RUGGEDIZED, PORTABLE SEQUENCING CAPABLITY

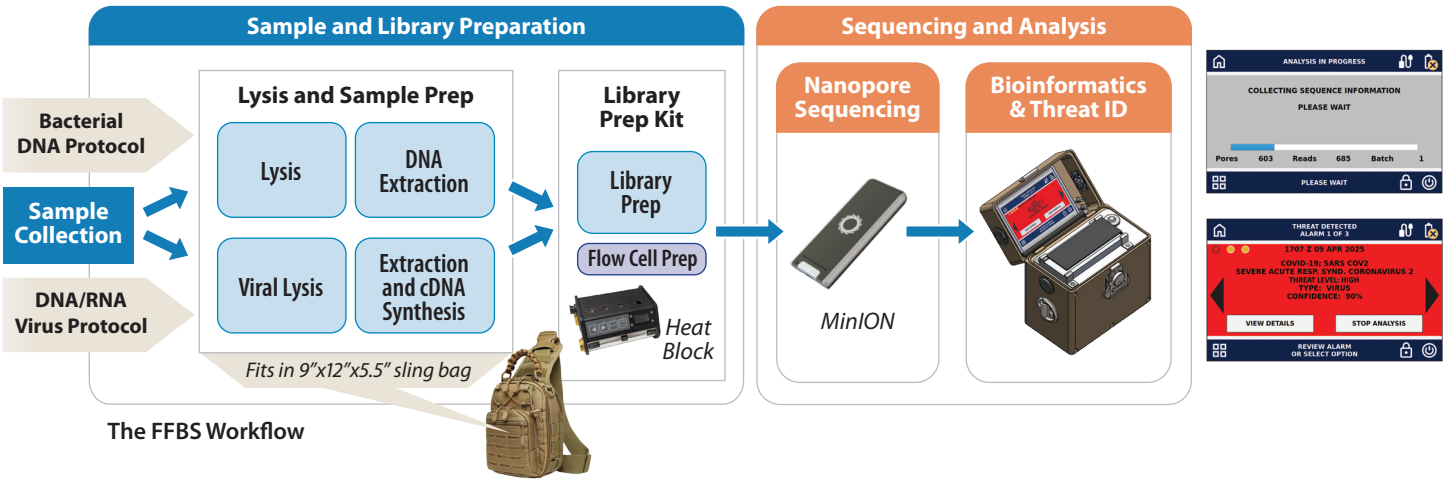
Universal Biothreat Identification in Far-Forward Environments

FFBS provides a biological sequencing capability for the identification of biological threats in far-forward environments. FFBS features a streamlined, end-to-end workflow and all the components necessary to perform sample preparation and sequencing in the field. FFBS is designed to reduce operational complexity while delivering the required biothreat identification performance, enabling users wearing full protective gear to perform biological sequencing under varied environmental and operational conditions.

SigSci has optimized our innovative bioinformatics software tools to run on the small, portable, battery-powered FFBS sequencing and analysis console. The ruggedized console includes an integrated docking station for the sequencer, a computing device with GPU for onboard base calling, bioinformatic threat analysis software, a custom-tailored threat database, and a graphical user interface for communicating sequencing information, alarm status, and details about identified targets including common name, type, threat level, and basic information on transmission and symptoms. The FFBS components are packaged within a lightweight, ruggedized field kit that fits within a small (<20-liter) rucksack, providing all the tools necessary to perform on-target sample preparation and on-the-move sequencing with sample-to-answer times of <30 min (DNA) or <120 min (RNA) for high biomass, low complexity biological samples.

signature® science LLC

www.signaturescience.com



The FFBS Workflow

Sample and Library Preparation Features

- Streamlined, 10 step manual process for the preparation of high biomass, low complexity biological samples for sequencing in 15min
- Rapid and efficient mechanical cell lysis using customized Claremont Bio Omnilyse®
- Quick and effective sample extraction using Akonni Biosystems TruTip® with modified protocol that does not require the use of a pipette
- Simplified and fast library and flow cell preparation using Oxford Nanopore reagents
- Includes portable, battery-powered heat block for performing workflow incubation steps in all environments
- Consumables are color coded and numbered for ease of use
- Packaged in tactical bag for field use

Sequencing and Analysis Console Features

- Weight: <10 lbs with integrated battery
- Sequencer: Oxford Nanopore MinION
- TouchScreen Display (with optional stylus)
- External Ethernet LAN Port
- Power: 10.8V LI-ION 2lb rechargeable battery pack and 120/240VAC. Battery pack provides 4 hours of sequencing time.
- Onboard CPU and GPU
- Storage: 1TB SSD (expandable to 4TB)
- Integrated Heat Sink for Thermal Management
- Custom bioinformatics pipeline and on board databases for processing sequencing data provide definitive threat determination
- Start of sequencing to initial species-level identification in less than 20 minutes
- Full genome coverage with identification of functions of concern and other genetic modifications can be completed in approximately 120 minutes

ACKNOWLEDGEMENTS: This project has been supported in part with federal funds from the Department of Defense's (DOD) Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) under contract number W911SR-24-9-0019. References to non-federal entities or their products do not constitute or imply DOD endorsement of any company, product, or organization.

Danielle Dickinson, PhD
SigSci's FFBS Program Manager
ddickinson@signaturescience.com
512-583-2441

1670 Discovery Drive
Suite 110
Charlottesville, VA 22911
www. signaturescience.com

LEARN MORE