

Take your lateral flow test sensitivity to a new level with **Upcon™ upconverting nanoparticle (UCNP) system**

The Upcon™ upconverting nanoparticle (UCNP) system is a unique detection technology based on photon upconversion.

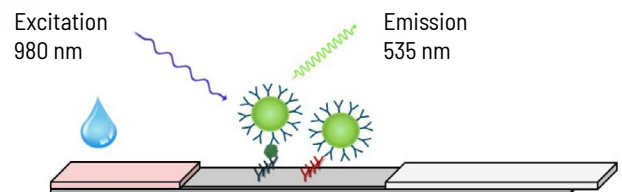
Upcon system is an exceptional solution for lateral flow tests

- High sensitivity
- Quantitative
- Automated objective readout
- LIS connectivity
- Possibilities for multiplexing



Complete solution:

- luminescent upconverting **nanoparticles**
- user-friendly **instrument** and **software**
- technical **support**



Application example: *C. difficile* lateral flow test

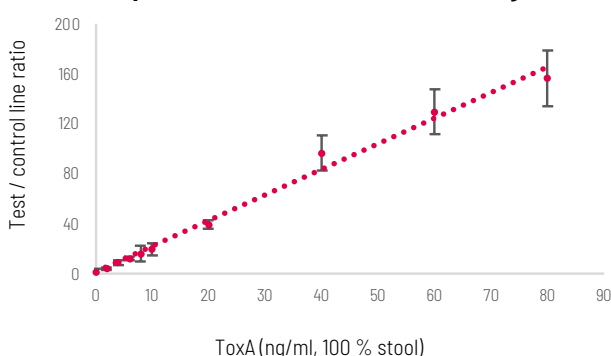
- *Clostridioides difficile* bacterium causes severe antibiotic-associated diarrhea
- Only toxin (A and/or B) producing strains cause symptoms, not all strains are toxigenic
- Sensitive detection of toxin A and B is crucial for diagnosis

Materials and methods

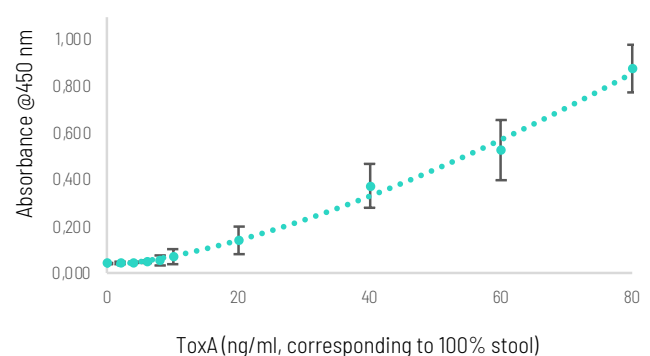
- Native ToxA detection from spiked stool samples diluted to 5 %
- Upcon LF detection limit 4-6 ng/ml in original 100 % stool
- Commercial ELISA detection limit 10-20 ng/ml in original 100 % stool

- Upcon surpasses ELISA in sensitivity
- Upcon surpasses ELISA in reading time (minutes vs 1.5h)

Upcon lateral flow immunoassay



Commercial ELISA



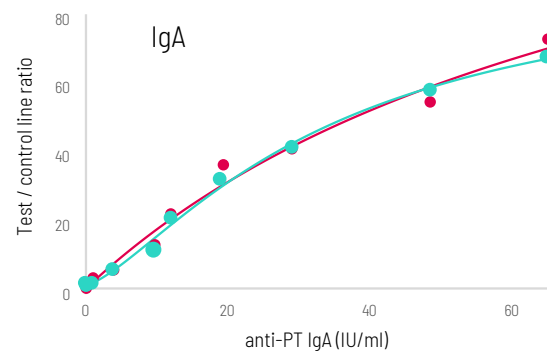
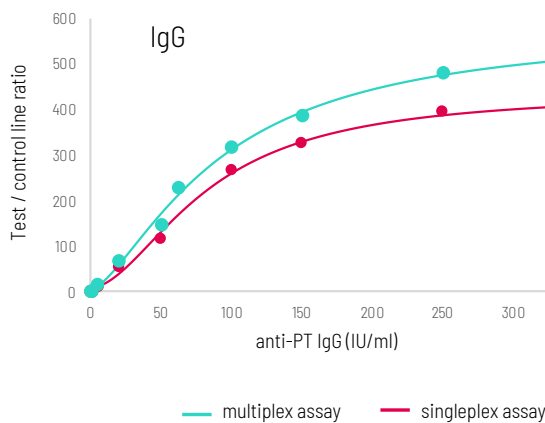
Application example: Pertussis (whooping cough) serological assay

- Whooping cough caused by the *Bordetella pertussis*
- Vaccine available, but the disease is still a problem
- *In vitro* diagnostic methods: PCR (genetic material), culture (growing the bacteria) or **serology** (testing for antibodies against Pertussis toxin)

Serology:

- **Challenge:** Detection of both IgG and IgA antibody response to pertussis toxin (single lateral flow test)
- **Solution:** Specific detection with different colored Upcon particles

- Dynamic range with Upcon lateral flow: 4 – 335 IU/ml for IgG antibodies
- Multiplex detection works as well as single plex assays with Upcon nanoparticles



Total solution

- Upcon™ system utilizing upconversion technology is manufactured under ISO 13485 certification
- Unique concept enabling
 - **High sensitivity & improved performance**
 - **LIS connectivity**
 - **Quantitative detection**
 - **Multiplexing opportunities**
- Especially suitable for lateral flow and POC platforms