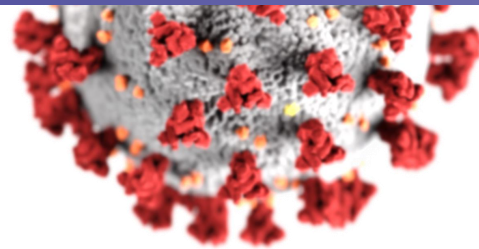
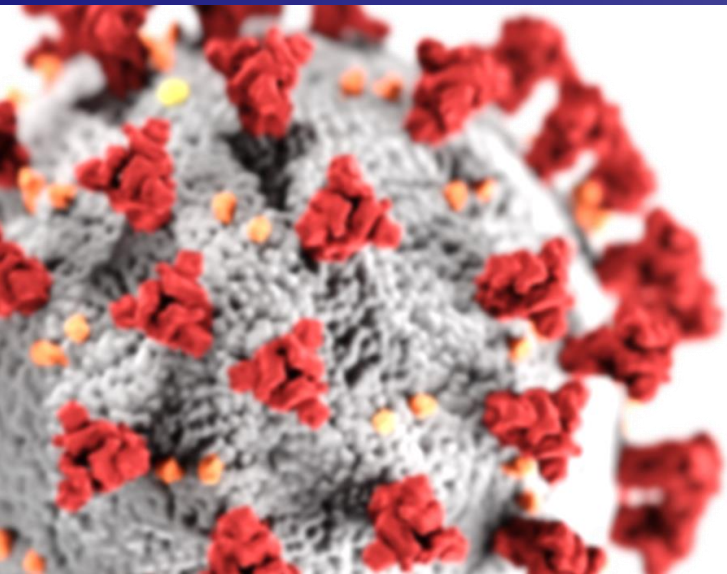


Protect yourself from serious infection with
highly specific COVID diagnostic kit

GENEdania COVID-19 qRT-PCR



(주)프로테옴텍
ProteomeTech Inc.

What is a coronavirus?

Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as **Middle East Respiratory Syndrome (MERS)** and **Severe Acute Respiratory Syndrome (SARS)**.

What is COVID-19?

COVID-19 is the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally.

Status of COVID-19 diseases

JOHNS HOPKINS
UNIVERSITY & MEDICINE

CORONAVIRUS
RESOURCE CENTER

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Global Map

U.S. Map

Data in Motion



COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)

Last updated at 08/28/2020



Global Cases

24,350,226

Cases by Country/Region/Sovereignty

5,863,088 US
3,761,391 Brazil
3,310,234 India
972,972 Russia
618,286 South Africa
613,378 Peru
573,888 Mexico
572,243 Colombia
429,507 Spain
404,102 Chile
380,292 Argentina



Global Deaths

829,861

180,590 deaths
US

118,649 deaths
Brazil

62,076 deaths
Mexico

60,472 deaths
India

41,564 deaths
United Kingdom

35,463 deaths
Italy

30,581 deaths
France

US State Level

Deaths, Recovered

32,926 deaths, 74,850 recovered
New York US

15,921 deaths, 33,744 recovered
New Jersey US

12,669 deaths, recovered
California US

12,156 deaths, 478,752 recovered
Texas US

10,868 deaths, recovered
Florida US

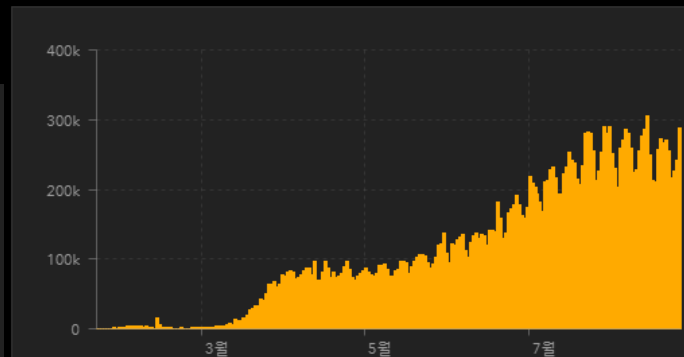
9,008 deaths, 103,920 recovered
Massachusetts US

