Risk Assessment
Rubella virus (including human samples and other materials)

Background

Rubella is spread through contact with nose or throat secretions of an infected person. This may result from airborne droplet spread, direct contact with an infected person or indirect contact with freshly infected articles. In closed institutions, such as in military barracks and child day-care centres, all exposed susceptible persons may become infected. Infants with CRS shed large quantities of rubella virus in their pharyngeal secretions and in urine, and can serve as a source of transmission.

Rubella is moderately contagious, mostly when the rash is erupting, but is communicable from 1 week before, to 5-7 days or more after the onset of the rash. Infants with CRS may shed virus for up to a year after birth. There is no evidence that the vaccine virus can spread to contacts.

The incubation period for rubella averages 14-18 days but can range from 12-23 days. A short prodromal phase (1-5 days) occurs before the rash appears in adolescents and adults but not in children. In children, a rash is usually the first manifestation. The prodrome involves low-grade fever, headache, malaise, anorexia, mild conjunctivitis, coryza, sore throat, cough and lymphadenopathy involving the suboccipital, post-articular and cervical lymph nodes (Figure 5). Approximately 14-18 days after infection, a maculopapular rash (a pink skin rash of discrete spots) develops. The rash, which may be difficult to see, starts on the face and neck and spreads rapidly down over the trunk and extremities. The rash fades after 1-3 days, and is occasionally pruritic. Joint pain and temporary arthritis, which are uncommon in children, occur frequently in adults, especially in women.

The rubella virus is relatively temperature labile but is more heat stable than measles virus; it is inactivated after 30 minutes at 56°C, 4 minutes at 70°C, and 2 minutes at 100°C. It degrades rapidly with conventional freezing at -20° but the virus is stable at -60°C and below and when freeze-dried with stabilizers. When stabilised with protein it can be repeatedly frozen and thawed without loss of titre. Lipid solvents, weak acids and alkalis, and UV light inactivate the rubella virus. It is also susceptible to a wide range of disinfectants, and is inactivated by 1% sodium hypochlorite, 70% ethanol and formaldehyde

Risk Considerations

(1) Rubella is contagious and materials containing and human samples suspected of containing rubella virus should be handled in a biosafety containment level 2 safety cabinet.
(2) Most people are vaccinated and, thus, immunized against rubella virus. All laboratory personnel working with human samples suspected of containing rubella virus must have evidence of vaccination.
(3) Congenital rubella syndrome (CRS) is the most serious consequence of rubella infection. Laboratory personnel who are pregnant or think they are pregnant should have proof of vaccination prior to engaging in laboratory work.

Exposure Risk

There is some risk of infection from exposure to rubella virus to workers in the laboratory. All laboratory personnel working with materials containing rubella virus must have evidence of vaccination. All work

with materials containing or suspected of containing rubella virus must be done in a biosafety containment level 2 safety cabinet. Protocols that produce aerosols should be performed in a BSCL2 safety cabinet. Personal protective equipment such as gowns and gloves must be worn at all times when in the laboratory.

Decontamination

The virus is inactivated by solvents, such as ether and chloroform, by acids (pH10), and by UV and visible light. It is also susceptible to many disinfectants, including 1% sodium hypochlorite, 70% alcohol and formalin. It is recommended to wipe down all work surfaces with 70% alcohol after work.

Tentative Assessment: BIOSAFETY LEVEL II