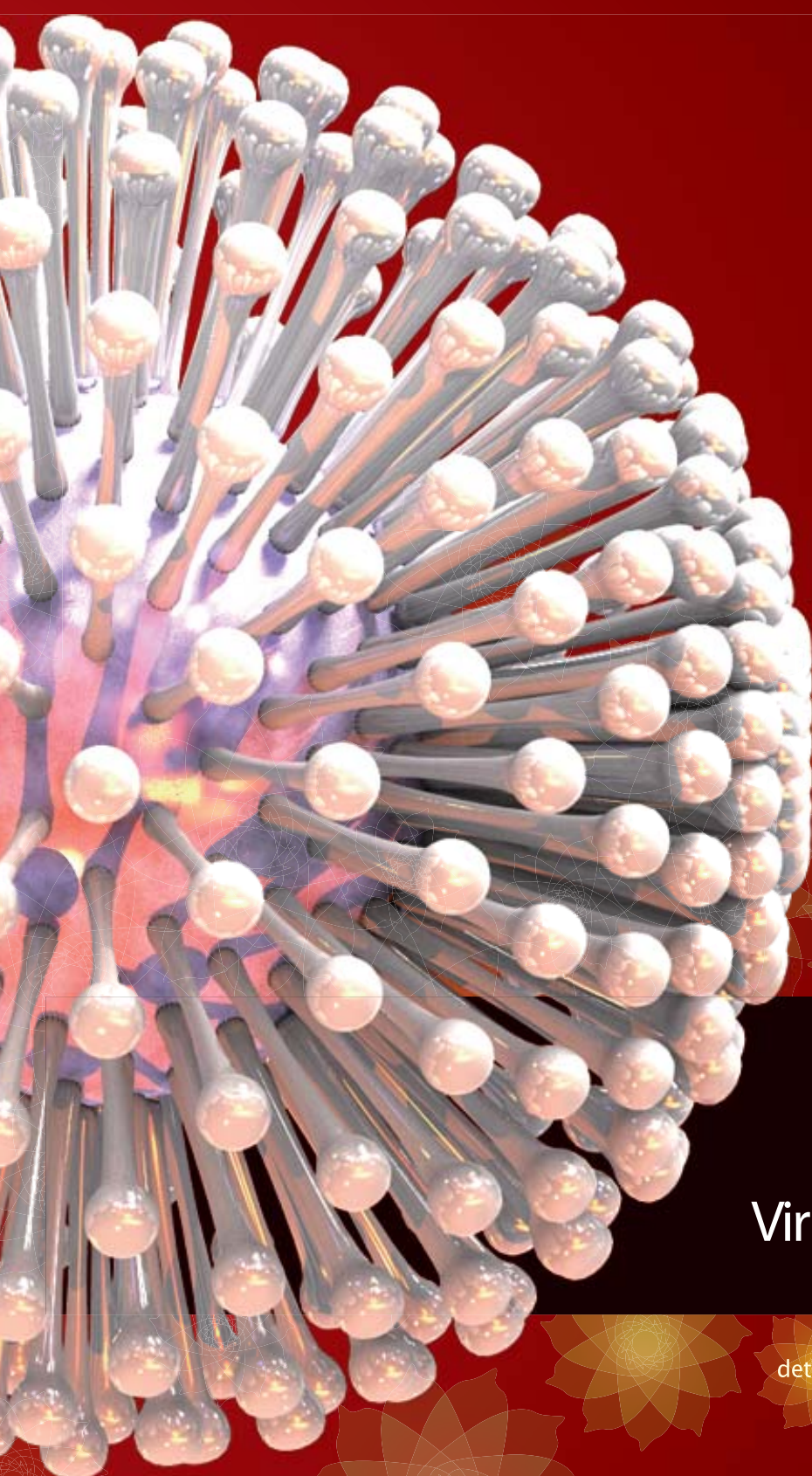




Seeplex®

Diarrhea

Virus / Bacteria Detection

Seeplex® Diarrhea ACE Detection
detects diarrhea-causing viruses and/or bacteria
directly from stool.





Diarrhea

Multiplex PCR Test

Seeplex® Diarrhea ACE Detection detects diarrhea-causing viruses and/or bacteria directly from stool. Current diagnostic methods for diarrhea such as electron microscopy, ELISA or stool culture have certain limitations. With multiplex PCR system based on DPO™ technology, the Seeplex® Diarrhea ACE Detection can detect 4 viruses and/or 10 bacteria causing diarrhea within 6 hours.

Human Infectious Diarrhea

- It is a common cause of death in developing countries and the second most common cause of infant deaths worldwide.

