



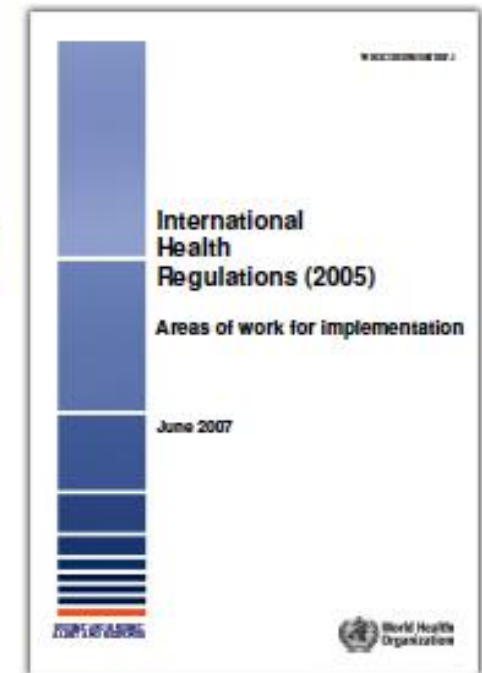
Viral Replication and PCR test

Siswanto
Kepala Badan Penelitian dan Pengembangan Kesehatan
Kemenkes RI

WHO International Health Regulation

Strengthening health security by implementing the International Health Regulations (2005)

The purpose and scope of the IHR (2005) are “to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade”

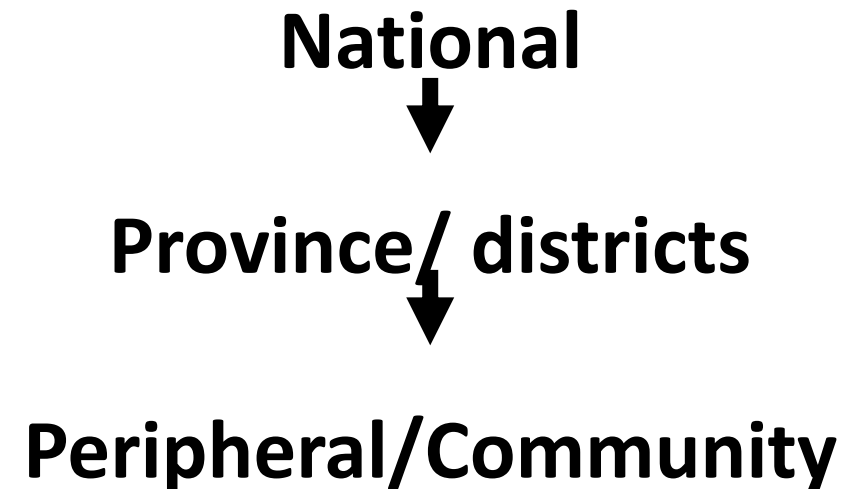


National IHR Core Capacity Requirement

8 Core Capacities

- Legislation and Policy
- Coordination
- Surveillance
- Response
- Preparedness
- Risk Communication
- Human Resources
- **Laboratory**

Implementation:



Laboratories are a fundamental for IHR core capacities and GHSA, especially **“to detect”**

