

Active surveillance of **24 pathogens** for two years (Nov. 2007 to Oct. 2009) on **two days per week** by unbiased enrolling of **every fifth diarrhoeal patient** admitted to the Infectious Diseases and Beliaghate General Hospital in Kolkata



Diarrhoea ward



Collaboration lab at NICED

Enrolled no. of patients: 2519

Bacteria: 1500 (*V.cholerae*, 711; others, 787)

Viruses: 797 (*Rota*, 493; others, 304)

Parasites: 523 (*Gialdia lamblia*, 281; others 251)

None of 24 pathogens: 704 (27.9 %)

Estimated number of **cholera** patients in India alone: **400,000/year**

The number reported to **WHO: 200,000/year**, you cannot always know the real world from WHO website!

Nair et al., *Gut Pathog.* 2010; 2: 4. Published online 2010 June 5. doi: [10.1186/1757-4749-2-4](https://doi.org/10.1186/1757-4749-2-4).

発表誌(インパクト・ファクター)の傾向

発表が多い誌名

J. Virol. (5.189): 8

J. Gen. Virol. (3.568): 8

Emerg. Infect. Dis. (6.859): 7

PLoS One (4.411): 7

J. Med. Virol. (2.895): 4

熱帯感染症、疾病対策専門誌

PLoS Negl. Trop. Dis. (4.752): 2

MMWR (-): 1

高ランク誌

Lancet (32.498): 1

PLoS Med. (15.617): 1

PLoS Path. (9.079): 4

トップ・スリー

1. ブタ連鎖球菌ヒト感染症(阪大)
(Emerg. Infect. Dis. 2011; Lancet 2011; PLoS One 2012)
2. 小児重症呼吸器感染症の新たな病原体Enterovirus 68の発見(東北大)
(Emerg. Infect. Dis. 2011; MMWR 2011)
3. デング熱の新しい疫学像(長崎大)
(PLoS Med. 2011)
3. 下痢症入院患者の積極的動向調査(岡山大)(Gut Path. 2010 ほか)



Thailand-Japan Research Collaboration
Center on Emerging and Re-emerging
Infections (RCC-ERI) in National Institute
of Health (NIH), Thailand

BSL2 Laboratory, RCC-ERI

Rapid detection of *V.cholerae*
from rectal swabs and
environmental water by the
LAMP method, instead of
culture or PCR method, and
immediate feedback of the
results.

Okada et al. Am J Trop Med Hyg. 2010
May;82(5):875-8; Diagn Microbiol Infect Dis. 2010
Feb;66(2):135-9. Epub 2009 Oct 7.

