

Ebola & Marburg Virus Vaccine ELISA Kits, Recombinant Proteins, and Antibodies

Alpha Diagnostic Intl Inc. (ADI), a biotechnology company located in San Antonio, Texas, USA, has been researching and developing many prototype vaccines and diagnostic tests to determine the efficacy of Ebola candidate vaccines in animals and humans. We have cloned and expressed many recombinant proteins (GP, NP, and VP40) from Ebola/Marburg viruses, generated antibodies, and developed ELISA kits for the detection and measurement of Ebola related antigens and antibodies. Given the urgency of Ebola virus disease (EVD), the company is releasing many critical recombinant proteins, antibodies, and ELISA kits to further research into the development of Ebola vaccines and testing their efficacy. ADI's Ebola kits contain all animal derived antibodies made to purified recombinant proteins. ADI antibodies and kits have no Ebola virus or viral derived proteins and are completely safe to use and transport. The kits have been tested and validated with Zmapp. Additional ELISA kits and antibodies are available for Ebola vaccine vectors (Adenovirus, VSV, and Rabies virus proteins) to determine efficacy of Ebola vaccines.

Zaire-Ebola vaccine Related ELISA kits

Virus	ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#
Zaire Ebola	Zaire-Ebola Virus Nucleoprotein (EBOV NP) antibody ELISA Kits**	Mouse	AE-320500-1	AE-320510-1
		Human	AE-320520-1	AE-320530-1
		Rabbit	AE-320540-1	
		Monkey/Chimp	AE-320550-1	AE-320560-1
	Zaire-Ebola Virus Glycoprotein (EBOV GP) antibody ELISA Kits**	Mouse	AE-320600-1	AE-320610-1
		Human	AE-320620-1	AE-320630-1
		Rabbit	AE-320640-1	
		Monkey/Chimp	AE-320650-1	AE-320660-1
	Zaire-Ebola Virus Glycoprotein (EBOV VP40) antibody ELISA Kits**	Mouse	AE-320700-1	AE-320710-1
		Human	AE-320720-1	AE-320730-1
		Rabbit	AE-320740-1	
		Monkey/Chimp	AE-320750-1	AE-320760-1
	ZMAPP (Humanized Anti-Ebola GP) IgGs Active ELISA kit (for the determining the activity of Zmapp and its measurement)	Human/Chimp /Mouse	AE-320850-1	
Sudan Ebola	Sudan-Ebola Virus Glycoprotein (EBOV GP) antibody ELISA Kits**	Mouse	AE-321600-1	AE-321610-1
		Human	AE-321620-1	AE-321630-1
		Rabbit	AE-321640-1	
		Monkey/Chimp	AE-321650-1	AE-321660-1
Marburg	Marburg Virus Glycoprotein (MARV GP) antibody ELISA Kits**	Mouse	AE-322600-1	AE-322610-1
		Human	AE-322620-1	AE-322630-1
		Rabbit	AE-322640-1	
		Monkey/Chimp	AE-322650-1	AE-322660-1

****Notes:** The above ELISA kits contain recombinant protein made and purified from E. coli or sf9 host cell. There is no Ebola virus or antibodies in the kit. The kit transport or usage does not pose any safety tissue. However, if Ebola positive samples are tested using the kit then they must be used in appropriate BSL4 labs

