



Dedication to the IVD industry?

**We I.V.DO that™**

# The future of engineered polymerases? Zeroing the step of quantitative reverse transcription PCR (RT-qPCR)

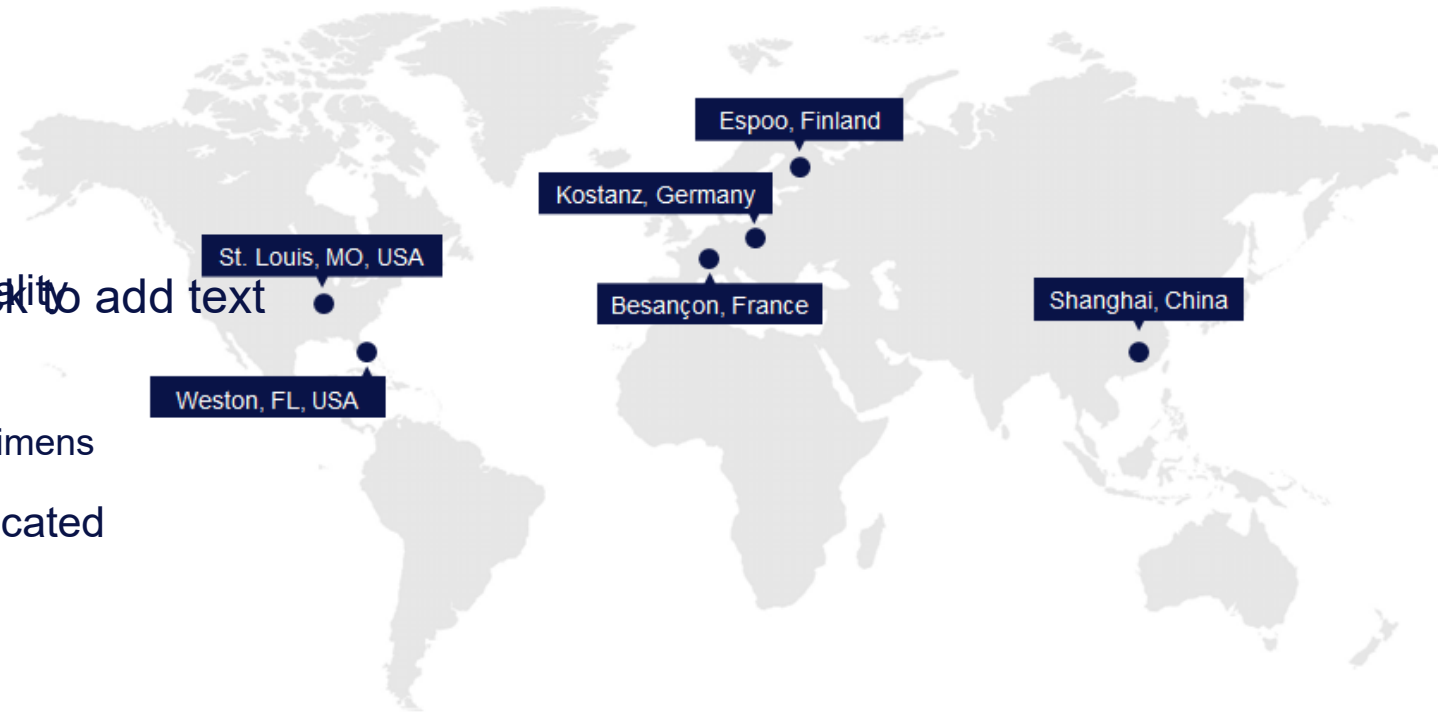
Dr. Kevin Eboigbodin, PhD, MBA

Senior Director, Molecular Diagnostic Reagents

Medix Biochemica Group

# Medix Biochemica

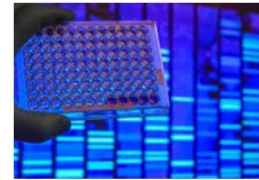
- Independent, international, and industry-leading critical raw materials partner to the IVD industry
- Founded in 1985
  - Headquarters in Espoo, Finland
  - Growing global branches
- Developing and manufacturing essential high quality raw materials for diagnostic applications
  - Antibodies, antigens, clinical chemistry enzymes, lipoproteins, DNA and RNA polymerases, biospecimens
- Over 250 employees, with 1 in 5 employees dedicated to R&D
- Trusted by leading names in the IVD industry
  - We work with 23 out of the 25 biggest global IVD companies
  - Products used in over 70 countries



