Evaluation of EGFR and HE4 on MagArray High Sensitive Immunoassay Platform
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Abstract (submitted)

**Background:** HE4 and EGFR are important clinically relevant biomarkers. We report here that the MagArray platform is particularly suitable for the detection of HE4 and EGFR with ease of use and high sensitivity. Rather than detecting optical labels, the MagArray platform is based on the detection of magnetic labels that are free of optical interference in biological matrices. We report here that the HE4 and EGFR are important clinically relevant biomarkers. We report that the HE4 and EGFR are important clinically relevant biomarkers.

**Methods:** Using MagArray biosips, antibodies for EGFR and HE4 (Human epithelial protein) were spotted on individual sensors. Serum samples were hybridized on the microarrays followed with detection antibody incubations adopting a standard ELISA configuration. Instead of enzymatic labeling and signaling mechanism, magnetic tags were labeled and detected. The accuracy and sensitivity of results on magnetic sensors were compared with standard ELISA assays.

**Results:** The detection limits of EGFR is 100 times better than that of ELISA, and HE4 20 times better. The inter assay CV was less than 20% for both biomarkers between 5 runs -9 runs in the concentration range studies.

**Conclusions:** MagArray platform is demonstrated to be a sensitive and easy-to-use platform for immunoassays.

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**Standard Procedure**

- **GMW chips:** Each sensor size: 100μm x 100μm
- **Antibody Fixation:** Sample 2hrs
- **Detection antibody:** Minimum volume: 100μl
- **Biottin labeled Magnetic nanoparticles:** 15nm
- **Blocking:** BSA

**Materials and Methods**

- **GMW sensor chip:** This platform has 80 sensors per chip (described below) and the top 4 rows were used with EGFR, 6 rows were with HE4. Each row has 8 sensors. It is good to spot any antibodies.

**Detection limit of EGFR and HE4 on MagArray**

![Detection limit of EGFR and HE4 on MagArray](image)

**Accuracy Profile**

After all, the detection limit was following: EGFR: MagArray 10pg/ml vs. ELISA 10ng/ml, HE4: MagArray 500pg/ml vs. ELISA 10pg/ml

**Correlation with patient samples**

The patient were made diagnoses as lung cancer. The serum sample were diluted 1:100 to PBS and were detected.

**Conclusions**

- It is good to say the following:
  1. This novel platform is a higher sensitive than usual ELISA method.
  2. The detection limit could be lower proportionality 1/100 times.
  3. High-sensitivity could improve to select or develop better antibodies.

We hope this platform could be very useful for the clinical in the future.