Nexless Healthcare

Kimera

The Ultra-Fast Point of Care Molecular Solution

Kimera ONE & Kimera P-IV

NEXLESS™ Healthcare

Kimera

Ultra-Fast Molecular Diagnostics at Point of Care

The Nexless™ Kimera Ultra-Fast Point of Care Plasmonic RT-qPCR platform brings innovation to the Molecular Diagnostic and Screening testing. It is the result of a collaboration involving physicians, biologists, and technical engineering teams.

The Kimera platform combines the ultra-fast speed of Plasmonic effect and ultra-fast enzymes to give full PCR results in five to ten minutes with amazing sensitivity and specificity. It is integrated into Secure Cloud.

"The combination of ultra-fast Plasmonic PCR and enzymes gives full PCR results in under ten minutes."

With its small size, light weight, low cost and low power consumption, the Kimera is easily portable and deployable in any environment.

With its patented Plasmonic technology, Kimera is available in a 4-well and single well testing device.

The Kimera platform has proven to be the best alternative for point of care tests of infectious diseases such as sexually transmitted, influenza, and coronavirus infections, as well as traces of e coli in the water.

Kimera provides very accurate molecular testing for use in point of care, at home, or remotely. Tests can be done easily in a very efficient way by the user without medical professional assistance.

The product will detect and quantify in real time the presence of specific DNA or RNA sequences that are associated with particular diseases or conditions.

This platform can be used in medical diagnostics to detect the presence of infections, genetic disorders, cancer, or compatibility/resistance to antibiotics.

Features

Ultra-Fast RT qPCR:

- Ultra-fast Thermocycling (20µL PCR solution)
  - Positive results (10^2–10^n DNA copies): < 5 minutes
  - Positive results (100–10 DNA copies): < 7 minutes
  - Negative results: < 10 minutes (To rule out Positive)
- How it Works
  - Plasmonic technology uses photons to heat gold nanorods inside the PCR solution.

Sensitive:

- Limit of detection
  - 1 DNA copy (95%), 10 DNA copies (97.5%), 10^2—10^n DNA copies (99%)
- Modernized Infection Control Measures
- Accurately detects infection in pre-symptomatic or asymptomatic carriers with low viral loads

1-well or 4-well Platform with Independent Spatial Multiplexing (Random access multiplexing):

- Time Efficient
  - One machine can run up to four tests simultaneously.
  - No need to wait for first reaction to end and load another test.
  - Can test a different pathogen in each well.
- Scalable to National Level
  - No need to buy multiple devices to test multiple samples simultaneously.
  - A P-IV Kimera can replace four one-well qPCRs.

Small & Power-Efficient:

- Highly Deployable
  - Deployable to pharmacies, outpatient clinics, remote communities, commercial industries, etc.
  - Kimera P-IV Size: 9” x 9” x 7”; and Weight: 4.3 lbs.
- Cost-efficient
  - Saves hardware and procurement costs. 3–10x less expensive than competitors

Easily Customizable Thermocycling Protocol:

- Can amplify any pathogen.
  - No laboratory equipment or skilled technicians required.
  - Can perform PCR, RT-LAMP, or any isothermal amplification.

Screening Management System:

- FHIR Compliant, cloud and IoT ready
- Digital Health ready
- Customizable

ISO 13485 Compliant design & production:

- Secures Canadian supply chain for device’s components.
  - Canadian supply chain will create high value jobs in Canada.

Advantages of the Kimera Plasmonic PCR technology

- The Kimera platform has the highest temperature ramping rate of the industry; up to 15°C per second.
- The Ultra-Fast characteristic of the PCR test in comparison with existing thermocyclers gives test results as early as 5 minutes.
- The Kimera can use of the same typical PCR reagents as conventional PCRs.
- The superior portability in volume and weight of the whole instrument and accuracy of the equipment makes it versatile and usable in a wide range of environments.
- The equipment features ultra-fast data post-analysis such as melt temperature analysis.
- The device has the capacity for network data processing on a remote server.
- Fast sample pre-processing time.
- The use of Ultra-Fast reagents combined with the plasmonic feature results in a PCR test completion time comparable with other less sensitive tests such as LAMP and Antigen tests.
- High sensitivity and specificity of the plasmonic PCR, comparable with standard PCR tests.
- Very Low energy consumption in comparison with conventional PCR platforms.

Developed assays

SARS-CoV-2 (COVID-19)

Sample Type: Nasopharyngeal or Oropharyngeal Swab
Sample Volume: 20 µL
Detection Method: end-point PCR
Time to Result: Less than 10 minutes

Flu A/B

Sample Type: Nasopharyngeal Swab
Sample Volume: 20 µL
Detection Method: end-point PCR
Time to Result: Less than 10 minutes

Sexually Transmitted Infections (STI)

Sample Type: Swab or Urine
Sample Volume: 20 µL
Detection Method: end-point PCR
Time to Result: 7 to 10 minutes
Detection: Chlamydia trachomatis, Neisseria gonorrhoeae, Treponema pallidum (Syphilis)

Water testing (E-Coli)

Sample Type: water sample
Sample Volume: 20 µL
Detection Method: end-point PCR
Time to Result: 7 to 10 minutes

Airborne contaminant

Sample Type: Air sample
Sample Volume: 20 µL
Detection Method: end-point PCR
Time to Result: 5 to 10 minutes

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