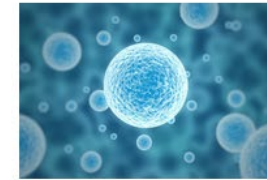


# MedixMDx - Innovative portfolio of best-in-class MDx reagents

- High-quality, robust **polymerases and mastermix** for applications used by both IVD and research customers
- Custom, novel DNA/RNA polymerase **development services**
- CE-IVD/FDA approved raw materials used in broad range of diagnostic tests globally



Genotyping



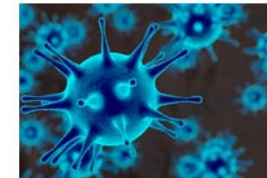
Direct PCRs



Freeze-Dried Products



Isothermal Amplification



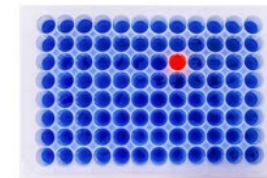
RNA / RT-PCR



PCR & qPCR



Mutant DNA Polymerases



Bulk & Customized Kits



Services

# Zero-step of quantitative reverse transcription qPCR (RT-qPCR)?

## Standard RT-qPCR protocol

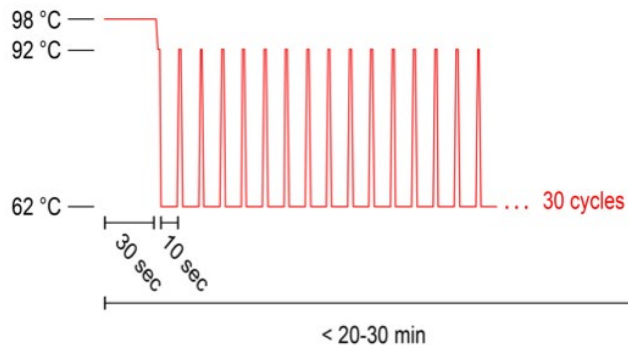


## 0-step RT-qPCR protocol



# Zero-step RT-PCR: Uses an Engineered highly thermostable Taq DNA polymerase with reverse transcriptase activity reading both RNA and DNA template

## 0-step RT-PCR



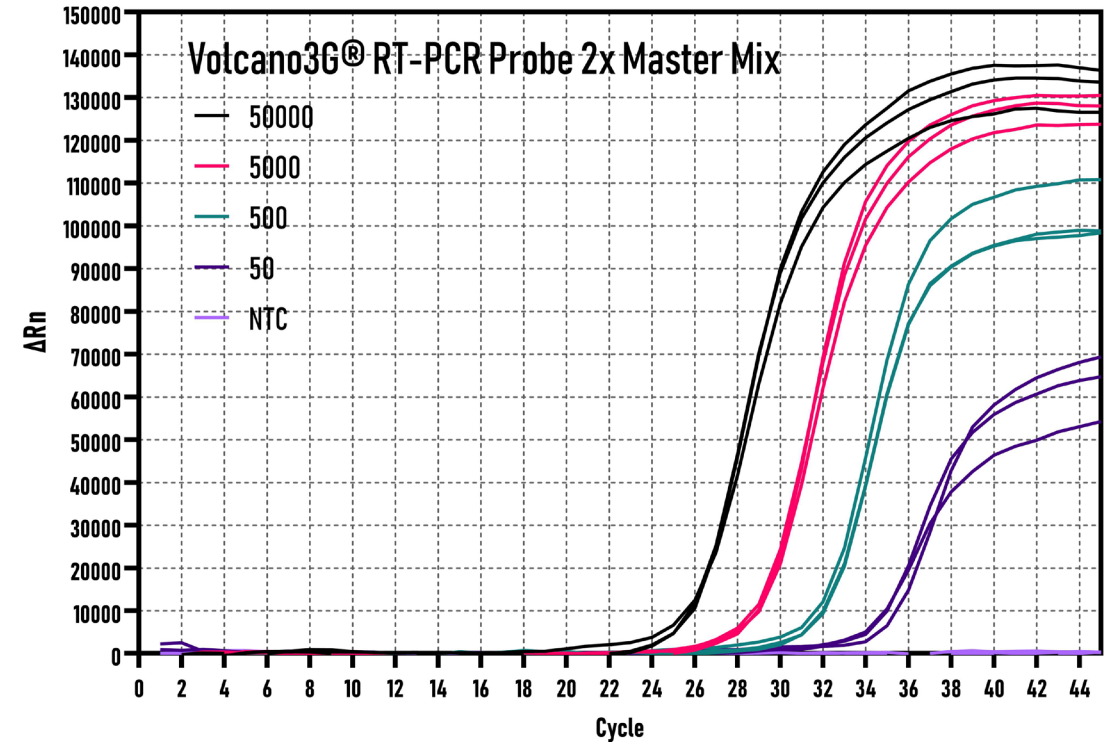
Reverse transcription (cDNA generation) and DNA amplification happens at the same time.

