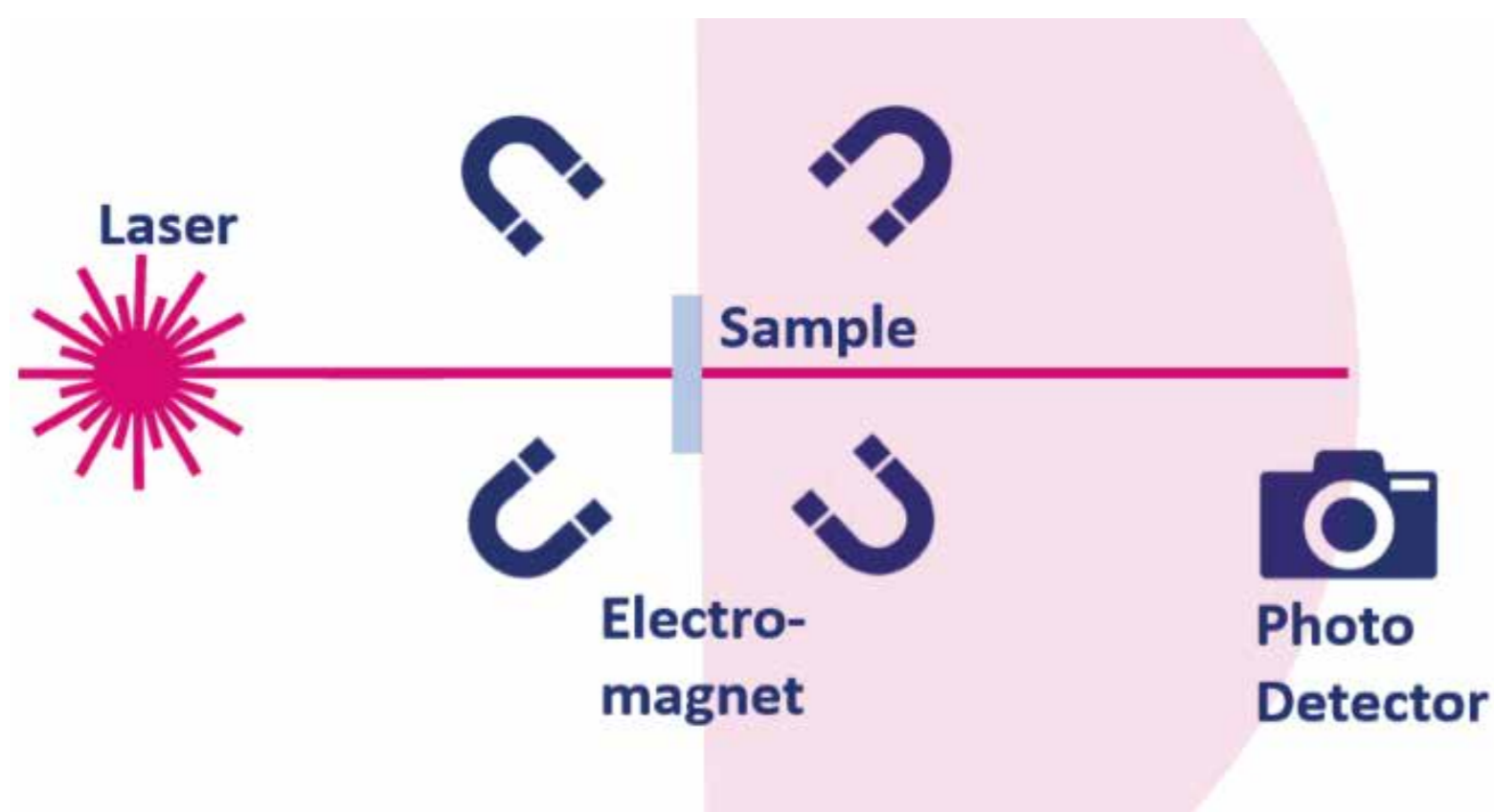
- We only want binding if our biomarker is present
- We do not want binding if our biomarker is not present



How do we measure the amount of clusters?