Etiology of Human Infectious Diarrhea

- Virus : 70–80 % of infectious diarrhea in developed countries
- Bacteria : 10–20 % of infectious diarrhea but involved in most severe diarrhea cases

Viral Diarrhea

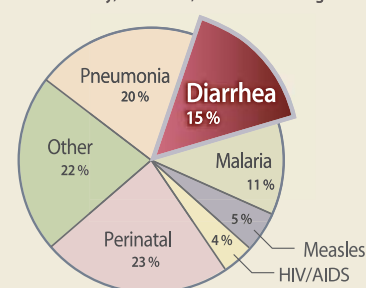
- Most likely cause of infectious diarrhea
- Rotavirus and Norovirus are most common.
- Symptoms usually include low grade fever, nausea and vomiting, abdominal cramps, and watery diarrhea lasting up to 1 week.

Bacterial Diarrhea

- Can affect all age groups
- Fecal-oral transmission, often through contaminated food
- Typical symptoms include bloody diarrhea, severe cramping, and malaise.

What's Killing Children?

Diarrhea - Policy, Sanitation, and Handwashing



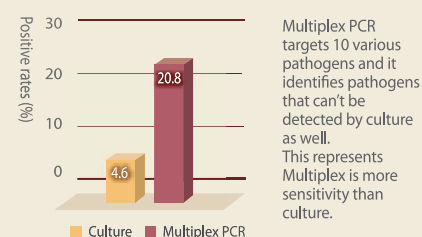
– Diarrhea is the second most common cause of death for children under the age of five. Globally, about 2 million child deaths (children under five) occur every year. (UNICEF)

<http://machete.gummyprint.com/whats-killing-children-diarrhea-policy-sanitation-and-handwashing/>

Comparison between culture and multiplex PCR ^{Ref 1-4}

Method	Description
Molecular Diagnostics (Multiplex PCR)	• Fast turnaround time • Outstanding sensitivity, specificity, and reproducibility • Simultaneous detection of various pathogens on a single test
Culture	• Limited pathogen type • Slow result • Low sensitivity • Need an additional test for confirmation

Comparison of positive rates ^{Ref 2}



Positive results in diarrhea virus infection from multiplex PCR assays ^{Ref 5}

Target	Positives	Mixed infections*	Target	Positives	Mixed infections*
<i>Retrospective application^a</i>			<i>Prospective application^b</i>		
HAdV	14	4	HAdV	29	7
HAdV	24	7	HAdV	48	11
HRV	23	2	HRV	94	12
NV GI	0	-	NV GI	16	2
NV GII	47	11	NV GII	297	15
SaV	ND	-	SaV	2	0
Total	108	23	Total	486	46

a. 239 samples collected from March 2007 until Feb 2007,

b. 1570 samples collected from Sep 2007 until Dec 2009.

* The number of mixed infections shows the cases of diarrhea caused by multiple viral infection.

References

1. Catriona Logana, John J. O'Leary, Niamh O'Sullivan, Journal of Virological Methods 146 (2007) 36–44.
2. Min-Chul Cho, Sin-Ae Noh, Mi-Na Kim, Kyoung-Mo Kim, Korean J Clin Microbiol Vol. 13, No. 4, December, 2010.
3. Seyed Asghar Havaei, Rasol Salehi, Mohammad Bokaeian and Seyed Ali Fazeli, Journal of Virological Methods 146 (2007) 36–44.
4. Mitchell DK, Monroe SS, Jiang X, Matson DO, Glass RI, J Infect Dis. 1995 Dec;172(6):1437–44.
5. Noortje M. van Maarseveen, Els Wessels, Caroline S. de Brouwer, Ann C.T.M. Vossen, Eric C.J. Journal of Clinical Virology 49 (2010) 205–210.

Compatible instrument

PCR

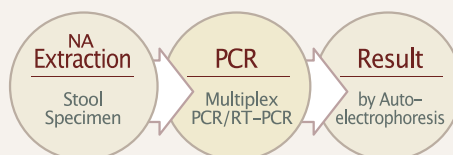
GeneAmp® 9700 (Life Technologies)
SEEAMPTM*

Auto-electrophoresis

ScreenTape® System (Agilent)
MCE®-202 MultiNA (SHIMADZU)
LabChip® Dx (Caliper)*

* The utilization of the Seeplex® Diarrhea ACE Detection is not CE approved for use on this instrument.

Process



Analyte

Diarrhea-V ACE Detection

- Rotavirus
- Norovirus GI
- Norovirus GII
- Enteric adenovirus
- Astrovirus

- Seeplex® Diarrhea-V ACE Detection has acquired medical device license by Health Canada.