Regulation

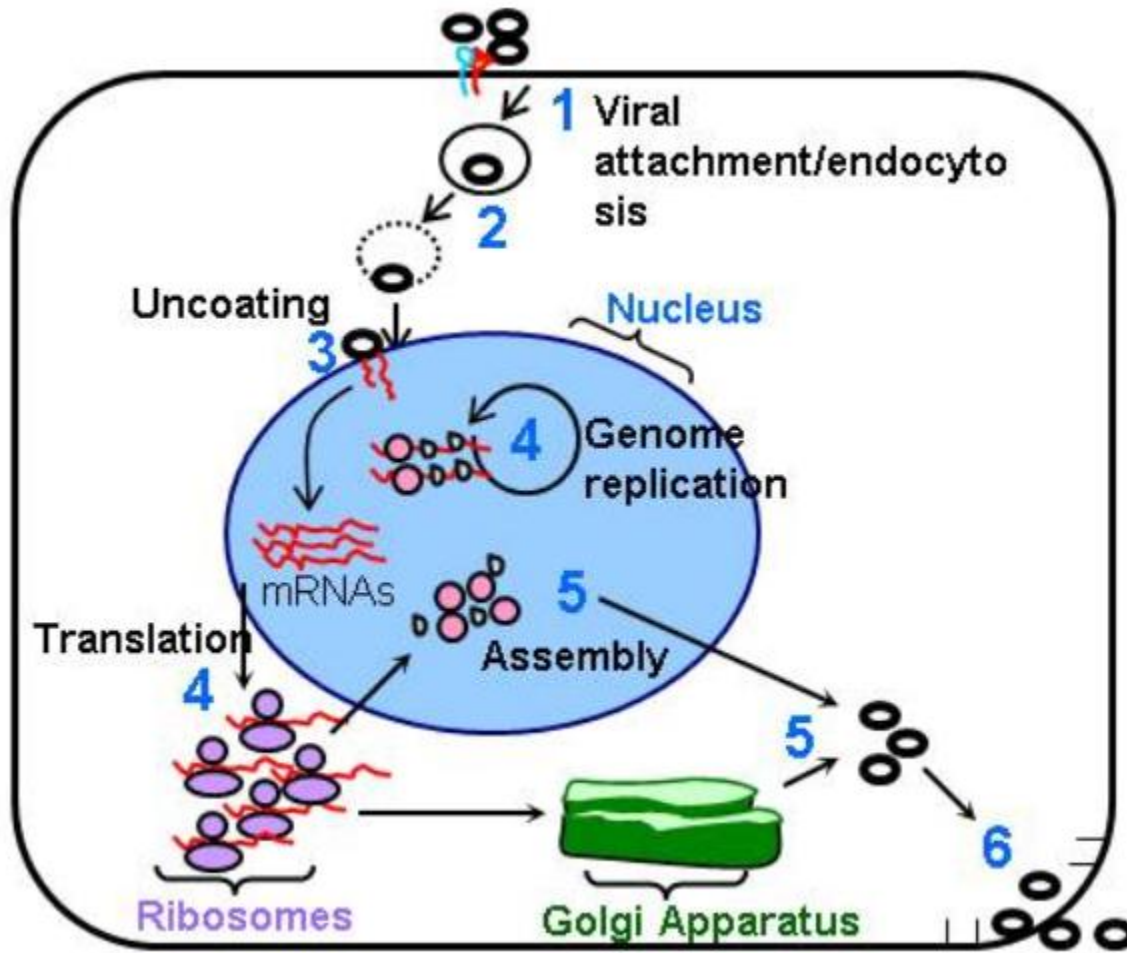


MENTERI KESEHATAN
REPUBLIK INDONESIA

**PERATURAN MENTERI KESEHATAN REPUBLIK INDONESIA
NOMOR 658/MENKES/PER/VIII/2009
TENTANG**

**JEJARING LABORATORIUM DIAGNOSIS PENYAKIT INFEKSI
NEW- EMERGING DAN RE-EMERGING**

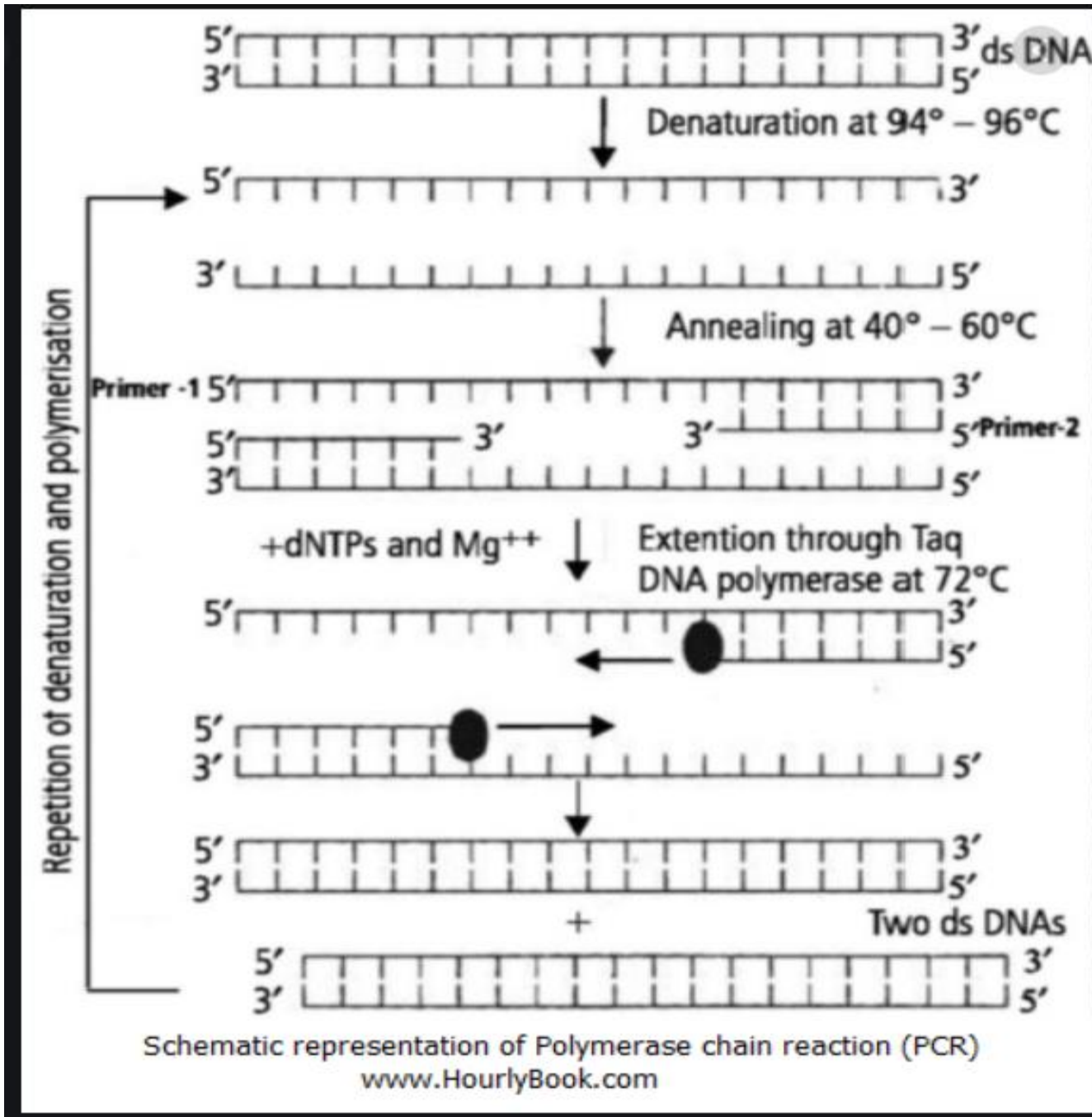
- (1) Untuk m...
re-emerg
emerging
- (2) Laborato...
sebagair...
 - a. Laboratorium Rujukan;
 - b. Laboratorium Pelaksana;
- (3) Laboratorium diagnosis sebagaimana dimaksud pada ayat (2) huruf a adalah Badan Penelitian dan Pengembangan Kesehatan yang berfungsi sebagai laboratorium pusat rujukan Nasional dan pusat kerjasama laboratorium penyakit infeksi *new-emerging* dan *re-emerging* dengan dunia Internasional.



