



mosquito[®] HV genomics
and dragonfly[®] discovery
in the fight against COVID-19



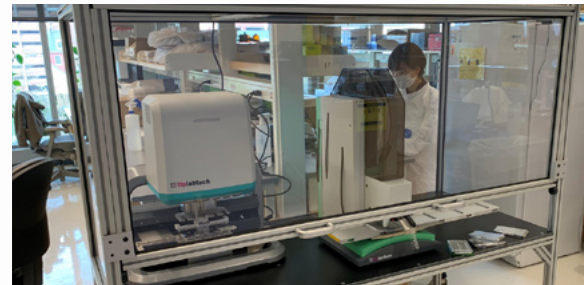
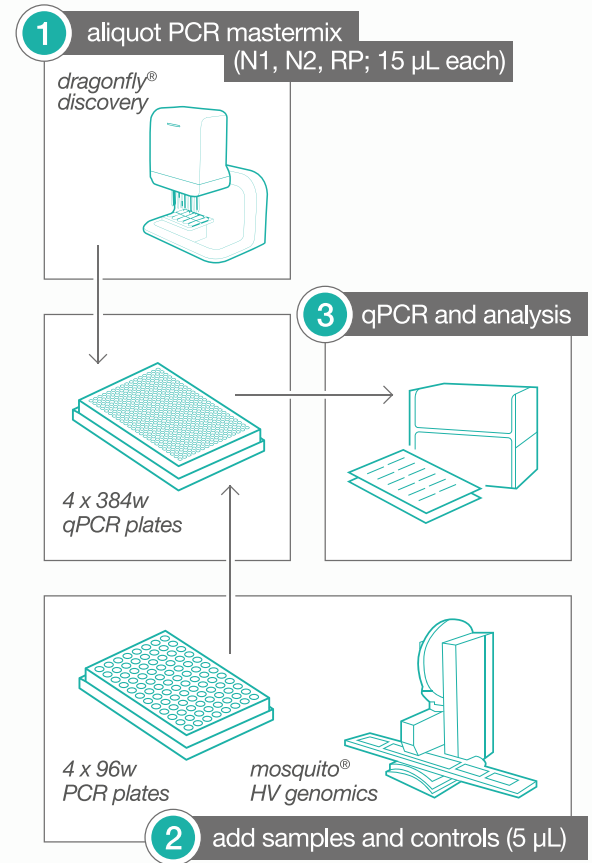
real time RT-PCR

lessons learned

US-based research service center

- contributing to the COVID fight by building up capacity to do high-volume rapid testing.
- led by director, Mike Humphreys, COVID-19 large-scale testing initiative is ramping up to run as many as 20,000 tests per day and return results within 24 to 48 hours, dramatically increasing testing throughput and turnaround time.
- test samples from patients are processed using the emergency use authorized CDC recommended assay for which SPT Labtech mosquito® HV genomics and dragonfly® discovery robotic platforms are used to automate assay processing
- “the enhanced testing capability will also be leveraged in the longer term to ensure sustained COVID-19 surveillance across the state of Maryland.”
- Sanford Stass, MD, professor and chair of UMSOM’s Department of Pathology and Department of Medical and Research Technology.