Diarrhea-B1 ACE Detection

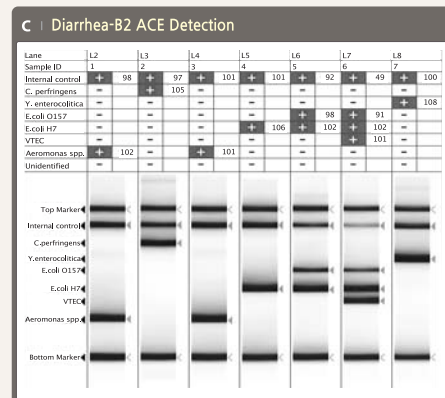
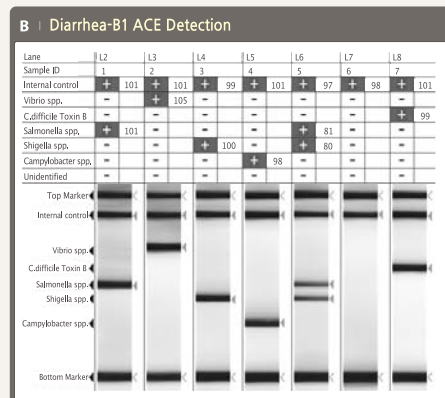
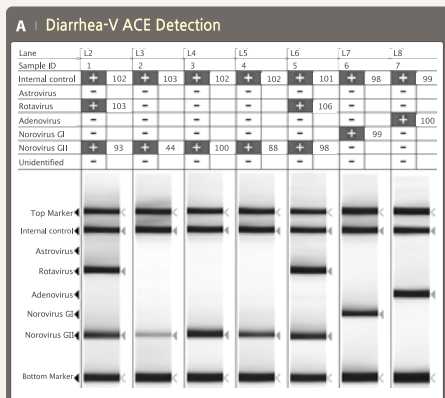
- *Salmonella* spp.
(*S. bongori* and *S. enterica*)
- *Shigella* spp.
(*S. flexneri*, *S. boydii*, *S. sonnei* and *S. dysenteriae*)
- *Vibrio* spp.
(*V. cholerae*, *V. parahaemolyticus* and *V. vulnificus*)
- *Campylobacter* spp.
(*C. jejuni* and *C. coli*)
- *Clostridium difficile* Toxin B

Diarrhea-B2 ACE Detection

- *Clostridium perfringens*
- *Yersinia enterocolitica*
- *Aeromonas* spp.
(*A. salmonicida*, *A. sobria*, *A. bivalvium*, and *A. hydrophila*)
- *E. coli* O157:H7
- Verocytotoxin-producing *E. coli* (VTEC)

Result

Amplified PCR products using Seeplex® Diarrhea ACE Detection and result analysis (Rapid & easy interpretation using ScreenTape® System)



Related publication

1. Rachel R. Higgins, et al., Evaluation and Verification of the Seeplex® Diarrhea-V ACE Assay for the Simultaneous Detection of Adenovirus, Rotavirus and Norovirus Genogroups I and II in Clinical Stool Specimens. J Clin Microbiol, Sep 2011; 49: 3154-3162.
2. Emilie Bessede, et al., New Methods for Detection of Campylobacters in Stool Samples in Comparison to Culture. J Clin Microbiol, Mar. 2011, p.941-944.
3. Min-Chul Cho, et al., Direct Application of Multiplex PCR on Stool Specimens for Detection of Enteropathogenic Bacteria. Korean J Clin Microbiol Vol. 13, No. 4, 2010, p.162-168.
4. Hae-Sun Cho, et al., A Case of Verotoxin-producing Escherichia coli O157:H7 with Hemorrhagic Colitis in an Infant, Diagnosed by Multiplex PCR. Korean J Clin Microbiol Vol. 13, No. 2, June, 2010.

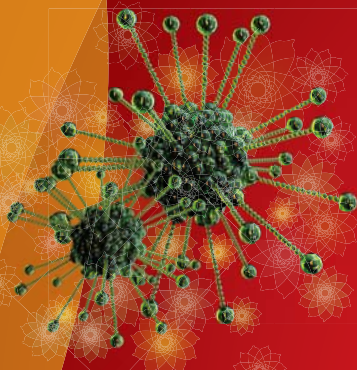
Product

	Cat. No.	Size
Diarrhea ACE Detection Set*	DR6000Y	50 rxns
Diarrhea-V ACE Detection	DR6411Y	50 rxns
Diarrhea-B1 ACE Detection	DR6501Y	50 rxns
Diarrhea-B2 ACE Detection	DR6502Y	50 rxns

*Note: Seeplex® Diarrhea Products are available for each individual sale.



Seeplex®



Simultaneous Multiple Detection

Molecular Diagnostics
Automatic Detection
DPO™-based Multiplex PCR



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Not Available in U.S.