



Virology Division

Electron Microscope Unit

BACKGROUND

EM UNIT ESTABLISHMENT

A suite of rooms in Block G was refurbished during 2007, and the installation of a new FEI Bio Twin spirit transmission electron microscope began in October. The TEM (Figure 1) operates at a maximum of 120kV, and is equipped with a digital camera which will greatly facilitate the ease of micrograph production. A cryotomography stage will undoubtedly prove to be an extremely useful adjunct to microscopically-based research.

ACTIVITIES, HIGHLIGHTS AND ACHIEVEMENTS



Figure 1: Transmission electron microscope

SAMPLE SCREENING

As an integral part of the viral diagnostic team, the EM Unit finds that viral identification at the family level, using negatively stained clinical specimens, is most useful for the viral gastroenteritis unit where samples often contain a number of different, concomitant

pathogens, many of which cannot be cultured (Figure 2). Although the majority of diarrhoeic samples viewed thus far, have provided only confirmatory viral information, the use of EM has also revealed the presence of other microbial agents, such as bacteriophages and mycoplasma-like mollicutes. Occasional samples from the SPU have been viewed, in order to assist in identification of unknown, cultured agents. The identification of an isolate at the family level assists in molecular diagnostics by narrowing down the possible options.

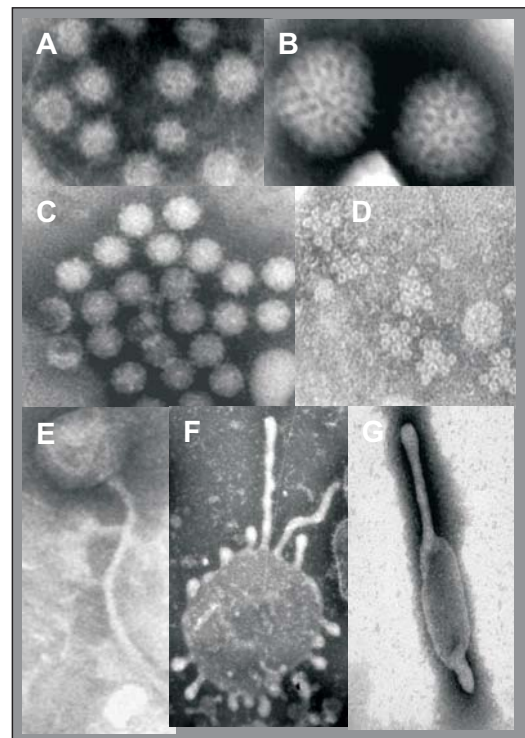


Figure 2: A variety of negatively-stained organisms found in stool samples: A - agglutinated Caliciviridae particles (38nm diameter); B - two Rotavirus particles (70nm diameter); C - Astrovirus cluster (30nm diameter); D - clumped Adenovirus capsomeres (8nm diameter); E - tailed bacteriophage (head 80nm); F & G - mollicute-like forms (length F - 800nm; G - 300nm)

CAPACITY BUILDING

The EM Unit has assisted in the microbiology registrar training programme co-ordinated by Dr Adrian Puren.