

SECTION I

Animal Viruses, Including Protozoal Viruses

Virus	Group or subgroup	Genus	Subfamily or family
Abadina (transmitted by <i>Culicoides</i>)	Palyam	orbivirus	Reoviridae
Abelson's murine leukemia ⁽¹⁾ : <i>see</i> oncoviruses			
Abras	probably Patois	bunyavirus	Bunyaviridae
<i>Abraxas grossularia</i>	type 8	cypovirus	Reoviridae
Abu Hammad	Dera Ghazi Khan	nairovirus	Bunyaviridae
Abu Mina	Dera Ghazi Khan	nairovirus	Bunyaviridae
Acado (mosquito transmitted)	Corriparta	orbivirus	Reoviridae
Acara	Capim	bunyavirus	Bunyaviridae
Acelaphine herpes h1: <i>see</i> malignant cattarrhal fever of wildebeest			
Acelaphine herpes h2: <i>see</i> hartebeest herpes virus			
<i>Acheta</i>		probably densovirus	Parvoviridae
<i>Acrobasis zelleri</i> (<i>Lepidoptera</i>)		B	Entomopoxvirinae
<i>Actias selene</i>	type 4	cypovirus	Reoviridae
Acute bee paralysis: <i>see</i> bee acute paralysis			
Acute hemorrhagic conjunctivitis (EV serotype 70; also 69, 71)		enterovirus	Picomaviridae
Acute infectious lymphocytosis (see EVU-16) ⁽²⁾			
Acute laryngotracheobronchitis	type 2	parainfluenza	Paramyxoviridae
Adenoassociated ⁽³⁾ : synonym for dependovirus			Parvoviridae

Virus	Group or subgroup	Genus	Subfamily or family
<p>ADENOVIRIDAE⁽⁴⁾: A very uniform family of icosahedral nonenveloped virions of about 80 nm diameter composed of 252 capsomers, buoyant density in CsCl 1.34 g/cm³. The 12 vertex capsomers (pentons) carry strain-characteristic glycoprotein fibers (10–30-nm long) with knobs at the ends; the rest is made up of hexons. The genome is linear double-stranded DNA of 20–25 × 10⁶ daltons in the mammalian and 28–30 × 10⁶ daltons in the avian viruses. At least ten proteins of 5–120 × 10³ daltons make up the virion. Each adenovirus has a narrow host range. Several are oncogenic in newborn nonhosts. Serological relations among the many different adenoviruses usually called “types” are very limited. Two genera have been defined [MASTADENOVIRUS and AVIADENOVIRUS; subgroups A–D or I–IV], and species names for those found in various animals have been proposed with h1–h34 for the (sero)types of the human virus species. Similar differentiation of serotypes are used for the animal adenoviruses [27 simian, ten bovine, eight avian, four porcine, two canine, and one ovine and opossum in 1979]. Adenoviruses generally cause only light upper respiratory diseases (Figure 1).</p>			
<i>Adoxophyes orana</i> ⁽⁵⁾	nuclear polyhedrosis virus (A)		Baculoviridae
<i>Aedes</i>			Togaviridae
<i>Aedes aegypti</i>		probably densovirus	Parvoviridae
<i>Aedes aegypti</i> (Diptera)		C	Entomopoxvirinae
<i>Aedes cantans</i>		probably chloriridovirus	Iridoviridae
<i>Aedes iridescent</i> : see mosquito iridescent virus			
Aerocystis agent: see swim bladder inflammation agent of carp			
African green monkey cytomegalo (AGM-CMV)	cercopithecine	(h5) cytomegalovirus	Betaherpesvirinae
African green monkey EBV-like (AGM-EBV)	cercopithecine	(h14) lymphocryptovirus	Gammaherpesvirinae

African horse sickness (vector <i>Culicoides</i> spp.)	9 serotype	orbivirus	Reoviridae
African swine fever ⁽⁶⁾	possibly genus of Iridoviridae (only five proteins)		
AG 80-24	probably Anopheles A	bunyavirus	Bunyaviridae
<i>Agropylla luteola</i>	type 10	cypovirus	Reoviridae
<i>Agrotis segetum</i>	type 9	cypovirus	Reoviridae
Aguacate		phlebovirus	Bunyaviridae
AIDS (acquired immune deficiency syndrome): see Human T-cell leukemia virus			
Aino	Simbu	bunyavirus	Bunyaviridae
Akabane	Simbu (RNA: 31 S, 26 S, 13 S)	bunyavirus	Bunyaviridae
AKR: see oncovirus			
AKv (mouse): see oncovirus			
Alajeula	probably Gamboa	bunyavirus	Bunyaviridae
Alastrim	identical to variola minor	orthopoxvirus	Chordopoxvirinae
Aleuquer		phlebovirus	Bunyaviridae
Aleutian disease of mink ⁽⁷⁾	(nontypical proteins), (causes immune- complex disease)		possibly Parvoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Alfuy (mosquito-borne)		flavivirus	Togaviridae
Allerton: <i>see</i> bovine ulcerative mammillitis			
Alpha: genus of Togaviridae ⁽⁸⁾ (type species: Sindbis virus)			
Alphaherpesvirinae ⁽⁹⁾ : subfamily of Herpesviridae; rapidly growing, highly cytolytic			
Amapari	Tacaribe complex		Arenaviridae
Amphibian cytoplasmic		ranavirus	Iridoviridae
<i>Amsacta moorei</i> (<i>Lepidoptera</i>)	type species	B	Entomopoxvirinae
<i>ana</i> 1 (<i>Anas domestica</i> , duck)		aviadenovirus	Adenoviridae
Ananindena	Guama	bunyavirus	Bunyaviridae
Anatid herpes, h.1: <i>see</i> duck plaque herpesvirus			
Anhanga		phlebovirus	Bunyaviridae
Anhambi	Bunyamwera	bunyavirus	Bunyaviridae
<i>Anomala cuprea</i> (<i>Coleoptera</i>)		A	Entomopoxvirinae
Anopheles A	type species of subgroup	bunyavirus	Bunyaviridae
Anopheles B	type species of subgroup	bunyavirus	Bunyaviridae
<i>ans</i> 1 (<i>Anser domesticus</i> , goose)		aviadenovirus	Adenoviridae
<i>Antheraea eucalypti</i>	Nudaurelia β group		

Aotine h1, 2, 3: see herpes aotusviruses			
Aotine h4: see owl monkey cytomegalovirus			
<i>Apanteles melanoscelus</i> (wasp)	probably (double-stranded circular DNA of $2-25 \times 10^6$ daltons) (D)		Baculoviridae
Apeu	C	bunyavirus	Bunyaviridae
Aphid viruses ¹⁰ (<i>Rhopalosiphum padi</i>)	27 nm diameter (162 S), buoyant density CsCl 1.37 g/cm ³ , ss RNA (31 S)		possibly Nodaviridae
<i>Aphodius tasmaniae</i> (<i>Coleoptera</i>)	A		Entomopoxvirinae
Aphtho ⁽¹¹⁾ : genus of Picornaviridae (type species: foot and mouth disease virus, aphthovirus D)			
Apoc		flavivirus	Togaviridae
<i>Aporophylla lutulenta</i>	type species of type 10	cypovirus	Reoviridae
Arbo: obsolete term for many arthropod-borne toga etc. viruses			
ARENAVIRIDAE ⁽¹²⁾ : Enveloped pleomorphic though predominantly round virions of 100–200 nm diameter and 325–580 S, 1.2 g/cm ³ density in sucrose, consisting of a core containing ribosome-like particles (arena = sand) and a lipid bilayer envelope with surface projections. Two viral minus-stranded RNAs of about 1.1 and 2.7×10^6 daltons and smaller ribosomal etc. RNAs are present. The nucleocapsid protein is about 63×10^6 daltons; about two glycoproteins are somewhat smaller. The host range of each arenavirus is narrow. Members of the family show more or less close serological relationships. The type species is lymphocytic choriomeningitis virus (LMC), others the Lassa and Mozambique viruses and the American Tacaribe complex with many members. Several are pathogenic to man and young rodents, and LMC generally persistent. Transmission is vertical and horizontal, often venereal (Figure 2).			

Virus	Group or subgroup	Genus	Subfamily or family
Argentina: Strain of vesicular stomatitis virus, closely related to cocal virus			
Arkansas bee ⁽¹³⁾	(41×10^3 dalton protein, yet probably nodavirus)		Nodaviridae
Arumowot		phlebovirus	Bunyaviridae
Asia-1		aphthovirus	Picornaviridae
Astro ⁽¹⁴⁾	unclassified 28 nm isometric particles consisting of two proteins of 33×10^3 daltons, and 2.8×10^6 dalton RNA carrying 3' terminal poly(A)		
Ateline herpes 1: <i>see</i> spider monkey cytomegalovirus			
Ateline herpes 2, 3: <i>see</i> herpes ateles virus			
ATS-124: <i>see</i> oncovirus			
Aura [related to western equine encephalitis virus]		alphavirus	Togaviridae
Aus MK 6357 (transmitted by mosquitoes)		orbivirus	Reoviridae
Australian antigen: circulating hepatitis B virus protein aggregate			
<i>Autographa californica</i> ⁽¹⁵⁾ (wide host range pesticide)	nuclear polyhedrosis virus (A)		Baculoviridae
Avalon	Sakhalin	nairovirus	Bunyaviridae
Aviadenoviruses: genus of Adenoviridae (of fowl, goose, duck, pheasant)			
Avian adenoviruses: <i>see</i> aviadenoviruses			

Virus	Group or subgroup	Genus	Subfamily or family
B 77 (chicken): <i>see</i> oncovirus			
B 1327	blue tongue	orbivirus	Reoviridae
Babahoyo	Patois	bunyavirus	Bunyaviridae
Baboon herpes (h12)		lymphocryptovirus	Gammaherpesvirinae
Baboon sarcoma: <i>see</i> oncovirus			
<p>BACULOVIRIDAE⁽¹⁹⁾: The virions are usually rod-shaped nucleocapsids (<i>baculus</i> = stick), with lipid bilayer envelopes, frequently in bundles occluded in "crystalline" protein bodies. The nucleocapsids are about 50 × 300 nm and have a density in CsCl of 1.47 g/cm³, compared to 1.21 for the enveloped virion. The genomes are circular double-stranded DNAs of 60–110 × 10⁶ daltons, and there are 10–25 proteins, including the single virus-coded matrix, termed polyhedrin, for the NUCLEAR POLYHEDROSIS SUBGROUP (A) and granulin for the GRANULOSIS SUBGROUP (B). The viruses occur in insects, spiders, and crustaceans. The nucleocapsids of the nuclear polyhedrosis group are frequently multiply enveloped, and always have many virions in each occlusion body; the granulosis virions occur singly. Proposed are two subgroups of nuclear nonoccluded enveloped rod-shaped virions (C) and (D), the latter characterized by polydisperse superhelical DNA in various length particles. The proteins of the occlusion bodies of all genera are serologically related. Transmission is horizontal and vertical (through the eggs) (Figure 3).</p>			
Baculo X	nonoccluded, singly enveloped persistent (C)		Baculoviridae
Bagaza	(mosquito-borne)	flavivirus	Togaviridae
Bahia Grande (TB4 1054)	(invertebrate hosts)		probably Rhabdoviridae
Bahig	Tete	bunyavirus	Bunyaviridae

	type species of possible subgroup	bunyavirus	Bunyaviridae
Bakau			Bunyaviridae
Baku (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Balb/2 (murine): <i>see</i> oncovirus			
Balb-10-1: <i>see</i> oncoviruses			
Bambari (mosquito-transmitted)	Corriparta	orbivirus	Reoviridae
Banded Krait (herpes)			Herpesviridae
Bandia	Qalyub	nairovirus	Bunyaviridae
Banzi	(mosquito-borne)	flavivirus	Togaviridae
<i>Barathra brassica</i> ⁽⁵⁾	nuclear polyhedrosisvirus (A)		Baculoviridae
Barmah Forest		alphavirus	Togaviridae
Barur	(vertebrate and invertebrate hosts)		probably Rhabdoviridae
Batai	Bunyamvera	bunyavirus	Bunyaviridae
Batama	Tete	bunyavirus	Bunyaviridae
Bat salivary: <i>see</i> salivary bat virus			
Batu Cave		flavivirus	Togaviridae
Bauline (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Be An 157575 (vertebrate hosts)			probably Rhabdoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Be An 293022			probably Arenaviridae
Be Ar 35646, 41067, 54342 (transmitted by phlebotomines)	Changuinola	orbivirus	Reoviridae
Be Ar 185559 (invertebrate hosts)			probably Rhaboviridae
Bebaru		alphavirus	Togaviridae
Bee acute paralysis ⁽²⁰⁾			unclassified (very similar to sacbrood virus, possibly rhinovirus, but not serologically related, stable < pH 4, 28 nm diameter, isometric particles 160 S, proteins of 24 and 32 × 10 ³ daltons)
Bee chronic paralysis ⁽²⁰⁾			unclassified (particles of 20 × 30, 40, 50, 60 nm, 82–126 S, 66 × 10 ³ dalton protein, often carries isometric satellite virus of 17 nm diameter)
Bee filamentous ⁽²⁰⁾			unclassified (ellipsoid virions, 150 × 450 nm, density in CsCl 1.28 g/cm ³ , contains 40 × 3000 nm nucleocapsid, double-stranded DNA of 12 × 10 ⁶ daltons and about 12 proteins of 13–70 × 10 ³ daltons)
Bee slow paralysis ⁽²⁰⁾			unclassified (30 nm isometric particles, 178 S, proteins of 46, 29, and 27 × 10 ³ daltons, plus-strand RNA)
Bee X and Y ⁽²⁰⁾			(very similar, but serologically distantly related, 35-nm-diameter isometric particles, 187 S, 55 × 10 ³ dalton protein, probably Nudaurelia β group)

Belmont ⁽²¹⁾	(isolated only in Australia, somewhat larger virion and larger three RNAs, four proteins)	probably Bunyaviridae
Benevides	Capim	Bunyaviridae
Bentica	Capim	Bunyaviridae
Berne ⁽²²⁾	Equine unclassified 130-nm-diameter particle with 20-nm spikes, partly bacilliform (buoyant density in sucrose 1.16 g/cm ³ , contains RNA. The structure of the core differentiates it from coronaviridae, not pathogenic)	
Bertioga	Guama	Bunyaviridae
Betaherpesvirinae ⁽²³⁾	subfamily of Herpesviridae (slow growing, cytomegalic)	
BFN 3187 (Grey Lodge) (invertebrate hosts)		probably Rhabdoviridae
Bhanja	bunyavirus	probably Bunyaviridae
Bijou bridge	alphavirus	Togaviridae
Bimiti	bunyavirus	Bunyaviridae
Birao	Bunyamwera	Bunyaviridae
Bird pox: <i>see</i> avipox		
BIRNA VIRUS GROUP ⁽²⁴⁾	Not yet classified family; icosahedral 60-nm-diameter particles (at times resembling reoviridae), 435 S, density in CsCl 1.32 g/cm ³ , contain two linear double-stranded RNAs of 2.5 and 2.3 × 10 ⁶ dalton per particle, and four proteins of 105 to 29 × 10 ³ daltons. Type species: infectious pancreatic necrosis of trout; viruses of fishes, molluscs, possibly <i>Drosophila</i> X, infectious bursal disease of chickens. Wide host range, three serotypes. The RNA may be circularized by a protein.	

Virus	Group or subgroup	Genus	Subfamily or family
<i>Biston betularia</i>	type 6	cyovirus	Reoviridae
Bittner: see mouse mammary tumor virus			
BK (human) ⁽²⁵⁾	Related to SV40 (3.45 × 10 ⁶ dalton circular dsDNA, 4962 × 2 nucleotides, sequenced).	polyoma	Papovaviridae
Black beetle ⁽²⁶⁾		nodavirus	Nodaviridae
Black stork herpes (h1)	ciconiid		Herpesviridae
Blue comb disease (enteritis of turkeys)		coronavirus	Coronaviridae
Blue tongue: Type species of orbivirus—68-nm-diameter particles, 550 S, two shells, seven proteins of 155 to 32 × 10 ³ daltons, ten double-stranded RNAs of 2.7 to 0.3 × 10 ⁶ daltons. Sensitive to lipid solvents and pH 3, many serotypes and serological subgroups, wide host range, mostly arthropods and mammals, various transmitting insects.			Reoviridae
Bobia	Olifantsvlei	bunyavirus	Bunyaviridae
Bobwhite quail herpes	percid	herpesvirus	Herpesviridae
<i>Bombyx mori</i>		densovirus	Parvoviridae
<i>Bombyx mori</i>	nuclear polyhedrosis (A)		Baculoviridae
<i>Bombyx mori</i>	type 1	cyovirus	Reoviridae

Boolarra				possibly Nodaviridae
Boraceia	Anopheles B		bunyavirus	Bunyaviridae
Border disease			pestivirus	Togaviridae
Borna disease	unclassified			Togaviridae
<i>Borrelina bombycis</i>	nuclear polyhedrosis (A)			Baculoviridae
<i>bos</i> 1-9 (<i>Bos taurus</i> , cattle)			mastadenovirus	Adenoviridae
Botambi	Olifantsvlei		bunyavirus	Bunyaviridae
Bouboni (mosquito-transmitted)			flavivirus	Togaviridae
Bovid: <i>see</i> bovine				
Bovine adeno			adenovirus	Adenoviridae
Bovine dependo	(adeno-associated virus)		dependovirus	Parvoviridae
Bovine diarrhea			probably enterovirus	Picornaviridae
Bovine entero 1-7	VG-5-27		enterovirus	Picornaviridae
Bovine ephemeral (or epizootic) fever ⁽²⁷⁾				probably Rhabdoviridae

Bovine herpes h1⁽²⁸⁾: *see* infectious bovine rhinotracheitis

Bovine herpes h2⁽²⁸⁾: *see* bovine ulcerative mammillitis, pseudolumpy skin disease, Allerston virus

Bovine herpes h3⁽²⁸⁾: *see* bovine "orphan" herpes virus

Virus	Group or subgroup	Genus	Subfamily or family
Bovine leukosis: <i>see</i> oncovirus			
Bovine lumpy disease		parapoxvirus	Chordopoxvirinae
Bovine mammillitis ⁽²⁹⁾ : <i>see</i> bovine ulcerative mammillitis			
Bovine orphan (herpes, h2)		simplexvirus	Alphaherpesvirinae
Bovine papilloma	type 1 (sequenced)		
Bovine parainfluenza	type 3	parainfluenza	Papovaviridae
Bovine parvo		parvovirus	Paramyxoviridae
Bovine pustular stomatitis		parapoxvirus	Parvoviridae
Bovine respiratory syncytial		pneumovirus	Chordopoxvirinae
Bovine rhino 1, 2		rhinovirus	Paramyxoviridae
Bovine rhinotracheitis: <i>see</i> infectious bovine rhinotracheitis			
Bovine syncytial			Picomaviridae
Bovine ulcerative mammillitis (Allerton virus), (h12)		simplexvirus	Spumavirinae
Bovine viral diarrhea ⁽³⁰⁾	type species	pestivirus	Alphaherpesvirinae
Bratislava (77): <i>see</i> avian sarcoma viruses			Togaviridae
Brazil: strain of vesicular stomatitis virus			
Brazilian myxoma		leporipoxvirus	Rhabdoviridae
Bruconha	probably C	bunyavirus	Chordopoxvirinae
			Bunyaviridae

