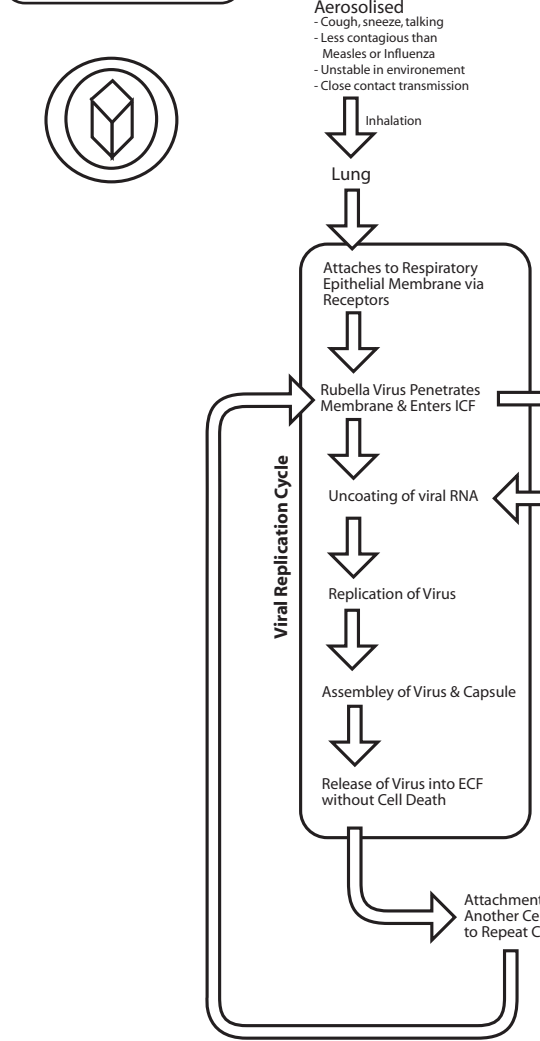
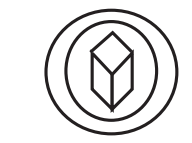


# Problem 1.07

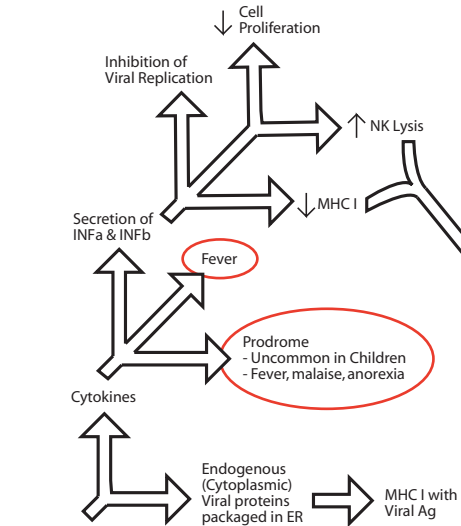
## Rubella

**Virus**  
 - Obligate Intracellular parasite  
 - Gene transporter  
 - DNA (double or single) or RNA  
 - Acellular, require host cell machinery for replication

**Rubella German Measles**  
 - Enveloped  
 - Medium Sized  
 - Rubivirus (Togavirus)  
 - RNA  
 - Slow Replication (48-72 hrs)



URTI = Upper Respiratory Tract Infection  
 ECF = Extracellular Fluid  
 ER = Endoplasmic Reticulum  
 Ag = Antigen  
 INF = Interferon  
 APC = Antigen Presenting Cell  
 MHC = Major Histocompatibility Complex  
 TNF = Tumour Necrosis Factor  
 TCR = T Cell Receptor



**Pregnancy**  
 - 20-25% of Confirmed Pregnancies end up in Spontaneous Abortion  
 - 90% of these in 1st Trimester  
 - 0.5% End in Miscarriage  
 - 2-3% Newborns have Major Congenital Malformation  
 - 50% are Unplanned  
 - 4 weeks > 50% unaware  
 - 8 weeks 15% unaware  
 - End 1st trimester < 10% unaware

**MHC II**  
 - Binds CD4  
 - HLA DP/DQ/DR  
 - Presents exogenous proteins  
 - Present on Immune Cells

**T Cell Activation**  
 CD4 - 2 signals  
 - TCR to MHC II  
 - B7 to CD28  
 CD8  
 - CD4 Cell  
 - APC MHC I

**MHC I**  
 - Binds CD8  
 - HLA A/B/C  
 - On all nucleated Cells (except trophoblast)  
 - Presents cytoplasmic proteins

**Ideal Vaccine**  
 Stable, safe, oral, single dose @ birth, 100% effective, cheap, life time protection, no side effects

**Rubella Vaccine**  
 - Live attenuated  
 - Given @ 12 months & 4 years

