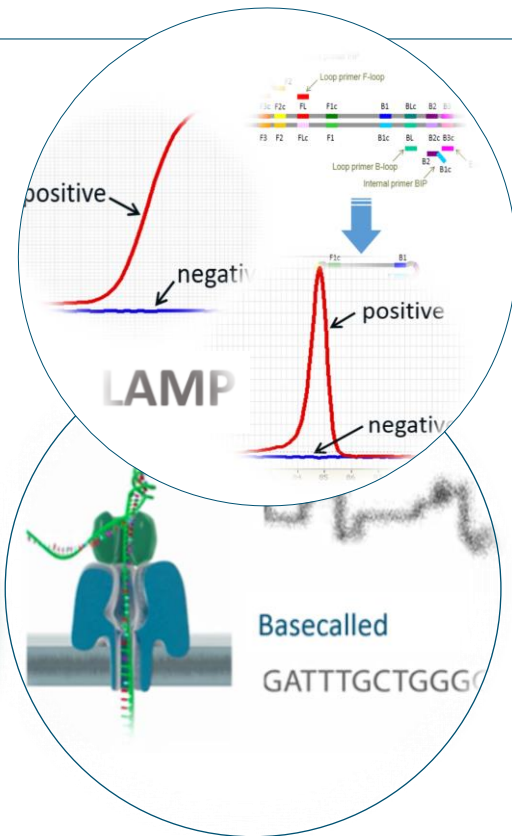
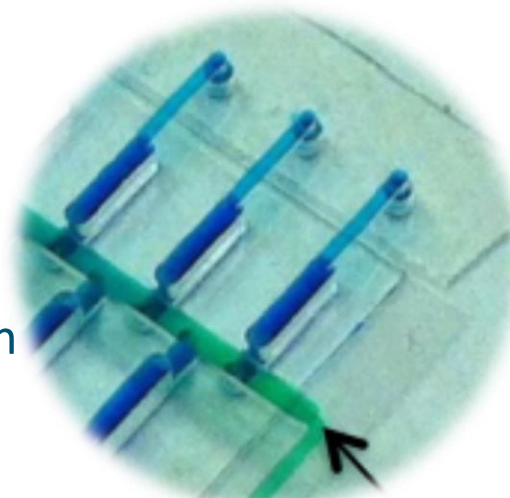


PPS On-site plant pathogen detection and barcode sequencing for improvement of plant health and phytosanitary control

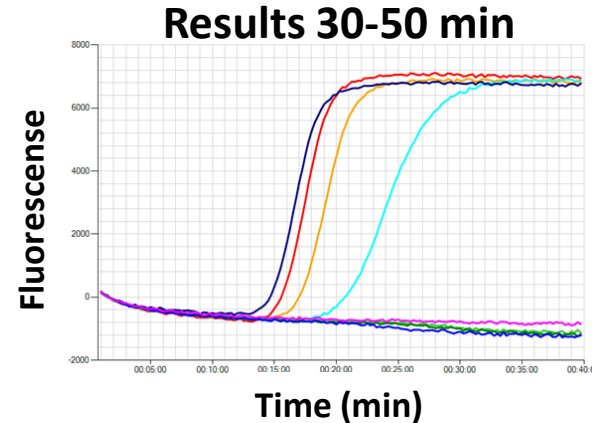
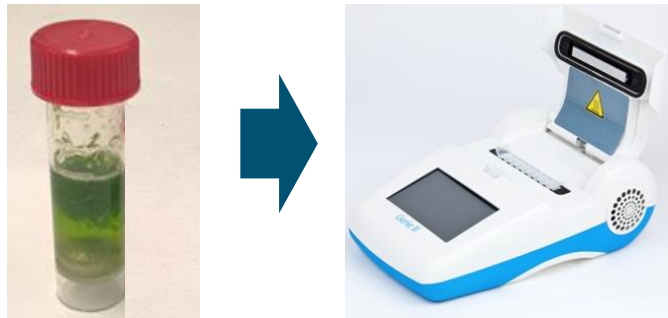
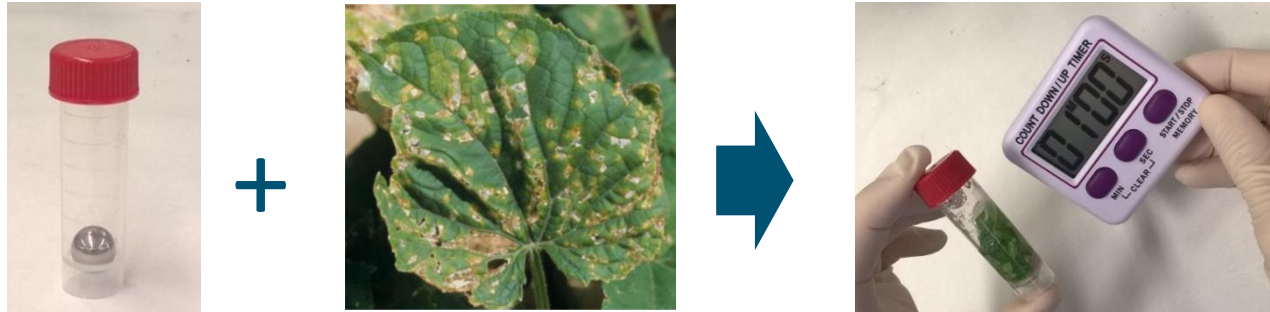
PARTNERS:

