

Mitochondrial DNA Testing & Massively Parallel Sequencing

NEW! Ion Chef S5

Since 2004 Bode has been one of few laboratories in the United States to offer mitochondrial DNA testing and has tested thousands of cases using the traditional Sanger Sequencing method.

Massively Parallel Sequencing: mtDNA Testing

Bode is excited to take its mitochondrial DNA service offering to the next level through the validation of both an internally developed mtDNA quant assay and the validation of the Applied Biosystems Precision ID mtDNA Whole Genome Panel on the Ion S5 platform with automated library and template preparation on the Ion Chef System.

Available Early 2021!

Massively Parallel Sequencing: Research

Bode also has a MiSeq instrument available and has experience using massively parallel/next-generation sequencing on numerous government research projects. Bode's Forensic Research and Support Team initiated this work through a program to bring new technologies to the forensic space.

Massively Parallel Sequencing Research Includes:

- Complex mixture resolution
- Predictive genomics including phenotypic traits (i.e. eye and hair color) and biogeographical ancestry
- Geosourcing / Ecomapping
- Forensic microbiome exploitation
- (PSA or p30)



(Above) Ion Chef™ and Ion S5™ from Thermo Fisher Scientific
(Below) miSeq from Verogen



Additional Research & Development

Bode's Federal Research Division continues to advance forensic science through innovative efforts. Working in conjunction with numerous federal agencies, Bode has delivered advanced forensic solutions including:

- Improvements to the preservation of collected biological evidence
- Low level/touch DNA recovery exploitation techniques and analysis
- Evaluation and development of alternative DNA collection and processing techniques for difficult samples
- DNA exploitation of IED components and other battlefield centric forensic substrates
- Resolution of complex mixtures through massively parallel sequencing (MPS)
- Portable, ruggedized rapid DNA analysis with results in less than 45 minutes
- Specialized collection device development for DNA as well as chemical and biological agents
- SME support for the development of internal forensic DNA capabilities for Federal entities
- Evaluation of alternative forensics DNA markers including SNPs and microhaplotypes

Featured Research and Development Efforts

Advanced DNA Analysis

- Specialized sample collection methods tailored to specific Client mission sets
- Alternative approaches/techniques to process low level and or degraded samples
- Improved techniques for rapid identification, triage, and collection of biological evidence for sensitive site exploitation (SSE) operations
- Non-destructive/covert DNA exploitation of handled documents (DOCEX) and other forensically relevant substrates
- DNA exploitation from post-blast evidence and IED components

Predictive Facial Morphology

- Determination of significant associations between genetic data and facial morphology utilizing targeted re-sequencing technology, microarray technology and 3D-imagery

Portable Human DNA Identification Solution

- Development of a fully validated, room temperature stable, portable HID solution that utilizes SNPs to analyze reference and forensic evidence samples for high-priority applications

Other Services

- Development and delivery of customized and tactical forensic exploitation kits
- Evaluation of emerging technologies and course of action mapping for integration into Client's workflows
- Subject matter expert (SME) consulting and training
- Design, stand-up, and operate non-traditional DNA laboratories/exploitation centers (deployable, temporary, etc.)
- Quick reaction DNA mission/operations support