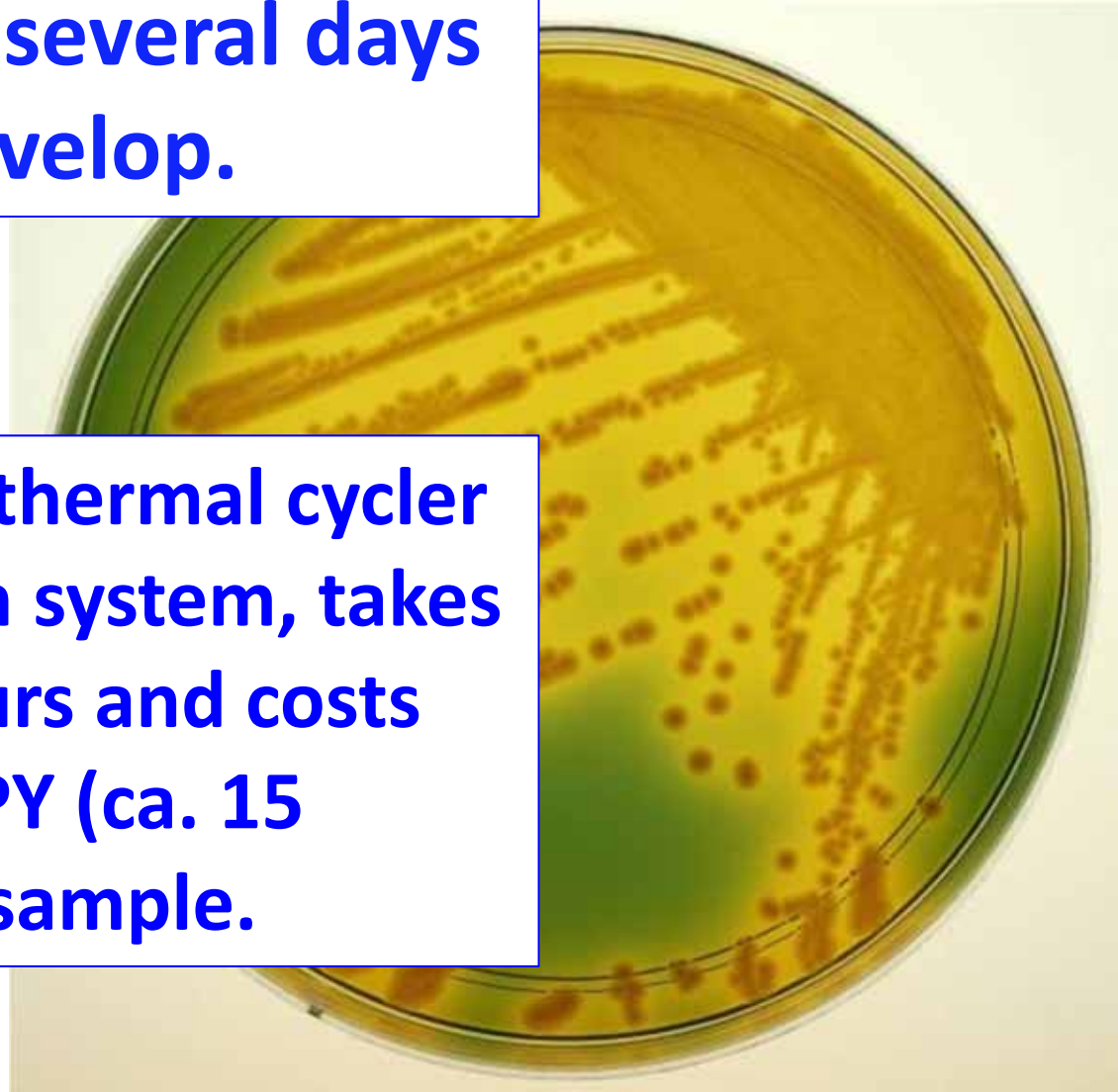
Thai NIH-Osaka University
Collaboration Center

BSL3 Laboratory, RCC-ERI



**At least 2 days,
sometimes several days
to develop.**

**PCR needs a thermal cycler
and detection system, takes
several hours and costs
1,500 JPY (ca. 15
USD)/sample.**



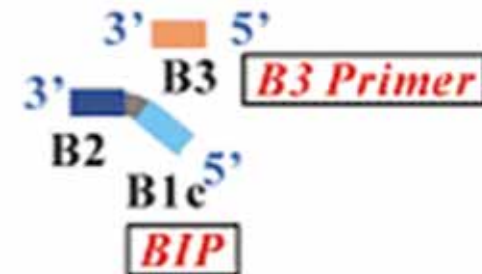
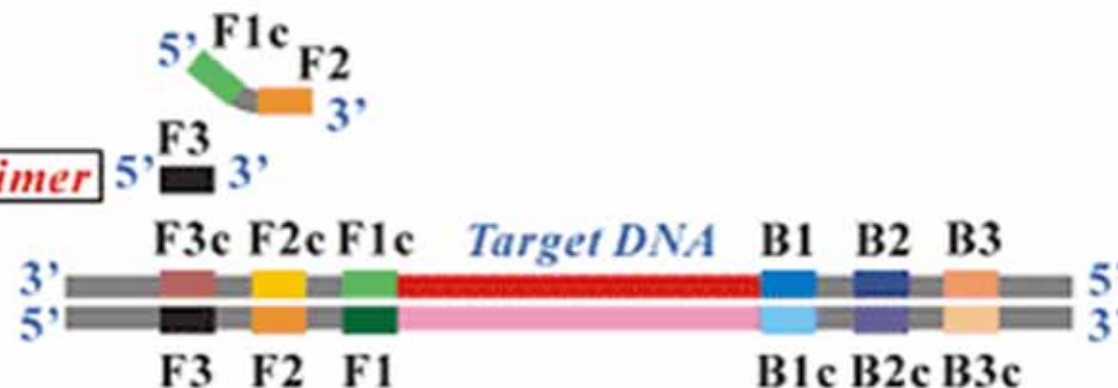
Vibrio cholerae

