Mobile COVID19 Monitoring in sewage with Orvion Udetect®

Udetect

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Orvion

Orvion

Environmental Biotechnology company near Gouda, the Netherlands

Focus on bioprocess control in water using DNA/RNA-techniques (NGS & qPCR)

Offering laboratory services, software and on-site qPCR technology (Orvion Udetect®)

R&D with own specialised biotechnology lab facilities

Let nature do the job

Orvion Udetect®: rapid on-site qPCR analysis

Udetect

Bacteria/viruses < 2 hours without lab equipment

Three-step analysis - filtration (10 min), DNA isolation (20 min) and qPCR analyses (<1h).

Usable by operators after short training (online)

No cooling required

No electricity required except for the thermocycler (car battery)

Let nature do the job

How Udetect works

Filtration
(± 10 minutes)

DNA / RNA isolation
(± 20 minutes)

qPCR analysis
(± 50 minutes)

Filtration of viruses: based on ENMF method

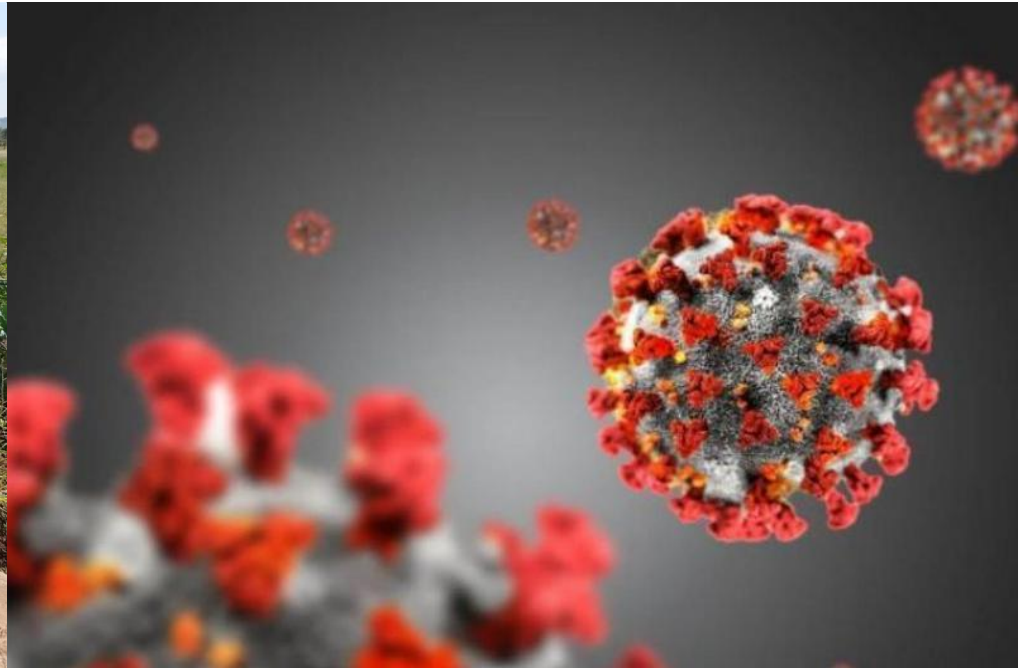
Available targets

- *Escherichia coli*
- *Bacteroides dorei*
- *Legionella pneumophila*
- *Cyanobacteria toxin (mcyE)*
- *Salmonella enterica*
- *Pathogenic Leptospira*
- *Enterococcus spp*
- *SARS-CoV-2 (COVID-19)* E-gene and N2-gene