**No conventional Reverse Transcription (RT) incubation step needed (0-step) thus enabling faster detection time to result**

**Faster!  
Unique!**

Typical protocol

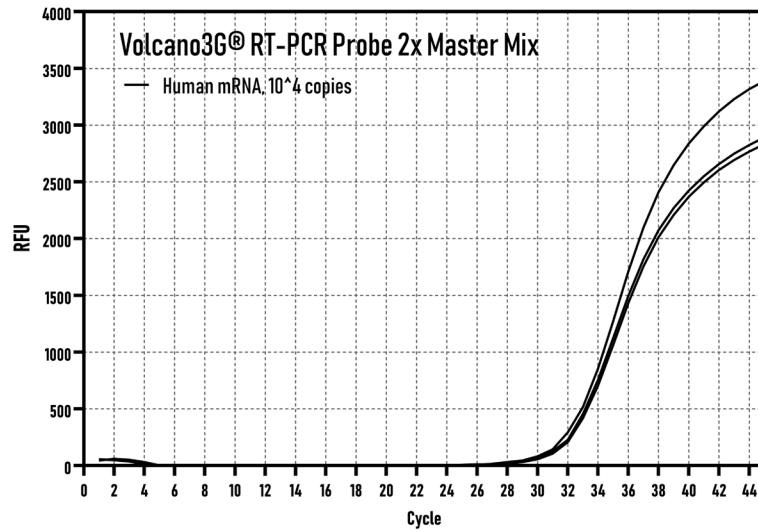
Protocol	Step	Temp	Time	Cycles
	1.	95°C	1 min	1 x
	2.	95°C	10 sec	45 x
	3.	60°C	1 min	



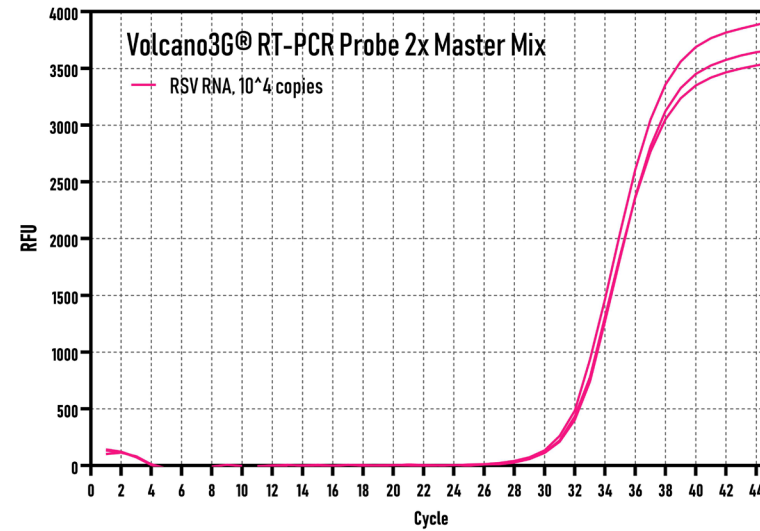
The time to result can be further shortened: By reducing the number of cycles and/or reducing the annealing/extension time (instrument dependent)