8,185 deaths, recovered
Illinois US

Global Deaths

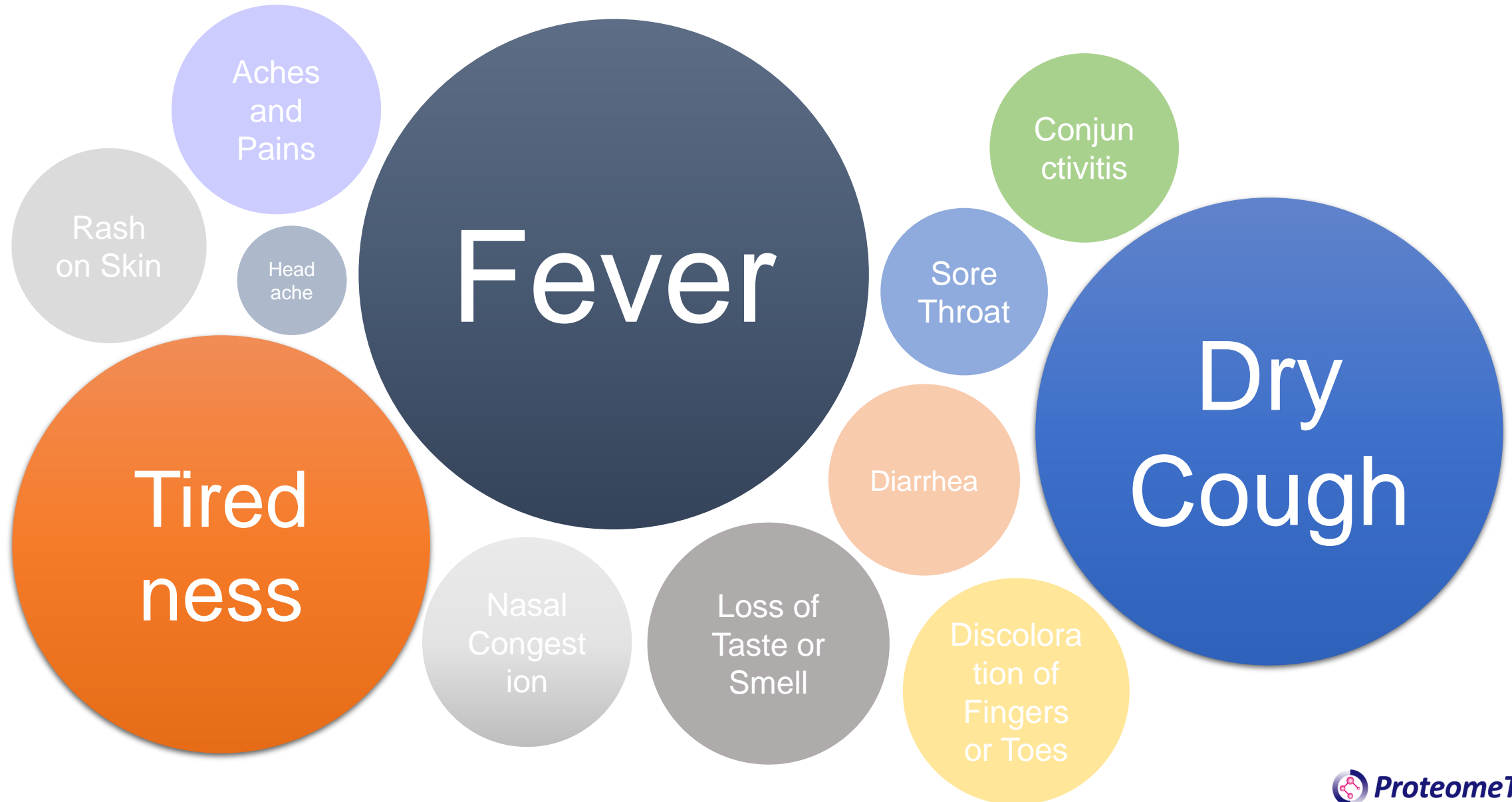
Global Recovered

US Deaths, Recovered



COVID-19 (Corona Virus disease 2019) is the respiratory infectious disease caused by SARS-CoV-2 that has not been previously identified