1. Glastuinbouw Nederland
2. LTO Nederland
3. Stichting KIIK
4. Hortigenetics Research: East West Seed Group
5. Dummen Orange
6. Agrifirm
7. Naktuinbouw
8. Fresh Forward
9. Future Genomics
10. Wageningen Plant Research



WP1: On-site extraction

- Optimization of different protocols for several crops, sampling, amount material (young/old)

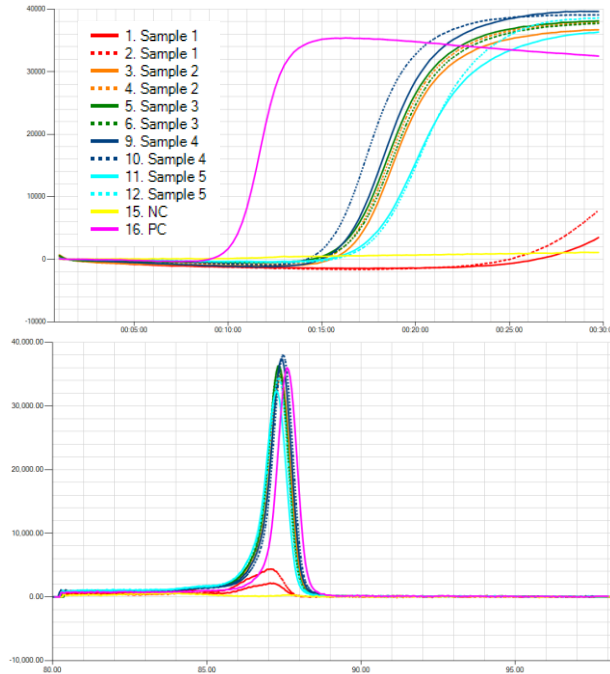


WP2: LAMP single and multiplexing

Xanthomonas fragariae LAMP on inoculated strawberry leaves

	1		2	
sample	Tpos (min)	Tm (°C)	Tpos (min)	Tm (°C)
1	26:00	87.13	29:30	87.03
2	18:30	87.37	18:15	87.36
3	18:00	87.33	18:15	87.33
4	17:00	87.47	18:00	87.39
5	19:15	87.22	19:45	87.33
NC	-	-	n.d.	n.d.
PC	11:30	87.61	n.d.	n.d.

Other LAMPs developed:
Pospoviroids, ToBRFV, TSWV, PVY, Clavibacter mm, Acidovorax citrulli, Fusarium ox, Verticillium dahliae