# Zero-step RT-qPCR has been validated using a number of RNA targets

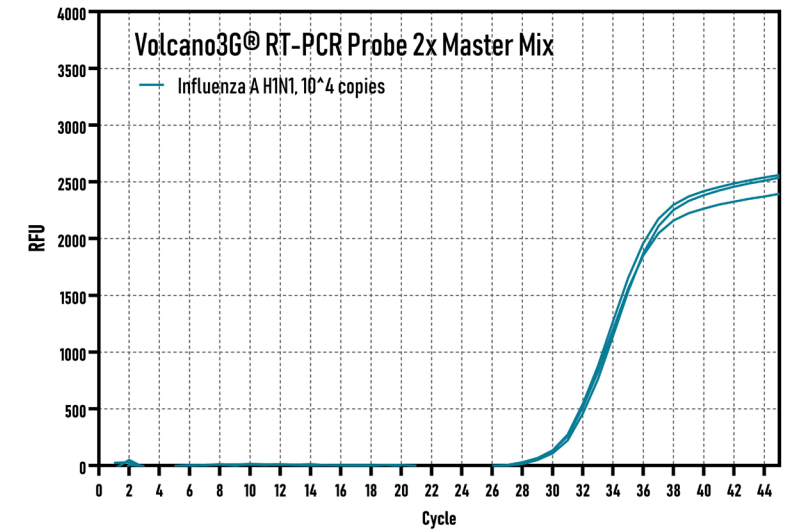
## Human mRNA



## RSV



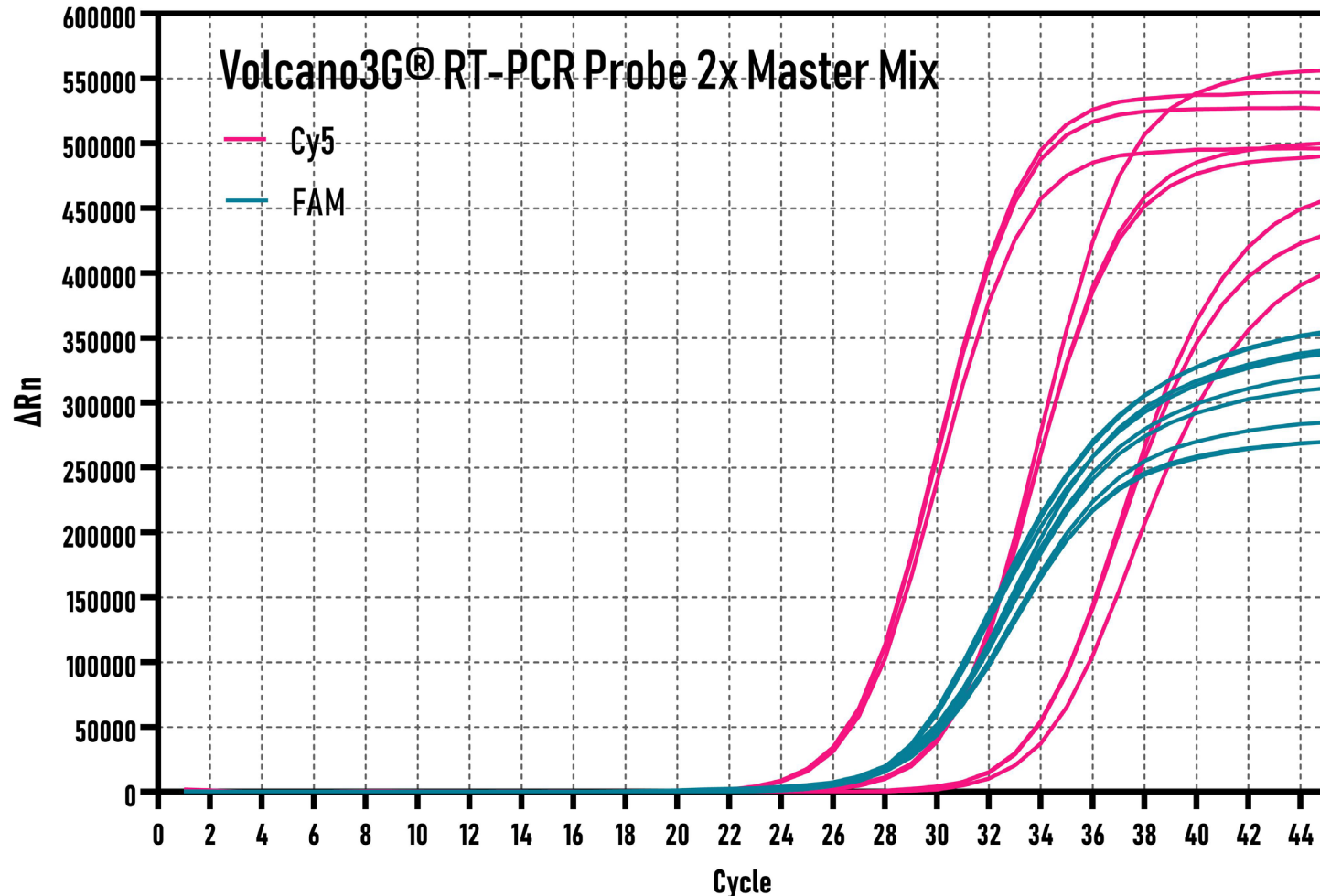
## Influenza



	Step	Temp	Time	Cycles
Protocol	1.	95°C	2 min	1 x
	2.	95°C	10 sec	45 x
	3.	60°C	45 sec	