in humans. WHO declared this beta-coronavirus as a pandemic disease being regarded as spreading all around the world.

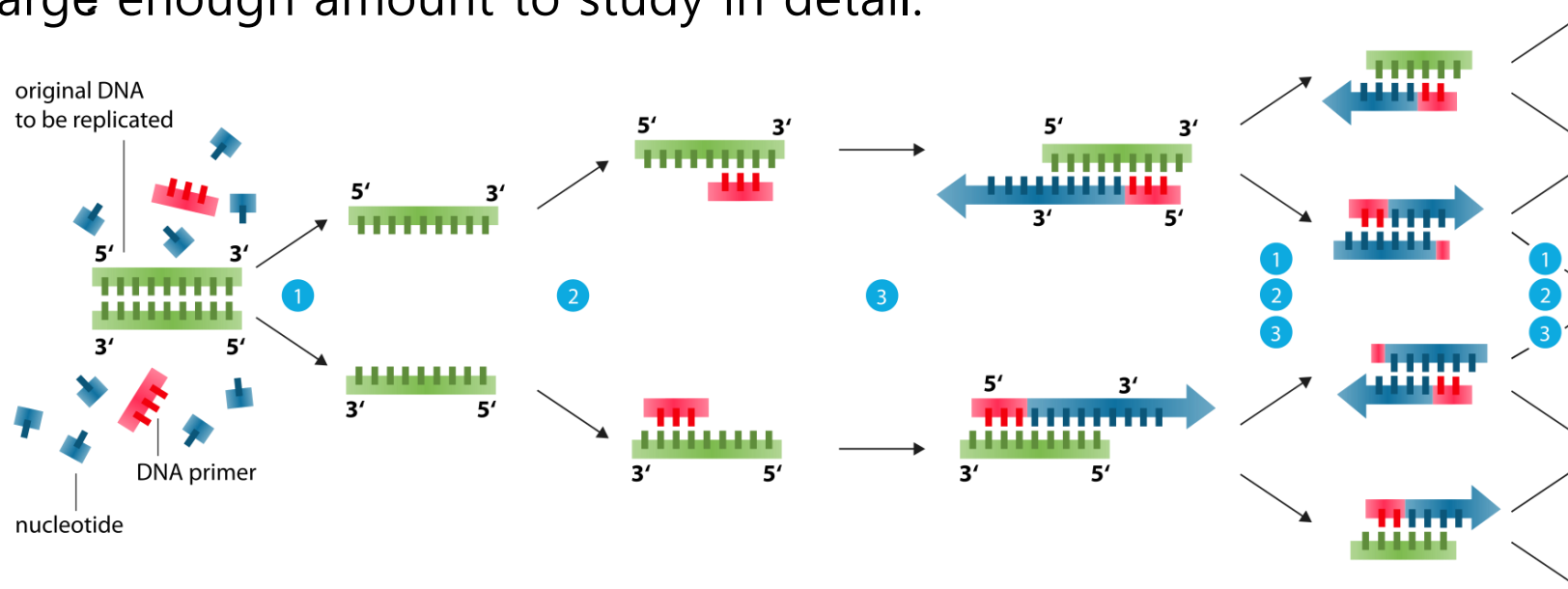
Symptoms of COVID-19



Polymerase Chain Reaction, PCR

What is the Polymerase Chain Reaction(PCR)?