Let's take a look inside the biosensor

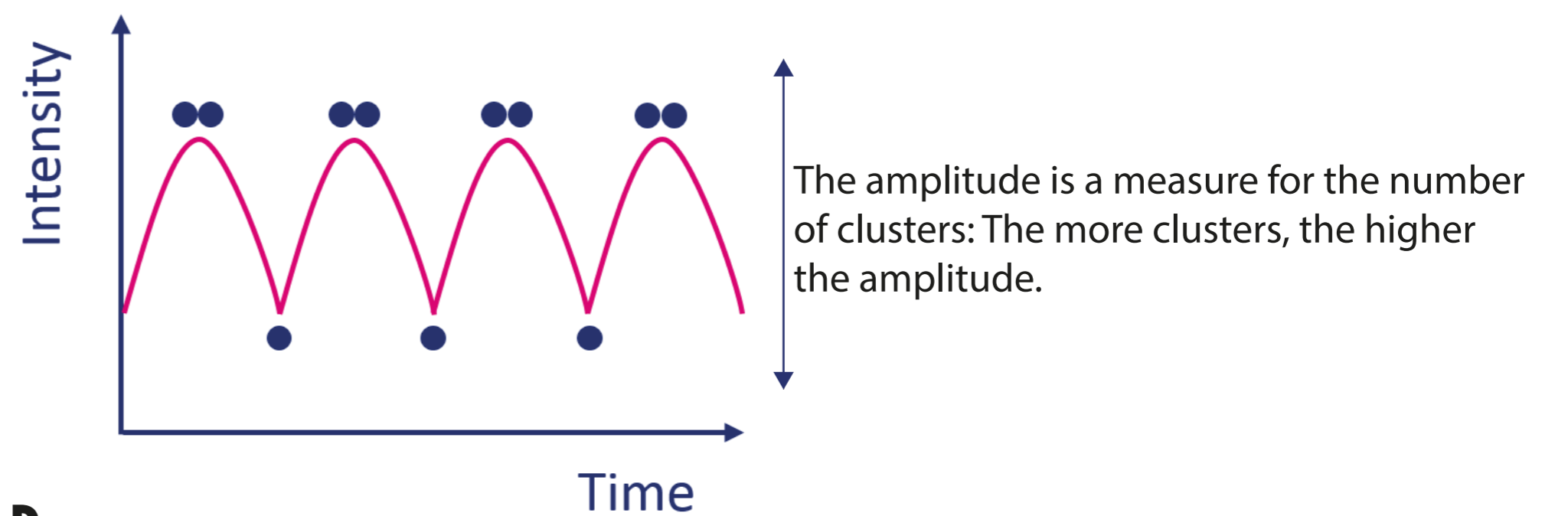
The core components



The laser illuminates the sample. The light rays that meet a particle while traveling through the sample, change direction and get scattered all around. In the sample the magnet rotates the clusters, and the rotating clusters create a time varying shadow (compare to the shadow of window blinds). The time varying shadow is measured by the photodetector, which is a component quite comparable to a camera sensor: it turns light into a current!