The time to result can be further shortened: By reducing the number of cycles and/or reducing the annealing/extension time (instrument dependent)

# Multiplex SARS-CoV-2 RT-qPCR assay using Volcano3G mix



Fast and robust detection of SARS-CoV-2

Template: SARS-CoV-2

Target: Human

N gene

RNaseP

Dye: FAM

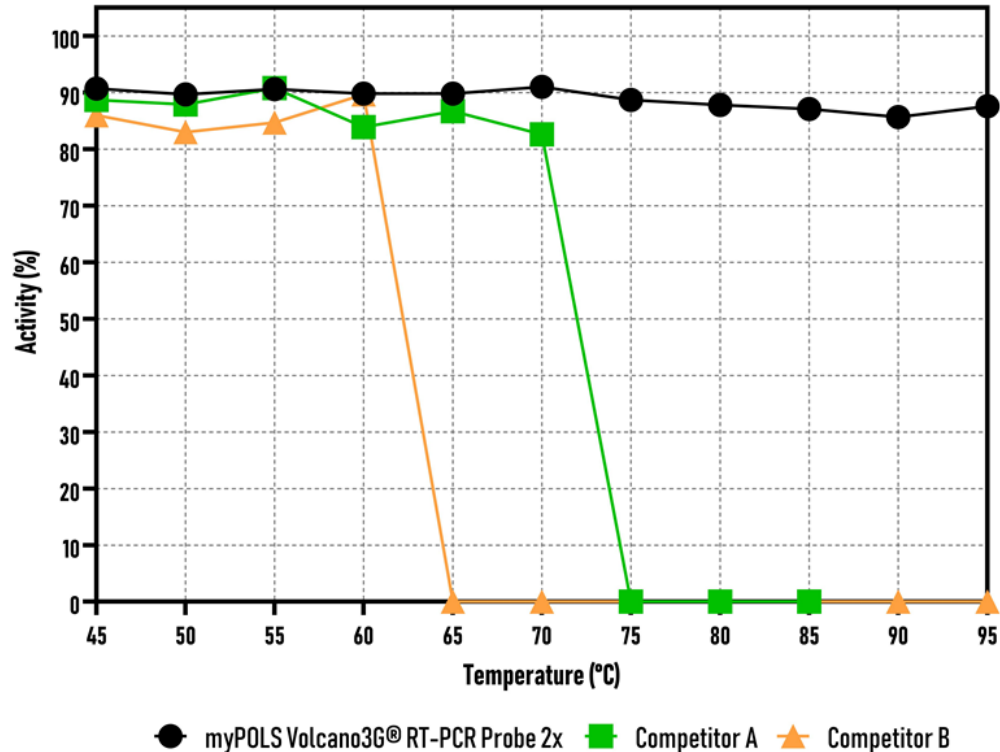
CY5

Protocol	Step	Temp	Time	Cycles
	1.	95°C	1 min	1 x
	2.	95°C	10 sec	45 x
3.	60°C	1 min		

The time to result can be further shorten : By reducing the number of cycles and/or reducing the annealing/extension time (instrument dependent)