Polymerase chain reaction (PCR) is a method widely used to rapidly make millions to billions of copies of a specific DNA sample, allowing scientists to take a very small sample of DNA and amplify it to a large enough amount to study in detail.

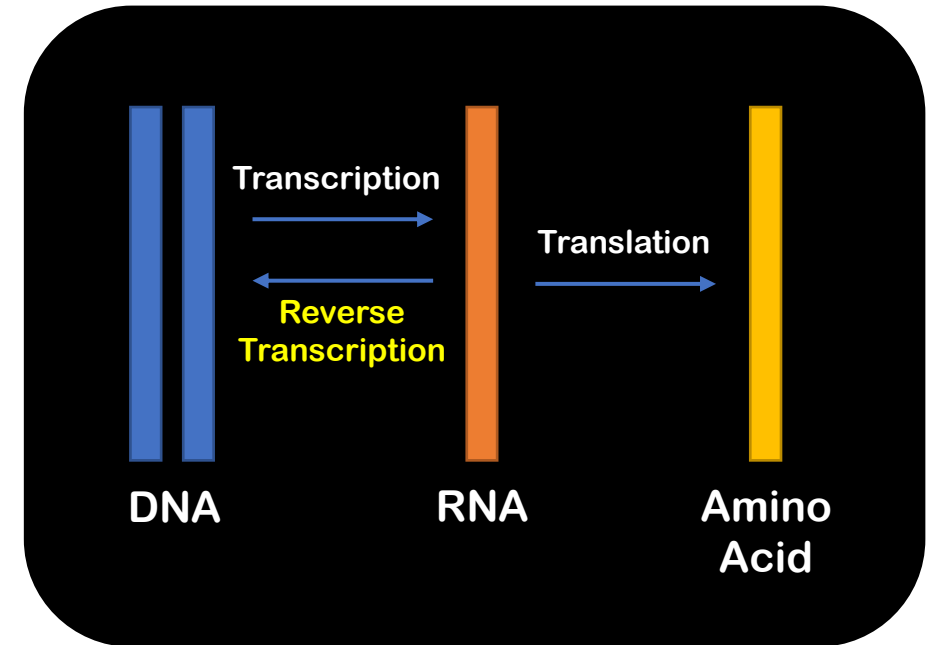
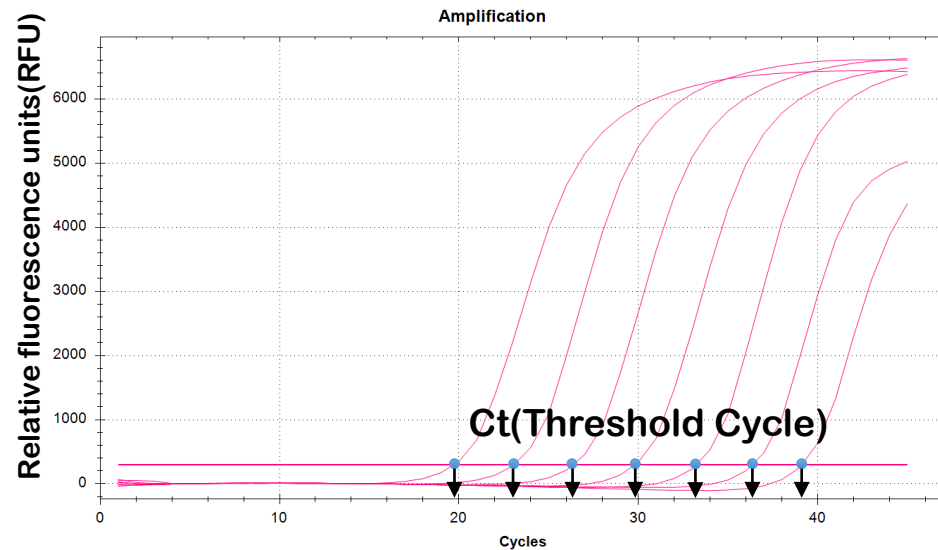


