

Single molecule diagnostics at the point of care

Partner search for HORIZON-HLTH-2027-02-IND-02

Photonic Nanosystems Lab | University of Fribourg, Switzerland

Dr. Morgane Loretan and Prof. Guillermo Acuna

We bring a portable fluorescence platform that detects and digitally counts individual molecules.

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A portable microscope with single molecule sensitivity

< €400
prototype component cost

~ 1 kg
current prototype

Smartphone
based imaging and analysis

Digital
single molecule counting



Our contribution

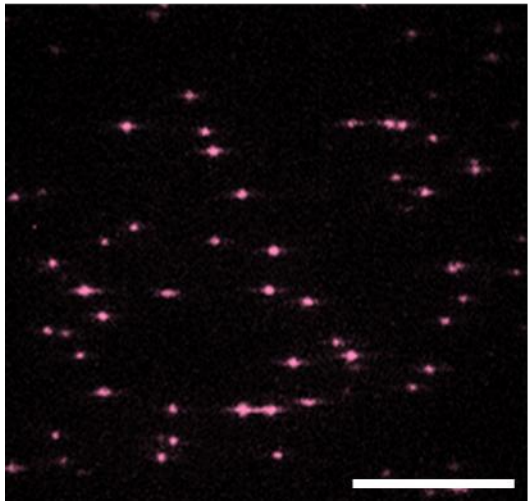
- Portable fluorescence reader
- Optical and software optimization
- Research validation and assay integration

Compact, self contained and designed for decentralized testing

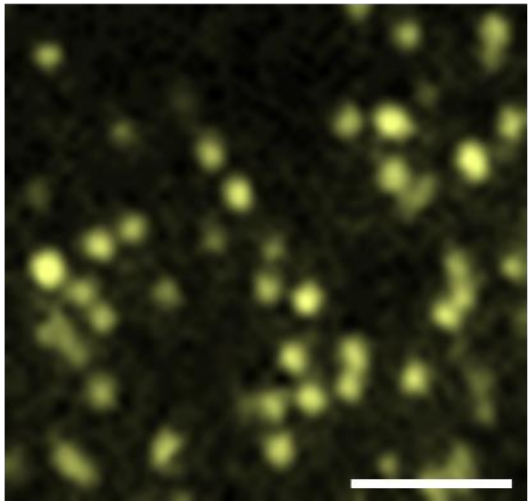
M. Loretan et al. **Nat. Comm. (2025).** https://www.nature.com/articles/s41467-025-63993-z

