

## One Codex

### ***Programmable Enrichment & Real-Time Selective Sequencing for Rapid Point of Care Diagnostics for Antimicrobial Resistance***

Antibiotic-resistant bacteria are a critical public health threat, estimated by the Centers for Disease Control and Prevention (CDC) to cause over 2 million illnesses and 23,000 deaths annually in the United States. Unfortunately, in many of these cases current *in vitro* diagnostics are unable to significantly inform clinical treatment decisions, largely due to slow sample-to-answer turnaround times (e.g., for tests requiring a culture) or their highly targeted nature (e.g., for pathogen or genespecific tests). This proposal details the opportunity for *real-time selective sequencing* (RSS) for broad pathogen identification and antimicrobial resistance (AMR) characterization. This unbiased, culture-independent method uses *programmable enrichment* to work directly from patient samples and identify the presence or absence of 100s or 1000s of nucleic acid targets in <90 minutes and for an estimated cost of <\$100. Additional benefits of the approach include the ability to readily extend or modify the assay and easy integration into clinical reporting, surveillance, laboratory information management (LIMS), and other information systems.