- 1 **Denaturation** at 94-96°C
- 2 **Annealing** at ~68°C
- 3 **Elongation** at ca. 72 °C

qRT-PCR

Quantitative

Reverse transcription



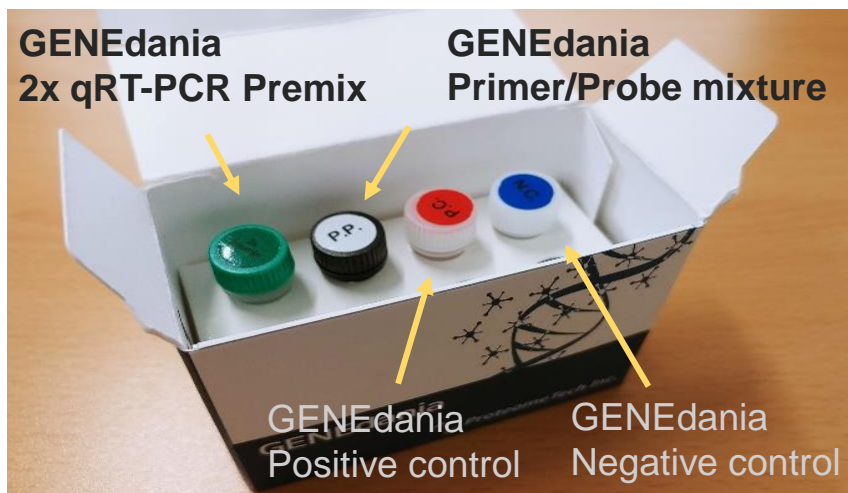
GENEdania COVID-19 qRT-PCR Kit

The GENEEdania COVID-19 qRT-PCR kit

in vitro diagnostic (IVD) one step real-time RT-PCR assay kit

intended for the qualitative detection of nucleic acid
from SARS-CoV-2 in upper respiratory specimens
e.g. nasopharyngeal, oropharyngeal swab, and lower
respiratory specimens, e.g. sputum, from individuals
with signs and symptoms of COVID-19.

GENEdania COVID-19 qRT-PCR Kit

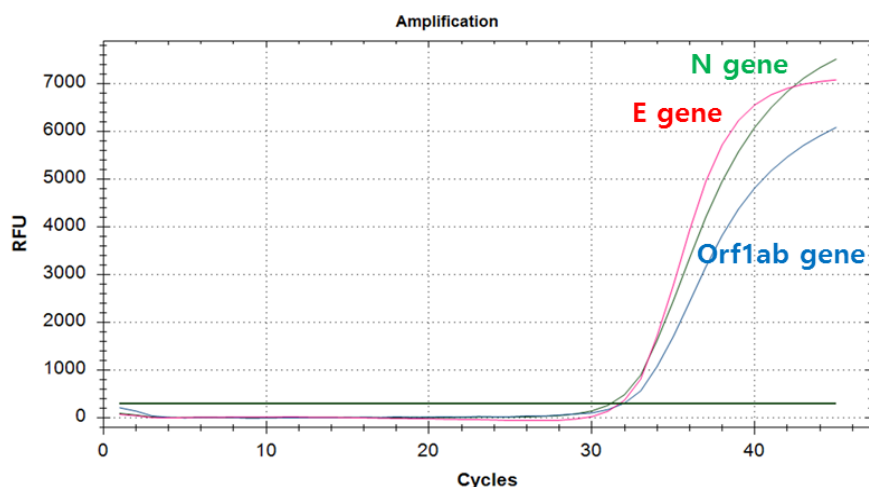


Kit Components

Name	Volume	Quantity
GENEdania 2x qRT-PCR Premix	1,000 μ L	1 E.A.
GENEdania Primer/Probe mixture	500 μ L	1 E.A.
GENEdania Positive control	50 μ L	1 E.A.
GENEdania Negative control	100 μ L	1 E.A.