Zaire-Ebola vaccine Related Antibodies, Proteins and other Reagents

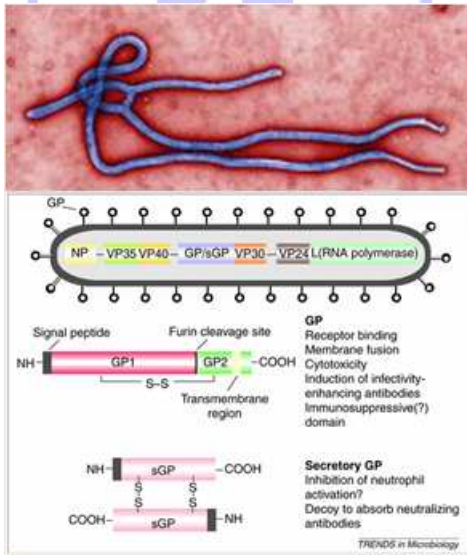
Virus Type#	Catalog#	Product Description	Product Type
Bundibugyo Ebola (BDBV)	BVGP41-A	Rabbit Anti-Bundibugyo Ebola virus glycoprotein (BDBV GP) IgG, aff pure	Antibodies
	BVGP45-R-10	Recombinant (sf9) Bundibugyo Ebola virus glycoprotein (his-tag, 73 kda), purified	Recombinant protein
Zaire Ebola (ZEBOV)	EVGP11-A	Rabbit Anti-Zaire Ebola virus glycoprotein peptide (EBOV GP) IgG, purified	Antigen protein
	EVGP11-C	Recombinant Zaire Ebola virus glycoprotein (EBOV GP) protein control for Western	Protein control
	EVGP15-A	Rabbit Anti-Zaire Ebola virus glycoprotein (GP, 1-676aa/DNA vaccine) IgG, purified	Antibodies
	EVGP16-A	Rabbit Anti-Zaire Ebola virus glycoprotein (GP 1-652aa/DNA vaccine) IgG, purified	Antibodies
	EVGP17-R-10	Recombinant (sf9) Zaire Ebola virus glycoprotein (his-tag, 68 kda), purified	Antigen protein
	EVGP18-M	Mouse monoclonal Anti-Zaire Ebola virus glycoprotein (EBOV GP) IgG, purified	Antigen protein
	EVL14-S	Rabbit Anti-Zaire Ebola virus-like particles (VLPs containing NP, GP, and VP40) antiserum	Antiserum
	EVNP11-C	Recombinant Zaire-Ebola virus nucleoprotein (EBOV NP) control for Western	Protein control
	EVNP11-S	Rabbit Anti-Zaire-Ebola virus nucleoprotein (EBOV NP) protein antiserum	Antiserum
	EVNP13-A	Rabbit Anti-Zaire Ebola virus nucleoprotein (EBOV NP, 1-739/DNA vaccine) IgG, aff pure	Antibodies
	EVNP15-R-10	Recombinant (E.coli) Zaire Ebola virus nucleoprotein (EBOV NP) (full length, his-tag, 82 kda), purified	Antigen protein
	EVP351-A	Rabbit Anti-Zaire Ebola virus VP35 peptide (ZEBOV VP35) IgG, aff pure	Antibodies
	EVP401-A	Rabbit Anti-Zaire-Ebola virus VP40 peptide (ZEBOV VP40) IgG, aff pure	Antiserum
	EVP401-C	Recombinant Zaire-Ebola virus VP40 protein control for Western blot	Protein control
	EVP405-R-10	Recombinant (E.coli) Zaire Ebola virus VP40 (no-tag, ~40 kda), purified	Antigen protein
	EVPO11-A	Rabbit Anti-Zaire Ebola virus L-polymerase peptide IgG, aff pure	Antibodies
	EVZ12-M	Mouse Monoclonal Anti-Zaire Ebola virus IgG, aff pure	Antibodies
	EVZ13-M	Mouse Monoclonal Anti-Zaire Ebola virus IgG, aff pure	Antibodies
	EVZ14-M	Mouse Monoclonal Anti-Zaire Ebola virus IgG (mixture of EVZ12-M and EVZ13-M), aff pure	Antibodies
	SP-89925-1	Zaire Ebola virus Glycoprotein (GP), T cell epitope (577-584) (Thr-Glu-Leu-Arg-Thr-Phe-Ser-Ile) (MW: 966.1)	Pure peptide
SP-89926-1	Zaire Ebola virus negative control peptide (influenza hemagglutinin) (Tyr-Pro-Tyr-Asp-Val-Pro-Asp-Tyr-Ala) (MW: 1102.2)	Pure peptide	
Marburg Virus (MARV)	MVGP12-A	Rabbit Anti-Marburg virus glycoprotein peptide (MARV GP) IgG, aff pure	Antibodies
	MVGP12-M	Mouse Monoclonal Anti-Marburg virus glycoprotein (MARV GP) IgG, purified	Antigen protein
	MVGP15-R-10	Recombinant (sf9) Angolavirus Marburg virus glycoprotein (his-tag, 60 kda), purified	Recombinant protein
	MVGP16-R-10	Recombinant (sf9) Musoke Marburg virus glycoprotein (HA-tag, 68 kda), purified	Recombinant protein
	MVLP11-S	Rabbit Anti-Marburg virus-like Particles (VLPs containing NP, GP, and VP40) antiserum	Antibodies
	MVLP12-A	Rabbit Anti-Marburg virus-like Particles (VLPs containing NP, GP, and VP40) IgG	Antibodies
	MVNP13-A	Rabbit Anti-Marburg virus nucleoprotein (MARV NP) IgG aff pure	Antibodies
	MVP401-M	Mouse Monoclonal Anti-Marburg virus VP40 (MARV VP40) IgG purified	Antibodies
MVP402-A	Rabbit Anti-Marburg virus VP40 peptide (MARV VP40) IgG aff pure	Antibodies	
Reston Ebola (RESTV)	RVGP31-A	Rabbit Anti-Reston Ebola virus Glycoprotein (RESTV GP) peptide IgG pure	Antibodies
	RVGP31-C	Purified Reston Ebola virus Glycoprotein (RESTV GP) control for western blot	protein control
	RVGP35-R-10	Recombinant (sf9) Reston Ebola virus glycoprotein (his-tag~72 kda), purified	Recombinant protein
Sudan Ebola (SUDV)	SVGP21-A	Rabbit Anti-Sudan Ebola virus glycoprotein (SUDV GP) peptide IgG purified	Antibodies
	SVGP21-C	Recombinant Sudan-Ebola virus glycoprotein (his-tag, 68 kda) control for Western	protein control
	SVGP22-M	Mouse Monoclonal Anti-Sudan Ebola virus glycoprotein (SUDV GP) IgG, purified	Antigen protein
	SVGP25-R-10	Recombinant (sf9) Sudan-Ebola virus glycoprotein (his-tag, 68 kda), purified	Antigen protein
	SVNP23-A	Rabbit Anti-Sudan Ebola virus Nucleoprotein (SUDV NP) peptide IgG, aff pure	Antibodies
	SVP402-A	Rabbit Anti-Sudan Ebola virus VP40 (SUDV VP40) IgG, aff pure	Antibodies
	SVP403-M	Mouse Monoclonal Anti-Sudan Ebola virus VP40 (SUDV VP40) IgG purified	Antibodies