Bryan strain of Rous sarcoma virus: <i>see</i> oncovirus		
BT 104	Changuinola	orbivirus
BT 2164	Changuinola	orbivirus
B-type particles: <i>see</i> Oncovirus		
Buenaventura		phlebovirus
Buffalopox		orthopox
Bujaro		phlebovirus
Bukalasa bat		flavivirus
Bunyamwera	type species	bunyavirus
Bunyamwera supergroup: synonym for genus Bunyavirus		
BUNYAVIRIDAE ⁽³¹⁾ : Large family of viruses. Oval to spherical virions of about 95 nm diameter (400 S, density in CsCl 1.2 g/cm ³) containing three major envelope glycoproteins, one minor large nucleocapsid protein forming long helical nucleocapsids (2.0–2.5 nm diameter) with the three minus strand RNAs (3–5, 1–2, and 0.3–0.8 × 10 ⁶ daltons). Reassortment between the RNAs of different bunyaviruses or strains that carry the information for the proteins of equivalent size has been achieved. The viruses have lipid-rich envelopes. Their host ranges are wide among vertebrates and arthropods; transmission is usually by mosquitoes, ticks, etc. Four genera have been identified (BUNYAVIRUS, PHLEBOVIRUS, NAROVIRUS, and UUKUVIRUS), as well as many groups for each of the first three genera. The phleboviruses have the largest small RNA, the bunyaviruses the smallest (0.8 vs. 0.4 × 10 ⁶ daltons); their large RNA exceeds that of the others (4.6 × 10 ⁶ daltons).		
Bunyavirus: genus of Bunyaviridae (type species: bunyamwera virus)		
Bushbush	Capim	bunyavirus
		Bunyaviridae
		Reoviridae
		Reoviridae
		Bunyaviridae
		Chordopoxvirinae
		Bunyaviridae
		Togaviridae
		Bunyaviridae
		Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Bussuquari (mosquito-transmitted)		flavivirus	Togaviridae
Button willow	Simbu	bunyavirus	Bunyaviridae
<i>Butus occitanns</i> (scorpion)			probably Reoviridae
Bwamba	type species of subgroup	bunyavirus	Bunyaviridae
C: subgroup		bunyavirus	Bunyaviridae
C-type: see oncovirus			
C 57L, C 58 (murine leukemia virus): see oncovirus			
Cabassou		alphavirus	Togaviridae
Cacao		phlebovirus	Bunyaviridae
Cache valley	Bunyamwera	bunyavirus	Bunyaviridae
Caimito		phlebovirus	Bunyaviridae
Calf rota ⁽³²⁾		rotavirus	Reoviridae
CALICIVIRIDAE ⁽³³⁾ : This virus family shows some resemblance to enlarged picornaviridae. The isometric particles have a diameter of 38 nm (183 S), density 1.37 g/cm ³ in CsCl, and contain 18% plus-strand RNA of 2.8 × 10 ⁶ daltons with poly (A) at the 3' end and a 10–15 × 10 ³ dalton protein bound to the 5' end. However, they are composed of 180 molecules of a single protein of about 67 × 10 ³ . Their particle weight is thus 15 × 10 ⁶ , compared to 8 × 10 ⁶ for the picornaviruses. The type species of this small family is the vesicular exanthema of swine virus with many serotypes, and others are the San Miguel sea lion virus, a feline calici virus, and others. These show serological interrelationships.			
California diarrhoe		rotavirus	Reoviridae

California encephalitis ⁽³⁴⁾	type species of subgroup	bunyavirus	Bunyaviridae
California: (subgroup)		bunyavirus	Bunyaviridae
California myxoma		leporipox	Chordopoxvirinae
<i>Callinectes sapidus</i> (blue crab)			possibly Baculoviridae
Callitrichine herpes h1: see herpes virus sanguinus			
Callitrichine herpes h2: see SSG, marmoset cytomegalovirus			
Calovo	Bunyamwera	bunyavirus	Bunyaviridae
Camel pox		orthopox	Chordopoxvirinae
<i>Campoletis sonorensis</i> (wasp)	probably D		Baculoviridae
<i>Camptochironomus tentans</i> (Diptera)		B	Entomopoxvirinae
can-1	(<i>Canis familiaris</i> , dog)	mastadenovirus	Adenoviridae
Cananea	Guama	bunyavirus	Bunyaviridae
Canary pox		avipox	Chordopoxvirinae
Candiru		phlebovirus	Bunyaviridae
Canid: see canine			
Canine corona		coronavirus	Coronaviridae
Canine dependo ⁽³⁵⁾ (related to others)		dependovirus	Parvoviridae
Canine distemper		morbillivirus	Paramyxoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Canine hepatitis			possibly Alphaherpesvirinae
Canine herpes: <i>see</i> dog herpesvirus			
Canine papilloma		papillomavirus	Papovaviridae
Canine parvo: <i>see</i> canine dependovirus			
<i>cap</i> -1	(<i>capra hercus</i> , goat)	mastadenovirus	Adenoviridae
Cape Wrath (tick-transmitted)	Kemorovo	orbivirus	Rhabdoviridae
Caprine arthritis-encephalitis ⁽³⁶⁾	(visna-like serology but no RNA homology)		probably Lentivirinae
Caprine herpes: <i>see</i> domestic goat herpes virus, sheep herpes			
Caprine herpes h1: <i>see</i> sheep herpes virus			
Caprine herpes h2: <i>see</i> domestic goat herpes virus			
Capripox ⁽³⁷⁾ : genus of Chordopoxvirinae (type species: sheeppox)			
Capuchin herpes (AL-5, AP18) (h1, h2)		simplexvirus h1, h2	Alphaherpesvirinae
Caraparu	C	bunyavirus	Bunyaviridae
Carcinoma MH2: <i>see</i> oncovirus			

<i>Carcinus maenas</i> (European crab)		possibly Baculoviridae
Cardio ⁽³⁸⁾ : genus of Picornaviridae (type species: encephalomyocarditis virus)		
Carey Island	flavivirus	Togaviridae
Carnivorepox	(related to cowpox)	Chordopoxvirinae
Carppox		Herpesviridae
Carr-Zilber strain of RSV, and associated: see oncovirus		
Cas-Br-M-(wild mouse): see oncovirus		
Cas E no 1-X: see oncovirus		
Cas SFFV (mouse): see oncovirus		
Cat cytomegalo (h2)	cytomegalovirus	Bethaherpesvirinae
Cat herpes	(infectious rhinotracheitis)	Alphaherpesvirinae
Cat scratch disease	unclassified	
Catu	Guama	Bunyaviridae
Caviid herpes 1: see guinea pig herpes virus, Hsuing-Kaplow		
Caviid herpes h2: see guinea pig cytomegalovirus		
Cba Ar (426)	Bunyamwera	Bunyaviridae
CELO	aviadenovirus	Adenoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Ceratitis	similar to <i>Drosophila</i> virus F		
Cercopithecine herpes h1: <i>see</i> herpes B, simian herpes B; h2: <i>see</i> SA8; h3: <i>see</i> SA6; h4: <i>see</i> SA 15; h5: <i>see</i> African green monkey cytomegalo; h6: <i>see</i> Liverpool vervet monkey; h7: <i>see</i> delta herpes, Patas monkey; h8: <i>see</i> Rhesus monkey cytomegalo; h9: <i>see</i> simian varicella, Medical Lake macaque; h10: <i>see</i> rhesus leukocyte-associated (strain I); h11: <i>see</i> rhesus leukocyte-associated (strain II); h12: <i>see</i> baboon herpes, herpes papio; h13: <i>see</i> herpes cyclopsis; h14: <i>see</i> African green monkey EBV-like.			
CFS (cell-fusing agent)	(though seriotogically unrelated to others)	flavivirus	Togaviridae
C: subgroup		bunyavirus	Bunyaviridae
CH 9935		orbivirus	Reoviridae
Chaco (vertebrate hosts)			probably Rhabdoviridae
Chagres		phlebovirus	Bunyaviridae
Chamois contagious ecthyma		parapox	Chordopoxvirinae
Chandipura (human)		vesiculovirus	Rhabdoviridae
Changuinola (transmitted by <i>phlebotomines</i>)	type species of subgroup (7 serotypes)	orbivirus	Reoviridae
Channel catfish ⁽³⁹⁾ (h1)			Alphaherpesvirinae
Chelonid herpes h1: <i>see</i> grey patch disease agent of green turtle			
Chelonid herpes h2: <i>see</i> Pacific pond turtle			

Chelonid herpes h3: <i>see</i> painted turtle herpes				
Chenuda (tick-transmitted)	Kemorovo	orbivirus	Reoviridae	
Chickenpox: <i>see</i> varicella-zoster				
Chikungunya		alphavirus	Togaviridae	
Chilibre		phlebovirus	Bunyaviridae	
Chimpanzee herpes (h1)		lymphocryptovirus	Gammaherpesvirinae	
<i>Chironomus attenuatus</i> (Diptera)		C	Entomopoxvirinae	
<i>Chironomus luridus</i> (Diptera)	type species	C	Entomopoxvirinae	
<i>Chironomus plumosus</i> (Diptera)		C	Entomopoxvirinae	
Chlorirido ⁽⁴⁰⁾ : genus of Iridoviridae	(larger than iridoviruses)			
Chordopoxvirinae ⁽⁴¹⁾ : subfamily of Poxviridae (of vertebrates)	Subfamily of Poxviridae			
<i>Choristoneura biennis</i> (Lepidoptera)		B	Entomopoxvirinae	
<i>Choristoneura conflicta</i> (Lepidoptera)		B	Entomopoxvirinae	
<i>Choristoneura diversuma</i> (Lepidoptera)		B	Entomopoxvirinae	
<i>Chorizagrotis auxiliaris</i> (Lepidoptera)		B	Entomopoxvirinae	

Virus	Group or subgroup	Genus	Subfamily or family
<i>Chrysoideixis eriosoma</i>		cotivirus	Chordopoxvirinae
Chum salmon	similarities to (11 ds RNAs) and differences from	rotavirus	Reoviridae
Ciconiid herpes h1: see black stork herpes virus			
Clo Mor		nairovirus	Bunyaviridae
CMII: see avian oncovirus (member of the MC 29 group)			
Co Ar 1071, Co Ar 3624, Co Ar 3627	Anopheles A	bunyavirus	Bunyaviridae
Co Ar 2837	Changuinola	orbivirus	Reoviridae
Cocal: strain of vesicular stomatitis virus			
Coital exanthema (horse) (h3)			Alphaherpesvirinae
Col An 57389	Anopheles A	bunyavirus	Bunyaviridae
<i>Colobus polykomos</i> (monkey) leukemia: see oncovirus			
Colorado tick fever	type species of subgroup	orbivirus	Reoviridae
Columbia SK (murine encephalomyocarditis)		cardiovirus	Picornaviridae
Columbid herpes h1: see pigeon herpes 1			

- Congo hemorrhagic fever: *see* Crimean–Congo
- Cormorant herpes (h1) Herpesviridae
- CORONAVIRIDAE⁽⁴²⁾: Spherical and pleomorphic particles of 60–220 nm diameter (buoyant density in sucrose 1.18 g/cm³) with characteristic club-shaped widely-spaced about 20 nm projections that give the particle the so-called corona-like appearance. The helical nucleocapsid consists of a plus-strand RNA of about 6×10^6 daltons carrying poly (A) and a phosphoprotein of about 55×10^3 daltons at the 3' and 5' end, respectively. Three or four proteins and glycoproteins as well as lipids make up the envelope and, a large glycoprotein the peplomers. The avian infectious bronchitis virus is the type species, and others are human corona virus (HCV), murine hepatitis virus, porcine hemagglutinating encephalitis, and transmissible gastroenteritis virus, as well as probably canine, calf, rat, and turkey coronaviruses. Only three different serotypes have been detected (Figure 4).
- Coronavirus enteritis of turkeys: *see* blue comb disease virus.
- Corriparta (mosquito-transmitted) type species of orbivirus Reoviridae
subgroup (3 serotypes)
- Coryza rhinovirus Picornaviridae
- Cotia⁽⁴³⁾: probably separate genus of Entomopoxvirinae (no serological relations detected)
- Cottontail herpes (h1) Gammaherpesvirinae
- Cowbane ridge flavivirus Togaviridae
- Cowpox orthopox Chordopoxvirinae
- Coxsackie enterovirus Picornaviridae
- Crane herpes (h1) Herpesviridae

Virus	Group or subgroup	Genus	Subfamily or family
<i>Crassostrea virginica</i>			Herpesviridae
Crawley (of birds)		orthoreovirus	Reoviridae
Creutzfeldt-Jacob disease ⁽⁴⁴⁾	unclassified (probably nonviral)		proposed term: Prion
Cricetid herpes: <i>see</i> hamster herpesvirus			
Cricket paralysis ⁽⁴⁵⁾	unclassified (possibly strain of encephalomyocarditis)		Picornaviridae
Crimean-Congo hemorrhagic fever	type species of subgroup	nairovirus	Bunyaviridae
C-type particles: <i>see</i> Oncovirinae			
<i>Cydia pomonella</i> (codling moth)	granulosis virus (B)		Baculoviridae
Cypovirus: genus of Reoviridae (type species cytoplasmic polyhedrosis virus of insects).			Reoviridae
Cyrimid herpes: <i>see</i> carp poxvirus			
Cytomegalo ⁽⁴⁶⁾ : genus of Betaherpesvirinae (type species: human cytomegalovirus)			
Cytoplasmic polyhedrosis ⁽⁴⁷⁾ , (Figure 5)	type 1012	cypovirus	Reoviridae
D'Aguilar (<i>Culicoides</i> -transmitted)	Palyam	orbivirus	Reoviridae
Dakar bat		flavivirus	Togaviridae
Dane particle: <i>see</i> hepatitis B virus			

Darna trima	nudaurelia β group		
DBS/1 (murine leukemia): see oncovirus			
Delta herpes (monkey) (h7)	simplexvirus	Alphaherpesvirinae	
Demodema boranensis	A	Entomopoxvirinae	
Denso(nucleosis) (insect hosts) ⁽⁴⁸⁾ : genus of Parvoviridae			
Dependo (common term adenoassociated viruses): genus of Parvoviridae (all serologically interrelated)			
Dera Ghazi Khan	type species of subgroup	Bunyaviridae	
<i>Dermolepida albobhirtum</i>	A	Entomopoxvirinae	
Dhori	unclassified, possibly orthomyxovirus but tick-borne		
Diatraea	densovirus	Parvoviridae	
Dog herpes (h1)		Alphaherpesvirinae	
Domestic goat herpes (h2)		Alphaherpesvirinae	
Douglas	Simbu	Bunyaviridae	
<i>Drosophila</i> A and P ⁽⁴⁹⁾	unclassified (similar to bee slow and acute paralysis virus)		
<i>Drosophila</i> C		Picornaviridae	
<i>Drosophila</i> F	(10 ds RNAs)	possibly orthoreovirus	Reoviridae
<i>Drosophila</i> Sigma ⁽⁴⁹⁾	possibly birnavirus group		

Virus	Group or subgroup	Genus	Subfamily or family
<i>Drosophila</i> X ⁽⁴⁹⁾ : possibly birnavirus group			
Duck plaque (h1)			Herpesviridae
Duck spleen necrosis: <i>see</i> spleen necrosis virus			
Dugbe		nairovirus	Bunyaviridae
Duo		obsolete name for rotavirus	Reoviridae
Duvenhage (vertebrates) ⁽⁵⁰⁾		lyssavirus	Rhabdoviridae
Eastern equine encephalitis		alphavirus	Togaviridae
Ebola: unclassified, very long rods resembling Marburg virus; lethal to man, possibly Rhabdoviridae			
EBV: <i>see</i> Epstein-Barr virus			
ECHO 9 (synonym for coxsackie virus A23)		enterovirus	Picornaviridae
ECHO serotype 10, 12, 28 ⁽⁵¹⁾		rhinoviruses	Picornaviridae
Ectromelia (mouse)		orthopox	Chordopoxvirinae
ED 1M (mouse)		rotavirus	Reoviridae
Edgehill (mosquito-transmitted)		flavivirus	Togaviridae
Eel: European		similar, but serologically not related, to infectious pancreatic necrosis virus	

Eg An 1825-61			Bunyaviridae
Eggdrop syndrome (chicken) ⁽⁵²⁾		probably uukuvirus	Adenoviridae
Egtved (synonym: hemorrhagic septicemia of fishes) ⁽⁵³⁾		adenovirus	probably Rhabdoviridae
EHD (New Jersey, Can Alberta): see epizootic disease of deer		orbivirus	Reoviridae
Elapid herpes: see Banded Krait, Indian cobra, Siamese cobra			
Elephant herpes (h1)			Herpesviridae
Elephant pox (related to cowpox)		orthopoxvirus	Chordopoxvirinae
Encephalomyocarditis (EMC) ⁽⁵⁴⁾		cardiovirus	Picornaviridae
<i>Enchrytraeus fragmentosus</i> (microannelid)		unclassified (270 × 50 nm particles)	
Endogenous <i>Drosophila</i> line			possibly Nodaviridae
Engelbreth-Holm avian sarcoma: see oncovirus			
Enseada		probably bunyavirus	Bunyaviridae
<i>Entamoeba histolytica</i> (amoeba)		unclassified (40 and 70 nm particles)	
Entebbe bat		flavivirus	Togaviridae
Entero: genus of Picornaviridae (type species: human poliovirus)			
Entomopoxvirinae ⁽⁵⁵⁾ : subfamily of Poxviridae (of insects)			
<i>Epiphyas postvittana</i>		cotivirus	Entomopoxvirinae

Virus	Group or subgroup	Genus	Subfamily or family
Epizootic hemorrhagic disease of deer	type species of subgroup (20 serotypes)	orbivirus	Reoviridae
Epstein-Barr ⁽⁵⁶⁾ (human herpes, h4)	type species	lymphocryptovirus	Gammaherpesvirinae
equ 1 (<i>Equus caballus</i> , horse)		mastadenovirus	Adenoviridae
Equid: <i>see</i> equine			
Equine abortion (h1)			Alphaherpesvirinae
Equine arteritis ⁽⁵⁷⁾		possibly pestivirus	Togaviridae
Equine dependo		dependovirus	Parvoviridae
Equine encephalitis: <i>see</i> Eastern and Western equine encephalitis			
Equine encephalosis	(five serotypes)	orbivirus	Reoviridae
Equine herpes h1 ⁽⁵⁸⁾ : <i>see</i> equine abortion and rhinopneumonitis virus			
Equine herpes h2 ⁽⁵⁸⁾ : <i>see</i> slow-growing cytomegalo-like virus			
Equine herpes h3 ⁽⁵⁸⁾ : <i>see</i> coital exanthema virus			
Equine infectious anemia ⁽⁵⁹⁾			Lentivirinae
Equine infectious arteritis: <i>see</i> equine arteritis			
Equine rhino	(serotypes 1,2)	rhinovirus	Picornaviridae
Equine rhinopneumonitis (h1)		poikilovirus	Alphaherpesvirinae
Equine viral arteritis		alphavirus	Togaviridae
Erythroblastosis: <i>see</i> avian erythroblastosis virus			

Erythrocyte aplasia agent			Parvoviridae
Esh: <i>see</i> avian sarcoma virus			
Eubenangea	type species of subgroup	orbivirus	Reoviridae
European eel: <i>see</i> eel virus			
European ground-squirrel cytomegalo (h1)			Betaherpesvirinae
European swine fever: <i>see</i> hog cholera			
European tick-borne encephalitis: <i>see</i> tick-borne encephalitis virus			
EV (enterovirus) type 70: <i>see</i> acute hemorrhagic conjunctivitis			
EVU 16 (possibly agent of acute infectious lymphocytosis of children)	(unusually large VP4, 49×10^3 dalton)		possibly Picornaviridae
Eyach (tick-transmitted)	Colorado tick fever	orbivirus	Reoviridae
FA: strain of murine encephalomyelitis virus			
Facey's Paddock	Simbu	bunyavirus	Bunyaviridae
Falcon inclusion body disease (h1)			Herpesviridae
Falconid herpes h1: <i>see</i> falcon inclusion body disease virus			
Farralon	Hughes	nairovirus	Bunyaviridae
FBJ (murine leukemia): <i>see</i> oncovirus			
Feline ataxia		parvovirus	Parvoviridae
Feline calici		calicivirus	Caliciviridae

Virus	Group or subgroup	Genus	Subfamily or family
Feline corona		coronavirus	Coronaviridae
Feline herpes h1: <i>see</i> cat herpes virus and infectious rhinotracheitis virus; h2: <i>see</i> cat cytomegalovirus.			
Feline infectious peritonitis		possibly coronavirus	Coronaviridae
Feline infectious rhinotracheitis (h1)			Alphaherpesvirinae
Feline leukemia: <i>see</i> oncovirus			
Feline panleukopenia		parvovirus	Parvoviridae
Feline parvo: synonym for feline panleukopenia virus			
Feline rhinotracheitis: synonym for feline infectious rhinotracheitis			
Feline sarcoma: <i>see</i> oncovirus			
Feline syncytial			Spumavirinae
Fer de Lance ⁽⁶⁰⁾		paramyxovirus	Paramyxoviridae
Fibroma (of rabbits, hares, squirrels)	myxoma	leporipoxvirus	Chordopoxvirinae
<i>Figulus sublaevis</i> (<i>Coleoptera</i>)		A	Entomopoxviridae
Fijivirus: genus of reoviridae of plants (<i>see</i> Section II)			Reoviridae
Filoviridae ⁽⁶¹⁾ : proposed family name for the group of Ebola, Marburg, etc. viruses			
Finch paramyxo		paramyxovirus	Paramyxoviridae
Fin isolate (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Flacherie (of silkworms): <i>see</i> Ina-flacherie virus			

Flanders (vertebrates and invertebrates)		probably Rhabdoviridae
Flavi: genus of Togaviridae ⁽⁶²⁾ (type species: yellow fever virus)		
Flexal		
Flock House		probably Arenaviridae
Flu: <i>see</i> Influenza		possibly Nodaviridae
Foamy virus group: official term: spumavirinae, subfamily of Retroviridae		Spumavirinae
Foot and mouth disease	type species of	Picornaviridae
Fort Morgan	aphthoviruses	Togaviridae
Fowl adeno 1 (<i>gal</i> 1) (CELO)	alphavirus	Adenoviridae
Fowl plague	aviadenovirus	Orthomyxoviridae
Fowlpox	type A	Chordopoxvirinae
Fraser Point	avipoxvirus	Bunyaviridae
Friend murine leukemia: <i>see</i> oncovirus	nairovirus	
Friend polycythemia induction: <i>see</i> oncovirus		
Friend spleen focus-forming: <i>see</i> oncovirus		
Frijoles		probably phlebovirus
Frog 3 ⁽⁶³⁾		Bunyaviridae
		Singular properties with 100×10^6 dalton DNA, circularly permuted and terminally redundant, resembling phage P22 DNA. Twenty percent of the cytidines are 5-methyl C.