Running Program

STEPS	Temp.	Time	Cycle
Reverse transcription	50°C	20 min	1
Pre-denaturation	95°C	5 min	1
Denaturation	95°C	15 sec	45
Annealing/ Extension/ Detection	58°C	60 sec	



Target gene

GENEdania detects three COVID-19 genes

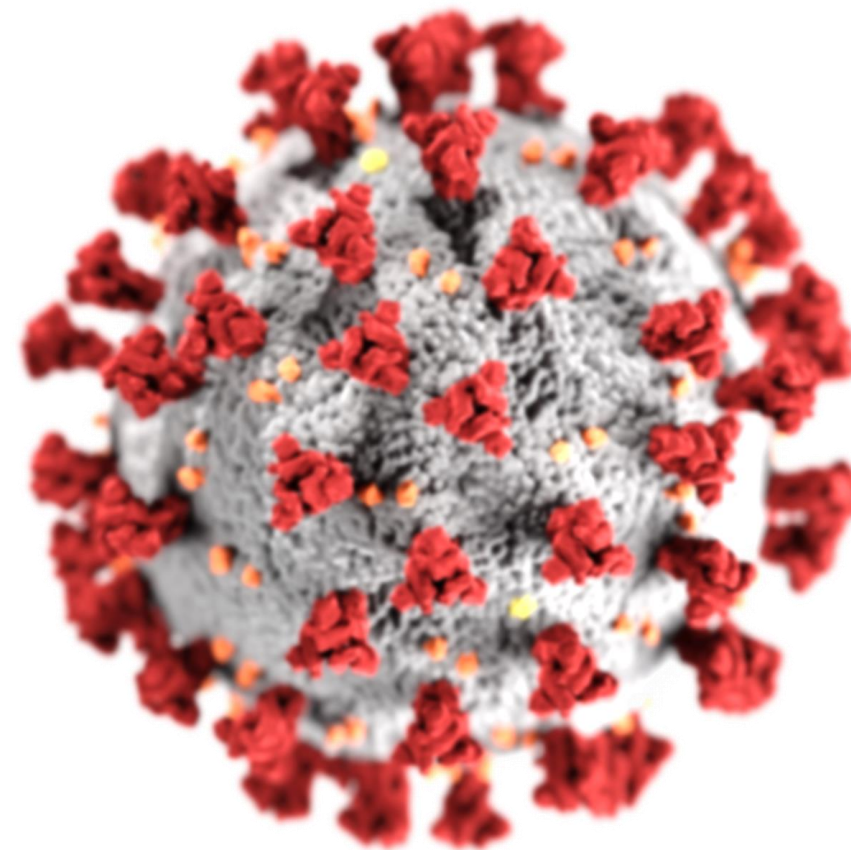
- **Orf1ab**, **N** and **E** genes

Orf1ab, N gene – COVID-19 specific genes

E gene – beta-coronavirus specific gene

Target	Fluorescence	Detection wavelength (nm)	
		Excitation	Emission
Orf1ab gene	FAM	494	518
N gene	HEX	538	554
E gene	CAL Fluor Red 610	590	610
I.C.*	Cy5	649	666

* I.C.: Internal Control

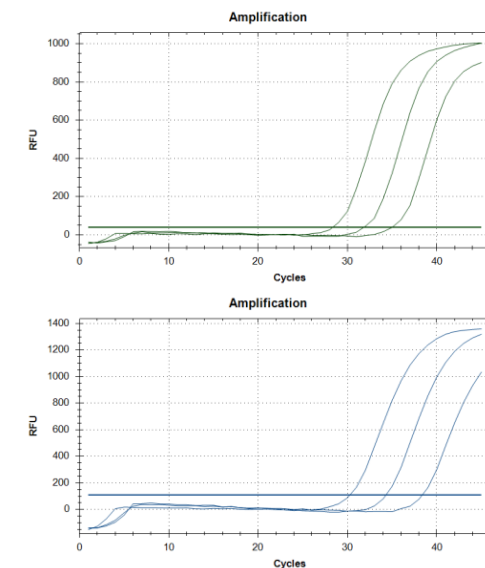
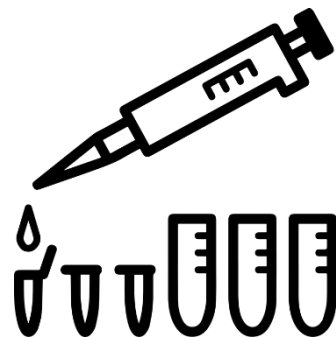