LAMP (loop mediated isothermal amplification)

Primers

FIP

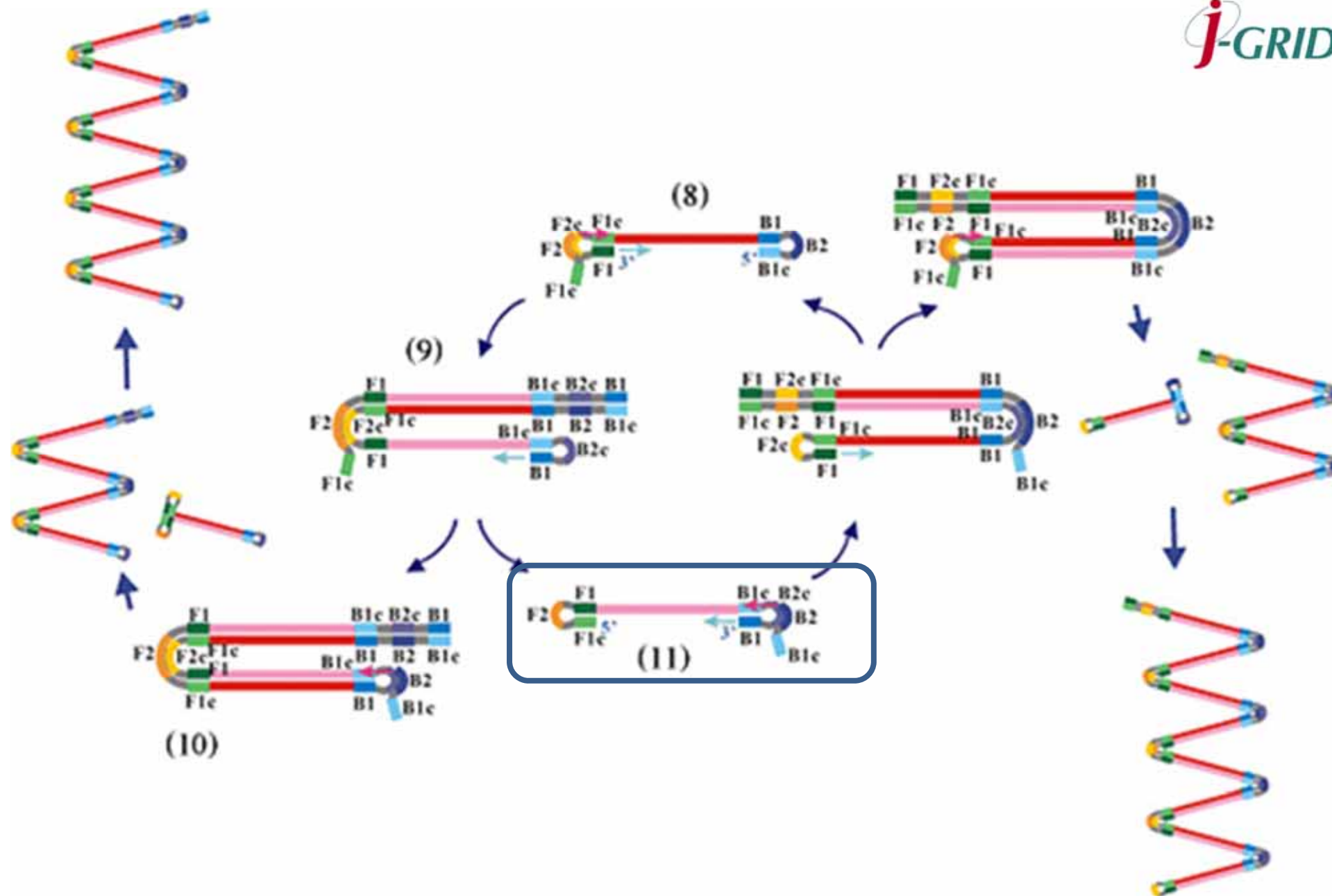
F3 Primer



Use of DNA polymerase with strand separation and DNA synthesis activities at 65 °C.