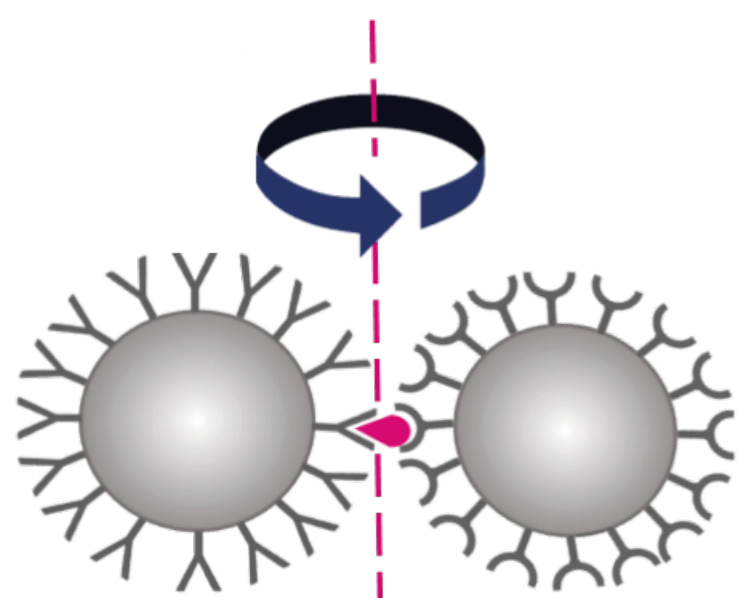
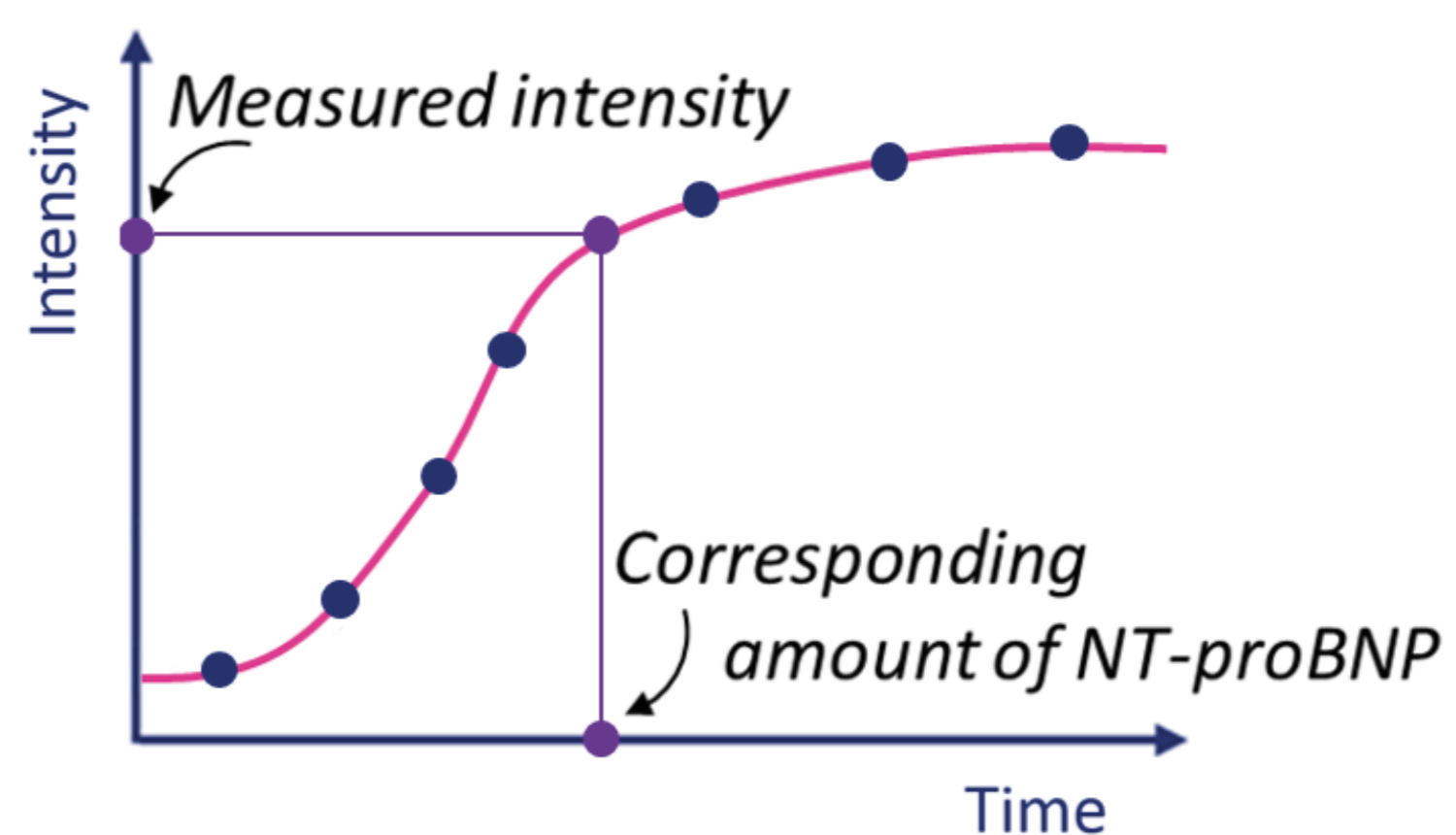
From signal to concentration

Signal on the photodetector



Dose-response curve

We have performed many measurements with known concentration of NT-proBNP. With that we set-up a 'dose response curve', which is the relation between the measured signal and the concentration. We use the dose-response curve to determine the concentration of an unknown sample.



Imagine the laser coming from where you are standing, then the frontal area of the varies between:



Did you know?

Our biosensor can be used for more than just the detection of NT-proBNP. The only thing that needs to be done is changing the antibodies. A whole new world in managing your health could be opened!

T.E.S.T.

2017