

# Nearest Neighbors Tested Against the RAZOR™ 10 Target Pouch

## TECHNICAL ::: NOTE

### Introduction

This technical note lists the organisms that were tested against The Ten® RAZOR pouch kit (PATH-ASY-0061). It details testing that was performed for both inclusivity, to show that desired organisms were detected by the appropriate assays, and exclusivity, to show that nearest neighbors were not detected. All testing was performed at Idaho Technology using commercially available pouches. Genus, species and number of copies tested for each organism are listed below.

### Pouch Results

| The RAZOR 10 Target pouch contains PCR tests for the following organisms: |                               |
|---|-------------------------------|
| <i>Bacillus anthracis</i>   | <i>Francisella tularensis</i> |
| <i>Brucella melitensis</i>  | <i>Ricinus communis</i>       |
| <i>Clostridium botulinum</i>  | <i>Salmonella spp.</i>        |
| <i>Coxiella burnetii</i>  | <i>Variola*</i>               |
| <i>Escherichia coli</i> O157  | <i>Yersinia pestis</i>        |

Each of these assays was tested against the following strains and was detected appropriately:

| Organisms                       | Assays                     | Detected? |
|---------------------------------|----------------------------|-----------|
| <i>Bacillus anthracis</i>       | Bacillus anthracis         | Yes       |
| <i>Brucella melitensis</i>      | <i>Brucella melitensis</i> | Yes       |
| <i>Clostridium botulinum</i>    | Clostridium botulinum      | Yes       |
| <i>Coxiella burnetii</i>        | Coxiella burnetii          | Yes       |
| <i>Escherichia coli</i> O157:H7 | Escherichia coli O157      | Yes       |
| <i>Francisella tularensis</i>   | Francisella tularensis     | Yes       |
| <i>Ricinus communis</i>         | Ricinus communis           | Yes       |
| <i>Salmonella</i>               | Salmonella spp.            | Yes       |
| <i>Variola*</i>                 | Variola                    | Yes       |
| <i>Yersinia pestis</i>          | Yersinia pestis            | Yes       |

\*Since smallpox organism is a World Health Organization restricted pathogen, Variola was tested with a synthetic Variola plasmid.

Each of these assays was tested against the following nearest neighbors (phylogenetically related species or other Biothreat pathogens) and was not detected:

| Nearest Neighbor                           | Template Concentration in Copies |
|--|----------------------------------|
| <i>Bacillus brevis</i>                     | 1.4 x 10 <sup>5</sup>            |
| <i>B. cereus</i> ATCC 10702                | 1.7 x 10 <sup>5</sup>            |
| <i>B. circulans</i>                        | 1.7 x 10 <sup>5</sup>            |
| <i>B. lichenformis</i>                     | 2.1 x 10 <sup>5</sup>            |
| <i>B. megaterium</i>                       | 2.1 x 10 <sup>5</sup>            |
| <i>B. subtilis</i>                         | 2.1 x 10 <sup>5</sup>            |
| <i>B.thuringiensis: al hakim</i>           | 1.7 x 10 <sup>5</sup>            |
| <i>Burkholderia mallei</i>                 | 1.6 x 10 <sup>5</sup>            |
| <i>Campylobacter jejuni</i>                | 5.1 x 10 <sup>5</sup>            |
| <i>Citrobacter freundii</i>                | 1.8 x 10 <sup>5</sup>            |
| <i>Clostridium perfringens</i> *           | 2.9 x 10 <sup>5</sup>            |
| <i>E. coli</i> 0111 Iso:ED031 EHEC2-18     | 1.8 x 10 <sup>5</sup>            |
| <i>E. coli</i> 026:H11 Iso:DEC10C EHEC2-11 | 1.8 x 10 <sup>5</sup>            |
| <i>E. coli</i> 026:NM Iso:RDEC-1 EHEC2-15  | 1.8 x 10 <sup>5</sup>            |
| <i>E. coli</i> 070:H11 Iso:DEC10J EHEC2-17 | 1.8 x 10 <sup>5</sup>            |
| <i>E. coli</i> 091:H21 ISO 23/67 STEC1-5   | 1.8 x 10 <sup>5</sup>            |
| <i>Enterococcus faecium</i>                | 3.2 x 10 <sup>5</sup>            |
| <i>Francisella philomiragia</i> *          | 4.4 x 10 <sup>5</sup>            |
| <i>Helicobacter pylori</i>                 | 5.6 x 10 <sup>5</sup>            |
| <i>Klebsiella pneumonia</i>                | 1.5 x 10 <sup>5</sup>            |
| <i>Ochrobactrum anthropi</i>               | 1 X 10 <sup>5</sup>              |
| <i>Ochrobactrum spp. isolates</i>          | 1 X 10 <sup>5</sup>              |
| <i>Pseudomonas aeruginosa</i> *            | 1.4 x 10 <sup>5</sup>            |
| <i>Rickettsia prowazekii</i>               | 8.1 x 10 <sup>4</sup>            |
| <i>Shigella dysenteriae</i> *              | 2.0 x 10 <sup>5</sup>            |
| <i>S. flexneri</i>                         | 2.0 x 10 <sup>5</sup>            |
| <i>Staphylococcus aureus</i>               | 3.2 x 10 <sup>5</sup>            |
| <i>Vaccinia</i>                            | 4.6 x 10 <sup>5</sup>            |
| <i>Vibrio cholerae</i>                     | 2.2 x 10 <sup>4</sup>            |
| <i>Yersinia enterocolitica</i>             | 1.9 x 10 <sup>5</sup>            |
| <i>Y. frederiksenii</i> *                  | 1.9 x 10 <sup>4</sup>            |
| <i>Y. pseudotuberculosis</i>               | 1.8 x 10 <sup>4</sup>            |

\* These organisms were not tested against the *Brucella melitensis* assay.

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