The whole amplification from some 50 copies to 10^9 - 10^{10} copies is finished within 30 to 60 min at 65 °C.

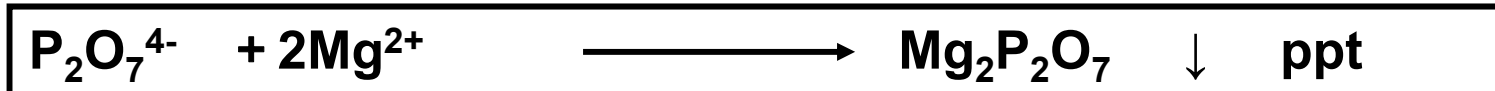
(Courtesy of Eiken Chem. Co. Ltd)



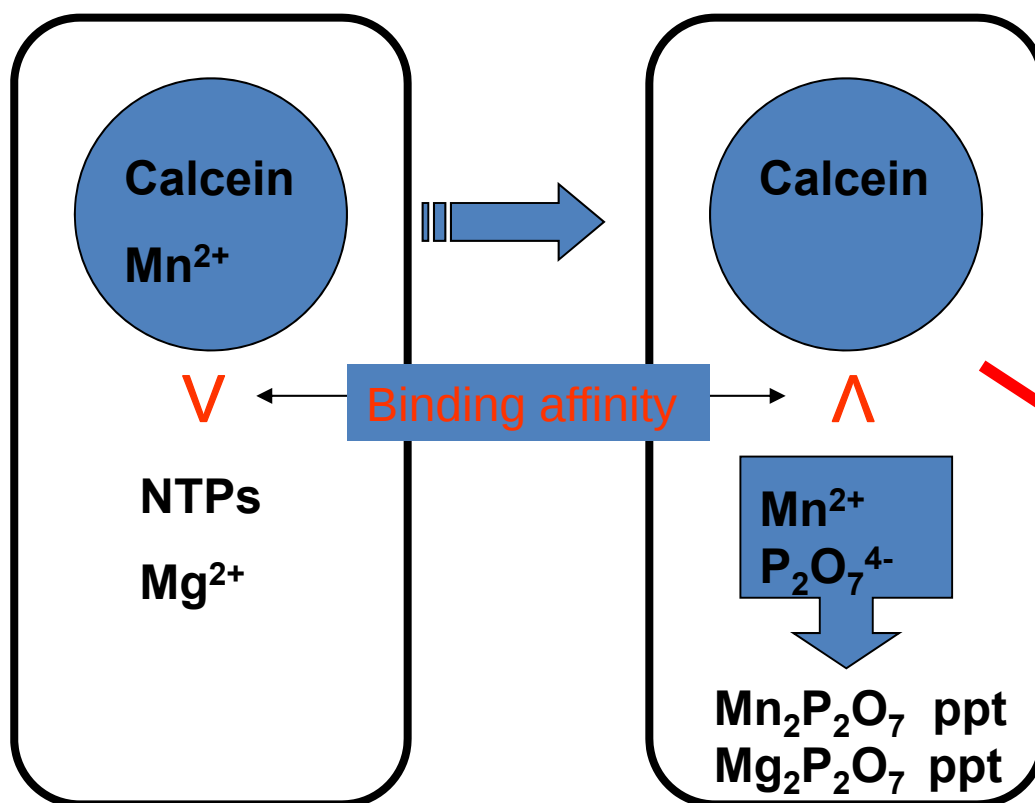
(Courtesy of Eiken Chem. Corp.)

LAMP reaction becomes visible to the naked eyes.

1) Insoluble turbid by-products



2) Green fluorescence emission by free calcein



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(Courtesy of Eiken Chem. Co. Ltd.)