Herpesviridae

Frog 4 (h2)

Fujinami sarcoma and Fujinami-associated: *see* oncovirus

G 8886, 15534

Reoviridae

GA: related to SM feline sarcoma virus

Gabek Forest

Bunyaviridae

gal 1–9 (*Gallus domesticus*, fowl)

Adenoviridae

Galleria mellonella

Parvoviridae

Gallid herpes h1: *see* infectious laryngotracheitisGallid herpes h2: *see* Marek's disease

Gamboa

Bunyaviridae

type species of group

Gammaherpesvirinae⁽⁶⁴⁾: subfamily of Herpesviridae (lymphocyte-associated)

Gan Gan

Bunyaviridae

bunyavirus

Ganjan

Bunyaviridae

possibly Maputta
Nairobi sheep diseaseGardner–Arnstein feline leukemia: *see* oncovirus

Gastroenteritis of man

possibly Parvoviridae

Gazdar murine sarcoma: *see* oncovirus

GD VII: strain of mouse encephalitis virus

Geotrupes sylvaticus (*Coleoptera*)

A

Entomopoxvirinae

Germiston	bunyamwera	bunyavirus	Bunyaviridae
Getah		alphavirus	Flaviviridae
Gibbon ape leukemia: <i>see</i> oncovirus		capripoxvirus	Chordopoxvirinae
Goat pox		C	Entomopoxvirinae
<i>Goeldichironomus holoprasimus</i> (<i>Diptera</i>)			possibly Picornaviridae
<i>Gonometa</i>			Parvoviridae
Goose parvo		parvovirus	Bunyaviridae
Gordil		phlebovirus	Gammaherpesvirinae
Gorilla herpes (h3)			
Graff: <i>see</i> Marburg virus			
Grand Arbout		uukuvirus	Bunyaviridae
Granulosis: subgroup B of Baculoviridae			
Great Island (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Green iguana (h1)			Herpesviridae
Grey lizard (h1)			Herpesviridae
Grey Lodge			probably Rhabdoviridae
Gross murine leukemia: <i>see</i> oncovirus			

Virus	Group or subgroup	Genus	Subfamily or family
Ground squirrel hepatitis ⁽⁶⁵⁾ ; see hepatitis B			
GU 71u344	probably Capim	bunyavirus	Bunyaviridae
Guajara	Capim	bunyavirus	Bunyaviridae
Guama	type species of group	bunyavirus	Bunyaviridae
Guaratuba	Guama	bunyavirus	Bunyaviridae
Guaroa	Bunyamwera	bunyavirus	Bunyaviridae
Guinea pig cytomegalo (h2)			Betaherpesvirinae
Guinea pig herpes (h1)			Herpesviridae
Guinea pig sarcoma: see oncovirus			
Gumbo Lingo	C	bunyavirus	Bunyaviridae
<i>Gyatrix hermaphroditis</i> (platyhelminth)	unclassified (70 nm particles)		
H1, 2, 3 (hamster and rat osteolytic viruses) ⁽⁶⁶⁾		parvovirus	Parvoviridae
h1 to 34 types of human adeno		mastadenovirus	Adenoviridae
H 32580	Anopheles A	bunyavirus	Bunyaviridae
Haden: see hemadsorbing enteric virus			
Hamster herpes (h1)			Betaherpesvirinae
Hamster papillomavirus		papillomavirus	Papovaviridae

Hantaan (of rodents)	(etiologial agent of Korean hemorrhagic fever with renal symptoms) related to Prospect Hill virus	possibly new genus	Bunyaviridae
HAPV (hamster polyomavirus)		polyomavirus	Papovaviridae
Hare fibroma		leporivirus	Chordopoxvirinae
Harris strain: <i>see</i> oncovirus			
Hartebeest herpes (h2)			
Hart Park (vertebrates and invertebrates)			Gammaherpesvirinae probably Rhabdoviridae
Harvey sarcoma (murine): <i>see</i> oncovirus			
Hazara ⁽⁶⁷⁾		nairovirus	Bunyaviridae
HBI: a variant of MC 29			
HD ⁽⁶⁸⁾	human (single isolate)	polyoma	Papovaviridae
HEL-12: <i>see</i> oncovirus			
<i>Heliothis armigeras</i>		cotiavirus	Entomopoxvirinae
Hemadsorbing enteric virus (bovine), (HADEN)		parvovirus	Parvoviridae
Hemadsorption virus	types 1 and 2 parainfluenza	paramyxovirus	Paramyxoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Hemagglutinating encephalomyelitis (of pigs) ⁽⁶⁹⁾		coronavirus	Coronaviridae
Hemorrhagic conjunctivitis: see acute hemorrhagic conjunctivitis			
Hemorrhagic encephalitis of Japan: see Sendaivirus			
Hemorrhagic encephalopathy (rats)		parvovirus	Parvoviridae
Hemorrhagic fever		arenavirus	Arenaviridae
Hemorrhagic septicemia (salmon): possibly identical to Egtvedvirus			probably Rhabdoviridae
Hepatitis A (old term, infectious hepatitis) ^(70,71)	human (very restricted host range)	enterovirus	Picornaviridae

Hepatitis B (old term, serum hepatitis)^(71,72): This virus was regarded as a virus infecting only man until recently when very similar and probably related viruses were discovered in woodchucks, Pekin ducks, and ground squirrels. The virus occurs in the blood as the "Dane" particle of 42 nm diameter, the core of 22 nm diameter, and the DNA (molecular weight of about 2×10^6) consisting of a double-stranded circular molecule, one strand of 3200 nucleotides, and the other, the plus strand being incomplete. The DNA polymerase of the virion fills the gap bringing the molecular weight to 2.1×10^6 . Replication involves RNA-DNA hybrid forms, thus resembling Retroviridae. Besides this protein, there is the surface protein of about 22×10^3 daltons, the core protein of about 18×10^3 daltons, and possibly another antigenic component derived from the others by aggregation. The virus is readily transmitted by various routes, extremely widespread, not always markedly pathogenic, and frequently latent and persistent. It represents now one of the main epidemiological problems of man.

Hepatosplenitis of owl	strigid	herpesvirus h1	Herpesviridae
Herpes aotus	aotine	herpesvirus h2	Gammaherpesvirinae
Herpes aotus (owl monkey)	aotine	herpesvirus h3	Betaherpesvirinae

Herpes ateles strain 73, 810 (spider monkey) ⁽⁷³⁾ (h2, h3)	rhadinovirus	Gammaherpesvirinae
Herpes B (h2)	simplexvirus	Alphaherpesvirinae
Herpes cucinuli (cottontail rabbit) (h2)		Herpesviridae
Herpes cyclopsis (monkey) (h3)		Herpesviridae
Herpes M (h1)		Alphaherpesvirinae
Herpes pan (chimpanzee) (h1)	lymphocytovirus	Gammaherpesvirinae
Herpes papio (monkey) (h12)	simplexvirus	Gammaherpesvirinae
Herpes platyrrhinae (monkey) (h2)		Gammaherpesvirinae
Herpes pottos (kinkajou) (h2)		Herpesviridae
Herpes saimiri (monkey) ⁽⁷³⁾ (h2)	rhadinovirus	Gammaherpesvirinae
Herpes salmonis (salmon) (h1)		Herpesviridae
Herpes sanguinus (marmoset) (h1)	simplexvirus	Herpesviridae
Herpes scophthalmus (turbot) (h1)		Herpesviridae
Herpes simplex (human) types 1, 2 (h1, h2)	simplexvirus	Alphaherpesvirinae
Herpes sylvagus (cottontail rabbit) (h1)		Gammaherpesvirinae
Herpes T (monkey) (h1)		Alphaherpesvirinae
Herpes tamarinus (monkey) (h1)		Alphaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
<p>HERPESVIRIDAE⁽⁷⁴⁾: More than 80 herpes viruses are known that were isolated from many different hosts. The virion of 120–200 nm (density in CsCl about 1.25 g/cm³) consists of a nucleocapsid core, an icosahedral shell (105 nm diameter) of 162 capsomers, the tegument, and the envelope with surface projections (Figure 6). The molecular weight of the linear double-stranded DNA ranges from 80–150 × 10⁶ for different genera, and that of the more than 20 proteins from 12–200 × 10³. Several proteins are phosphorylated. The envelope contains lipid and glycoproteins. Three subfamilies have been established differing in biological properties. The DNA of ALPHAHERPESVIRINAE is usually less than 100 × 10⁶ daltons. These viruses have wide host ranges, a short reproductive cycle, rapid cytopathology, and frequently cause latent infection of ganglia.</p>			
<p>The BETAHERPESVIRINAE have DNAs near 150 × 10⁶ daltons. They have a narrow host range, a long reproductive cycle, slowly progressing cytopathology frequently causing cell enlargement (cytomegaly), and late infections can become established in many different tissues.</p>			
<p>The GAMMAHERPESVIRINAE (DNA molecular weights usually near 100 × 10⁶) have narrow <i>in vivo</i> host ranges. They infect specifically either B or T lymphocytes, either in lytic or in persistent manner. Thus, the reproductive cycle varies in length and ensuing cytopathology, with frequent latent infections.</p>			
<p>Proposed genera for the ALPHAHERPESVIRINAE are SIMPLEXVIRUS (herpes simplex-like viruses); species human herpesvirus 1 and 2, bovine herpesvirus 2, cercopithecine herpesvirus 1 and 2 with common names herpes simplex 1, 2, bovine mammillitis, SA8 and B virus; POKILOVIRUS (pseudorabies-like viruses): species suid herpes virus 1 or pseudorabies, and equid herpesvirus 1 or equine rhinopneumonitis virus; and VARICELLAVIRUS (varicella–Zoster–like viruses): species human herpesvirus 3 or varicella–Zoster virus. The proposed BETAHERPESVIRINAE genera are CYTOMEGALOVIRUS: human herpesvirus 5 or cytomegalovirus, and MUROMEGALOVIRUS: murid herpesvirus 5 or cytomegalovirus. For the GAMMAHERPESVIRINAE, proposed genera are LYMPHOCRYPTOVIRUS (Epstein–Barr–like viruses): human herpesvirus 4 (or Epstein–Barr virus), cercopithecine herpes virus 12 or baboon herpesvirus, pongine herpesvirus 1 or chimpanzee herpes virus; THETALYMPHOCRYPTOVIRUS: Marek's disease virus and melleagrid herpesvirus 1 (turkey herpes virus); and RHADINOVIRUS (saimiri–ateles-like herpes viruses): ateline herpesvirus 2 and 3 or herpesvirus ateles, strains 810 and 73, and saimiriine herpesvirus 2 or herpesvirus saimiri (Figure 6).</p>			

Heteronychos arator: see blackbeetle virus

Hog cholera (identical to swine fever)		pestivirus	Togaviridae
Housefly ⁽⁷⁵⁾	similarities to (10 ds RNAs) and differences from others	orthoreovirus	Reoviridae
Hsuing-Kaplow (h1)		parvovirus	Herpesviridae
HT			Parvoviridae
HTLV: see Human T-cell leukemia			
Huacho (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Hughes	type species of group	nairovirus	Bunyaviridae
Human 72: see hepatitis A virus			
Human adenoviruses		adenovirus	Adenoviridae
Human corona (identical with enteric virus, respiratory virus)		coronavirus	Coronaviridae
Human coxsackie	A1-22, A24, B1-B6	enterovirus	Picornaviridae
Human cytomegalo (h5)	type species	cytomegalovirus	Betaherpesvirinae
Human echo	type 1-9, 11-27, 29-34 (9 = entero A23)	enterovirus	Picornaviridae
Human enteric		coronavirus	Coronaviridae
Human entero	type 68-71	enterovirus	Picornaviridae
Human foamy			Spumavirinae
Human herpes (simplex) type 1		simplexvirus	Alphaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
Human herpes (simplex) type 2		simplexvirus	Alphaherpesvirinae
Human herpes type 3 (h3) (varicella-zoster virus)		varicellavirus	Alphaherpesvirinae
Human herpes type 4 (h4) (Epstein-Barr virus)		lymphocryptovirus	Gammaherpesvirinae
Human herpes type 5 (h5)		cytomegalovirus	Betaherpesvirinae
Human infantile enteritis (or gastroenteritis)		rotavirus	Reoviridae
Human papilloma (wart)	type 1a	papillomavirus	Papovaviridae
Human respiratory		coronavirus	Coronaviridae
Human rhino	1A-type species, 2-113	rhinovirus	Picornaviridae
Human rota: see infantile (gastro)enteritis			
Human T-cell leukemia ⁽⁷⁶⁾ (HTLV I, II)		oncovirus, possibly type D	Retroviridae
HTLV III: possibly responsible for AIDS (acquired immune deficiency syndrome); related to simian virus		possibly visnavirus	Retroviridae
<i>Hydra vulgaris</i> (coelenterate)		adenovirus	Adenoviridae
<i>Hyposoter exiguae</i>	(nonoccluded) (D) (two envelopes)		
HZ-1	(nonoccluded) (C)		
Ib Ar 22619, 33853	epizootic disease of deer subgroup	orbivirus	Reoviridae

Ibaraki (cattle)	epizootic disease of deer	orbivirus	Reoviridae
IBH 11306, 13019 (<i>culicoides</i> -transmitted)	Palyam	orbivirus	Reoviridae
IBV: <i>see</i> avian infectious bronchitis virus			
Ictalurid h1: <i>see</i> channel catfish herpes			
Icoaraci		phlebovirus	Bunyaviridae
Icosahedral cytoplasmic DNA viruses (ICDV): obsolete term for viruses now classified as Iridoviridae			
Ife		orbivirus	Reoviridae
<i>Ignotosoma sabellarium</i> (ciliate) unclassified (75 × 50 nm particles)			
Iguanid herpes: <i>see</i> Green Iguana herpes h1			
Ilesha	Bunyamwera	bunyavirus	Bunyaviridae
Ilhéus (mosquito-borne)		flavivirus	Togaviridae
IMC-Hz-1-NOV – <i>Heliothis zea</i> ⁽⁷⁷⁾	nuclear polyhedrosis (A)		Baculoviridae
IM: possibly responsible for multiple sclerosis			Parvoviridae
<i>Inachis io</i>	type 2	cyovirus	Reoviridae
Ina-Flacherie		probably dependovirus	Parvoviridae
Inclusion body rhinitis (swine) (h2)			Betaherpesvirinae
Indian cobra herpes (h1)			Herpesviridae
Indiana: strain of vesicular stomatitis virus			

Virus	Group or subgroup	Genus	Subfamily or family
Infantile (gastro)enteritis (many animals, including humans)		rotavirus	Reoviridae
Infectious anemia (horse): <i>see</i> equine infectious anemia			
Infectious arteritis (horse): <i>see</i> equine arteritis			
Infectious bovine keratoconjunctivitis			Herpesviridae
Infectious bovine rhinotracheitis (h1)		simplexvirus	Alphaherpesvirinae
Infectious bronchitis (chickens), (IBV)		coronavirus	Coronaviridae
Infectious bursal disease (chicken)		possibly Birnavirus group	
Infectious canine hepatitis		mastadenovirus	Adenoviridae
Infectious canine laryngotracheitis		mastadenovirus	Adenoviridae
Infectious hematopoietic necrosis			probably Rhabdoviridae
Infectious laryngotracheitis (chicken) (h1)			Alphaherpesvirinae
Infectious pancreatic necrosis (fish): type species of proposed birnavirus group			
Infectious pustular vulvovaginitis (cattle) (h1)			
Infectious rhinotracheitis (cat) (h1)			Alphaherpesvirinae
Influenza ⁽⁷⁸⁾ (Figure 7)		type A, B, C	Orthomyxoviridae

Ingwavuma	Simbu	bunyavirus	Bunyaviridae
Inini	Simbu	bunyavirus	Bunyaviridae
Inkoo	California	bunyavirus	Bunyaviridae
Insect viruses: <i>see</i> Baculoviridae, Iridoviridae, Parvoviridae, Poxviridae, etc.			
Iridescent viruses, type 1-20: different insect hosts		iridovirus	Iridoviridae
<p>IRIDOVIRIDAE⁽⁷⁹⁾: A rather large heterogeneous group of large icosahedral particles (130-300 nm diameter, 1300-4500 S, density 1.16-1.35 g/cm³). They contain one or two molecules of double-stranded linear DNA of 100-250 × 10⁶ daltons. The small and large iridescent insect viruses, genus IRIDOVIRUS and CHLORIRIDOVIRUS, respectively, are more obviously interrelated than the frog viruses (genus RANAVIRUS) and the not yet classified African swine fever and lymphocystic disease virus groups. The unenveloped iridescent viruses contain, besides the DNA, 15-20 proteins (about 75%) and lipid (about 6%). The chloriridoviruses have envelopes derived from the plasma membrane, thus represent the larger, ether-sensitive lipid-rich iridoviridae. They have narrow host ranges. These and the iridoviruses (type species Tipula iridescent virus) reach very high concentrations in their insect hosts, thus turning the moribund larvae iridescent. African swine fever replicates in and is transmitted by ticks (Figure 8).</p>			
Irituia	Changuinola	orbivirus	Reoviridae
Isfahan: strain of vesicular stomatitis virus			
Israel turkey meningitis		flavivirus	Togaviridae
Ita		orbivirus	Reoviridae
Itaituba		phlebovirus	Bunyaviridae
Itaporanga		phlebovirus	Bunyaviridae
Itaqui	C	bunyavirus	Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Itimirim	Guama	bunyavirus	Bunyaviridae
J (mouse)		paramyxovirus	Paramyxoviridae
Jacareacanga	Corriparta	orbivirus	Reoviridae
Jamestown Canyon	California	bunyavirus	Bunyaviridae
Japanant		orbivirus	Reoviridae
Japanese encephalitis ⁽⁸⁰⁾		flavivirus	Togaviridae
JC [human] ⁽⁸¹⁾ (agent responsible for progressive multifocal leukoencephalopathy)		polyomavirus	Papovaviridae
Jerry Slough	California	bunyavirus	Bunyaviridae
JHM [murine] ⁽⁸²⁾		coronavirus	Coronaviridae
Joagsiekt: see sheep pulmonary adenomatosis virus			
Joinjakaka (invertebrate hosts)			probably Rhabdoviridae
Juan Diaz	Capim	bunyavirus	Bunyaviridae
Jugra (mosquito-transmitted)		flavivirus	Togaviridae
Junco		avipoxvirus	Chordopoxvirinae
Junin (human pathogen)	Takaribe complex	arenavirus	Arenaviridae
Junonia		densovirus	Parvoviridae
Jurona		bunyavirus	Bunyaviridae

Jutiapa		flavivirus	Togaviridae
K (mouse)		polyomavirus	Papovaviridae
Kadam (mosquito-transmitted)		flavivirus	Togaviridae
Kaeng Khoi		probably bunyavirus	Bunyaviridae
Kaikalur	Simbu	bunyavirus	Bunyaviridae
Kairi	Bunyamwera	bunyavirus	Bunyaviridae
Kaisodi	type species of possible group	bunyavirus	Bunyaviridae
Kamese (invertebrate hosts)			probably Rhabdoviridae
Kao Shuan	Dera Ghazi Khan	nairovirus	Bunyaviridae
Karimabad	Sandfly fever	phlebovirus	Bunyaviridae
Karshi (tick-borne)		flavivirus	Togaviridae
Kasba	Palyam	orbivirus	Reoviridae
Kawino (host, mosquito <i>Mansonia uniformis</i> ⁽⁸³⁾)		probably enterovirus (though no poly (A))	Picornaviridae
Kedongon (tick-borne)		flavivirus	Togaviridae
Kelp fly ⁽⁸⁴⁾	unclassified (29 nm particles, 158 S, RNA 3.5×10^6 , proteins 73 and 29 $\times 10^3$ daltons)		
Kemerovo	type species (20 serotypes)	orbivirus	Reoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Kenai (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Kern Canyon (of bats)			probably Rhabdoviridae
Ketapang	possibly Bakau	bunyavirus	Bunyaviridae
Keuraliba (vertebrate hosts)			probably Rhabdoviridae
Keystone	California	bunyavirus	Bunyaviridae
Khasan		possibly bunyavirus	Bunyaviridae
Kilham (rat)	type species	parvovirus	Parvoviridae
Kimberley (invertebrate hosts)			probably Rhabdoviridae
Kinkajou (h.1)			Herpesviridae
Kirk (rat)		parvovirus	Parvoviridae
Kirsten (murine): <i>see</i> oncovirus			
Kissling			Picornaviridae
Klamath (mouse)		cardiovirus	probably Rhabdoviridae
Kokobera (mosquito-borne)		flavivirus	Togaviridae
Koongol	type species of group	bunyavirus	Bunyaviridae