Targets under construction

- *Campylobacter spp*
- *Vibrio cholerae*
- Cyanotoxins

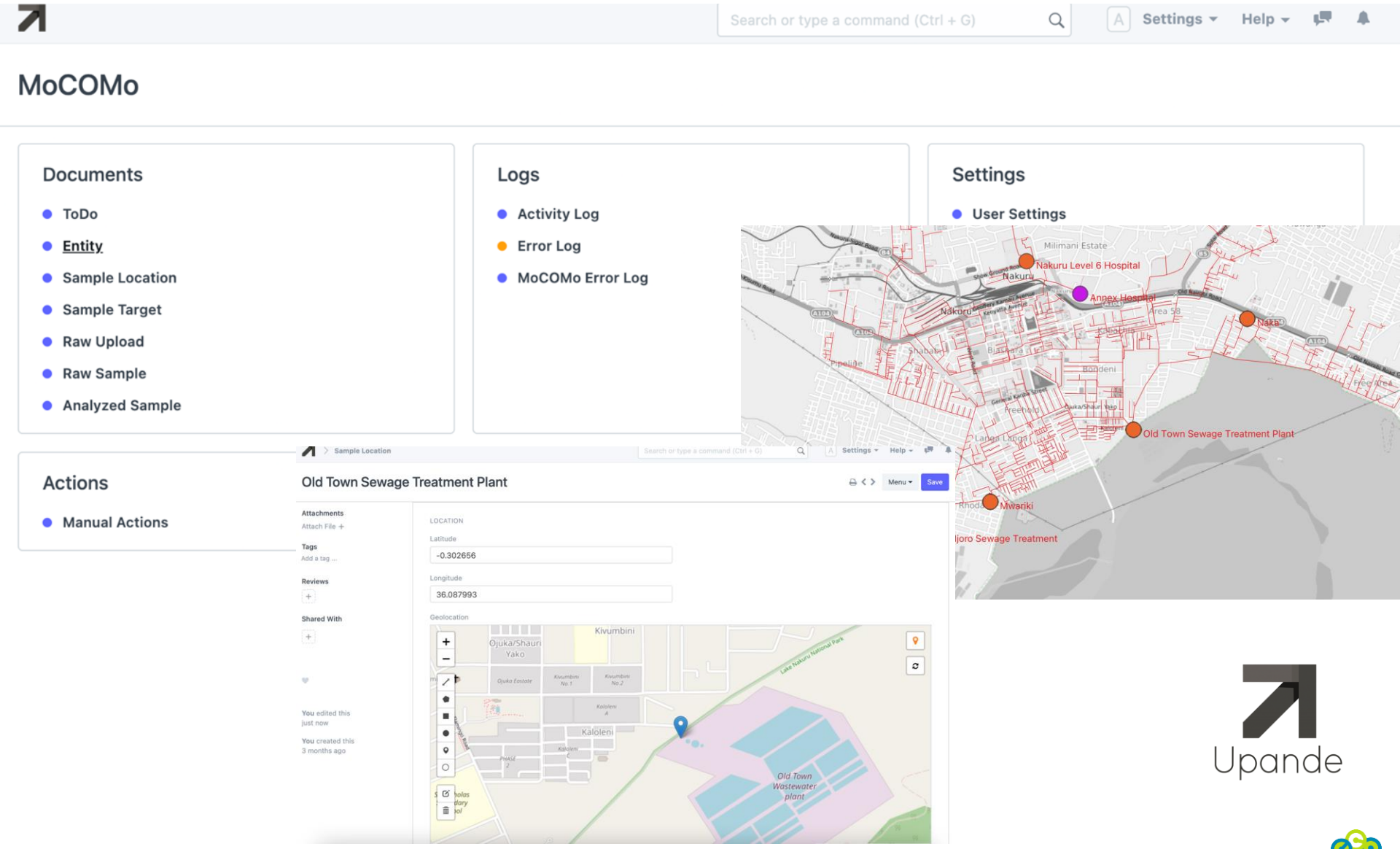
Other kits developed at request



MoCOMo: on-site monitoring of Covid19 in sewage water, Kenya 2021

- Detection of Covid19 virus (E gene from 2019-nCoV Charité/Berlin and N2 gene from 2019-nCoV CDC assays) in sewage water with new Udetect RNA extraction protocol
- Quantification of Covid19 particles per millilitre of sample analysed (max. 40 cycles)
- RNA Extraction Control (REC) & Bacteroides RNA (matrix+control) included
- Proof of concept in the lab and first round of validation in Kenya (UN Habitat project in Kisumu and Nakuru) by local partners NAWASSCO, KIWASCO, KEMRI, UPANDE
- 2nd round in Kenya coming up (dec/jan 2021)

Upande Udetect software



Upande

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Results 1st round June/July 2021

sample#	date	city	location	pH	ml	REC cq	REC shift	bact cq	E gene cq	N2 gene cq	N2 gene copies ml
7	9-6-2021	Kisumu	District Hospital 1	8.19	20	30.44	12.28	15.21	na	36.98	7
9	9-6-2021	Kisumu	Kendu Pump	7.13	50	30.03	11.87	15.95	na	pos	
10	9-6-2021	Kisumu	Kisat treatment	7.39	50	30.28	12.12	15.56	na	pos	
16	1-7-2021	Kisumu	District Hospital	8.64	20	30.71	12.55	16.16	na	35.00	28
22	6-7-2021	Nakuru	Annex Hospital	8.10	20	29.96	11.80	19.73	na	32.88	127

- 60 samples total, 43 samples analysed, 17 used for training
- Total valid samples: 32 (74%) REC shift < 14, recovery > 1%
- Mean REC recovery: 4.7%
- 38 Bacteroides ok (88%), cq: 14 - 24
- 5 positives N2 gene (16 % of REC ok samples)
- 0 positive E gene

Discussion

- The method worked relatively well in Kenya
- New round - 100 samples upcoming
- Volume filtrated was smaller than expected (needs work)
- No E gene found
- 5 positives for N2 gene: not much illness or mutations
- Fast results obtained (< 2 hours)
- No lab materials / apparatus, no cold chain needed
- Update primers / probes for mutations (N1 instead of E)

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Aqua for All

Udetect

For more information and the latest updates, visit:
www.udetect.eu

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