



Replication cycle of an influenza virus

Figure 3. Replication cycle of an influenza virus. (a) The virus binds to receptors on the surface of the host cell and (b) is internalised into endosomes. (c) Fusion and uncoating events, which are pH dependent, result in (d) the release of the viral genome (in the form of viral ribonucleoproteins; vRNPs) into the cytoplasm. The vRNPs are then imported into the nucleus for (e) replication. (f) Positive-sense viral messenger RNAs (mRNAs) are exported out of the nucleus into the cytoplasm for (g) protein synthesis. (h) Some of the proteins are imported into the nucleus to assist in viral RNA replication and (i) vRNP assembly, which also occur in the nucleus. (j) Late in infection, the vRNPs form and leave the nucleus, and (k) progeny viruses assemble and (l) bud from the plasma membrane. The sites of action of anti-viral drugs are shown in red, italic text. Abbreviations used: cRNA (+), positive-sense complementary RNA; HA, haemagglutinin; M1, matrix protein; M2, tetrameric ion channel; mRNA (+), positive-sense messenger RNA; NA, neuraminidase; NP, nucleoprotein; NS1, a non-structural protein; NS2, a viral protein; polys, polymerases; vRNA (-), negative-sense genomic RNA (fig003gwn).