Kotankan (transmitted by midges)	lyssavirus	Rhabdoviridae
Koutango	flavivirus	Togaviridae
Kowanyama	bunyavirus	Bunyaviridae
Kunjin (mosquito-borne) ⁽⁸⁵⁾	flavivirus	Togaviridae
Kununurra (invertebrates)		probably Rhabdoviridae
Kuru		proposed term: Prion
Kwatta (invertebrates)		probably Rhabdoviridae
Kyasanur Forest disease (tick-borne)	flavivirus	Togaviridae
Kyzylagach	alphavirus	Togaviridae
Lacertid: <i>see</i> Green Lizard herpes		
La Crosse ⁽⁸⁶⁾	bunyavirus	Bunyaviridae
Lactic dehydrogenase (mice)	possibly pestivirus	Togaviridae
Lagos bat	lyssavirus	Rhabdoviridae
Lake Victoria (cormorant)		Herpesviridae
Langat (tick-borne)	flavivirus	Togaviridae
Lanjan	possibly uukuvirus	Bunyaviridae
Lapine	parvovirus	Parvoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Laryngotracheitis (canine)			Adenoviridae
<i>Laspeyresia pomonella</i>		cotivirus	Entomopoxvirinae
Lassa (human pathogen)		arenavirus	Arenaviridae
Latino	Tacaribe complex	arenavirus	Arenaviridae
LAV (leukoadenopathy virus): possibly identical with HTLV III			
LCM group: <i>see</i> lymphocytic choriomeningitis			
Leafhopper A		cypovirus	Reoviridae
Lebombo (mosquito-borne), (infects man)		orbivirus	Reoviridae
Lednice	Turlock	bunyavirus	Bunyaviridae
Lentivirinae: ⁽⁸⁷⁾ (so-called slow viruses) subfamily of Retroviridae			
Leporid herpes h1: <i>see</i> cottontail herpes virus, herpes sylvilagus			
Leporid herpes h2: <i>see</i> herpes cuniculi			
Leporipox (rabbit myxoma): genus of Chordopoxvirinae			
Leukoviruses: obsolete term for oncovirinae			
Lipovnik (tick-borne)	Kemorovo	orbivirus	Reoviridae
Liverpool vervet monkey (h6)			Alphaherpesvirinae
LK (horse)			Herpesviridae
Llano seco		orbivirus	Reoviridae

LNV _G (<i>Lymantria</i> spp.)	(lower molecular weights, but slight serological relationship with black beetle virus)	probably Nodaviridae
Lokern	Bunyamwera	Bunyaviridae
Lone Star		Bunyaviridae
Loriline herpes h1: see Kinkajou virus, herpes pottos		
Louping Ill (tick-borne)		Togaviridae
L-S (rat)		Parvoviridae
LT 1-4 (newt)		Iridoviridae
LU III		Parvoviridae
Lucké (frog adenocarcinoma) (h1)		Herpesviridae
Lukumi	Anopheles A	Bunyaviridae
Lumbo	probably California	Bunyaviridae
Lumpy skin disease (Neethling)		Chordopoxvirinae
<i>Lymantria dispar</i>	nuclear polyhedrosis virus (A) (licensed for use as insecticide)	Baculoviridae
Lymphocryto: genus of Gammaherpesviridae (type species: Epstein-Barr virus)		

Virus	Group or subgroup	Genus	Subfamily or family
Lymphocystis disease (of fishes): possible genus of Iridoviridae (Figure 9); 200 nm diameter icosahedra			
Lymphocytic choriomeningitis ⁽⁸⁸⁾	type species		Arenaviridae
Lymphoproliferative group: old term for rhadino and lymphocytovirus genera of Gammaherpesvirinae			
Lymphotropic polyoma (LPV) of green monkey (and man?)		papovavirus	Papovaviridae
Lyssa ⁽⁸⁹⁾ : genus of Rhabdoviridae (type species: rabiesvirus)			
M9		orbivirus	Reoviridae
M25	type 4	parainfluenza	Paramyxoviridae
MAC-1 (<i>Macaca arctoides</i> and <i>mulata</i>) leukemia: see oncovirus			
Machupo (human pathogen)	Tacaribe complex	arenavirus	Arenaviridae
<i>Macropipius depurator</i> (crab) unclassified (55 and 150–300 nm particles)			
Macropodid herpes h.1: see Parma wallaby herpes virus			
Madrid	C	bunyavirus	Bunyaviridae
Maedi (so-called slow virus)			Lentivirinae
Magwari	Bunyamwera	bunyavirus	Bunyaviridae
Mahogany Hammock	Guama	bunyavirus	Bunyaviridae
Main Drain	Bunyamwera	bunyavirus	Bunyaviridae

Malignant Catarrhal fever of wildebeest (also cattle, deer, etc. in Africa) (h1)		probably Gammaherpesvirinae
Malignant Catarrhal fever of wildebeest (in America)	cytomegalovirus	Betaherpesvirinae
Mammalian adenovirus: <i>see mas</i>		
Mammalian C type or type C: <i>see oncovirus</i>		
Mammary tumor: <i>see mouse mammary tumor virus</i>		
Manawa	uukuvirus	Bunyaviridae
Manzanilla	bunyavirus	Bunyaviridae
Mapputta	type species of group	possibly Bunyaviridae
Maprik	Maputta	possibly Bunyaviridae
Marburg (monkey, man)	unclassified (variably long, 130–2000, average 665 × 80 nm rods), lethal in man	possibly Rhabdoviridae proposed: Filoviridae
Marco (vertebrate hosts)		probably Rhabdoviridae
Marek's disease (chicken) ⁽⁹⁰⁾ (h2)	thetalymphocryptovirus	Gammaherpesvirinae
Marituba	bunyavirus	Bunyaviridae
Marmoset cytomegalo	cytomegalovirus	Betaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
Mason-Pfizer (monkey)	type D	oncovirus	Oncovirinae
Mastadenovirus ⁽⁹¹⁾ : genus of mammalian Adenoviridae			
Matruh	Tete	bunyavirus	Bunyaviridae
Maus-Elberfeld (ME): serologically identical with encephalomyocarditis virus			
Mayaro		alphavirus	Togaviridae
MC 29 (avian myelocytomatosis): see oncovirus			
MCF (murine): see oncoviruses			
Measles	type species (RNA of 4.5 × 10 ⁶ daltons)	morbillivirus	Paramyxoviridae
Medical Lake Macaque herpes (h9)			
mel 1, 2 (<i>Meleagris gallopapo</i> , turkey)			
<i>Melanoplus sanguinipes</i> (<i>Orthoptera</i>)		aviadenovirus	Adenoviridae
Melao	California	B	Entomopoxvirinae
Meleagrid h1: see turkey herpes virus h1			
<i>Melolontha melolontha</i> (<i>Coleoptera</i>)	type species	A	Entomopoxvirinae
Mengo ⁽⁹²⁾ (rodents): synonym for encephalomyocarditis			

Mermet	Simbu	bunyavirus	Bunyaviridae
MH2: <i>see</i> avian oncovirus (member of the MC29 group)			
Middleburg		alphavirus	Togaviridae
Milker's node		parapoxvirus	Chordopoxvirinae
Minatitlan	type species of group	bunyavirus	Bunyaviridae
Mink (cytopathic or cell focus-inducing or forming, MCF) ⁽⁹³⁾ : <i>see</i> spleen focus-inducing			
Mink enteritis		parvovirus	Parvoviridae
Minute virus of mice (MVM) ⁽⁹⁴⁾	(two structural and two nonstructural proteins)	parvovirus	Parvoviridae
Mirim	Guama	bunyavirus	Bunyaviridae
Mitchell River (<i>culicoides</i>)		orbivirus	Reoviridae
MM C-1 (macaque) leukosis: <i>see</i> oncovirus			
MM (hamster): possibly identical to (murine) encephalomyocarditis			
MM strain of BK virus involved in human malignancies, though slightly smaller			
MNV-1 (<i>Macaca nemestrina</i>): <i>see</i> oncovirus			
Modoc		flavivirus	Togaviridae
Moju	Guama	bunyavirus	Bunyaviridae
Mokola (shrew)		lyssavirus	Rhabdoviridae

Virus	Group or subgroup	Genus	Subfamily or family
<i>Molluscum contagiosum</i>		orthopoxvirus	Chordopoxvirinae
Moloney (murine): <i>see</i> oncoviruses			
Monkey cytomegalo (h8)		orthopox	Betaherpesvirinae
Monkey pox		orbivirus	Chordopoxvirinae
Mono Lake	Kemorovo	flavivirus	Reoviridae
Montana myotis leukoencephalitis			Togaviridae
Morbilli ⁽⁹⁵⁾ : genus of Paramyxoviridae (type species: measles virus)			
Moriche	Capim	bunyavirus	Bunyaviridae
Mosquito iridescent		chloriridovirus	Iridoviridae
Mossuril (vertebrates and invertebrates)			probably Rhabdoviridae
Mount Elgon bat (mosquito-transmitted)			probably Rhabdoviridae
Mouse (<i>see also</i> murine) cytomegalo (h1)		muromegalovirus	Betaherpesvirinae
Mouse encephalomyelitis		possibly cardiovirus	Picornaviridae
Mouse hepatitis (MHV) ⁽⁹⁶⁾			Coronaviridae
Mouse mammary tumor ⁽⁹⁷⁾ (Bittner virus)	type B	oncovirus	Oncovirinae
Mouse polio		enterovirus	Picornaviridae

Mouse polyoma		Papovaviridae
Mouse sarcoma and leukemia: <i>see</i> oncovirus		
Mouse thymic herpes (h3)		Herpesviridae
Mozambique		Arenaviridae
MP 359	Palyam	Reoviridae
M'Poko	Turlock	Bunyaviridae
MIRM 10434	Palyam	Bunyaviridae
Mucambo		Togaviridae
Mucosal disease: <i>see</i> bovine viral diarrhea		
Mudginbarry	Wallal	Reoviridae
Mumps ⁽⁹⁸⁾		Paramyxoviridae
Murid: <i>see</i> murine, mouse		
Murine encephalomyocarditis: <i>see</i> encephalomyocarditis virus (EMC)		
Murine hepatitis: <i>see</i> mouse hepatitis virus		
Murine herpes 1: <i>see</i> mouse cytomegalovirus		
Murine herpes 2: <i>see</i> rat cytomegalovirus		
Murine herpes 3: <i>see</i> mouse thymic virus.		
Murine leukemia and sarcoma: <i>see</i> oncovirus		
Murine mink cell focus-inducing: <i>see</i> spleen focus-inducing		

Virus	Group or subgroup	Genus	Subfamily or family
Murine viruses: <i>see also</i> mouse viruses			
Murocytomegalo: genus of Betaherpesviridae (type species: murine cytomegalovirus)			
Murray Valley encephalitis (mosquito-borne)		flavivirus	Togaviridae
Murutucu	C	bunyavirus	Bunyaviridae
Murweh: related to Barmah Forest virus			Togaviridae
<i>mus</i> 1 (<i>Mus musculus</i> , mouse): <i>see</i> minute virus of mice		mastadenovirus	Adenoviridae
MVM: <i>see</i> minute virus of mice			
Myelocytomatosis: <i>see</i> MC 29			
Mykenes (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Myxoma		leporipox	Chordopoxvirinae
<i>Naegleria gruberi</i> (amoeba)	unclassified (100 nm particles)		
Nairobi sheep disease	type species of group	nairovirus	Bunyaviridae
Nairovirus ⁽⁹⁹⁾ : genus of Bunyaviridae (type species: Nairobi sheep disease virus)			
Nariva (murine)		paramyxovirus	Paramyxoviridae
Navarro (vertebrate hosts)			probably Rhabdoviridae
N2B-10-1: <i>see</i> oncovirus			

Ndumu	alphavirus	Togaviridae
NE (agent of <i>Nephropathia epidemica</i> of rodents)		possibly Bunyaviridae
Nebraska calf diarrhoea	rotavirus	Rhabdoviridae
Negishi	flavivirus	Togaviridae
Nelson Bay (avian)	orthoreovirus	Reoviridae
Neonatal calf diarrhoea	coronavirus	Coronaviridae
Nepuyo	bunyavirus	Bunyaviridae
Newcastle disease	paramyxovirus	Paramyxoviridae
New Jersey: strain of vesicular stomatitis virus		
New Minto (invertebrate hosts)		probably Rhabdoviridae
Newt LT 1-4, T 6-20	ranavirus	Iridoviridae
Nique	phlebovirus	Bunyaviridae
Nodamura ⁽¹⁰⁰⁾	nodavirus	Nodaviridae
<p>NODAVIRIDAE⁽¹⁰¹⁾: Isometric 29-nm-diameter particles (135 S, density 1.34 g/cm³, stable to pH 3) consisting of two plus-strand RNAs, lacking poly(A), of about 1.15 and 0.46 × 10⁶ daltons, both required for infectivity, and an intracellular RNA of 0.15 × 10⁶ daltons, derived from the large RNA. The 104 × 10³ dalton gene product is probably the RNA polymerase, that of 46 × 10³ daltons the coat protein precursor. Wide host range among insects. Transmissible to suckling mice by <i>Aedes aegypti</i>. Most are serologically interrelated. Members: Nodamura, black beetle, Arkansas bee, Boolarra, endogenous <i>Drosophila</i> line, and Flockhouse viruses.</p>		
Nola	bunyavirus	Bunyaviridae
	Simbu	

Virus	Group or subgroup	Genus	Subfamily or family
Nonoccluded enveloped nuclear insect viruses: subgroup C and D of Baculoviridae			
Northway	bunyamwera	bunyavirus	Bunyaviridae
Norwalk		calicivirus	Caliciviridae
Norwalk agent: <i>see</i> gastroenteritis of man			
Ntaya (mosquito-borne)		flavivirus	Togaviridae
Nuclear polyhedrosis: subgroup A of Baculoviridae			
Nudaurelia β group ⁽¹⁰²⁾ : isometric 35-nm-diameter particles (200 S, density in CsCl 1.29 g/cm ³ , stable at pH 3) consisting of one molecule of plus-strand RNA of 1.8×10^6 daltons. Most members are serologically interrelated. Hosts are <i>Lepidoptera</i> . The type species was isolated from <i>Nudaurelia cytherea capensis</i> , others from <i>Antheraea eucalypti</i> , <i>Darna trima</i> , <i>Thosea asigna</i> , <i>Philosamia ricini</i> , and <i>Trichoplusia ni</i> .			
Nugget (tick-transmitted)	Kemorovo	orbivirus	Reoviridae
Nyabira	Palyam	orbivirus	Reoviridae
<i>Nymphalidae</i> spp.		densovirus	Parvoviridae
NZB-10-1 (murine): <i>see</i> oncoviruses			
O-agent (sheep, cattle)		rotavirus	Reoviridae
Obodhiang (mosquito-transmitted)		lyssavirus	Rhabdoviridae
OC 43			Coronaviridae
Oceanside		uukuvirus	Bunyaviridae
<i>Octopus vulgaris</i> disease			possibly Iridoviridae

Oita 293
probably
Rhabdoviridae

OK 10 (avian acute leukemia): *see* oncovirus (member of MC 29 group)

Okhotskiy (tick-transmitted) Kemorovo orbivirus

Olifantsvlei type species of group bunyavirus

Omsk hemorrhagic fever flavivirus

Oncorynchus masau (salmon) herpes (h12) Herpesviridae

Oncovirinae (RNA tumor subfamily of
viruses)⁽¹⁰³⁾ Retroviridae (*see*
oncovirus)

ONCOVIRUS: On morphological grounds, this genus has been classified as consisting of four subgenera, termed A-type, B-type, C-type, and D-type. The A-TYPE particles, characterized by a toroidal nucleoid, may be developmental stages leading to B-type or D-type virions, or they may be abortive. Thus, they have lost their class status. The B-TYPE virions have a spherical nucleoid that is eccentrically located and they bud as spherical particles with long spikes. The (Bittner) mouse mammary tumor virus and its strains or close relatives seem to be the only representatives of that subgenus. The D-TYPE particles resemble the B-type in buoyant density (1.21 g/cm³ in sucrose) and in budding of complete short surface knobs instead of long spikes. This type also has one well-characterized representative, the Mason-Pfizer monkey virus, isolated from a rhesus monkey's breast carcinoma, but the recently discovered human HTLV viruses may also be D-type viruses.

The C-TYPE particles form only upon budding as crescents, but are virions with centrally located nucleoids and short spikes. Their buoyant density is lower (1.16 g/cm³ in sucrose). They are, in contrast to the other types, extremely numerous, and have resisted all attempts at consistent and generally acceptable classification. The classical "RNA tumor viruses" were given the names either of the person that first described them, or of the host-victim and the disease that seemed to characterize them. But it has become evident that (1) one investigator can discover more than one virus, (2) most viruses can infect more than one species, and (3) the same virus can cause different malignancies in the same or different species, depending on the circumstances. Thus, letter-number combinations are now generally

used in naming new C-type viruses or new variants of the classical ones. Only a classification of the C-type viruses into avian, murine, feline, etc. has become generally accepted, although instances of crossing over between groups are also recognized.

What has complicated the classification of the oncoviruses greatly are the following two facts: Almost all C-type viruses, and possibly all the murine ones, are defective, lacking either the transforming, i.e., oncogenic gene (*onc*) (transformation-defective, td) or the ability to replicate (replication-defective, rd) by lacking part or all of the *env*, *gag*, or *pol* genes (*envelope* proteins, group-specific antigen = core protein, or *polymerase*). In all these instances, only the association with, or presence in the cell of, another oncovirus of complementary deficiency can result in replication and transformation, i.e., oncogenicity. Further, homologues of the transforming gene of the RNA tumor viruses, or at least similar nucleotide sequences, occur in the host genomes, and the same is true for other oncovirus genes and even nonhost animal genomes. Thus, the possibility of the intracellular formation of fully competent viruses and/or oncogenic capability has been assumed to be a likely occurrence.

The preferred classification within each group of C-type viruses is based on their ability to interfere with infection of closely related viruses. Host range is an additional classifying criterion. Both, but particularly interference, represent expression of the nature of their envelope proteins which must interact with specific host cell receptor site structures. However, other classifications have also been proposed.

The AVIAN C-TYPE viruses were the first to be discovered and studied, largely because several strains of Rous SARCOMA virus are nondefective. Five subgroups (A-E) have been identified, each comprising both sarcoma viruses and transformation-defective LEUKOSIS VIRUSES. Subgroup A: Rous sarcoma (RSV)-29, Schmidt-Ruppin RSV1, Prague RSV-A, and Engelbreth-Holm RSV; leukemia virus Rous-associated (RAV)^{1, 3, 4, and 5}, Fujinami-associated (FAV), and myeloblastosis-associated viruses (MAV), resistance-inducing factor (RIF), and RPL-12. Subgroup B: Schmidt-Ruppin RSV2, Prague RSV-B, and Harris RSV; leukemia viruses RAV-2, RAV-6, MAV-2, and erythroblastosis virus 4. Subgroup C: Prague RSV-C, B77 (Bratislava) and Mill Hill 2; leukemia viruses RAV-7 and RAV-49. Subgroup D: Schmidt-Ruppin RSV-D and Carr-Zilber RSV-D; leukemia RAV-50 and Carr-Zilber-associated virus. Subgroup E: Schmidt-Ruppin RSV-E, Prague RSV-E, and leukemia viruses RAV-0, RAV-60, and induced leukemia viruses. Not yet classified are the Bryan high and standard titer strains of RSV and the Fujinami sarcoma virus; among leukemia viruses, avian myeloblastosis, myelocytoma MC29, and many others.

The leukemia viruses, also called leukosis-leukemia viruses, that lack *onc* genes, can be symptomless, but they can also, depending on conditions and hosts, cause occasionally or regularly severe diseases of the lymphatic system, so-called nonsolid tumors. They become most evident as "helpers" of the replication-defective sarcoma viruses.

The most studied MAMMALIAN C-type viruses are those of rodents, mostly mice and cats. All murine sarcoma and leukemia viruses appear to be defective, and thus always represent mixtures or recombinants. For instance, the Rauscher virus represents a complex of three replication-competent and one defective virus. The latter is responsible for severe erythroblastosis, and is called spleen focus-forming virus (SFFV). Many rodent oncoviruses have been grouped according to their host range in four classes as follows. Among the *ecotropic* viruses, i.e., those characterized by infecting only rodent cells, are the Friend, Rauscher, Moloney, AKR-L, Cas-Br-M, and AKv virus complexes; *amphotropic*, i.e., infecting also many nonrodent cells, are 1504A and 4070A; *xenotropic*, i.e., unable to infect mouse cells, are Balb/2 and Balb-10-1, ATS-124, N2B-10-1, and Cas Eno 1-X. MCF, mink cell focus-forming viruses, represent a fourth group also termed *coxenotropic* or *dualtropic*.

The feline sarcoma viruses are generally in the same manner defective and helper-dependent as the murine. The replication-competent feline leukemia viruses can act as helper also of murine sarcoma virus in mouse cells. Three subgroups (A, B, and C) have been defined, again on the basis of interference and host range. Most isolates are, however, mixtures of subgroup A and B viruses. For human oncoviruses see HTLV.

