

OnsiteGene Introduces XDive™ — The Future of 5-Minute PCR Testing

OnsiteGene details the XDive™ system, an ultra-fast PCR platform capable of completing 40-cycle real-time PCR in under 5 minutes.

LOS ALTOS, CA, UNITED STATES,
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-- OnsiteGene Inc. has published a comprehensive review of its XDive™ Ultra-Fast Real-Time PCR Instrument, examining the system's architecture, capabilities, certifications, and potential applications across clinical, public health, environmental, agricultural, and veterinary domains.

Introduction

OnsiteGene Inc., a biotechnology company specializing in molecular diagnostics, has provided an in-depth technical review of its XDive™ Ultra-Fast Real-Time PCR Instrument. The review outlines the instrument's ability to perform complete nucleic acid amplification and real-time fluorescence detection in under five minutes. It also highlights multiplexing capabilities, sample throughput, reagent stability, regulatory compliance, and integration options for decentralized, point-of-care, and high-throughput testing environments.

System Overview

The XDive™ platform integrates rapid thermal cycling, real-time fluorescence detection, and high-speed reaction chemistry in a compact and flexible instrument. The device can complete 40-cycle PCR assays in as little as 4 minutes and 54 seconds, with RT-PCR assays detectable in under 7 minutes.

Unlike conventional PCR instruments, XDive™ offers extreme speed without sacrificing sensitivity or accuracy. The platform supports a moderate sample throughput of up to 16 reactions per run



XDive Instrument

and is compatible with a wide range of sample types, including swabs and saliva. Its design supports seamless integration into new laboratory systems and point-of-care workflows.

Workflow Architecture

The review emphasizes that XDive™ consolidates conventional PCR processes into a rapid, streamlined workflow:

- Samples are prepared using the Xtractor™ 5-minute magnetic bead nucleic acid extraction instrument or equivalent upstream processing.
- Samples are loaded into ultra-fast capillary PCR tubes compatible with XDive™.
- Thermal cycling and multiplex real-time fluorescence detection are performed.
- Data is processed and results are displayed through the instrument interface or exported to Laboratory Information Systems (LIS).

This workflow enables a full sample-to-result timeline of approximately 15 minutes when paired with rapid extraction and reduces operator handling time.

Configurations and Scalability

XDive™ is designed for moderate throughput and flexible deployment:

- Single-unit operation allows 1 to 16 reactions per run.
- Multiplexing supports up to 4 fluorescence channels simultaneously, expandable to 6.



myNAT™ sample-to-answer-



Real-Time PCR Reagents

- Reagent formulations support 5–30 μL reaction volumes.
- OEM compatibility facilitates integration into automated or multi-instrument workflows.

This flexibility allows laboratories to scale operations efficiently without extensive infrastructure modifications.

Technical Specifications

- Sample-to-result time: ~5 minutes for 40-cycle PCR, ~7 minutes for RT-qPCR
- Reaction Wells: 1-16
- Fluorescence Channel: Fam, Hex, Rox, Cy5 expandable to 6 fluorescent channels
- Single-Tube Multiplex: Supports 4 Targets per Reaction (customizable to 6 targets)
- Reaction volumes: 5–30 μL
- Panel Detection: Support up to 96 targets per Reaction over 16 PCR tubes
- Reagent stability: dried, room temperature, six-month shelf life
- Instrument weight: compact design suitable for benchtop or portable deployment
- Power: 100–240 V AC, 50/60 Hz

Applications

OnsiteGene identifies a broad set of potential applications for XDive™:

- Clinical diagnostics: rapid pathogen detection including COVID-19 and Monkeypox
- Public health surveillance: outbreak monitoring, community screening, school-based testing
- Environmental testing: water, air, and soil pathogen monitoring
- Food safety and agriculture: rapid detection of pathogens and quality control in supply chains
- Veterinary medicine: animal pathogen diagnostics in clinical and farm settings
- Biosafety and biodefense: rapid on-site detection in high-priority scenarios



PCR Reagents



PCR Test-

The platform's speed and flexibility support both routine testing and emergency response applications.

Quality and Certifications

OnsiteGene manufactures XDive™ under an ISO 13485–audited quality management system. The device is certified by TÜV for IEC 61010 product safety and IEC 61326-2-6:2020 electromagnetic compatibility. The supporting reagent kits—including the COVID-19 RT-qPCR Kit, SalivaDirect™ COVID-19 RT-qPCR Kit, and Monkeypox qPCR Kit—have received Emergency Use Authorization (EUA) from the FDA.

These certifications reinforce the instrument's reliability and suitability for regulated diagnostic settings.

Reagents for Superfast Real-Time PCR

In addition to the XDive® Superfast Real-Time PCR Instrument, the OnsiteGene has also developed a series of efficient, stable, and user-friendly ultra-fast PCR reagents and rapid nucleic acid extraction kits, all designed to meet the requirements of ultra-fast real-time PCR.

The series of Xfast™ Ultra-Fast PCR Reagents developed by OnsiteGene contain ultra-fast DNA polymerase and carefully formulated buffer components. As a result, the DNA synthesis speed of Xfast™ Ultra-Fast Real-Time PCR Reagents is significantly higher than that of conventional real-time PCR reagents, enabling the completion of 40 real-time PCR cycles in just 5 minutes. In addition, OnsiteGene also offers lyophilized (dry powder) ultra-fast real-time PCR reagents, which can be stored and transported for long periods at room temperature.

Comparative Advantages

The review contrasts XDive™ with traditional PCR workflows:

- Conventional instruments require more than an hour for 40-cycle PCR, limiting time-sensitive testing.
- Standard workflows often necessitate multiple preparation areas, increasing contamination risks.
- XDive™ delivers ultra-fast amplification, multiplex detection, and moderate throughput in a single compact platform.

This combination positions XDive™ as a rapid, reliable, and flexible alternative for decentralized and point-of-care molecular diagnostics.

Cost Management

OnsiteGene emphasizes room-temperature dried reagents, reducing cold-chain requirements and simplifying logistics. Reaction consumables are designed for cost-efficient testing without compromising assay performance.

Delivery and Availability

XDive™ is available through OnsiteGene's official order channels, with an estimated lead time of four weeks. Demonstrations and quotations are available upon request through the company website.

Summary

The review concludes that XDive™ is a ultrafast, compact PCR instrument suited for clinical, environmental, and agricultural molecular diagnostics. By combining rapid thermal cycling, multiplex detection, and robust reagent stability, XDive™ enables rapid sample-to-result testing, meeting the needs of laboratories in diverse sectors.

About OnsiteGene Inc.

OnsiteGene Inc. is a biotechnology company focused on developing rapid, reliable molecular diagnostics platforms for clinical, environmental, and agricultural applications. Its portfolio includes the XDive™ ultra-fast PCR instrument, Xtractor™ 5-Minute Nucleic Acid Extractor and the [myNAT™ sample-to-answer](#) open-panel system. OnsiteGene manufactures its products under an ISO 13485-audited quality management system and maintains internationally recognized safety and electromagnetic compatibility certifications. Headquartered in Los Altos, California, the company supports laboratories worldwide with adaptable, scalable, and high-performance molecular solutions.

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