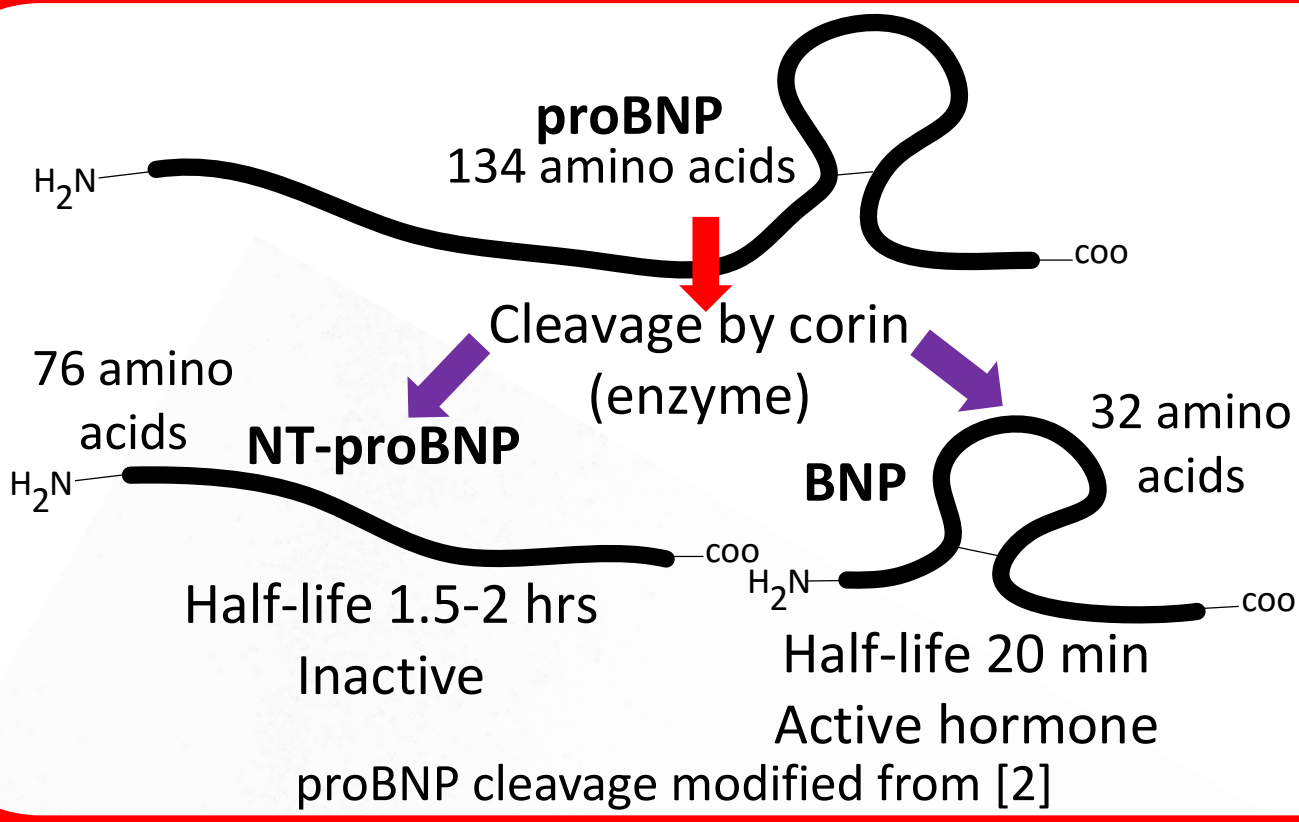


# DeTectUs – Stopping Heart Failure In Its Tracks

Preventing heart failure based on NT-proBNP measurements by APTES functionalized, junctionless silicon nanowire bioFETs