Many viruses listed in the catalogue have not yet been classified, many others fail to be listed, and many more arise currently or become experimentally produced by recombination and mutation. Structural and functional aspects of the oncoviruses are given under Retroviridae.

O'Nyong-nyong	alphavirus	Togaviridae
<i>Operophtera brumata</i> (<i>Lepidoptera</i>)	B	Entomopoxvirinae
Orangutan herpes (h2)		Gammapherpesvirinae
Orbi ⁽¹⁰⁴⁾ : genus of Reoviridae (type species: blue tongue virus)		Reoviridae
Oregon sockeye disease (salmon)	vesiculovirus	Rhabdoviridae

Orungo	human, related to Leboambo	orbivirus	Reoviridae
<i>Oryctes rhinoceros</i> ⁽¹⁰⁸⁾	nonoccluded (C)		Baculoviridae
<i>Orygia pseudotsugata</i>	granulosis and nuclear polyhedrosis viruses (licensed for use as insecticide), (A, B)		Baculoviridae
Ossa	C	bunyavirus	Bunyaviridae
<i>Ostrea edulis</i> (oyster)	unclassified (125–170 nm particles)		
ovi 1–5 (<i>ovis aries</i> , sheep)		mastadenovirus	Adenoviridae
Ovine dependovirus		dependovirus	Parvoviridae
Owl monkey cytomegalo (h4)		cytomegalovirus	Herpesviridae
Oyster	possibly birna virus group		
P (<i>Crustaceae</i>)		orbivirus	Reoviridae
P (<i>Drosophila melanogaster</i>)			Picomaviridae
Pacific pond turtle herpes (h2)			Herpesviridae
Pacui		phlebovirus	Bunyaviridae
Pahayokee	Patois	bunyavirus	Bunyaviridae
Painted turtle herpes (h2)			Herpesviridae
Palestina	Minatitlan	bunyavirus	Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Palyam (transmitted by <i>culicoides</i>)	type species of group	orbivirus	Reoviridae
Papilloma virus ⁽¹⁰⁹⁾ (Figure 10): genus of Papovaviridae (type species: Shope papilloma virus)			
<p>PAPOVAVIRIDAE⁽¹¹⁰⁾: Two genera make up this family, the larger the PAPILLOMA and the smaller the POLYOMA viruses. Both are icosahedral, of 55 and 45 nm diameter (300 and 240 S), respectively, with a density in CsCl of 1.32 g/cm³. They consist of one molecule of circular double-stranded DNA of 5 and 3 × 10⁶ daltons, and seven and five proteins, respectively. Several polyoma DNAs have been sequenced. Papovaviruses have been found in many mammals, including man (nine types of papilloma and two of polyomaviruses). Their host range for pathogenicity (if any) is very restrictive, but the polyomaviruses are frequently oncogenic in young animals of other species. Papilloma viruses form benign but occasionally also malignant tumors in their host. The type species are Shope rabbit papilloma virus for papillomaviruses, and mouse polyoma virus for polyomavirus, with the simian SV40 being the most studied and used of about ten known members of the genus (Figure 10).</p>			
Para: SV40-adenovirus type 7 hybrid			
Parainfluenza 1-4 (human, bovine, ovine, murine)		paramyxovirus	Paramyxoviridae
Parainfluenza 5 (avian, simian, canine)		paramyxovirus	Paramyxoviridae
Parainfluenza turkey Ontario		paramyxovirus	Paramyxoviridae
<i>Paramaecium</i> spp. (protozoon)	unclassified (80 nm particles)		
Paramushir	Sakhalin	probably nairovirus	Bunyaviridae
<p>PARAMYXOVIRIDAE⁽¹¹¹⁾: Pleomorphic virions of about 150-300 nm diameter (about 1000 S, density in sucrose 1.19 g/cm³). A lipid-rich envelope carries 8-nm-long spikes consisting of two glycoproteins (Figure 11). The RNA is a single molecule of about 6 × 10⁶ daltons, mostly minus-stranded. It is built into a flexuous helix that resembles the tobamoviruses (TMV) in its diameter and appearance. There are seven proteins, the largest being the RNA polymerase, the most</p>			

abundant the matrix supporting the envelope. Of the three genera, the *PARAMYXOVIRUSES* is the largest with Newcastle disease virus as type species, others being the mumps and several parainfluenza viruses of man, as well as paramyxoviruses infecting other mammals and others birds. Each is very host-specific. All paramyxoviruses have in their spikes a glycoprotein carrying both neuraminidase and hemagglutinating activity. The second spike glycoprotein is active in causing cell fusion. Transmission is usually by aerosol.

The genus *MORBILLIVIRUS* represents the serologically interrelated measles, the type species, and the canine distemper, rinderpest, and peste-des-petits-ruminants viruses. These lack the neuraminidase.

The type species of the small genus *PNEUMOVIRUSES* is the respiratory syncytial virus and others are bovine respiratory syncytial virus and pneumonia virus of mice. These also lack the neuraminidase, and differ in the size and appearance of their nucleocapsid from the other genera (Figure 11).

Parana	Tacaribe complex	arenavirus	Arenaviridae
Parapox: genus of Chordopoxvirinae (type species Orfivirus)			
Pararota: chicken, porcine, and human rotaviruses with the typical RNA segments, but lacking the common group-specific antigen of other rotaviruses			Reoviridae
Parma wallaby (h1)			Herpesviridae
Paroo River		orbivirus	Reoviridae
Parrot herpes (Pacheco's disease) (h1)			Herpesviridae
Parrot paramyxo		paramyxovirus	Paramyxoviridae
Parry Creek (invertebrates)			probably Rhabdoviridae

PARVOVIRIDAE⁽¹¹²⁾: (Figure 12) This family consists of small (18–26 nm diameter) icosahedral particles of about 115 S, density in CsCl 1.4 g/cm³, that contain single-stranded DNA of 1.5–2.0 × 10⁶ daltons. The viruses are stable over the range of pH 3–9, and up to 60°C. The three proteins of the virion may result from the processing of a single

translation product, and there are also two nonstructural proteins. The Parvoviridae have three genera: the PARVOVIRUSES of vertebrates, the insect parvoviruses, termed DENSOVIRUSES, and the ADENOASSOCIATED VIRUSES termed DEPENDOVIRUSES. The vertebrate parvoviruses contain usually mostly if not only minus-strand DNA with particular terminal double-hairpin features. They are rarely pathogenic. They replicate only in dividing cells. Several parvoviruses show serological interrelations, i.e., the canine, feline, murine, and racoon viruses. The type species is the Kilham rat virus, or parvovirus r1, and others the minute virus of mice, the Aleutian mink disease virus, the feline panleucopenia, and mink enteritis viruses, H-1, Lu III, RT, and TVX, and possibly the agent causing gastroenteritis of man.

The dependoviruses are, as the name indicates, dependent on coinfection with adenoviruses (or under certain circumstances, herpes virus). These viruses have encapsidated either plus- or minus-stranded DNA of 1.8×10^6 daltons; thus, upon isolation of the DNA, double-stranded molecules result. The viruses are host-specific, but occur in many mammalian adenovirus hosts. They are serologically interrelated.

The densoviruses carry, like the dependoviruses, both plus- and minus-strand DNA. They are named only by the name of their insect host genus. Their virions form dense intranuclear masses, thus expanding the nucleus. The type species is the densovirus of *Iunonia*, others of *Aedes*, *Acheta*, *Bombyx*, *Diatrea*, *Nymphalidae*, and *Sibine*.

Parvo: genus of Parvoviridae (type species: Kilham rat virus)

Pata (mosquito-transmitted)	Eubenanga	orbivirus	Reoviridae
Patas monkey herpes (h7)			Alphaherpesvirinae
Pathum Thani	Dera Ghazi Khan	nairovirus	Bunyaviridae
Patois	type species of group	bunyavirus	Bunyaviridae
Peaton	Simbu		Bunyaviridae
<i>Penaeus duorarum</i> (shrimp)			Baculoviridae
Percid herpes (h1): see Wally epidermal hyperplasia			

Peste-des-petits-ruminants (ovine)	morbillivirus	Paramyxoviridae
Pesti ⁽¹¹³⁾ : genus of Togaviridae (type species: bovine viral diarrhoea)		
<i>pha</i> 1 (<i>Phasianus colchicas</i> , pheasant)	aviadenovirus	Adenoviridae
Phalacrocoracid h1: see cormorant herpes virus		
Pheasant leukemia: see oncovirus		
<i>Philosamia ricini</i> : nudaurelia β group		
Phlebotomus fever group	unclassified	
Phlebo ⁽¹¹⁴⁾ : genus of Bunyaviridae (type species: sandfly fever Sicilian virus)		
Phnom Penh bat	flavivirus	Togaviridae
<i>Phthorimasa operculella</i>	cotivirus	Entomopoxvirinae
<i>Phyllopertha horticola</i> (<i>Coleoptera</i>)	A	Entomopoxvirinae
Phytoreoviruses: see Section II (plant viruses)		
Pichinde	Tacaribe complex	Arenaviridae
<p>PICORNAVIRIDAE⁽¹¹⁵⁾: Small spherical particles of about 27 nm diameter (140–165 S, density in CsCl 1.33–1.44 g/cm³), consisting of one molecule of plus-strand RNA of 2.5 \times 10⁶ daltons with a 5' terminally-bound small protein and 3' terminal poly A, and about equal numbers (60) of four capsid proteins (three of 24–41 \times 10³, and one of about 10 \times 10³ daltons). Most of the picornaviruses are very host-specific. The four genera are the ENTEROVIRUSES, CARDIOVIRUSES, RHINOVIRUSES, and APHTHOVIRUSES. The type species of the ENTEROVIRUSES (density 1.34 g/cm³) is human poliovirus 1; many human coxsackie viruses belong in this genus, as well as murine poliovirus, and enteroviruses of many mammalian species. Human poliovirus RNA has been sequenced (7434 nucleotides). These viruses are stable at acid pH.</p>		

They affect mostly the gastrointestinal tract with only occasional neuro- and myotropic tendencies. Enterovirus serotypes 70 and 71 are responsible for human acute hemorrhagic conjunctivitis and encephalitis-meningitis, at times epidemic.

The **CARDIOVIRUS** type species is the encephalomyocarditis virus and others are the Mengo, Maus-Elberfeld, Columbia SK, MM, and murine encephalomyelitis virus. They differ from the enteroviruses in being unstable below pH 5; their RNA contains a poly(C) tract near, but not at, the 5' end. They behave identically in sophisticated serologic tests. The **RHINOVIRUSES** are the main agents of the common cold. Human rhinovirus 1A is the type species, but there exist at least 112 more human, as well as some bovine rhinoviruses. They also are unstable below pH 6. The type member of the **APHTHOVIRUSES** is the foot-and-mouth disease virus (Aphtho O). Others are A, C, SAT 1, SAT 2, SAT 3, and Asia 1. The aphthoviruses are also unstable below pH 6 and carry a poly(C) tract near the 5' end. The foot-and-mouth disease virus has a higher buoyant density than the others (1.44 g/cm³). The equine rhinoviruses and several insect viruses are not yet classified picornaviridae, and others are possible members of that family.

Pig cytomegalo (h2)	cytomegalovirus	Betaherpesvirinae
Pig enterovirus	enterovirus	Picornaviridae
Pigeon herpes (h1)		Herpesviridae
Pigeon pox	avipox	Chordopoxvirinae
Pike fry		Rhabdoviridae
Piry (vertebrate hosts)	vesiculovirus	Rhabdoviridae
Pixuna	alphavirus	Togaviridae
<i>Plasmodium gallinaceum</i> (protozoon)	unclassified (35-55 nm particles)	
Playas	bunyavirus	Bunyaviridae

Pleuronectid herpes h1: <i>see</i> turbot herpes virus		
<i>Plodia interpunctella</i>	granulosis (B)	Baculoviridae
Pneumonia of mice	pneumovirus	Paramyxoviridae
Pneumo ⁽¹¹⁶⁾ : genus of Paramyxoviridae (type species: respiratory syncytial virus)		
Poikilo ⁽¹¹⁷⁾ : genus of Alphaherpesvirinae (type species: pseudorabies virus)		
Poliomyelitis ¹¹⁷ (synonym: polio)	enterovirus	Picornaviridae
Polydnaviridae: proposed family name for insect viruses with segmented double-stranded circular DNA genome.		
Polyhedral cytoplasmic DNA virus (polyhedrosisvirus): obsolete term for Iridoviridae		
Polyoma ⁽¹¹⁸⁾ : genus of Papovaviridae (type species: SV40 virus)		
Pongine herpes h1: <i>see</i> herpes pan, chimpanzee herpesvirus		
Pongine herpes h2: <i>see</i> orangutan herpesvirus		
Pongine herpes h3: <i>see</i> herpesvirus gorilla		
Pongola	Bwamba	Bunyaviridae
Ponteves	uukuvirus	Bunyaviridae
Poovoot (tick-transmitted)	orbivirus	Reoviridae
Porcine enteroviruses 1–8	enterovirus	Picornaviridae
Porcine hemagglutinating encephalitis	coronavirus	Coronaviridae
Porcine leukemia: <i>see</i> oncovirus		
Porcine parvo	parvovirus	Parvoviridae

Virus	Group or subgroup	Genus	Subfamily or family
Porcine transmissible gastroenteritis		coronavirus	Coronaviridae
Powassan (tick-transmitted)		flavivirus	Togaviridae

POXVIRIDAE⁽¹¹⁹⁾: This is a family of large complex viruses affecting most vertebrates and many invertebrates. The ovoid particles of about 400×200 nm, containing a single molecule of double-stranded DNA of $90\text{--}200 \times 10^6$ daltons, at least 40 structural proteins, glycoproteins, and phosphoprotein, forming specific internal organelles (lateral bodies, etc.), and lipid that is not in all genera near the surface and thus ether-sensitive. The viruses are generally very host-specific; they are transmitted by aerosol, by contact, and by insects.

The two recognized subfamilies are the CHORDOPOXVIRINAE of vertebrates and the ENTOMOPOXVIRINAE of arthropods. There is some serological relationship between all chordopoxvirinae, and close relationships within each genus. These are: ORTHOPOXVIRUS, formally called the VACCINIA subgroup; PARAPOXVIRUS, the (rabbit) MYXOMA subgroup; and SUIPOXVIRUS, the swinepox virus subgroup. The orthopoxviruses (type species vaccinia virus) are ether-resistant; their linear DNA of 130×10^6 daltons tends to cyclize by terminal crosslinking. Variola of man, ectromelia of mice, and many other mammalian species are known. The parapoxviruses (type species Orf virus) have a somewhat smaller DNA, are ether-sensitive, and show a characteristic surface structure. They infect ungulates, and rarely man. The avipoxviruses (type species fowlpox virus) have a larger DNA, are ether-resistant and generally transmitted by arthropods. The capripoxviruses (type species sheep poxvirus) are transmitted in the same manner and are also ether-sensitive. The leporipoxviruses (type species myxoma) show similar properties. The fibromas of rabbits, hares, and squirrels belong to this group. The suipox genus represents the swinepox virus.

The ENTOMOPOXVIRINAE show somewhat different surface appearance, and some have only one lateral body rather than the two of the Chordopoxvirinae. The four probable genera termed A, B, C, and cotiavirus show no serological relationship. Insect poxviruses probably do not replicate in vertebrates, and vice versa. They are named only by their respective hosts. The type species of genus A is *Melothonta melothonta*, with related viruses found in eight other *Coleoptera*. The type species of genus B is *Amsacta moorei*, with seven other *Lepidoptera* and one *Orthoptera* carrying related viruses. Type species of genus C is *Chironimus luridus*, with related viruses found in five other *Diptera*.

PPR	morbillivirus	Paramyxoviridae
Prague (avian sarcoma): <i>see</i> oncovirus		
PRC II (avian sarcoma): <i>see</i> oncovirus		
Pretoria	Dera Ghazi Khan nairovirus	Bunyaviridae
Progressive multifocal leukoencephalopathy agent: <i>see</i> JC virus		
Progressive Pneumonia		Lentivirinae
Prospect Hill	serologically related to Hantaan virus	possibly Bunyaviridae
<i>Pseudaletia separata</i>		Entomopoxvirinae
<i>Pseudaletia unipuncta</i>	granulosis virus (B)	Baculoviridae
Pseudocowpox		Chordopoxvirinae
Pseudolumpy skin disease (bovine)		Alphaherpesvirinae
<i>Pseudoplusia includens</i> (soybean looper)	nudaurelia β group	
Pseudorabies (swine)		Alphaherpesvirinae
Psittacid herpes 1: <i>see</i> parrot herpesvirus, Pacheco's disease virus		
Pueblo Viejo	Gamboa bunyavirus	Bunyaviridae
Punta Salinas	Hughes nairovirus	Bunyaviridae
Punta toro	Sandfly phlebovirus	Bunyaviridae
Qalyub	type species of group nairovirus	Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Quailpox		avipoxvirus	Chordopoxvirinae
Rabbit fibroma		leporipoxvirus	Chordopoxvirinae
Rabbit herpes (h1)		polyomavirus	Gammaherpesvirinae
Rabbit kidney vacuolating		leporipoxvirus	Papovaviridae
Rabbit myxoma			Chordopoxvirinae
Rabbit papilloma: <i>see</i> Shope papilloma			
Rabbitpox		orthopoxvirus	Chordopoxvirinae
Rabbit syncytium		probably orbivirus	Reoviridae
Rabies		lyssavirus	Paramyxoviridae
Raccoon pox		probably orthopoxvirus	Chordopoxvirinae
<i>Rana</i> ⁽¹²⁰⁾ : genus of Iridoviridae (type species: frog viruses)			
Ranid herpes 1: <i>see</i> Lucké virus			
Ranid herpes 2: <i>see</i> Frog virus 4			
Rat 1: <i>see</i> Kilham rat virus			
Rat corona		coronavirus	Coronaviridae
Rat cytomegalo (h2)		muromegalovirus	Betaherpesvirinae
Rauscher murine virus: <i>see</i> oncovirus			
RAV (avian leukosis): <i>see</i> oncovirus (Rous-associated)			

Raza	Hughes	nairovirus	Bunyaviridae
Razdan	unclassified		Bunyaviridae

RD 114: *see* oncovirus

REOVIRIDAE⁽¹²¹⁾: (Figs. 13, 5) This family is characterized by large icosahedral particles, at times covered by an outer protein shell (60–80 nm diameter, density about 1.38 g/cm³), containing 10–12 molecules of linear double-stranded RNA of 0.2–3.0 × 10⁶ daltons. The internal structure is the nucleocapsid core (45% RNA) with 12 spikes. Each RNA molecule is associated with RNA polymerase, and becomes transcribed in synchrony. There are four animal genera (ORTHOREOVIRUS, ORBIVIRUS, ROTAVIRUS, CYPOVIRUS) and two plant genera (PHYTOREOVIRUS and FIJIVIRUS). The ORTHOREOVIRUSES occur in many mammals and birds, but are rarely seriously pathogenic. Reovirus type 1 of man is the type species (734 S). They contain ten RNAs of 0.5–2.7 × 10⁶ daltons, as well as many oligonucleotides. Nine structural proteins of 34–155 × 10³ daltons have been identified. The viruses are quite heat stable and not inactivated by ether or low pH. Besides the human (types 1–3), orthoreoviruses have been found in monkeys, dogs, cattle, and birds; they are serologically related.

The ORBIVIRUSES (550 S) are very numerous in mammals including man and in many insects and other arthropods. They differ from the orthoreoviruses in being sensitive to acid and ether, apparently containing some lipid in their outer shell. The 32 capsomers of the inner shell appear as characteristic rings on the surface of the particle. The orbiviruses are transmitted by and replicated in insects, and many of them are pathogenic only to insects or other invertebrates. The type species is the bluetongue virus of sheep with 21 strains. There are more than 12 other serological subgroups, and several unclassified orbiviruses.

The ROTAVIRUSES (525 S) of mammals have 11 RNA molecules; they are relatively heat-, acid-, and ether-resistant. They are pathogenic in mammals, causing particularly gastrointestinal symptoms. They show little host specificity. They are named only by the host from which they were isolated. The CYPOVIRUSES (type species cytoplasmic polyhedrosis virus, Figure 5) of insects have again ten genes.