Ebola Virus –General Information, Therapeutics and Vaccines

Ebola virus (EBOV) causes severe disease in humans and in nonhuman primates in the form of viral hemorrhagic fever. The name Ebola virus is derived from the Ebola River (a river that was at first thought to be in close proximity to the area in Zaire where the first recorded Ebola virus disease outbreak occurred) and the taxonomic suffix virus. Zaire Ebolavirus is a virological taxon included in the genus Ebolavirus, family Filoviridae, order Mononegavirales. The family Filoviridae (members are called Filovirus or filovirids; filum is derived from latin meaning filamentous) is a group of several related viruses that form filamentous infectious viral particles (virions) and encode their genome in the form of single-stranded negative-sense RNA. The family currently includes the three virus genera Cuevavirus, Ebolavirus, and Marburgvirus. The family members are:

Genus name	Species name	Virus name (Abbreviation)
<i>Cuevavirus</i>	<i>Lloviu cuevavirus*</i>	Lloviu virus (LLOV)
<i>Ebolavirus</i>	<i>Bundibugyo ebolavirus</i>	Bundibugyo virus (BDBV; previously BEBOV)
	<i>Reston ebolavirus</i>	Reston virus (RESTV; previously REBOV)
	<i>Sudan ebolavirus</i>	Sudan virus (SUDV; previously SEBOV)
	<i>Tai Forest ebolavirus</i>	Tai Forest virus (TAFV; previously CIEBOV)
	<i>Zaire ebolavirus*</i>	Ebola virus (EBOV; previously ZEBOV)
<i>Marburgvirus</i>	<i>Marburg marburgvirus*</i>	Marburg virus (MARV)