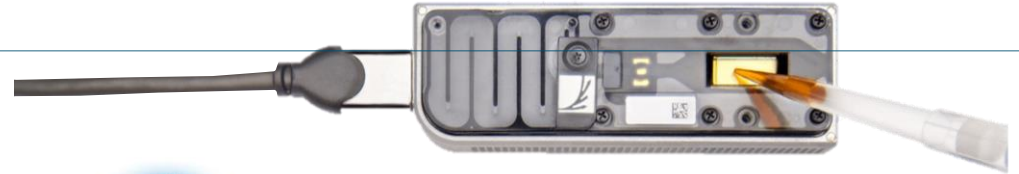


Fragaria x ananassa 15dpi with *X. fragariae*

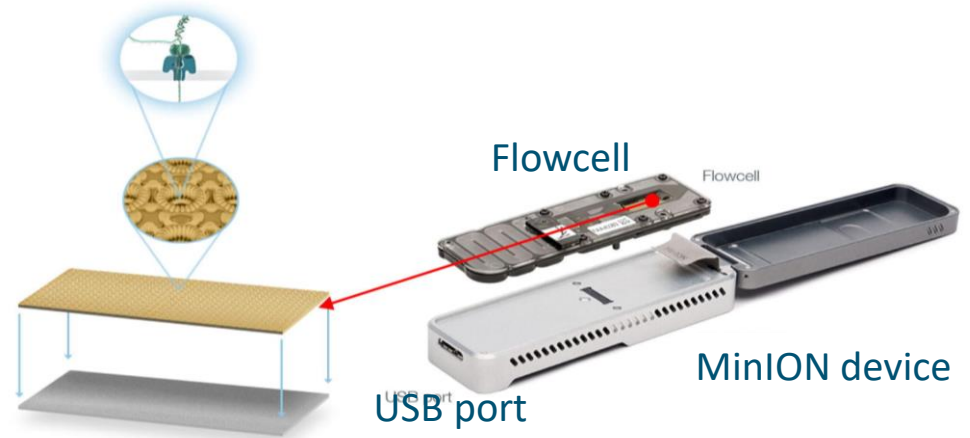
WP3: MinION sequencing



Flowcell



Flowcell



MinION device

USB port

6 Tobamoviruses:

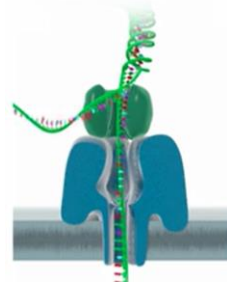
CGMMV, PMMoV, TMV, ToBRFV,
ToMoMV, ToMV

Raw data



Basecalled

GATTTGCTGGGGGCAGGGCCG



Data

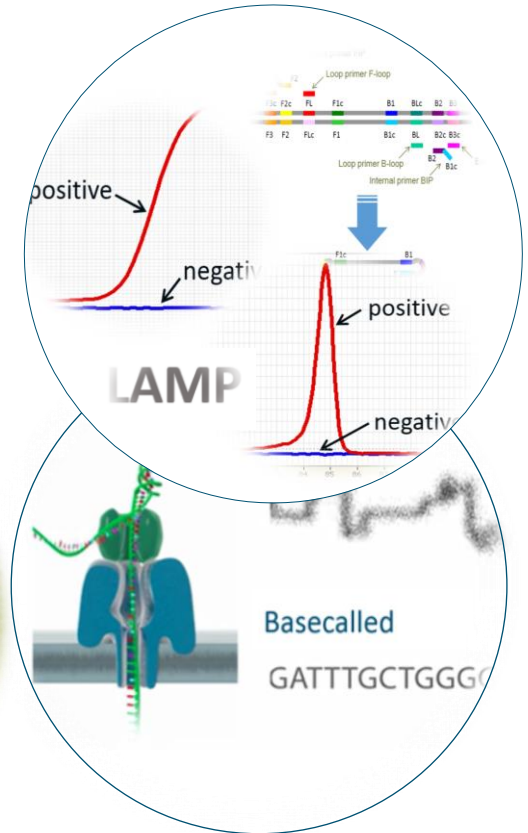


Sequen

PPS Air Monitoring in Greenhouses

PARTNERS:

1. Glastuinbouw Nederland
2. Stichting KIJK
3. Gewas coöperaties Komkommer, Roos en Gerbera
4. Naktuinbouw
5. Royal Brinkman
6. Pessll Instruments
7. Bertin Instruments
8. One Planet / Imec NL
9. 20/20 Seedlabs Inc.
10. Univ. Appl. Sc. Leiden
11. Wageningen Plant Research



PPS Air Monitoring in Greenhouses

Task 1 Selection 'air samplers'

Month 1-12 (WUR, Univ. Appl. Sc. Leiden, Companies)

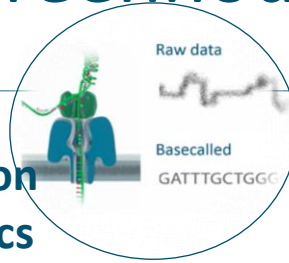


Task 4 Air sampling in demo-greenhouses

Month 13-30 (WUR, Univ. Appl. Sc. Leiden, imec NL)

Task 2 Optimisation metagenomics

Month 1-18 (WUR, Univ. Appl. Sc. Leiden)



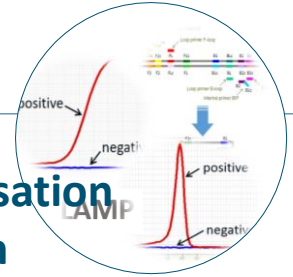
Task 5 Evaluation in practice

Month 13-48 (Companies, WUR, Univ. Appl. Sc. Leiden, imec NL)



Task 3 Optimisation detection

Month 1-18 (WUR, imec NL)



Necessary

- Knowledge of pathogens: viruses, bacteria, fungi etc.
- Taxonomy and collections
- Expertise of detection methods and validation
- Collaboration with stakeholders



peter.bonants@wur.nl