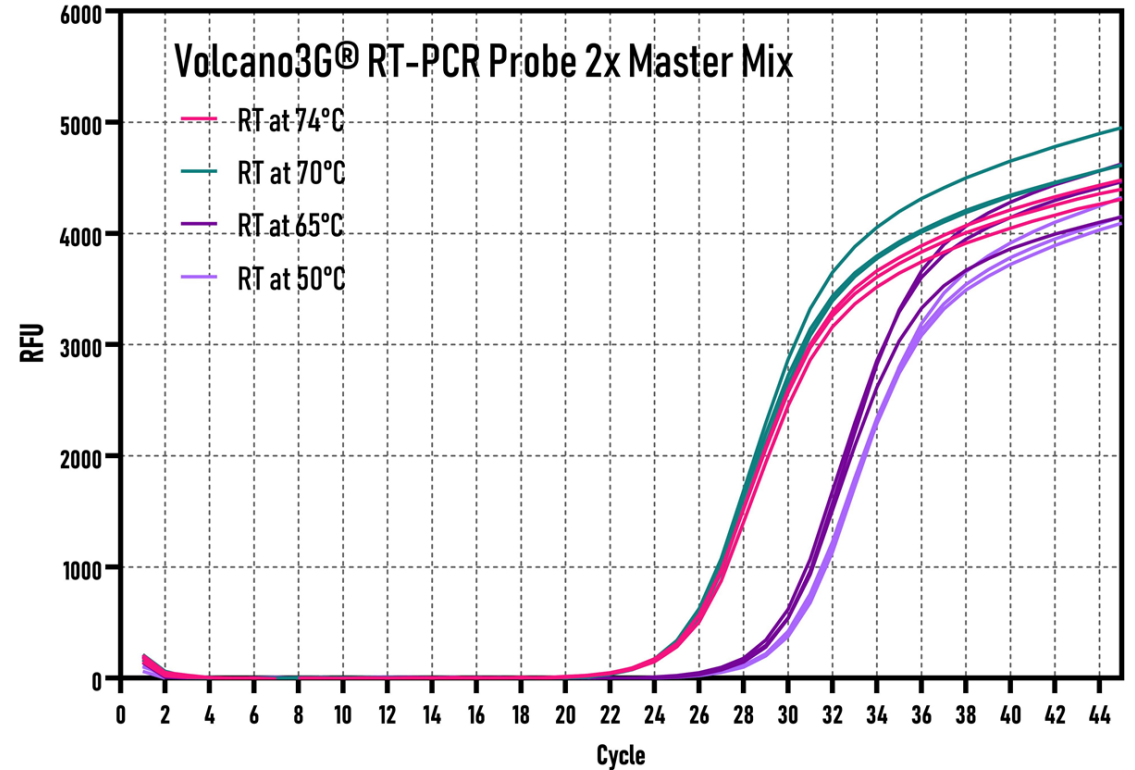
# High thermostability enabling better flexibility in assay development



Volcano3G RT-PCR Probe Master Mix remains active across wide temperature range up to 95°C, whereas competitors lose their activity at 60°C and 70°C.

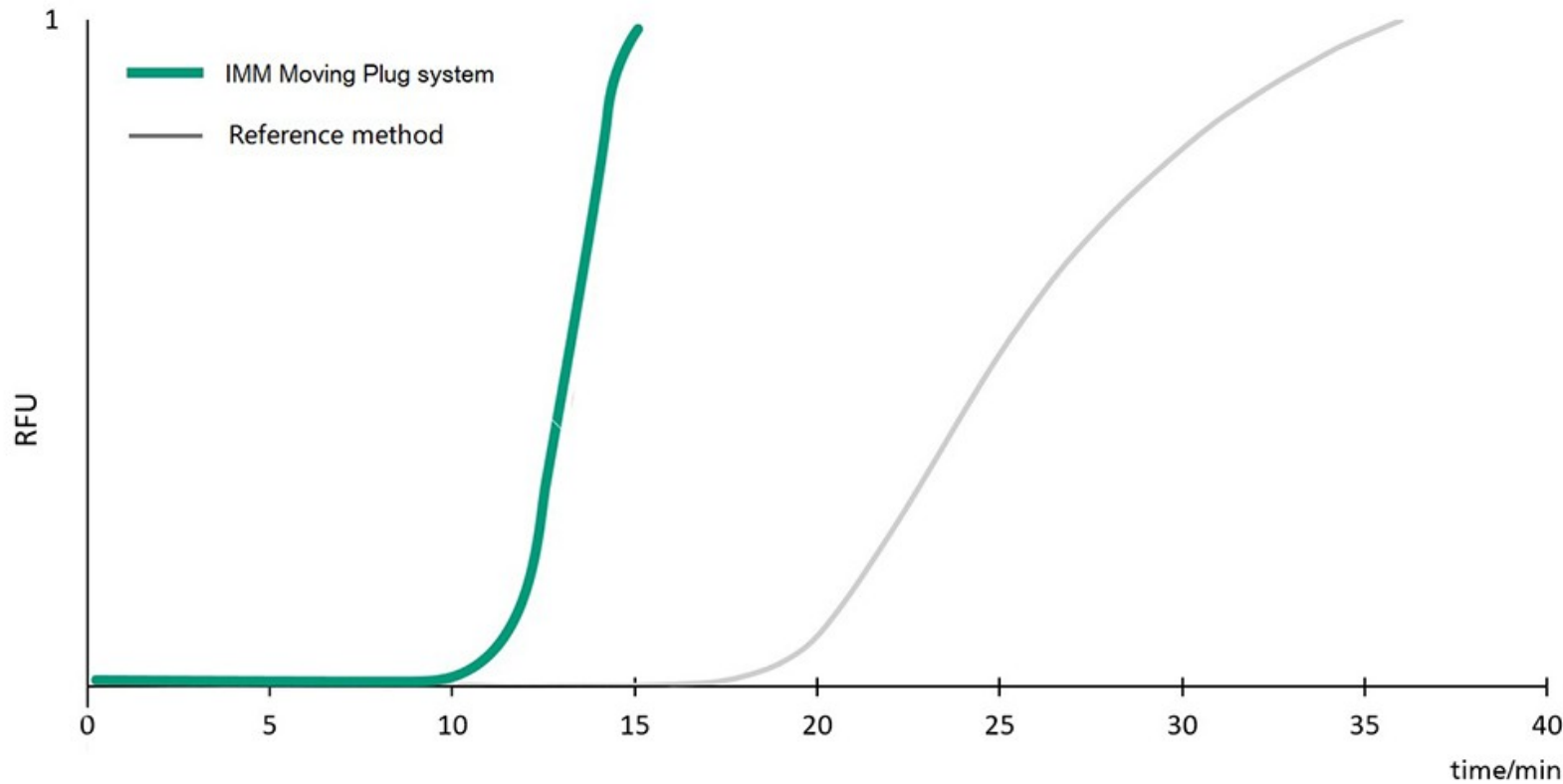
Suitable for pre-treating clinical samples and RNA template for secondary structures.