Reo (man, monkey, etc.)	serotypes 1–3	orthoreovirus	Reoviridae
-------------------------	---------------	---------------	------------

Virus	Group or subgroup	Genus	Subfamily or family
Reptilian sarcoma: <i>see</i> oncovirus			
Respiratory equine		parainfluenza virus	Paramyxoviridae
Respiratory syncytial ¹²² (widespread child pathogen)		pneumovirus	Paramyxoviridae
Restan	C	bunyavirus	Bunyaviridae

Reticuloendotheliosis: *see* oncovirus

RETROVIRIDAE^(1,23): (Fig. 14) The common feature of this family is that they contain RNA that must be transcribed to DNA, and thus carry a reverse transcriptase in their virion. The virions of about 90 nm diameter, [550–600 S, density in sucrose 1.16–1.21 g/cm³] are spherical and enveloped by a lipid-rich membrane with spikes containing two glycoproteins (Figure 14). The RNA of the nondefective viruses has a molecular weight of 3.3×10^6 , but occurs in the virion as duplex molecules specifically H-bonded to one another (about 70 S). The RNAs are capped, with one methyl group on the chain-terminal nucleotide [7-MeG-5'-p-p-5'MePurine-p→], and have poly(A) on the 3' end. The virion contains tRNAs, with a specific one H-bonded by base complementarity to a specific site on the virion RNA, and serving as primer for the reverse transcriptase. Besides the two envelope proteins and the reverse transcriptase, there are four nucleocapsid and/or matrix proteins, three of which are phosphoproteins, all derived by processing from a primary gene product. Three subfamilies have been distinguished. The largest, the most important, and the best known of which are the ONCOVIRINAE with three genera: ONCOVIRUS B-TYPE, C-TYPE, and D-TYPE based on structural differences. These were formerly termed RNA tumor viruses and will be discussed under oncoviruses in more detail. They have long been recognized to be oncogenic in birds and mammals, recently also at times in man. This property could be detected in cell culture by transformation of cells leading to microtumors. Three subgenera are the mammalian, avian, and reptilian C-type oncoviruses.

The SPUMAVIRINAE or FOAMY VIRUS GROUP, while having similar appearance and replication properties as the oncovirinae, do not transform cells nor cause tumors, nor are they usually pathogenic. They lead to persistent infections in several mammals, characterized by the appearance under specific conditions of vacuolated and, thus, seemingly foamy cell syncytia. They are thus termed syncytial or foamy viruses.

The LENTIVIRINAE resemble the other subfamilies in all biochemical respects. However, they cause slowly progressive lethal diseases in sheep, etc., and possibly man. They are not serologically related to other oncovirinae.

Papovaviridae

polyomavirus

(contains two
complementary
DNA molecules),
(defective human)

RFV (variant of BK)

RHABDOVIRIDAE⁽¹²⁴⁾: This family includes both animal and plant viruses. The animal rhabdoviruses are generally bullet-shaped while many plant rhabdoviruses are rounded at both ends, thus bacilliform. The virions vary in dimension, from 130–380 × 50–95 nm (550–1000 S, density in CsCl or sucrose 1.19 g/cm³). They are unstable below pH 4, at 56°C, and in ether. The nucleocapsid contains negative-strand RNA of about 4 × 10⁶ daltons, in a protein (70% of total) helix, and the RNA polymerase, possibly consisting of both a large and a medium-sized protein. The lipid-rich envelope contains a glycoprotein.

The animal rhabdoviridae generally have wide host ranges, many of them replicating in insects and vertebrates, some even in insects and plants. They are mostly transmitted by insects. The vesicular stomatitis virus is the type species of the genus VESICULOVIRUSES; there are a few other members, besides several strains of that virus. Many rhabdoviruses have not yet been classified in terms of genera. The rabies virus and some similar ones have, however, been classified as a separate genus, LYSSAVIRUSES, on serological grounds. These again were found partly in vertebrates and partly in insects, but are not restricted to one host species (Figure 15).

Rhadino: genus of Gammaherpesvirinae

Gammaherpesvirinae

Rhesus leucocyte-associated
(Strain I) (h11)

Gammaherpesvirinae

Rhesus leucocyte-associated
(Strain II) (h12)

Betaherpesvirinae

Rhesus monkey cytomegalo (h8)

Betaherpesvirinae

Rhino⁽¹²⁵⁾: genus of Picornaviridae (type species: common cold virus)Rhinopneumonitis: *see* equine abortion virus

Rift Valley fever

phlebovirus

Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Rinderpest		morbillivirus	Paramyxoviridae
Rio Bravo		flavivirus	Togaviridae
Rio Grande		phlebovirus	Bunyaviridae
RKV (rabbit)		papillomavirus	Papovaviridae
RNA tumor virus group: see Oncovirinae			
Rochester-2-sarcoma (avian): see oncovirus			
Rocio		flavivirus	Togaviridae
<i>Roseola infantum</i> agent	unclassified		
Ross River		alphavirus	Togaviridae
Rota ^(12.6) : genus of Reoviridae (agent of human epidemic polyarthritits), 11 segment of dsRNA, many hosts			
Rous-associated viruses (RAV): see oncovirus			
Rous sarcoma (avian) ^(12.7) : see oncovirus			
Royal Farm (tick-borne)		flavivirus	Togaviridae
RPL 12 (avian leukosis): see oncovirus			
RT (rat)		parvovirus	Parvoviridae
Rubella ^(12.8) (German measles)	type species	rubivirus	Togaviridae
Rubi: genus of Togaviridae (type species: rubella virus)			
Russian tick-borne encephalitis		flavivirus	Togaviridae

RV: <i>see</i> Kilham rat viruses			
S 1643 (invertebrate hosts)			Rhabdoviridae
SA 6 (monkey) (h3)			Betaherpesvirinae
SA 7 (monkey) (oncogenic simian adenovirus)	mastadenovirus		Adenoviridae
SA 8 (monkey) (h2)	simplexvirus		Alphaherpesvirinae
SA 11 (monkey)	rotavirus		Reoviridae
SA 12 (baboon)	polyomavirus		Papovaviridae
SA 15 (monkey) (h4)			Betaherpesvirinae
Sabo	bunyavirus	Simbu	Bunyaviridae
Saboya	flavivirus		Togaviridae
Sac brood		unclassified, similar to rhinovirus, but much lower buoyant density (1.33 g/cm ³)	
Sacramento River chinook			probably Rhabdoviridae
Sagiyama	alphavirus		Togaviridae
Saimiriine herpes 1: <i>see</i> Marmoset herpes virus, herpes M, T, tamavirus, platyrrhinae type 1			
Saimiriine herpes 2: <i>see</i> squirrel monkey, herpes saimiri.			
Saint Floris	probably phlebovirus		Bunyaviridae
Saint Louis encephalitis: <i>see</i> St. Louis			

Virus	Group or subgroup	Genus	Subfamily or family
Sakhalin	type species of group	nairovirus	Bunyaviridae
Salehabad		phlebovirus	Bunyaviridae
Salivary of bats		flavirus	Togaviridae
Salmon herpes h1: see salmonid herpes			
Salmon herpes h2: see <i>Oncorhynchus masou</i>			
Salmonid herpes (h1)			Herpesviridae
San Angelo	California	bunyavirus	Bunyaviridae
Sandfly fever Sicilian	type species of group	phlebovirus	Bunyaviridae
Sango	Simbu	bunyavirus	Bunyaviridae
San Juan	probably Gamboa	bunyavirus	Bunyaviridae
San Miguel sea lion	(at least eight serotypes)		Caliciviridae
Santa Rosa	Bunyamwera	bunyavirus	Bunyaviridae
Sapphire 11	Hughes	nairovirus	Bunyaviridae
<i>Sarracenia purpurea</i>			probably Rhabdoviridae
SAT 1, SAT 2, SAT 3		aphthoviruses	Picornaviridae
Satellite: a term used in plant virology for "helper"-dependent viruses			
Sathuperi	Simbu	bunyavirus	Bunyaviridae

Saumarez Reef (tick-transmitted)	flavivirus	Togaviridae
Sawgrass (invertebrate hosts)		probably Rhabdoviridae
Schmidt–Ruppin avian sarcoma: <i>see</i> oncovirus		proposed term: Prion
Scrapie agent ⁽¹²⁹⁾		
Scurid herpes h1: <i>see</i> European ground squirrel cytomegalovirus		
SD	murine coronavirus strain (<i>see</i> SK)	Coronaviridae
Seletar (tick-transmitted)	orbivirus	Reoviridae
Semliki Forest	alphavirus	Togaviridae
Sendai (synonym for parainfluenza virus 1)	paramyxovirus	Paramyxoviridae
<i>Sepia officinalis</i> (squid)	paramyxovirus	Paramyxoviridae
Sepik (mosquito-borne)	flavivirus	Togaviridae
<i>Sericestis iridescent</i>	iridovirus	Iridoviridae
Serra do Navio	bunyavirus	Bunyaviridae
SF Naples	phlebovirus	Bunyaviridae
SF Sicilian: <i>see</i> sandfly virus		
Shamonda	bunyavirus	Bunyaviridae
Shark River	bunyavirus	Bunyaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Sheep herpes (h1)	type species		Herpesviridae
Sheeppox		capripoxvirus	Chordopoxvirinae
Sheep pulmonary adenomatosis			Herpesviridae
Shipping fever: <i>see</i> parainfluenza virus			
Shope fibroma (rabbit)		leporipoxvirus	Chordopoxvirinae
Shope papilloma (rabbit)		papillomavirus	Papovaviridae
Shuni	Simbu	bunyavirus	Bunyaviridae
Sialodacryoadenitis (rat)		coronavirus	Coronaviridae
Siamese cobra herpes			Herpesviridae
Si Ar 126	possibly Thogato	bunyavirus	Bunyaviridae
Sibine		densovirus	Parvoviridae
Sigma (<i>Drosophila</i>)			probably Rhabdoviridae
Silverwater	Kaisodi	bunyavirus	Bunyaviridae
Simbu	type species of group	bunyavirus	Bunyaviridae
Simian (monkey) adeno (oncogenic)	SV (1, 22, 23, 25, 33, 37, 38)	adenoviruses	Adenoviridae
Simian B: <i>see</i> simian herpes B virus			
Simian entero		enterovirus	Picornaviridae

Simian foamy			Spumavirinae
Simian hemorrhagic fever		possibly pestivirus	Togaviridae
Simian herpes B (h1)			Alphaherpesvirinae
Simian paramyxo	SV 5, SV 41	paramyxovirus	Paramyxoviridae
Simian polyoma (SV 40, sequenced and much used)		polyomavirus	Papovaviridae
Simian reo	SV 12, SV 59, identical with human type 1, and 2 reovirus	orthoreovirus	Reoviridae
Simian sarcoma: <i>see</i> oncovirus			
Simian varicella: <i>see</i> Medical Lake macaque			
Simplex: genus of Alphaherpesvirinae (type species: human herpes simplex 1)			
Sindbis ⁽¹³⁰⁾ (Figure 16)	type species	alphavirus	Togaviridae
Sixgun City (tick-borne)	Kemorovo	orbivirus	Reoviridae
SK (mouse)	(strain derived from human multiple sclerosis CNS tissue)	coronavirus	Coronaviridae
SL3-3 (mouse leukemia): <i>see</i> oncovirus			
Slow-growing cytomegalo (of horses) (h2)			
Slow paralysis: <i>see</i> bee slow paralysis virus			
Slow viruses: term used for Lentivirinae, and at times (falsely) for the scrapie, Kuru, Creutzfeldt–Jacob, transmissible mink encephalopathy agent group (proposed term: Prions).			Betaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
SM feline sarcoma: <i>see</i> oncovirus			
Snowshoe hare	California	bunyavirus	Bunyaviridae
Sokoluk		flavivirus	Togaviridae
Soldado	Hughes	nairovirus	Bunyaviridae
Sororoca	Bunyamwera	bunyavirus	Bunyaviridae
South river	probably California	bunyavirus	Bunyaviridae
Soybean looper	unclassified 40 nm particle (190S) with 1.9×10^6 dalton RNA and 55×10^3 dalton protein, serologically unrelated to other insect viruses tested		
Sp Ar 2317	Anopheles A	bunyavirus	Bunyaviridae
Sparrowpox		avipoxvirus	Chordopoxvirinae
Spider monkey herpes (h1)			Alphaherpesvirinae
Spleen focus-inducing (mink, murine) ⁽¹³¹⁾ : <i>see</i> oncovirus			
Spleen necrosis ⁽¹³²⁾ (duck)		oncovirus	Retroviridae
<i>Spodoptera exempta</i>	types 3 and 12	cypovirus	Reoviridae
<i>Spodoptera exigua</i>	type species, type 11	cypovirus	Reoviridae

<i>Spodoptera frugiperda</i>	cottavirus	Entomopoxvirinae
<i>Spodoptera littoralis</i>	cottavirus	Entomopoxvirinae
Spondweni (mosquito-borne)	flavivirus	Togaviridae
Spring viremia of carp	probably rhabdovirus	Rhabdoviridae
Spumavirinae ⁽¹³³⁾ : subfamily of Retroviridae (type species: syncytial viruses)		
Squirrel fibroma	leporipoxvirus	Chordopoxvirinae
Squirrel monkey herpes (h2)	rhadinovirus	Gammaherpesvirinae
Squirrel monkey retrovirus: <i>see</i> oncovirus		
SSG (marmoset cytomegalo) (h2)	cytomegalovirus	Betaherpesvirinae
ST: <i>see</i> SM feline sarcoma virus		
St. Louis encephalitis	flavivirus	Togaviridae
Starling pox	avipox	Chordopoxvirinae
STMV (macaque)	polyomavirus	Papovaviridae
Stratford (mosquito-borne)	flavivirus	Togaviridae
Strigid herpes h1: <i>see</i> hepatosplenitis virus of owl		
Subacute sclerosing panencephalitis ⁽¹³⁴⁾ : attributed to persistent measles virus		
Suid herpes 1	pseudorabies, Aujeszky's disease virus (swine)	Alphaherpesvirinae
Suid herpes 2	inclusion body rhinitis (swine)	Betaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
Suipox ⁽¹³⁵⁾ : genus of Chordopox virinae (type species: swinepox)			
Sunday Canyon		bunyavirus	Bunyaviridae
<i>sus</i> 1-4 (<i>Sus domesticus</i> , pig)		mastadenovirus	Adenoviridae
SV (1, 5, 12, 15, 20, 23, 25, 33, 34, 37, 38, 40, 41, 59): see under simian adeno, paramyxo, polyoma, reoviruses			
SV 40 ⁽¹³⁶⁾ : see simian polyoma virus			
Swim bladder inflammation agent (carp)			probably Rhabdoviridae
Swine fever		pestivirus	Togaviridae
Swine influenza		type A	Orthomyxoviridae
Swinepox	type species	suipoxvirus	Chordopoxvirinae
Swine vesicular disease	(closely related to human coxsackie virus B5)	enterovirus	Picornaviridae
Syncytium-forming: see under bovine, feline, etc., syncytium-forming viruses			
T50616 (Skunk)		orbivirus	Reoviridae
T6-20		ranavirus	Iridoviridae
T21 (<i>Xenopus</i>)		ranavirus	Iridoviridae
Tacaiuma	Anopheles A	bunyavirus	Bunyaviridae
Tacaribe	type species of group	arenavirus	Arenaviridae

Tadpole edema (<i>Rana catesbriana</i>)	LT (1-4, 6-20)	ranavirus	Iridoviridae
Taggart	Sakhalin	nairovirus	Bunyaviridae
Tahyna	California	bunyavirus	Bunyaviridae
Taiassui	Bunyamwera	bunyavirus	Bunyaviridae
Talfan's disease		enterovirus	Picornaviridae
Tamdy			Bunyaviridae
Tamiami		arenavirus	Arenaviridae
Tanapox (monkey)	serologically related to Yaba pox virus	orthopoxvirus	Chordopoxvirinae
Tataguine			Bunyaviridae
Tehran		phlebovirus	Bunyaviridae
<i>Tellina tennis</i> (mollusc)	probably birnavirus group		
Tembusu (mosquito-borne)		flavivirus	Togaviridae
Tensaw	Bunyamwera	bunyavirus	Bunyaviridae
Termite paralysis			Picornaviridae
Teschen's disease: <i>see</i> Talfan's disease			
Tete	type member of group	bunyavirus	Bunyaviridae
Theiler feline sarcoma: <i>see</i> oncovirus			
Theiler's murine encephalitis: <i>see</i> murine encephalomyelitis			

Thealymphocryto: genus of gammaherpesvirinae (type species: Marek's disease virus)

Thimiri		bunyavirus		Bunyaviridae
Thirlmere Reservoir	probably birnavirus group			
Thogoto (tick-borne)				possibly Orthomyxoviridae
<i>Thosea asigna</i>	nudaurelia β group			
Tick-borne encephalitis		flavivirus		Togaviridae
Tillamook	Sakhalin	nairovirus		Bunyaviridae
Tilligerry (NB 7080)	Eubenangee	orbivirus		Reoviridae
Timbo (vertebrate-hosts)				probably Rhabdoviridae
Timboteua	Guama	bunyavirus		Bunyaviridae
Tinaroo	Simbu	bunyavirus		Bunyaviridae
Tindholmur (tick-borne)	Kemorovo	orbivirus		Reoviridae
Tipula iridescent	type species	iridovirus		Iridoviridae
Tipula paludosa		iridovirus		Iridoviridae
Tlacotalpan	Bunyamwera	bunyavirus		Bunyaviridae

TOGAVIRIDAE⁽¹³⁷⁾: (Figure 16) These are the smallest enveloped (toga = mantle) animal viruses. They are spherical, 40–70 nm in diameter, density is CsCl 1.25 g/cm³. The icosahedral nucleocapsid of about 30 nm diameter consists of a 4.0–

4.5×10^6 dalton plus-strand RNA and the capsid protein, the envelope of two glycoproteins, and lipid. Four genera have been identified, members of which are serologically interrelated, but not with members of other genera. These have been called ALPHAVIRUSES, FLAVIVIRUSES, RUBIVIRUSES, and PESTIVIRUSES. The type member of the ALPHAVIRUSES is the Sindbis virus (70 nm diameter, 280 S), the capsid protein of which is about 32×10^3 , and the glycoproteins 52×10^3 daltons; the RNA 4.5×10^6 daltons, and 30% lipid. Among the many other members are the Semliki Forest virus, and Eastern, Western, and Venezuelan equine encephalomyelitis viruses. These viruses replicate in both arthropods and vertebrates.

The FLAVIVIRUSES are smaller (45 nm diameter, 200 S) with one glycoprotein of about 60, and a coat protein of 14×10^3 daltons. Most of these viruses replicate in both insects and vertebrates. The yellow fever virus is the type species (RNA of 3.8×10^6 daltons, lacking terminal poly A), and Dengue and Japanese encephalitis are other examples of this numerous group. Their replication strategy differs from that of the alphaviruses, and they may become classified as a separate family.

The only classified member of the RUBIVIRUSES is the rubella virus of man, which has no other vertebrate or invertebrate hosts. The PESTIVIRUS genus also differs from the other genera in being unable to replicate in invertebrates, and in lack of serological relation to other togaviridae. The type species is the mucosal disease virus (bovine virus diarrhoea). Hog cholera and border disease viruses are members. Among possible togaviridae (equine arteritis, lactic dehydrogenase, simian hemorrhagic fever viruses, and *aedes albopictus* cell-fusing agent) is also one plant virus, the carrot mottle virus.