Laboratory level detection in a portable format

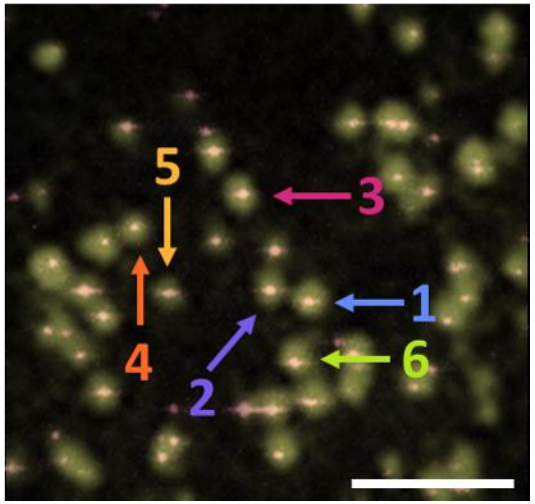
High-end microscope
ATTO 647N



Smartphone
ATTO 542



Overlay

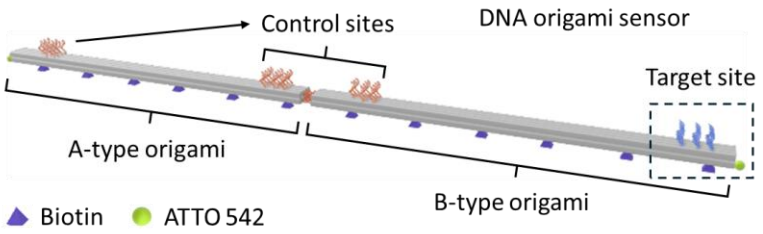


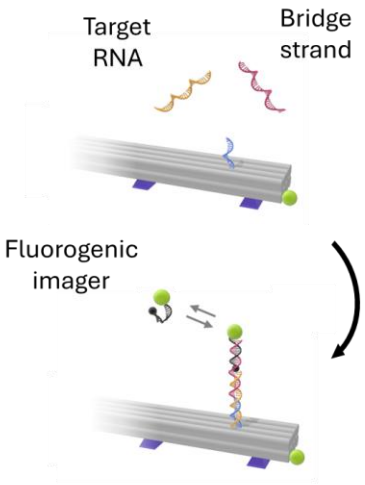
Individual fluorescent molecules are detected and digitally counted with results comparable to a high end microscope.

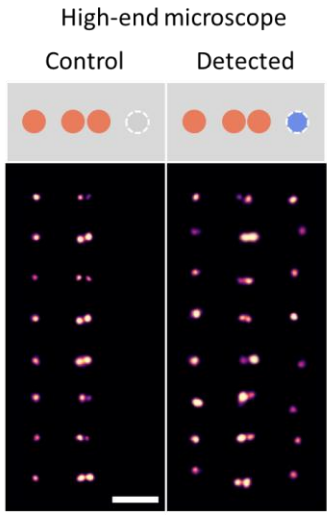
Why it matters

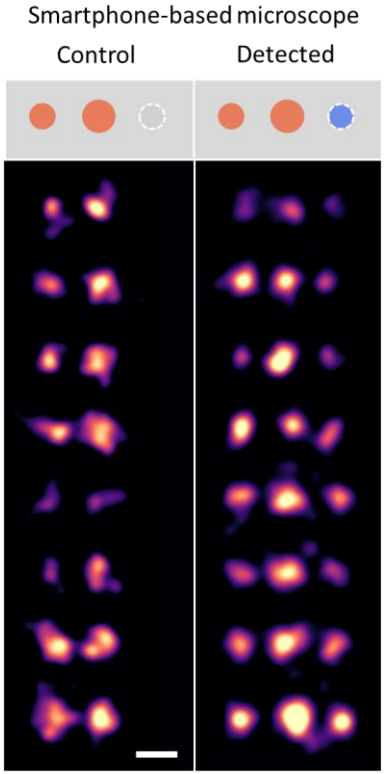
Ultrasensitive quantitative measurements can move beyond specialized microscopy laboratories.

Proof of concept RNA detection









RNA target

↓

DNA origami assay

↓

Digital counting

Sequence specific RNA sensing has already been demonstrated with the portable reader.

What we bring and whom we need

WHAT WE BRING

1. Patented portable fluorescence platform
2. Single molecule detection and digital counting
3. Smartphone based hardware and analysis
4. Expertise in fluorescence and DNA nanotechnology
5. Published RNA sensing proof of concept

PARTNERS SOUGHT

Clinical partner	use case, samples and benchmarking
Assay developer	multiplexed nucleic acid or biomarker assays
Diagnostics or MedTech SME	product engineering, manufacturing and scale up
Microfluidics partner	sample to answer workflow
Deployment partner	primary care usability and implementation

Open to joining an existing consortium or co-developing a new proposal

Advice

Please note:

- the presentation should be in English and last **maximum 5 minutes**
- do not overload your slides – provide links to additional material available on the web
- do not use videos, animations, etc. – this might not work with the IT system used
- send your pitch in PPT and PDF format with the following subject: „**Pitch presentation Cluster 1 – Name of the organisation" by 13. 11.2026 16:00 CET** to ewa.szkiladz@ncbr.gov.pl; dagmara.Robakowska-hyzorek@ncbr.gov.pl and vania.rosas-magallanes@recherche.gouv.fr
- the selection for pitching session will be announced on **20.11.2026**
- all submitted pitches will be made available on the partnering event website after the event