**Highly  
Thermostable!**



Allows robust detection of targets with high secondary structure and minimize sample derived inhibition!

# Rapid RT-qPCR detection within 15 mins!



<https://www.imm.fraunhofer.de/en/press-publications/qpcr-15min.html>

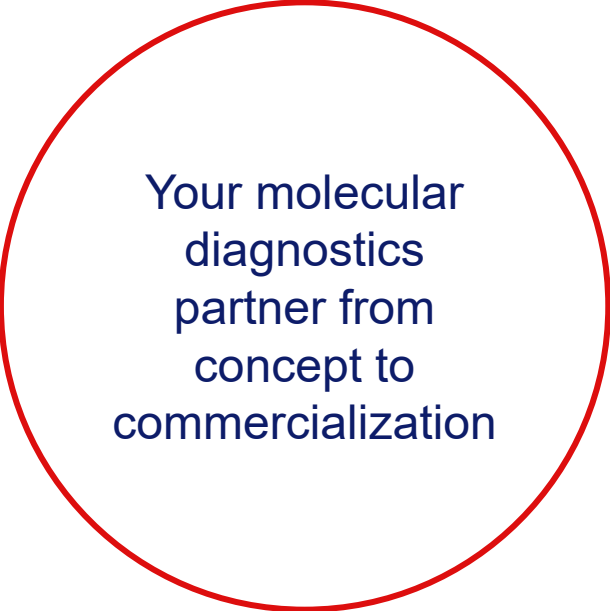
- The engineered Volcano3G RT-PCR mix enabled the quantitative SARS-COV-2 detection result in under 15 mins
- Ultra fast, Highly sensitive and specific test with similar speed as a point-of-care immunoassay test.

# Summary: Engineered polymerases for molecular diagnostic application



- **Expert DNA/RNA polymerase engineering**
  - ✓ The core component in PCR/RT-PCR and core competence
  - ✓ Ensure robustness of MDx test
  - ✓ Customization and flexibility in assay development
- **High thermal stability**
  - ✓ Simplify sample preparation workflow
  - ✓ Reduce sample derived inhibition
- **Zero-step**
  - ✓ Shorter time-to-result
  - ✓ Save time and money

# Medix MDx Unparallel partnership offering – Reducing your time to market



Your molecular  
diagnostics  
partner from  
concept to  
commercialization

- MedixMDx specializes in supporting you from concept to commercialization.
- A single point of contact for a comprehensive portfolio of best-in-class raw materials and service for molecular diagnostics.
- Best in class team and capabilities in MDx reagents development
- We shorten your time to market by combining
  - Highest scientific expertise in MDx
  - Consistent quality
  - Strong global presence and customer support
  - Consolidated supply chain management
- By reducing complexity, we enable you to bring commercially viable products to market sooner