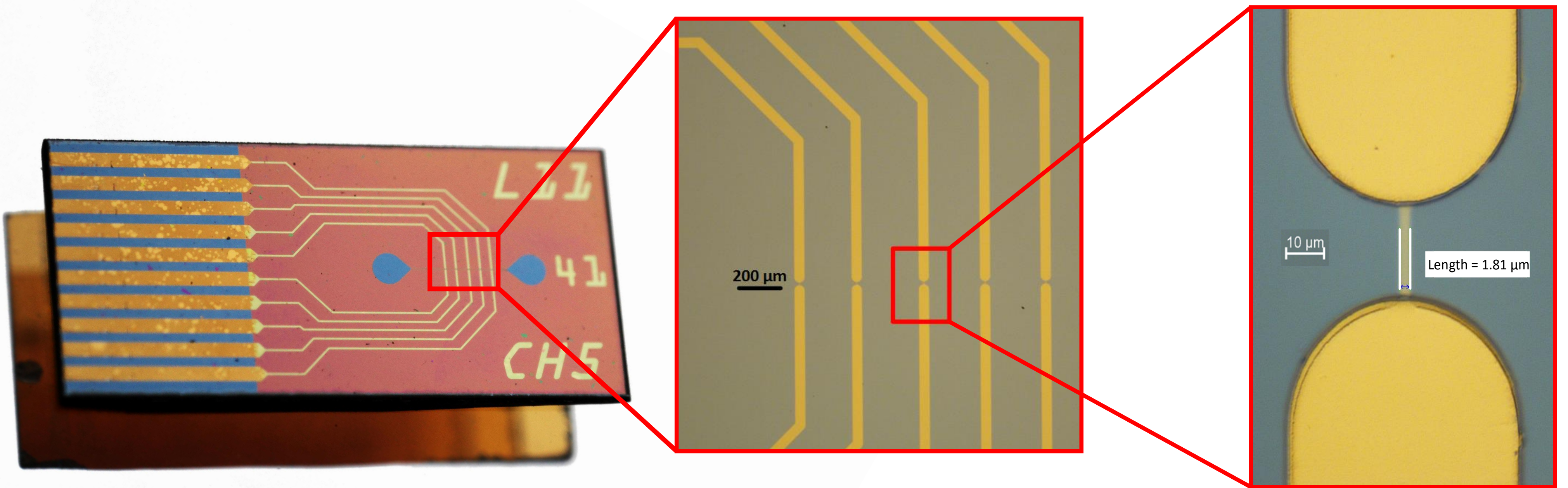
## BNP and NT-proBNP



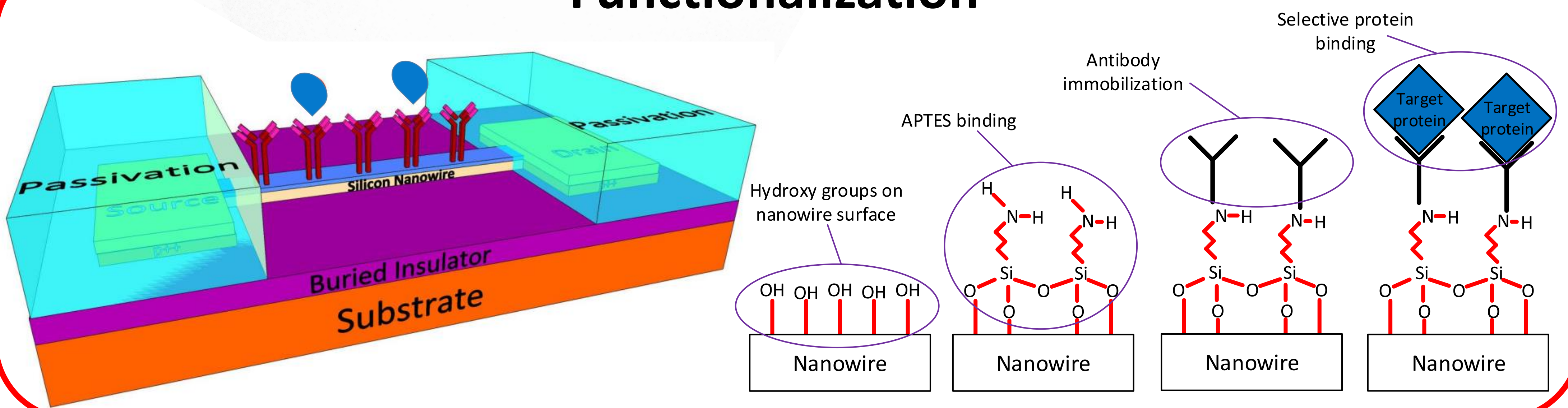
Biomarker	Normal Range	Risk Range	Heartfailure cut-off value
BNP	14-63 pg/ml	64-99 pg/ml	> 100 pg/ml
NT-proBNP	< 100 pg/ml	101-400 pg/ml	> 401 pg/ml

Values based on data from [1] and [2]. Average values are very dependent on age and lifestyle and thus a normal baseline should be established for each patient and the numbers interpreted by a qualified physician.

