



CHALLENGE SPECS

CHALLENGE

Identify Organisms from a Stream of DNA Sequences

DISCIPLINES

Government, Defense, Biochemistry

CHALLENGE AWARD

\$1,000,000

SOLVERS ENGAGED

2,793

SOLUTIONS

17

PROGRAM DURATION

289 Days

GLOBAL SOLVER PARTICIPATION



Using innovation and advanced research to make U.S. citizens at home and overseas safer, the U.S. Defense Threat Reduction Agency (DTRA) is concerned with biological threats in situations where identifying unknown pathogens in quick time is key to saving lives. Knowing that progress of research in this area was falling behind the progress of the threat, DTRA came to InnoCentive to help kick-start a disruptive innovation.

Challenge

- The analysis of DNA samples has historically taken a long time – often up to a week.
- This has hampered situations in which rapid characterization is needed, such as on the battlefield, where many lives are put at risk by this delay.
- Research and innovation in this area is scattered across the world, which has slowed its progress.

Solutions

- DTRA offered a \$1M award for an algorithm that could process a sample in the quickest time, while also being robust under a range of scenarios.
- To help submit a winning solution, InnoCentive's online platform provided a facility for teams to form and collaborate online (removing the traditional need for scientists to be in the same location in order to co-develop an innovation).
- The winning solution, submitted by an international team of 3 people, reduced the time-to-identification from days to tens of minutes and can be conducted in the trying conditions of the field.

Result

- The winning solution represents a dramatic breakthrough in pathogen detection and the wider fields of genetic science and genomics, which could have an extraordinary impact in a range of military and commercial settings.
- It also has the potential to save thousands of lives.
- The algorithm will allow for more informed medical intervention and targeted antibiotics. Besides the known benefits on the battlefield, this innovation could well have applications in several areas of the life sciences.

“Making the \$1 million award open to all participants, regardless of nationality, encouraged participation from a broader community than we might normally be able to reach for this type of project.”

Dr. Christian Whitchurch, Devices Branch Manager,
DTRA Diagnostics, Detection and Disease Surveillance Division