Key Features

- Detects three COVID-19 genes
: **Orf1ab**, **N** and **E** genes and endogenous control gene
- Full compliance with the WHO Guidelines
- Less than 2 hours from RNA to results on most qPCR machines
- One tube and one step real-time RT-PCR assay Kit
- UDG (Uracil-DNA Glycosylase) to eliminate the carry-over contamination during the RT-PCR assay



Flow-Chart



Sample
Collection

RNA
Extraction

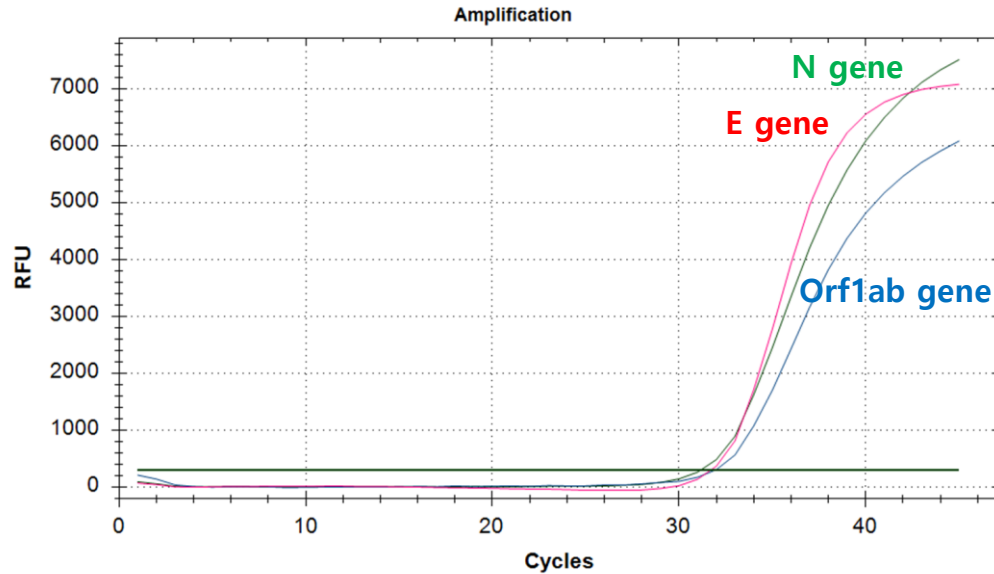
Onestep
qRT-PCR

Data
Analysis

About 81 min.