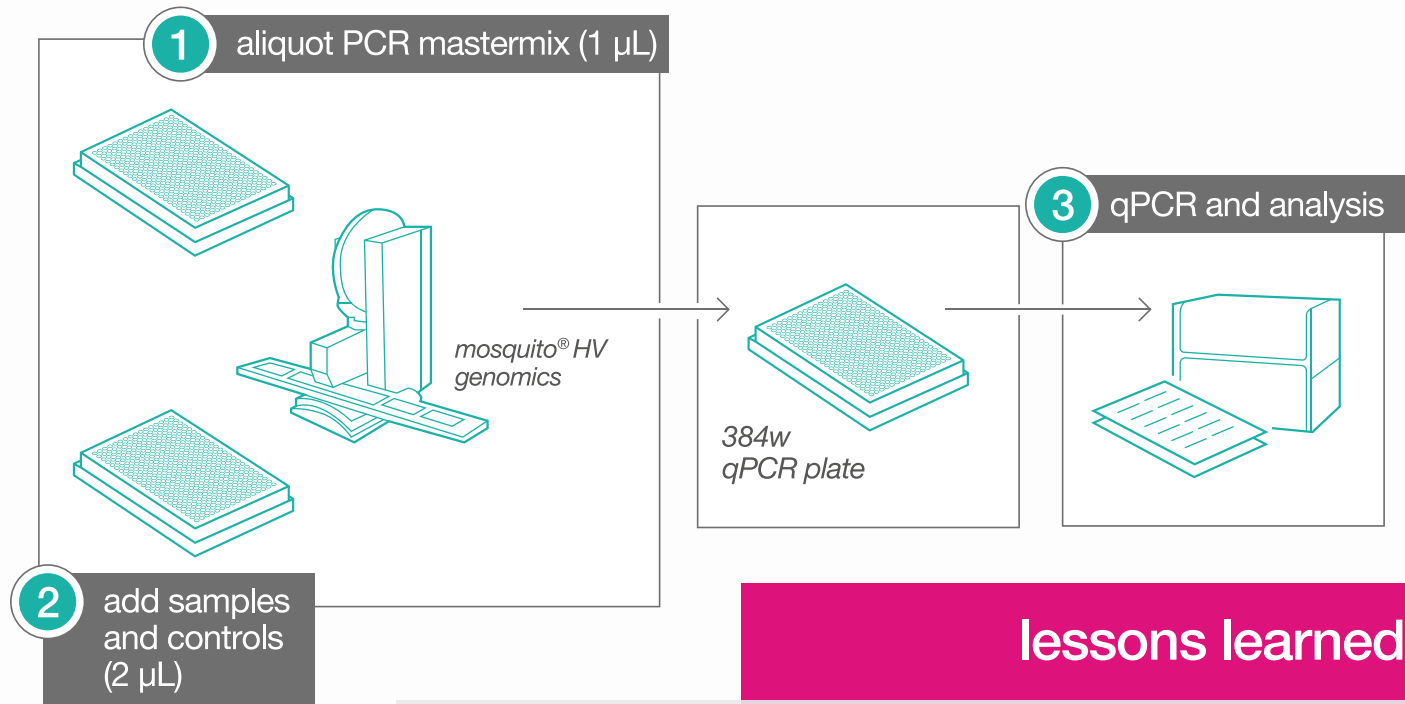
[read more here](#)



dragonfly® discovery and mosquito® HV genomics completely enclosed in a laminar hood



multiplex real time RT-PCR



find out
more here

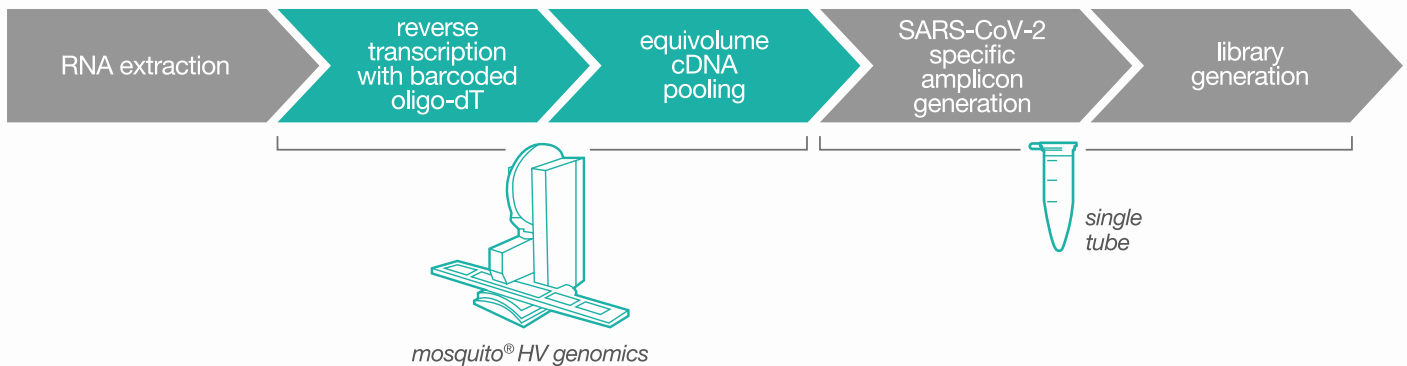
lessons learned

US-based research laboratory

- multiplex COVID-19 RT-qPCR helps save time and resources
- assay miniaturization on mosquito[®] HV genomics liquid handler:
 - allows 8-fold reduction of the cost per sample
 - enables a significant increase of number of samples processed from one kit
 - increases the assay sensitivity (detection limit: 3 vs 6 viral copies)
- as the world continues to search for scalable testing, the team has demonstrated that even though saliva collection is less invasive, it is also less reliable