Steps of viral replication:

1. Attachment
2. Penetration
3. Uncoating
4. Genome replication
5. Translation
6. Assembly
7. Virion release

PCR (Polymerase Chain Reaction)

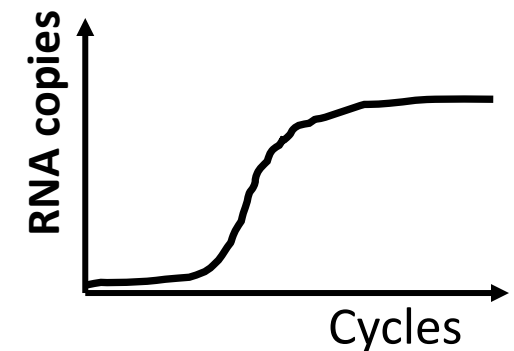


Diulang kurang lebih 40 siklus:

- Semula 1 DS DNA (2 untai)
- Diulang 40 siklus
- Jumlah untai = $2^{40} = 1.099.511.627.776$
1.100 milyar untai



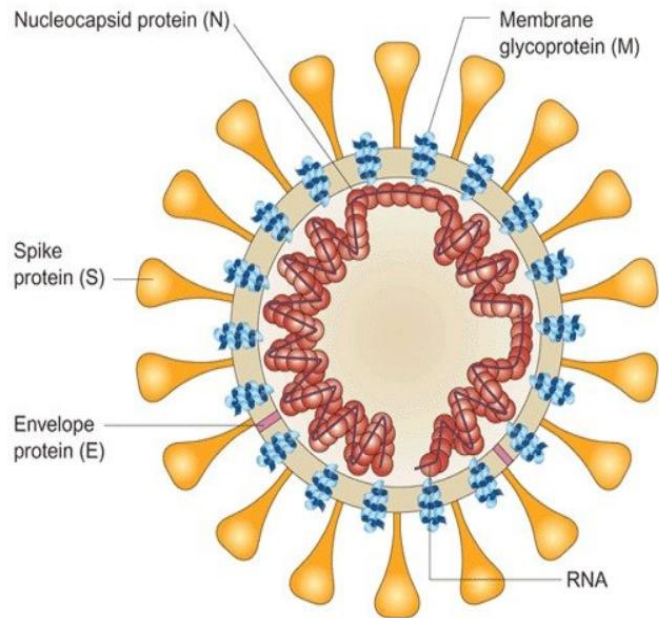
Dibaca dengan Spectrophotometer



Coronavirus

Empat Jenis Coronavirus:

1. Alpha Coronavirus → Bisa menyerang manusia
2. Betha Coronavirus → Bisa menyerang manusia
3. Gamma Coronavirus → Menyerang hewan
4. Delta Coronavirus → Menyerang hewan



Enam Coronavirus yang menginfeksi manusia:

- HCoV-229E (Alpha)
 - HCoV-NL63 (Alpha)
 - HCoV-OC43 (Beta)
 - HCoV-HKU1 (Beta)
 - *Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) (Beta)*
 - *Middle East Respiratory Syndrome Coronavirus (MERS-CoV) (Beta)*
 - ***Muncul baru → Novel Coronavirus 2019 (Beta)***
- } Mild Common Cold

Novel Coronavirus WHO [Novel coronavirus \(2019-nCoV\).mp4](#)

Terima kasih