Tonate	alphavirus	Togaviridae
Toluca 1	enterovirus	Picornaviridae
TO (Theiler's Original): see murine encephalomyelitis virus		
Toscana	phlebovirus	Bunyaviridae
Transmissible enteritis of turkey	enterovirus	Picornaviridae
Transmissible gastroenteritis of pigs	coronavirus	Coronaviridae

Virus	Group or subgroup	Genus	Subfamily or family
Transmissible mink encephalopathy agent	unclassified (similar to scrapie)		proposed term: Prion
Treeshrew herpes			Herpesviridae
Tribec (tick-borne)	Kemorovo	orbivirus	Reoviridae
<i>Trichoplusia ni</i>	granulosis virus (B)		Baculoviridae
<i>Trichoplusia ni</i>	nudaurelia β group		
<i>Trichoplusia ni</i>	type 5	cypovirus	Reoviridae
<i>Tricosomoides crasscanda</i> (nematode)	unclassified (15 nm particles)		
<i>Triphena pronuba</i>	type 7	cypovirus	Reoviridae
Trivittatus	California	bunyavirus	Bunyaviridae
Trubanaman	Maputta	bunyavirus	Bunyaviridae
Tupaine herpes h1: see Treeshrew herpes			
Turbot herpes	pleuronectid	herpesvirus	Herpesviridae
Turkeypox (h1) (used to vaccinate against Marek's disease)		thetalymphocyrovirus	Gammaherpesvirinae
Turlock	type member of group	bunyavirus	Bunyaviridae
TVS		parvovirus	Parvoviridae

Type B, C, D: B-type, C-type, D-type: subgenera of oncovirus			
Tyuleniya (tick-borne)	flavivirus		Togaviridae
Uganda S (mosquito-borne)	flavivirus		Togaviridae
UK bovine rota (related to SA 11)	rotavirus		Reoviridae
Umatilla	orbivirus		Reoviridae
Umbre	bunyavirus	Turlock	Bunyaviridae
Una	alphavirus		Togaviridae
Urucuri	phlebovirus		Bunyaviridae
USA T5-0616	orbivirus		Reoviridae
USA 69-V2161	orbivirus		Reoviridae
US bat salivary	flavivirus		Togaviridae
Usutu (mosquito-borne)	flavivirus		Togaviridae
Utinga	bunyavirus	Simbu	Bunyaviridae
Utive	bunyavirus	Simbu	Bunyaviridae
Uuku ⁽¹³⁸⁾ : genus of Bunyaviridae (type species: uukuniemivirus)			
Uukuniemi	uukuvirus	type species	Bunyaviridae
Vaccinia ⁽¹³⁹⁾ (Figure 17)	orthopoxvirus		Chordopoxvirinae
Varicella ⁽¹⁴⁰⁾ : genus of alphaherpesvirinae (type species: varicella-zoster)			
Varicella-zoster (chickenpox, shingles)	varicellavirus		Alphaherpesvirinae

Virus	Group or subgroup	Genus	Subfamily or family
Variola (minor) (human)		orthopoxvirus	Chordopoxvirinae
Vellore	Palyam	orbivirus	Reoviridae
Venezuelan (equine) encephalitis		alphavirus	Togaviridae
Vesicular exanthema of swine	type species (12 serotypes)		Caliciviridae
Vesicular stomatitis	type species (strains: Argentina, Brazil, Cocal, Indiana, New Jersey, etc.) (Figure 15)	vesiculovirus	Rhabdoviridae
Vesiculo ⁽¹⁴¹⁾ : genus of Rhabdoviridae (type species: vesicular stomatitis virus)			
Vinces	probably C	bunyavirus	Bunyaviridae
Viper (reptilian sarcoma): <i>see</i> oncovirus			
Viral hemorrhagic septicemia: <i>see</i> Egtvedvirus			
Virgin River	Anopheles A	bunyavirus	Bunyaviridae
Visna ⁽¹⁴²⁾ (so-called slow virus)			Lentivirinae
von Magnus (defective influenza)		type B	Orthomyxoviridae
Wad Wedani	Kemorovo	orbivirus	Reoviridae
Wallal (Ch 12048)	type species of subgroup (2 serotypes)	orbivirus	Reoviridae

Wally epidermal hyperplasia (fish) (h1)	percid		Herpesviridae
Warrego (Ch 9935) (<i>Culicoides</i>)	type member of subgroup (2 serotypes)	orbivirus	Reoviridae
Wart (human)		papillomavirus	Papovaviridae
Wesselsbron (mosquito-borne)		flavivirus	Togaviridae
Western equine encephalitis (WEE)		alphavirus	Togaviridae
WF-1 (rat sarcoma): see oncovirus			
Whataroa		alphavirus	Togaviridae
Wilbebest malignant catarrhal fever (h1)			Gammaherpesvirinae
<i>Wiseana cervinata</i>		cotivirus	Entomopoxvirinae
Witwatersrand		bunyavirus	Bunyaviridae
Wongal	Koongol	bunyavirus	Bunyaviridae
Woodchuck hepatitis ⁽¹⁴³⁾ : very similar to human hepatitis B virus			
Woolley monkey sarcoma: see oncovirus			
Wyemyia	Bunyamwera	bunyavirus	Bunyaviridae
X 14		parvovirus	Parvoviridae
XBM (bovine)		orbivirus	Reoviridae
Xenopus T21		ranavirus	Iridoviridae
Y 73 (avian leukosis): see oncovirus			

Virus	Group or subgroup	Genus	Subfamily or family
Yaba 1	Turlock	bunyavirus	Bunyaviridae
Yaba 7	Simbu	bunyavirus	Bunyaviridae
Yaba monkey tumor pox	related to tanavirus	orthopoxvirus	Chordopoxvirinae
Yamaguchi sarcoma (avian): see oncovirus			
Yaquina Head (tick-borne)	Kemorovo	orbivirus	Reoviridae
Yata (invertebrate host)			probably Rhabdoviridae
Yellow Fever	type species	flavivirus	Togaviridae
Yucaipa (avian)		paramyxovirus	Paramyxoviridae
Zaliv-Terpeniya		uukuvirus	Bunyaviridae
Zegla	Patois	bunyavirus	Bunyaviridae
Zika (mosquito-borne)		flavivirus	Togaviridae
Zirqa	Hughes	nairovirus	Bunyaviridae
Zwogerziekte			Lentivirinae
6/94	parainfluenza virus 1	paramyxovirus	Paramyxoviridae
73U11	C	bunyavirus	Bunyaviridae
75V-2621, 78V-2441, 75V-2374	Gamboa	bunyavirus	Bunyaviridae

References (Section I)

1. Goff, P., Gilboa, E., Witte, O. N., and Baltimore, I., 1980, Structure of the Abelson murine leukemia virus genome and the homologous cellular gene: Studies with cloned viral DNA, *Cell* **22**:727.
2. Grose, C., and Horwitz, M. S., 1976, Characterization of an enterovirus associated with acute infectious lymphocytosis. *J. Gen. Virol.* **30**:347–355.
- 3a. Berns, K. I., and Hauswirth, W. W., 1979, Adeno-associated viruses, *Adv. Virus Res.* **25**:407.
- 3b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:73.
- 4a. Philipson, L., and Lindberg, U., 1974, Reproduction of adenoviruses, in: *Comprehensive Virology*, Vol. 2 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 143, Plenum Press, New York.
- 4b. Ginsberg, H. S., 1979, Adenovirus structural proteins, in: *Comprehensive Virology*, Vol. 13 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 409, Plenum Press, New York.
- 4c. Ginsberg, H. S., and Young, C. S. H., 1979, Genetics of adenoviruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 27, Plenum Press, New York.
- 4d. Patch, C. T., Levine, A. S., and Lewis, A. M., Jr., 1979, The adenovirus-SV40 hybrid viruses, in: *Comprehensive Virology*, Vol. 13 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 459, Plenum Press, New York.
- 4e. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:59.
- 4f. Wigand *et al.*, 1982, Adenoviridae: Second report, *Intervirology* **18**:169.
5. Jurkovičová, M., Van Touw, J. H., Sussenbach, J. S., and Ter Schegget, J., 1979, Characterization of the nuclear polyhedrosis virus DNA of *Adoxophyes orana* and of *Barathra brassicae*, *Virology* **93**:8.
- 6a. Salas, M. L., Kuznar, J., and Vinuela, E., 1981, Polyadenylation, methylation, and capping of the RNA synthesized *in vitro* by African swine fever virus, *Virology* **113**:484.
- 6b. Goorha, R., and Granoff, A., 1979, Icosahedral cytoplasmic deoxyriboviruses, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 347, Plenum Press, New York.
- 7a. Shahrabadi, M. S., Cho, H. J., and Marusyk, R. G., 1977, Characterization of the protein and nucleic acid of Aleutian disease virus, *J. Virol.* **23**:353.
- 7b. Porter, D. D., and Cho, H. J., 1980, Aleutian disease of mink: A model for persistent infection, in: *Comprehensive Virology*, Vol. 16 (H. Fraenkel-Conrat and R. R. Wagner eds.), p. 233, Plenum Press, New York.
8. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:97.
9. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:48.

10. D'Arcy, C. J., Burnett, P. A., Hewings, A. D., and Goodman, R. M., 1981, Purification and characterization of a virus from the aphid *Rhopalosiphum padi*, *Virology* **112**:346.
11. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:130.
- 12a. Rawls, W. E., and Leung, W.-C., 1979, Arenaviruses, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner eds.), p. 157, Plenum Press, New York.
- 12b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:119.
13. Bailey, L., and Woods, R. D., 1974, Three previously undescribed viruses for the honey bee, *J. Gen. Virol.* **25**:175.
14. Herring, A. J., Gray, E. W., and Snodgrass, D. R., 1981, Identification and characterization of ovine astrovirus, *J. Gen. Virol.* **53**:47.
15. Miller, L. K., and Dawes, K. P., 1979, Physical map of the DNA genome of *Autographa californica* nuclear polyhedrosis virus, *J. Virol.* **29**(March):1044.
16. Davies, H. A., Dourmashkin, R. R., and MacNaughton, M. R., 1981, Ribonucleoprotein of avian infectious bronchitis virus, *J. Gen. Virol.* **53**:67.
- 17a. Czernilofsky, A. P., Levinson, A. D., Varmus, H. E., and Bishop, J. M., 1980, Nucleotide sequence of an avian sarcoma virus oncogene (*src*) and proposed amino acid sequence for gene product, *Nature* **287**.
- 17b. Erikson, E., Collett, M. S., and Erikson, R. L., 1978, *In vitro* synthesis of a functional avian sarcoma virus transforming-gene product, *Nature* **274**(August).
18. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:43.
- 19a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:53.
- 19b. Tinsley, T. W., and Harrap, K. A., 1978, Viruses of invertebrates, in: *Comprehensive Virology*, Vol. 12 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 19c. Kelly, D. C., Lescott, T., Ayres, M. E., Carey, D., Coutts, A., and Harrap, K. A., 1981, Induction of a nonoccluded baculovirus persistently infecting *Heliothis zea* by *Heliothis armigera* and *Trichoplusia ni* nuclear polyhedrosis viruses, *Virology* **112**:174.
- 19d. Langridge, W. H. R., 1981, Biochemical properties of a persistent nonoccluded baculovirus isolated from *Heliothis zea* cells, *Virology* **112**:770.
- 19e. Revet, B. M. J., and Guelpa, B., The genome of a baculovirus infecting *Tipula paludosa* (Meig) (diptera): A high molecular weight closed circular DNA of zero superhelix density.
- 19f. McCarthy, W. J., Mercer, W. E., and Murphy, T. F., 1978, Characterization of the DNA from four heliothis nuclear polyhedrosis virus isolates, *Virology* **90**:374.
- 20a. Bailey, L., 1976, Viruses attacking the honey bee, *Adv. Virus Res.* **20**:271.
- 20b. Bailey, L., Carpenter, J. M., and Woods, R. D., 1981, Properties of a filamentous virus of the honey bee (*Apis mellifera*), *Virology* **114**:1.
- 20c. Bailey, L., Carpenter, J. M., Govier, D. A., and Woods, R. D., 1980, Bee virus X, *J. Gen. Virol.* **51**:405.
- 20d. Longworth, J. F., 1978, Small isometric viruses of invertebrates, *Adv. Virus Res.* **23**:103.
21. McPhee, D. A., and Westaway, E. G., 1981, Comparisons of belmont virus, a possible bunyavirus unique to Australia, with bunyamwera virus, *J. Gen. Virol.* **54**:135.
22. Weiss, M., Steck, F., and Horzinek, M. C., 1983, Purification and partial characterization of a new enveloped RNA virus (berne virus), *J. Gen. Virol.* **64**:1849.
23. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:49.
24. MacDonald, R. D., and Gower, D. A., 1981, Genotype and phenotypic divergence among three serotypes of aquatic birnaviruses (infectious pancreatic necrosis virus), *Virology* **114**:187.

25. Wright, P. J., and Di Mayorca, G., 1975, Virion polypeptide composition of the human papovavirus BK: Comparison with simian virus 40 and polyoma virus, *J. Virol.* **15**:828.
26. Friesen, P. D., and Rueckert, R. R., 1982, Black beetle virus: Messenger for protein B is a subgenomic viral RNA, *J. Virol.* **42**:986.
27. Della-Porta, A. J., and Brown, F., 1979, Physicochemical characterization of bovine ephemeral fever virus as a member of the family *Rhabdoviridae*, *J. Gen. Virol.* **44**:99.
28. Ludwig, H., 1983, Bovine herpesviruses in: *The Viruses*, Vol. II (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman eds.), p. 135, Plenum Press, New York.
29. Buchman, T. G., and Roizman, B., 1978, Anatomy of bovine mammillitis DNA: Restriction endonuclease maps of four populations of molecules that differ in the relative orientation of their long and short components, *J. Virol.* **25**:395.
30. Pritchett, R., Manning, J. S., and Zee, Y. C., and Characterization of bovine viral diarrhea virus RNA, *J. Virol.* **15**:1342.
- 31a. Bishop, D. H. L., and Shope, R. E., 1979, Bunyaviridae, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 31b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:115.
- 31c. Beaty, B. J., Holterman, M., Tabachnick, W., and Shope, R. E., 1981, Molecular basis of bunyavirus transmission by mosquitoes: Role of the middle-sized RNA segment, *Science* **211**:1433.
- 31d. Beaty, B. J., Miller, B. R., Shope, R. E., Rozhon, E. J., and Bishop, D. H. L., 1982, Molecular basis of bunyavirus *per os* infection of mosquitoes: Role of the middle-sized RNA segment, *Proc. Natl. Acad. Sci. USA* **79**:1295.
- 31e. Obijeski, J. F., and Murphy, F. A., 1977, Bunyaviridae: Recent biochemical developments, *J. Gen. Virol.* **37**:1.
32. Bridger, J. C., and Woode, G. N., 1976, Characterization of two particle types of calf rotavirus, *J. Gen. Virol.* **31**:245.
- 33a. Schaffer, F. L., 1979, Caliciviruses, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 249, Plenum Press, New York.
- 33b. Schaffer, F. L. *et al.*, 1980, Caliciviridae, *Intervirology* **14**:1.
- 33c. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:133.
- 34a. Goldman, N., Presser, I., and Sreevalsan, T., 1977, California encephalitis virus: Some biological and biochemical properties, *Virology* **76**:352.
- 34b. Vorndam, A. V., and Trent, D. W., 1979, Oligosaccharides of California encephalitis viruses, *Virology* **95**:1.
35. Parrish, C. R., and Carmichael, L. E., 1983, Antigenic structure and variation of canine parvovirus type-2, feline panleukopenia virus, and mink enteritis virus, *Virology* **129**:401.
36. Roberson, N. M., McGuire, T. C., Klevjer-Anderson, P., Gorham, J. R., and Cheevers, W. P., 1982, Caprine arthritis-encephalitis virus is distinct from visna and progressive pneumonia viruses as measured by genome sequence homology, *J. Virol.* **44**:755.
37. Matthews, R. E. F., 1982, The capripoxviruses, *Intervirology* **17**:44.
38. Matthews, R. E. F., 1982, The cardiopoxviruses, *Intervirology* **17**:130.
- 39a. Dixon, R. A. F., and Farber, F. E., 1980, Channel catfish virus: Physicochemical properties of the viral genome and identification of viral polypeptides, *Virology* **103**:267-278.
- 39b. McAllister, P. E., 1979, Fish viruses and viral infections, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 401, Plenum Press, New York.
40. Matthews, R. E. F., 1982, The chloriridoviruses, *Intervirology* **17**:57.
41. Matthews, R. E. F., 1982, The chordopoxvirinae, *Intervirology* **17**:42.
- 42a. Matthews, R. E. F., 1982, The Coronaviridae, *Intervirology* **17**:102.
- 42b. Robb, J. A., and Bond, C. W., 1979, Coronaviridae, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 193, Plenum Press, New York.

- 42c. Tyrell, D. A. J., Alexander, D. J., Almeida, J. D., Cunningham, C. H., Easterday, B. C., Garwes, D. J., Hierholzer, J. C., Kapikian, A., MacNaughton, M. R., and McIntosh, K., 1978, Coronaviridae: Second report, *Intervirology* **10**:321–328.
- 42d. Mahy, B. W. J., 1980, Coronavirus comes of age, *Nature* **288**:536.
- 42e. Dennis, D. E., and Brian, D. A., 1982, RNA-dependent RNA polymerase activity in coronavirus-infected cells, **42**:153–164.
- 42f. Siddell, S. G., *et al.* 1983, Coronaviridae, *Intervirology* **20**:181.
43. Ueda, Y., Dumbell, K. R., Tsuruhara, T., and Tagaya, I., 1978, Studies on cotia—an unclassified poxvirus, *J. Gen. Virol.* **40**:263–276.
- 44a. Wolinsky, J. S., and Johnson, R. T., 1980, Role of viruses in chronic neurological diseases, in: *Comprehensive Virology*, Vol. 16 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 257, Plenum Press, New York.
- 44b. Manuelidis, L., and Manuelidis, E. E., 1981, Search for specific DNAs in Creutzfeldt–Jakob infectious brain fractions using “nick translation,” *Virology* **109**:435.
- 44c. Gajdusek, D. C., 1977, Unconventional viruses and the origin and disappearance of kuru, *Science* **197**:943.
- 45a. Eaton, B. T., and Steacie, A. D., 1980, Cricket paralysis virus RNA has a 3' terminal poly(A), *J. Gen. Virol.* **50**:167.
- 45b. Scotti, P. D., and Longworth, J. F., 1980, The biology and ecology of strains of an insect small RNA virus complex, *Adv. Virus Res.* **26**:117.
- 46a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:49.
- 46b. Rapp, F., 1980, Persistence and transmission of cytomegalovirus, in: *Comprehensive Virology*, Vol. 16 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 193, Plenum Press, New York.
- 46c. Stinski, M. F., 1983, Molecular biology of cytomegaloviruses, in: *The Viruses, The Herpesviruses*, Vol. II (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 67, Plenum Press, New York.
- 46d. Rapp, F. 1983, The biology of cytomegaloviruses, in: *The Viruses, The Herpesviruses*, Vol. II (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 1, Plenum Press, New York.
- 47a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:86.
- 47b. Payne, C. C., and Mertens, P. P. C., 1983, Cytoplasmic polyhedrosis viruses, in: *The Viruses, The Reoviridae* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 425, Plenum Press, New York.
- 48a. Kelly, D. C., and Bud, H. M., 1978, Densonucleosis virus DNA: Analysis of fine structure by electron microscopy and agarose gel electrophoresis, *J. Gen. Virol.* **40**:33.
- 48b. Tijssen, P., and Kurstak, E., 1981, Biochemical, biophysical, and biological properties of densonucleosis virus (parvovirus). III. Common sequences of structural proteins, *J. Virol.* **37**:17–23.
- 48c. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:74.
- 49a. Teninges, D., 1979, Protein and RNA composition of the structural components of *Drosophila* X virus, *J. Gen. Virol.* **45**:641.
- 49b. Teninges, D., Ohanessian, A., Richard-Molard, C., and Contamine, D., 1979, Isolation and biological properties of *Drosophila* X virus, *J. Gen. Virol.* **42**:241.
- 49c. Scott, M. P., Fostel, J. M., and Pardue, M. L., 1980, A new type of virus from cultured *Drosophila* cells: Characterization and use in studies of the heat-shock response, *Cell* **22**:929.
50. Tignor, G. H., Murphy, F. A., Clark, H. F., Shope, R. E., Madore, P., Bauer, S. P., Buckley, S. M., and Meredith, D. C., 1977, Duvenhage virus: Morphological, biochemical, histopathological and antigenic relationships to the rabies serogroup, *J. Gen. Virol.* **37**:595.
51. Rosenwirth, B., and Eggers, H. J., 1978, Structure and replication of echovirus type

12. 1. Analysis of the polypeptides and RNA of echovirus 12 particles, *Eur. J. Biochem.* **92**:53.
52. Todd, D., and McNulty, M. S., 1978, Biochemical studies on a virus associated with egg drop syndrome 1976, *J. Gen. Virol.* **40**:63.
- 53b. Olberding, K. P., and Frost, J. W., 1975, Electron microscopical observations of the structure of the virus of viral haemorrhagic septicaemia (VHS) of rainbow trout (*Salmo gairdneri*), *J. Gen. Virol.* **27**:305.
54. Merregaert, J., van Emmelo, J., Devos, R., Porter, Al., Fellner, P., and Fiers, W., 1978, The 3'-terminal nucleotide sequence of encephalomyocarditis virus RNA, *Eur. J. Biochem.* **82**:55.
56. Matthews, R. E. F., 1982, The entomopoxvirinae, *Intervirology* **17**:44.
- 56a. Kieff, E., Dambaugh, T., King, W., Heller, M., Cheung, A., van Santen, V., Hummel, M., Beisel, C., and Fennewald, S., 1983, Biochemistry of Epstein-Barr virus, in: *The Viruses, The Herpesviruses, Vol. I* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 105, Plenum Press, New York.
- 56b. Henle, W., and Henle, G., 1983, Immunology of Epstein-Barr virus, in: *The Viruses, The Herpesviruses, Vol. I* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 200, Plenum Press, New York.
- 56c. de-Thé, G., 1983, Epidemiology of Epstein-Barr virus and associated diseases in man, in: *The Viruses, The Herpesviruses, Vol. I* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 25, Plenum Press, New York.
57. Zeegers, J. J. W., Van der Zelst, B. A. M., and Horzinek, M. C., 1976, The structural proteins of equine arteritis virus, *Virology* **73**:200.
58. O'Callaghan, D. J., Gentry, G. A., and Randall, C. C., 1983, The equine herpesviruses, in: *The Viruses, The Herpesviruses, Vol. II* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 215, Plenum Press, New York.
- 59a. Parekh, B., Issel, C. J., and Montelaro, R. C., 1980, Equine infectious anemia virus, a putative lentivirus, contains polypeptides analogous to prototype-C oncornaviruses, *Virology* **107**:520-525.
- 59b. Summers J., Jones, S. E., and Anderson, M. J., 1983, Characterisation of the agent of erythrocyte aplasia permits its classification as a human parvovirus, *J. Gen. Virol.* **64**:2527.
60. Clark, H. F., Lief, F. S., Lunger, P. D., Waters, D., Leloup, P., Foelsch, D. W., and Wyler, R. W., 1979, Fer de Lance virus (FDLV): A probable paramyxovirus isolated from a reptile, *J. Gen. Virol.* **44**:405-418.
61. Kiley, M. P. *et al.*, 1983, A taxonomic home for marburg and ebolavirus, *Intervirology* **18**:24.
62. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:98.
- 63a. Goorha, R., and Murti, K. G., 1982, The genome of frog virus 3, an animal DNA virus, is circularly permuted and terminally redundant, *Proc. Natl. Acad. Sci. USA* **79**:248-252.
- 63b. Murti, K. G., Goorha, R., and Granoff, A., 1982, Structure of frog virus 3 genome: Size and arrangement of nucleotid sequences as determined by electron microscopy, *Virology* **116**:275-283.
64. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:50.
65. Ganem, D., Greenbaum, L., and Varmus, H. E., 1982, Virion DNA of ground squirrel hepatitis virus: Structural analysis and molecular cloning, *J. Virol.* **44**:374-383.
66. Koller, R., and Goulian, M., 1981, Synthesis of parvovirus H-1 replicative form from viral DNA by DNA polymerase γ , *Proc. Natl. Acad. Sci. USA* **78**:6206-6210.
67. Foulke, R. S., Rosato, R. R., and French, G. R., 1981, Structural polypeptides of hazara virus, *J. Gen. Virol.* **53**:169-172.
68. Bosslet, K., and Sauer, G., 1978, Biological properties and physical map of the genome of a new papovavirus, HD virus, *J. Virol.* **25**:596-607.