diagnostic assay based on NGS



lessons learned

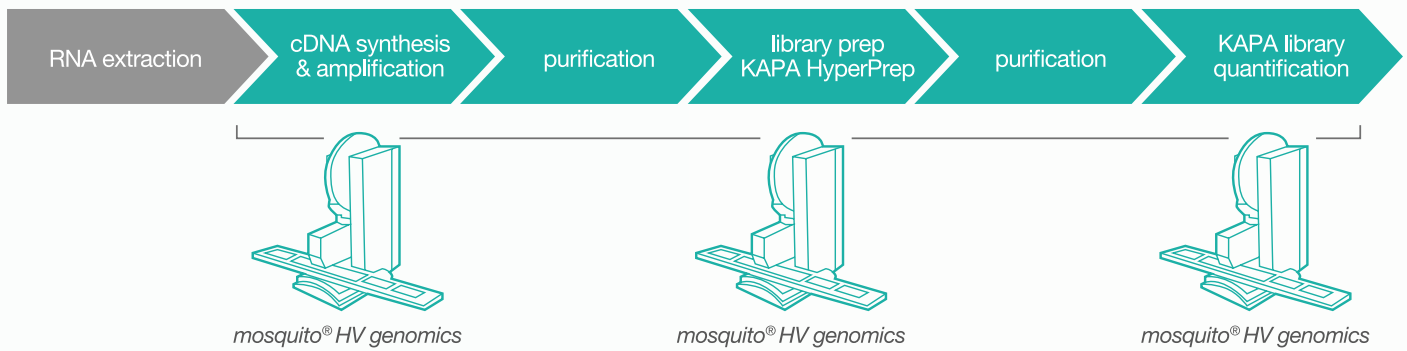
state-of-the-art research and training facility

- HiDRA-seq, built on Next Generation Sequencing technology, has the ability to multiplex thousands of barcoded patient samples, significantly increasing current testing capacity
- method designed to be partially performed on a small automated liquid handling machine, so that a single person is able process more than 2,000 RNA samples per day with ease
- library preparation and sequencing data obtained in as little as 1.5 days
- miniaturization of the reactions results in a much more affordable solution compared to other methodologies available in the market
- estimated price for sample screening from extracted RNA to diagnostic result: 2 CHF/EUR/USD

learn more here



whole-genome sequencing



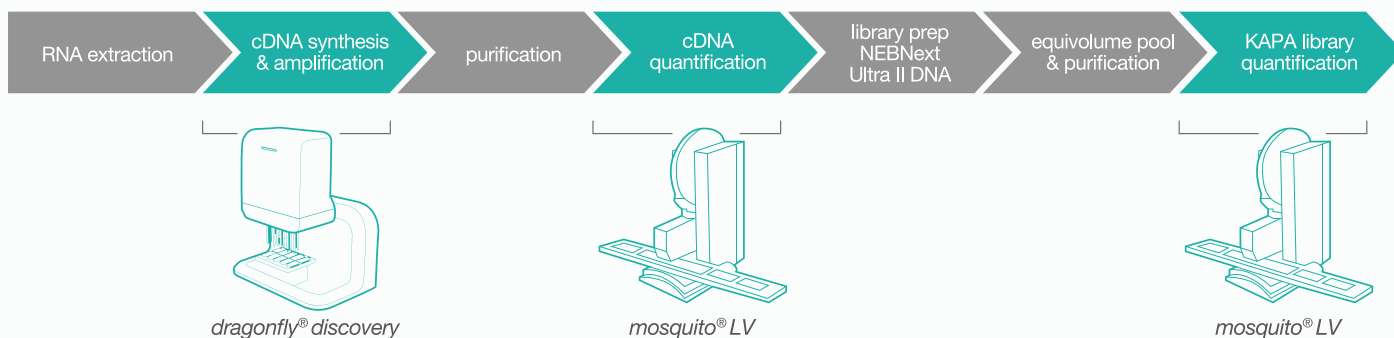
lessons learned

UK-based centre of excellence in virology research

- recent addition of mosquito® HV genomics liquid handlers has already increased capacity to research COVID-19, specifically helped
 - automate full NGS workflow that includes cDNA synthesis and amplification, NGS library preparation and purification steps
 - process more samples within the same time
 - reduce reaction volumes to analyse more samples within the same budget
- the obtained sequencing data were combined with traditional case-finding and contact tracing to establish COVID-19 transmission clusters in Scotland
- this research can further enhance descriptive epidemiology and facilitate control efforts to restrict the spread of coronavirus