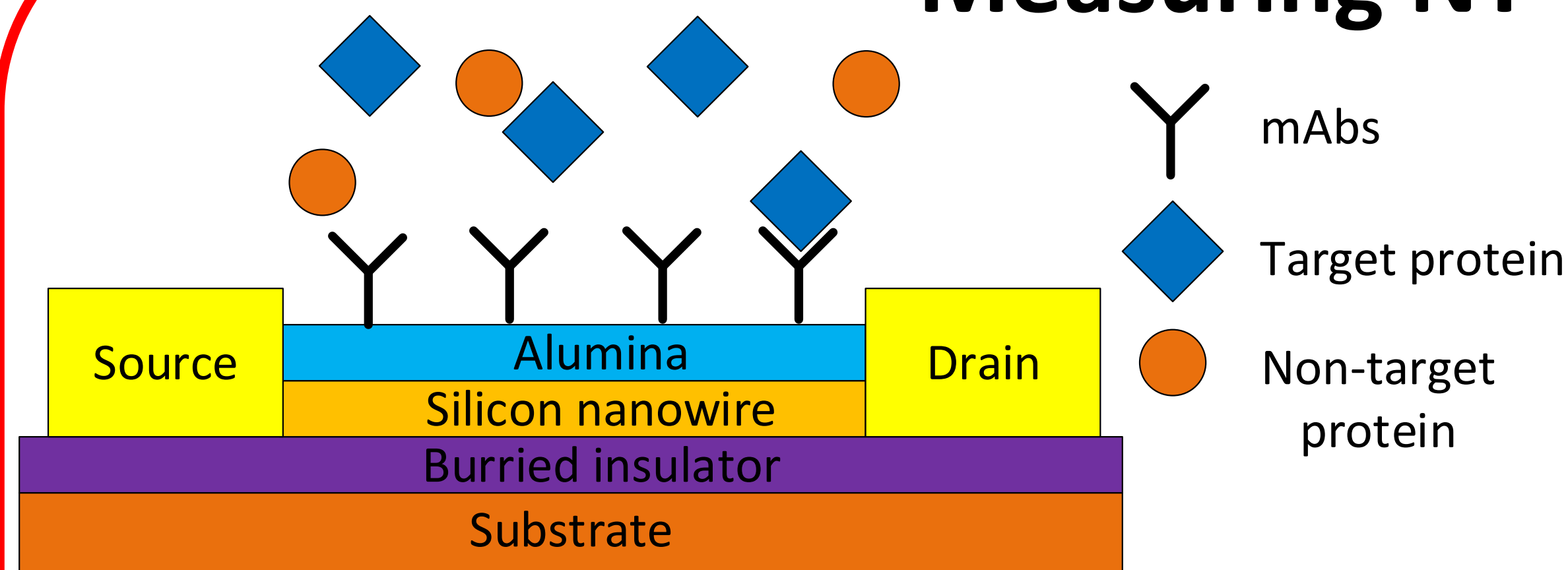
## The silicon nanowire



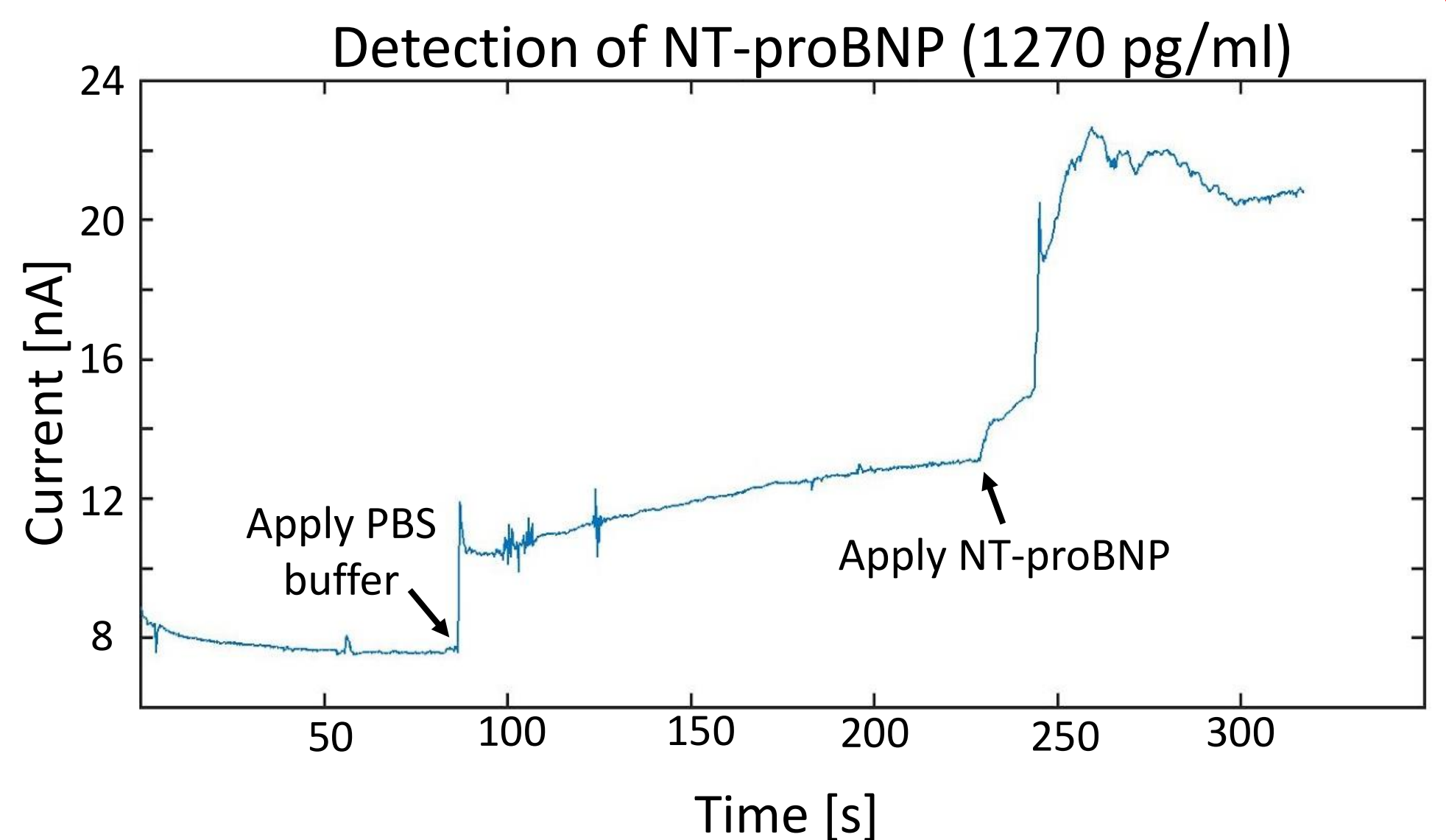
## Functionalization



## Measuring NT-proBNP



1) Only the target protein will bind to the antibody and affect the current in the nanowire



Actual measurement of NT-proBNP

2) A binding event results in an immediate decrease in current. The larger the impact, the higher the NT-proBNP concentration

### References

- [1] SensUs.org, Brain Natriuretic Peptide: (NT-pro)BNP, February 22nd 2017. [http://sensus.org/wiki/index.php?title=Brain\\_Natriuretic\\_Peptide:\\_\(NT-pro\)BNP](http://sensus.org/wiki/index.php?title=Brain_Natriuretic_Peptide:_(NT-pro)BNP)
- [2] MedScape.com, Brain-Type Natriuretic Peptide, May 23rd 2014. <http://emedicine.medscape.com/article/2087425-overview#a4>