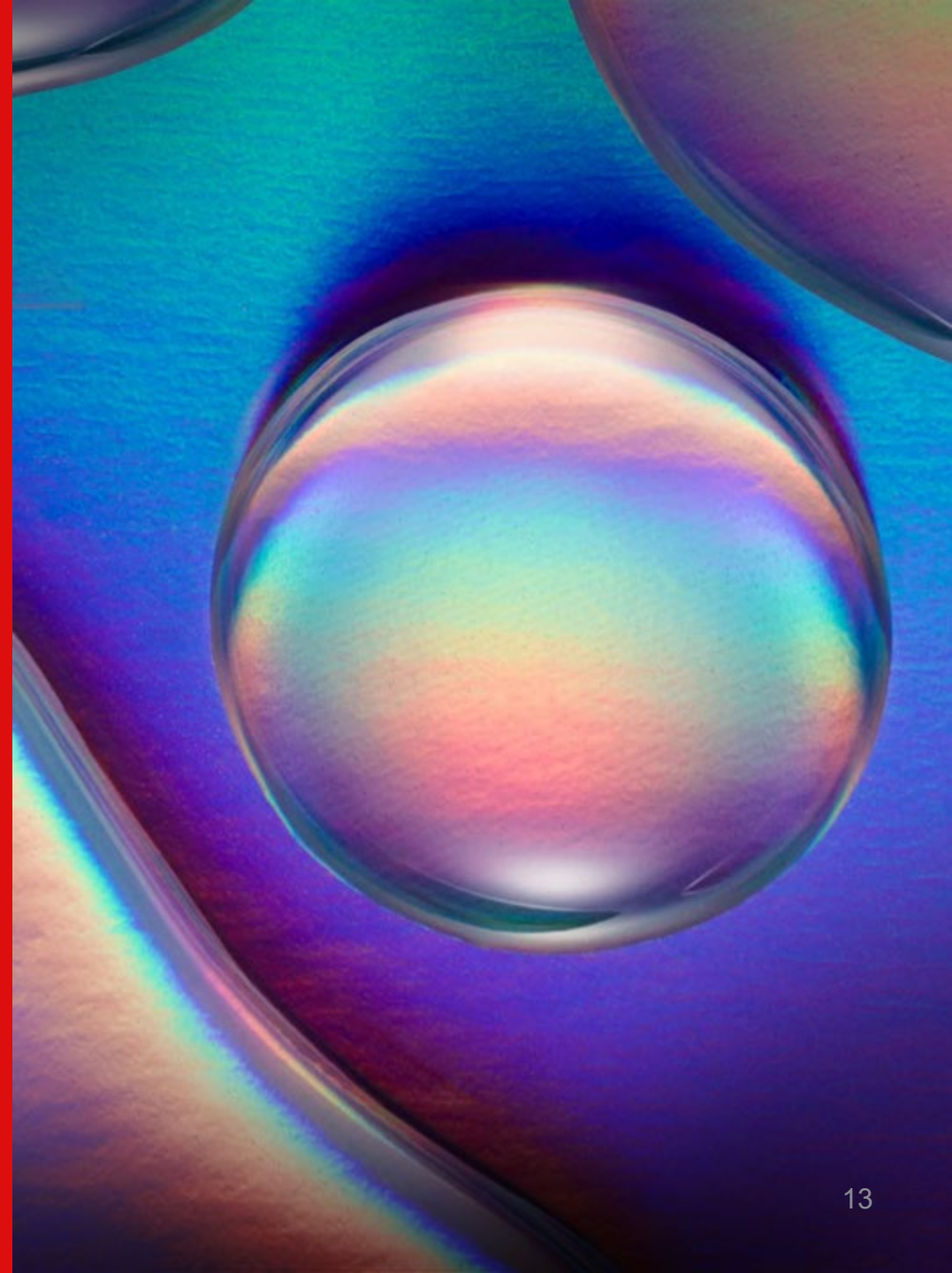


Tech support and general inquires:

Contact:

[mdx@medixbiochemica.com](mailto:mdx@medixbiochemica.com)

[Medix Biochemica and myPOLS Biotec Molecular Reagents web shop](#)



Thank you for **y**our time