discover more here

whole-genome sequencing



lessons learned

world leader in genome research

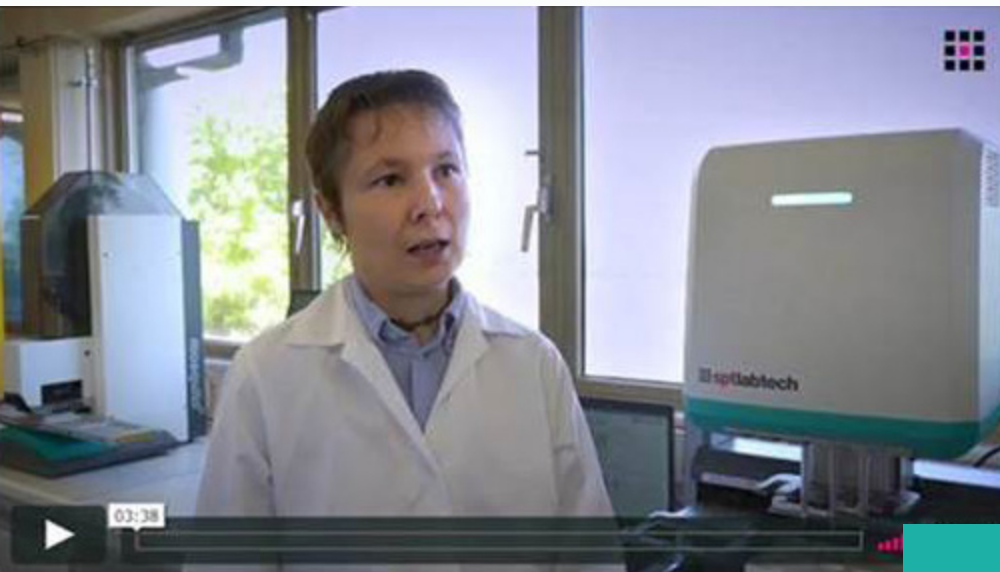
- whole-genome sequencing of the virus provides critical data that will help Public Health Agencies to manage the COVID-19 outbreak in specific countries/regions and inform vaccine research efforts
- throughput and price point were critical in making this research effective, hence automation and miniaturization are key
- use of dragonfly® discovery for cDNA synthesis and PCR master mix additions steps provides the following:
 - significant time saving
 - reagent dead volume reduction
 - hugely reduced tip consumption compared to using tradition pipette tip based liquid handling
 - enables miniaturization (384 well plate method) due to low volume accuracy and precision
- mosquito® HV genomics used in low volume (384) workflow for high speed, low volume sample transfers

read more here

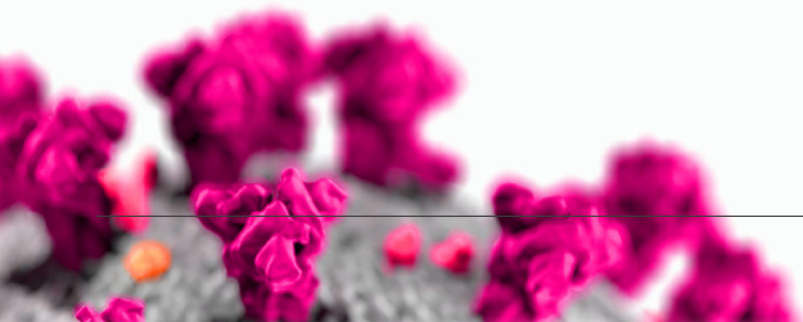


detecting COVID-19

Watch our latest video where Kamila – Field Applications Scientist – genomics, takes us through how our dragonfly® discovery and mosquito® HV genomics liquid handlers are utilised to detect COVID-19 by real-time RT-PCR.



watch the
full video here





SPT Labtech website

blog

Automation and Miniaturization Solution to Testing and Research Bottlenecks

- miniaturization of the testing process using automated low-volume liquid handlers addresses the three key bottlenecks to increasing testing capacity: reliability, cost, and supply chain
- a single PCR test is currently priced at \$20 USD. By scaling this down 20-fold with our specialized low-volume liquid handlers, such as the dragonfly[®] discovery and mosquito[®] HV genomics robots, the cost can be reduced to \$2.50 per test
- in the long term, automated low-volume liquid handling will save labs reagent, time, and money on their research while achieving robust data and having a lower environmental impact

How structural biology is playing a role in tackling the COVID-19 pandemic

- next-generation tools for sample preparation, such as the chameleon for cryo-EM grid vitrification and liquid handling robots such as the mosquito[®] HV genomics and dragonfly[®] discovery to enable efficient crystallographic screening, resulting as seen in recent high-impact publications

COVID and beyond: Making Automation work for you

news

Responding to COVID-19: Working together to advance life science research at SPT Labtech

- key objectives are to assure the safety and wellbeing of our staff and those we come into contact with, maintain continuity of service and respond proactively to changing needs, while playing our role in global research

crystallography

- Structural and Functional Basis of SARS-CoV-2 Entry by Using Human ACE2
- Structure of the SARS-CoV-2 spike receptor-binding domain bound to the ACE2 receptor
- Main protease structure and XChem fragment screen



click here to **contact us**

ask us a question about how your instrument
can support COVID-19 research