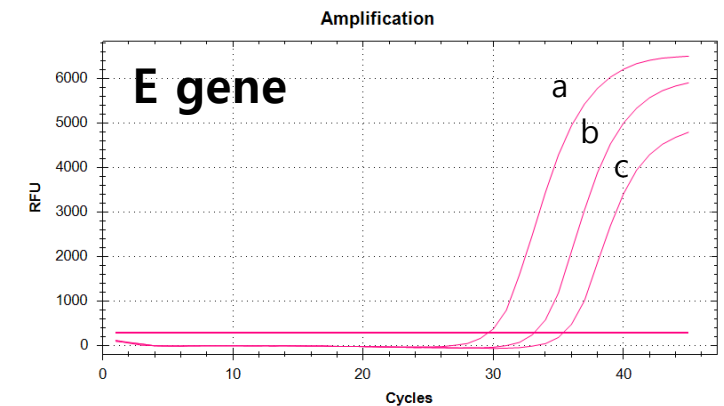
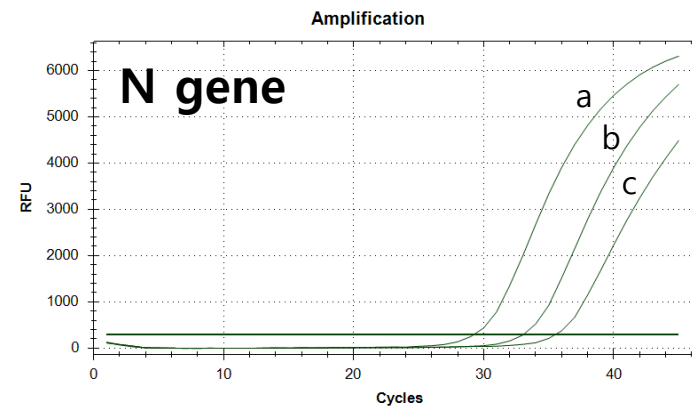
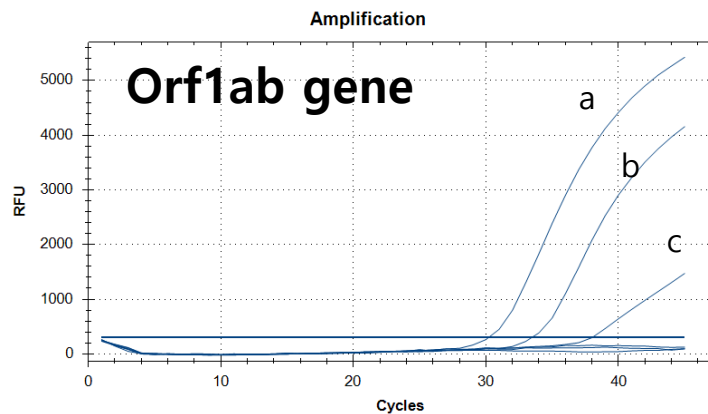
Less than 2 hours from RNA to results on most qPCR machines

Standard Test



GENEdania COVID-19 qRT PCR Kit
shows high sensitivity and stability

a: 1,000 copies/ μ L
b: 100 copies/ μ L
c: 10 copies/ μ L



Result interpretation

#	Orf1ab	N	E	I.C.	Assay Result
1	≤ 40	≤ 40	≤ 40	≤ 35	COVID-19 Positive
2	≤ 40	≤ 40	U.D.*	≤ 35	
3	≤ 40	U.D.*	≤ 40	≤ 35	
4	U.D.*	≤ 40	≤ 40	≤ 35	
5	≤ 40	U.D.*	U.D.*	≤ 35	Re-test (COVID-19 Positive if Orf1ab ≤ 40 after re-test)
6	U.D.*	≤ 40	U.D.*	≤ 35	Re-test (COVID-19 Positive if N ≤ 40 after re-test)
7	U.D.*	U.D.*	≤ 40	≤ 35	Beta coronavirus
8	U.D.*	U.D.*	U.D.*	≤ 35	Negative
9	U.D.*	U.D.*	U.D.*	U.D.*	Invalid (re-test)

* U.D.: Undetermined

Clinical performance

Compared with a comparative method (Real-time RT-PCR)
with 50 positive samples and 50 negative samples,

Test results		Comparator (Real-time RT-PCR)		Total
		Positive	Negative	
GENEdania COVID-19 qRT-PCR Kit	Positive	50	0	50
	Negative	0	50	50
Total		50	50	100

- Positive agreement: 100% (50/50)
- Negative agreement: 100% (50/50)
- Overall agreement: 100% (100/100)

Thank You!



***Protect yourself from serious infection
with highly specific GENEdania COVID-19 qRT-PCR***