69. Pocock, D. H., 1978, Effect of sulphhydryl reagents on the biological activities, polypeptide composition and morphology of haemagglutinating encephalomyelitis virus, *J. Gen. Virol.* **40**:93-101.
70. Gust, I. D., Coulepis, A. G., Feinstone, S. M., Locarnini, S. A., Moritsugu, Y., Najera, R., and Siegl, G., 1983, Taxonomic classification of hepatitis A virus, *Intervirology* **20**:1-7.
- 71a. Robinson, W. S., Viruses of human hepatitis A and B, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), pp. 471-526, Plenum Press, New York.
- 71b. Melnick, J. L., 1983, Class of hepatitis A virus as entero type 72 and hepatitis B as hepadnavirus Type 1, *Intervirology* **18**:103.
- 72a. Galibert, F., Mandart, E., Fitoussi, F., Tiollais, P., and Charnay, P., 1979, Nucleotide sequence of the hepatitis B virus genome (subtype ayw) cloned in *E. coli*, *Nature* **281**:646.
- 72b. Pasek, M., Goto, T., Gilbert, W., Zink, B., Schaller, H., MacKay, P., Leadbetter, G., and Murray, K., 1979, Hepatitis B virus genes and their expression in *E. coli*, *Nature* **282**:575.
73. Fleckenstein, B., and Desrosiers, R. C., 1983, *Herpesvirus saimiri* and *Herpesvirus ateles*, in: *The Viruses, The Herpesviruses*, Vol. I (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 253, Plenum Press, New York.
- 74a. Roizman, B., 1983, The family Herpesviridae: General description, taxonomy, and classification, in: *The Viruses, The Herpesviruses*, Vol. I (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 1, Plenum Press, New York.
- 74b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:47.
75. Krell, P. J., and Stoltz, D. B., 1980, Virus-like particles in ovary of an ichneumonid wasp: Purification and preliminary characterization, *Virology* **101**:408.
76. Robert-Guroff, M., Fahey, K. A., Maeda, M., Nakao, Y., Ito, Y., and Gallo, R. C., 1982, Identification of HTLV p19 specific natural human antibodies by competition with monoclonal antibody, *Virology* **122**:297.
77. Langridge, W. H. R., 1981, Biochemical properties of a persistent nonoccluded baculovirus isolated from *Heliothis zea* cells, *Virology* **112**:770.
- 78a. Compans, R. W., and Chopin, P. W., 1975, Reproduction of poxviruses, in: *Comprehensive Virology*, Vol. 4 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 179, Plenum Press, New York.
- 78b. Laver, W. G., Air, G. M., Webster, R. G., and Markoff, L. J., 1982, Amino acid sequence changes in antigenic variants of type A influenza virus N2 neuraminidase, *Virology* **122**:450.
- 78c. Webster, R. G., Laver, W. G., Air, G. M., and Schild, G. C., 1982, Molecular mechanisms of variation in influenza viruses, *Nature* **296**:115.
- 78d. Kaptein, J. S., and Nayak, D. P., 1982, Complete nucleotide sequence of the polymerase 3 gene of human influenza virus A/WNS/33, *J. Virol.* **42**:55.
- 78e. Winter, G., and Fields, S., 1982, Nucleotide sequence of human influenza A/PR/8/34 segment 2, *Nucl. Acids Res.* **10**:2135.
79. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:56.
80. Huang, C. H., 1982, Studies of Japanese encephalitis in China, *Adv. Virus Res.* **27**:71.
- 81a. Martin, J. D., Padgett, B. L., and Walker, D. L., 1983, Characterization of tissue culture-induced heterogeneity in DNAs of independent isolates of JC virus, *J. Gen. Virol.* **64**:2271.
- 81b. Walker, D. L., and Padgett, B. L., 1983, Progressive multifocal leukoencephalopathy, in: *Comprehensive Virology*, Vol. 18 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 161, Plenum Press, New York.
82. Siddell, S. G., 1982, Coronavirus JHM: Tryptic peptide fingerprinting of virion proteins and intracellular polypeptides, *J. Gen. Virol.* **62**:259.

83. Pudney, M., Newman, J. F. E., and Brown, F., 1978, Characterization of kawino virus, an entero-like virus isolated from the mosquito *Mansonia uniformis* (diptera: culicidae), *J. Gen. Virol.* **40**:433.
84. Scotti, P. D., Gibbs, A. J., and Wrigley, N. G., 1976, Kelp fly virus, *J. Gen. Virol.* **30**:1.
85. Westaway, E. G., and Shew, M., 1977, Proteins and glycoproteins specified by the flavivirus kunjin, *Virology* **80**:309.
86. Gentsch, J., Wynne, L. R., Clewley, J. P., Shope, R. E., and Bishop, D. H. L., 1977, Formation of recombinants between snowshoe hare and la crosse bunyaviruses, *J. Virol.* **24**:893.
87. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:127.
- 88a. Lehmann-Grube, F., Peralta, L. M., Bruns, M., and Lohler, J., 1983, Persistent infection of mice with the lymphocytic choriomeningitis virus, in: *Comprehensive Virology*, Vol. 18 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 43, Plenum Press, New York.
- 88b. Oldstone, M. B. A., 1979, Immune responses, immune tolerance, and viruses, in: *Comprehensive Virology*, Vol. 15 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 88c. Buchmeier, M. J., Lewicki, H. A., Tomori, O., and Johnson, K. M., 1980, Monoclonal antibodies to lymphocytic choriomeningitis virus react with pathogenic arenaviruses, *Nature* **288**:486.
89. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:111.
90. Nonoyama, M., 1983, The molecular biology of Marek's disease herpesvirus, in: *The Viruses*, The Herpesviruses, Vol. I (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 333, Plenum Press, New York.
91. Matthews, R. E. F., 1982, The mastadenoviruses, *Intervirology* **17**:60.
92. Perez-Bercoff, R., and Gander, M., 1977, The genomic RNA of mengovirus. I. Location of the poly(C) tract, *Virology* **80**:426.
- 93a. Chattopadhyay, S. K., Cloyd, M. W., Linemeyer, D. L., Lander, M. R., Rands, E., and Lowy, D. R., 1982, Cellular origin and role of mink cell focus-forming viruses in murine thymic lymphomas, *Nature* **295**:25.
- 93b. Chattopadhyay, S. K., Lander, M. R., Gupta, S., Rands, E., and Lowy, D. R., 1981, Origin of mink cytopathic focus-forming (MCF) viruses: Comparison with ecotropic and xenotropic murine leukemia virus genomes, *Virology* **113**:465.
94. Cotmore, S. F., Sturzenbecker, L. J., and Tattersall, P., 1983, The autonomous parvovirus MVM encodes two nonstructural proteins in addition to its capsid polypeptides, *Virology* **129**:333.
95. Matthews, R. E. F., 1978, Classification and nomenclature of viruses, *Intervirology* **17**:105.
96. Stohlman, S. A., and Lai, M. M. C., 1979, Phosphoproteins of murine hepatitis viruses, *J. Virol.* **22**:672.
- 97a. Yagi, M. J., and Compans, R. W., 1977, Structural components of mouse mammary tumor virus. I. Polypeptides of the virion, *Virology* **76**:751.
- 97b. Ball, J. K., Dekaban, G. A., McCarter, J. A., and Loosmore, S. M., 1983, Molecular biological characterization of a highly leukaemogenic virus isolated from the mouse. III. Identity with mouse mammary tumour virus, *J. Gen. Virol.* **64**:2177.
98. Örvell, C., 1978, Structural polypeptides of mumps virus, *J. Gen. Virol.* **41**:527.
- 99a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:117.
- 99b. Casals, J., and Tignor, G. H., 1979, Theairovirus genus, serological interrelationships, *Intervirology* **14**:144.
100. Newman, J. F. E., and Brown, F., 1977, Further physicochemical characterization of nodamura virus. Evidence that the divided genome occurs in a single component, *J. Gen. Virol.* **38**:83.
101. Matthews, R. E. F., 1982, The Nodaviridae, *Intervirology* **17**:167.

- 102a. Matthews, R. E. F., 1982, Nudaurelia β viruses, *Intervirology* 17:135.
- 102b. Juckes, I. R. M., 1979, Comparison of some biophysical properties of the nudaurelia β and ϵ viruses, *J. Gen. Virol.* 42:89-94.
- 102c. Reinganum, C., Robertson, J. S., and Tinsley, T. W., 1978, A new group of RNA viruses from insects, *J. Gen. Virol.* 40:195-202.
- 103a. Matthews, R. E. F., 1982, The Oncovirinae, *Intervirology* 17:125.
- 103b. Vogt, P. K., 1977, Genetics of RNA tumor viruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 341, Plenum Press, New York.
- 103c. Hanafusa, H., 1977, Cell transformation by RNA tumor viruses, in: *Comprehensive Virology*, Vol. 10 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 401, Plenum Press, New York.
- 103d. Duesberg, P., 1979, Transforming genes of retroviruses, Cold Spring Harbor Symposium on Quantitative Biology 45:13.
- 104a. Verwoerd, D. W., Huismans, H., and Erasmus, B. J., 1979, Orbiviruses, in: *Comprehensive Virology*, Vol. 14 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 285, Plenum Press, New York.
- 104b. Gorman, B. M., Taylor, J., and Walker, P. J., 1983, Orbiviruses, in: *The Viruses The Reoviridae* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 287, Plenum Press, New York.
- 104c. Matthews, R. E. F., 1982, The Orbiviruses, *Intervirology* 17:82.
- 105a. Matthews, R. E. F., 1982, The Orthomyxoviridae, *Intervirology* 17:106.
- 105b. Hightower, L. E., and Bratt, M. A., 1975, Genetics of orthomyxoviruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 535, Plenum Press, New York.
106. Matthews, R. E. F., 1982, The orthopoxviruses, *Intervirology* 17:42.
107. Matthews, R. E. F., 1982, The orthoreoviruses, *Intervirology* 17:81.
108. Payne, C. C., 1974, The isolation and characterization of a virus from *Oryctes rhinoceros*, *J. Gen. Virol.* 25:105.
109. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* 17:62.
- 110a. Salzman, N. P., and Khoury, G., 1979 Reproduction of papovaviruses, in: *Comprehensive Virology*, Vol. 3 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 63, Plenum Press, New York.
- 110b. Finch, J. T., and Crawford, L. V., 1975, Structure of small DNA-containing animal viruses, in: *Comprehensive Virology*, Vol. 4 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 119, Plenum Press, New York.
- 110c. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* 17:62.
- 111a. Choppin, P. W., and Compans, R. W., 1975, Reproduction of paramyxoviruses, in: *Comprehensive Virology*, Vol. 4 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 95, Plenum Press, New York.
- 111b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* 17:104.
- 111c. Kingsbury, D. W., Bratt, M. A., Choppin, W., Hanson, R. P., Hosaka, Y., ter Muelen, V., Norrby, E., Plowright, W., Rott, R., and Wunner, W. H., 1978, Paramyxoviridae, *Intervirology* 10:137.
- 111d. Matthews, H. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* 17:43.
- 112a. Rose, J. A., 1974, Parvovirus reproduction, in: *Comprehensive Virology*, Vol. 3 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 112b. Bachmann, P. A., Hoggan, M. D., Kurstak, E., Melnik, J. L., Pereira, H. G., Tattersall, P., and Vago, C., 1979, Parvoviridae: Second report, *Intervirology* 11:248.
- 112c. Matthews, H. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* 17:72.
113. Matthews, H. E. F. 1982, Classification and nomenclature of viruses, *Intervirology* 17:100.

114. Matthews, H. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:116.
- 115a. Crowell, R. L., and Landau, B. J., 1983, Receptors in the initiation of picornavirus infections, in: *Comprehensive Virology*, Vol. 18 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 115b. Rueckert, R. R., 1975, On the structure and morphogenesis of picornaviruses, in: *Comprehensive Virology*, Vol. 5 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 31, Plenum Press, New York.
- 115c. Cooper, P. D., 1977, Genetics of picornaviruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 133, Plenum Press, New York.
- 115d. Cooper, P. D., Agol, V. I., Bachrach, H. L., Brown, F., Ghendon, Y., Gibbs, A. J., Gillespie, J. H., Lonberg-Holm, K., Mandel, B., Melnick, J. L., Mohanty, S. B., Povey, R. C., Rueckert, R. R., Schaffer, F. L., and Tyrrell, D. A. J., 1978, Picornaviridae: Second report, *Intervirology* **10**:165.
- 115e. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:129.
116. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:105.
117. Kitamura, N., Semler, B. L., Rothberg, P. G., Larsen, G. R., Adler, C. J., Dorner, A. J., Emini, E. A., Hanecak, R., Lee, J. J., van der Werf, S., Anderson, C. W., and Wimmer, E., 1981, Primary structure, gene organization and polypeptide expression of poliovirus RNA, *Nature* **291**:547.
- 117a. Stoltz *et al.*, 1984, Polydnviridae: proposed family of insect viruses with segmented double-stranded circular DNA genome, *Intervirology* **21**:1.
- 118a. Eckhart, W., 1977, Genetics of polyoma virus and simian virus 40, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 118b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:62.
- 119a. Moss, B., 1974, Reproduction of poxviruses, in: *Comprehensive Virology*, Vol. 3 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 405, Plenum Press, New York.
- 119b. Gafford, L. G., Mitchell, E. B., Jr., and Randall, C. C., 1978, Sedimentation characteristics and molecular weights of three poxvirus DNAs, *Virology* **89**:229.
- 119c. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:42.
120. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:57.
- 121a. Sharpe, A. H., and Fields, B. N., 1983, Pathogenesis of reovirus infection, in: *The Viruses*, The Reoviridae (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 229, Plenum Press, New York.
- 121b. Joklik, W. K., 1983, *The Viruses*, The Reoviridae (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.
- 121c. Joklik, W. K., 1983, The reovirus particle, in: *The Viruses*, The Reoviridae (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 9, Plenum Press, New York.
- 121d. Shatkin, A. J., and Kozak, M., 1983, Biochemical aspects of reovirus transcription and translation, in: *The Viruses*, The Reoviridae (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 79, Plenum Press, New York.
- 121e. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:81.
122. Lambert, D. M., Pons, M. W., Mbuy, G. N., and Hasler, K. D., 1980, Nucleic acids of respiratory syncytial virus, *J. Virol.* **36**:837.
- 123a. Matthews, R. E. H., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:124.
- 123b. Duesberg, P. H., 1983, Retroviral transforming genes in normal cells? *Nature* **304**:219.
- 124a. Wagner, R. R., 1975, Reproduction of rhabdoviruses, in: *Comprehensive Virology*, Vol. 4 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 1, Plenum Press, New York.

- 124b. Pringle, C. R., 1977, Genetics of rhabdoviruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 239, Plenum Press, New York.
- 124c. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:109
125. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:130.
- 126a. Holmes, I. H., 1983, Rotaviruses, in: *The Viruses*, The Reoviridae (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 359, Plenum Press, New York.
- 126b. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:84.
- 127a. Keith, J., and Fraenkel-Conrat, H., 1975, Identification of the 5' end of rous sarcoma virus RNA, *Proc. Natl. Acad. Sci. USA* **72**:3347.
- 127b. Hackett, P. B., Swanstrom, R., Varmus, H. E., and Bishop, J. M., 1982, The leader sequence of the subgenomic mRNA's of rous sarcoma virus is approximately 390 nucleotides, *J. Virol.* **41**:527.
128. Van Alstyne, D., Drystal, G., Kettlys, G. D., and Bohn, E. M., 1981, The purification of rubella virus (RV) and determination of its polypeptide composition, *Virology* **108**:491.
- 129a. Marsh, R. F., Malone, T. G., and Lancaster, R. P., 1978, Evidence for an essential DNA component in the scrapie agent, *Nature* **275**:147.
- 129b. Cho, H. J., 1979, Requirement of a protein component for scrapie infection, *Intervirology* **14**:213.
130. Monroe, S. S., Ou J-H., Rice, C. M., Schlesinger, S., Strauss, E. G., and Strauss, J. H., 1982, Sequence analysis of cDNAs derived from the RNA of sindbis virions and of defective interfering particles, *J. Virol.* **41**:153.
- 131a. Schultz, A. M., Ruscetti, S. K., Scolnick, E. M., and Oroszlan, S., 1980, The *env*-gene of the spleen focus-forming virus lacks expression of p15(E) determinants, *Virology* **107**:537.
- 131b. Linemeyer, D. L., Ruscetti, S. K., Scolnick, E. M., Evans, L. H., and Duesberg, P. H., 1981, Biological activity of the spleen focus-forming virus is encoded by a molecularly cloned subgenomic fragment of spleen focus-forming virus DNA, *Proc. Natl. Acad. Sci. USA* **78**:1401.
132. O'Rear, J. J., and Temin, H. M., 1981, Mapping of alterations of noninfectious proviruses of spleen necrosis virus, *J. Virol.* **39**:138.
133. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:126.
134. ter Meulen, V., Stephenson, J. R., and Kreth, H. W., 1974, Subacute sclerosing panencephalitis, in: *Comprehensive Virology*, Vol. 18 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 105, Plenum Press, New York.
135. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:44.
136. Fiers, W., Contreras, R., Haegeman, G., Rogiers, R., Van de Voorde, A., Van Heuverswyn, H., Van Herreweghe, V., Volckaert, G., and Ysebaert, M., 1978, Complete nucleotide sequence of SV40 DNA, *Nature* **273**:113.
- 137a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:97.
- 137b. Pfefferkorn, E. R., and Shapiro, D., 1974, Reproduction of togaviruses, in: *Comprehensive Virology*, Vol. 2 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 171, Plenum Press, New York.
- 137c. Pfefferkorn, E. R., 1977, Genetics of togaviruses, in: *Comprehensive Virology*, Vol. 9 (H. Fraenkel-Conrat and R. R. Wagner, eds.), p. 209, Plenum Press, New York.
- 138a. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:117.
- 138b. Hewlett, M. J., Pettersson, R. F., and Baltimore, D., 1977, Circular forms of uukuniemi virion RNA: An electron microscopic study, *J. Virol.* **21**:1085.

- 139a. Belle Isle, H., Venkatesan, S., and Moss, B., 1981, Cell-free translation of early and late mRNAs selected by hybridization to cloned DNA fragments derived from the left 14-million to 72-million daltons of the vaccinia virus genome, *Virology* **112**:306.
- 139b. Wittek, R., Barbosa, E., Cooper, J. A., Garon, C. F., Chan, H., and Moss, B., 1980, Inverted terminal repetition in vaccinia virus DNA encodes early mRNAs, *Nature* **285**:21.
140. Hyman, R. W., 1983, Molecular biology of varicella-zoster virus, in: *The Viruses, The Herpesviruses, Vol. II* (H. Fraenkel-Conrat, R. R. Wagner, and B. Roizman, eds.), p. 115, Plenum Press, New York.
141. Matthews, R. E. F., 1982, Classification and nomenclature of viruses, *Intervirology* **17**:110.
142. Harris, J. D., Scott, J. V., Traynor, B., Brahic, M., Stowring, L., Ventura, P., Haase, A. T., and Peluso, R., 1981, Visna virus DNA: Discovery of a novel gapped structure, *Virology* **113**:573.
- 143a. DeJean, A., Vitvitski, L., Brechot, C., Trepo, C., Tiollais, P., and Charnay, P., 1982, Presence and state of woodchuck hepatitis virus DNA in liver and serum of woodchucks: Further analogies with human hepatitis B virus, *Virology* **121**:195.
- 143b. Galibert, F., Chen, T. N., and Mandart, E., 1982, Nucleotide sequence of a cloned woodchuck hepatitis virus genome: Comparison with the hepatitis B virus sequence, *J. Virol.* **41**:51.