The two members of the family that are commonly known are Ebola virus and Marburg virus. Both viruses, and some of their lesser known relatives, cause severe disease in humans and nonhuman primates (NHP) in the form of viral hemorrhagic fevers. All Ebola viruses and Marburg viruses are Select Agents Group 4 Pathogens. Filoviruses have a history that dates back several tens of millions of years. The most recent common ancestor of both the Reston and Zaire species has been estimated to be ~1960. The most recent common ancestor of the Marburg and Sudan species appears to have evolved 700 and 850 years before present respectively. The family Filoviridae represents significant health risks as emerging infectious diseases as well as potentially engineered biothreats. Ebolavirus species Zaire (ZEBOV) causes a highly lethal hemorrhagic fever, resulting in the death of 90% of patients within days. Ebola Zaire attacks every organ and tissue in the human body except skeletal muscle and bone. Ebola is classified as a Level 4 pathogen (higher than AIDS) with a 2 to 21 day (7 to 14 days average) incubation period. There are currently four known strains of Ebola: Zaire, Sudan, Reston and Tai. All of them cause illness in sub-human primates. Only Ebola Reston does not cause illness in humans. The mortality rate of Ebola victims is between 60% and 90%; with Ebola Sudan at 60% and Ebola Zaire at 90%.



The virions are tubular in general form but variable in overall shape and may appear as the classic shepherd's crook or eyebolt, as a U or a 6, or coiled, circular, or branched. Ebolavirions consist of seven structural proteins. At the center is the helical ribonucleocapsid, which consists of the genomic RNA wrapped around a polymer of **nucleoproteins (NP)**. Associated with the ribonucleoprotein is the RNA-dependent RNA polymerase (L) with the polymerase cofactor (VP35) and a transcription activator (VP30). The ribonucleoprotein is embedded in a matrix, formed by the major (VP40) and minor (VP24) matrix proteins. These particles are surrounded by a lipid membrane derived from the host cell membrane. The membrane anchors a **glycoprotein (GP1,2)** that projects 7 to 10 nm spikes away from its surface. While nearly identical to marburgvirions in structure, ebolavirions are antigenically distinct. Being acellular, viruses do not grow through cell division; instead, they use the machinery and metabolism of a host cell to produce multiple copies of themselves, then assembling in the cell.

Ebola virus disease (EVD) is clinically indistinguishable from **Marburg virus disease (MVD)** and can be easily confused with many other diseases prevalent in Equatorial Africa, such as other viral hemorrhagic fevers, falciparum malaria, typhoid fever, shigellosis, and rickettsial diseases such as typhus, cholera, gram-negative septicemia, borreliosis such as relapsing fever or EHEC enteritis. The most common **diagnostic methods** are therefore RT-PCR in conjunction with antigen-capture ELISA which can be performed in field or mobile hospitals and laboratories. **Vaccines** have successfully protected nonhuman *primates*; however, the six months needed to complete immunization made it impractical in an epidemic. In 2003, a vaccine using an adenoviral (ADV) vector carrying the Ebola spike protein was tested on crab-eating macaques. The monkeys were challenged with the virus 28 days later, and remained

resistant. In 2005, a vaccine based on attenuated recombinant vesicular stomatitis virus (VSV) vector carrying either the Ebola glycoprotein or Marburg glycoprotein successfully protected nonhuman primates, opening clinical trials in humans. There are currently **no Food and Drug Administration-approved vaccines** for the prevention of EVD. The most promising ones are DNA vaccines or are based on adenoviruses, vesicular stomatitis Indiana virus (VSIV) or filovirus-like particles (VLPs) as all of these candidates could protect nonhuman primates from Ebola virus-induced disease.

Experimental Drugs and Vaccines (ZMapp, Favipravir, TKM-Ebola etc)

From 1976 (when it was first identified) through 2013, the WHO reported a total of 1,716 cases. The largest outbreak to date is the ongoing 2014 West Africa Ebola outbreak, which is affecting Guinea, Sierra Leone, Liberia and Nigeria. As of 26 August 2014, 3,069 suspected cases resulting in the deaths of 1,552 have been reported. Currently, neither a specific treatment nor a vaccine licensed for use in humans is available. However, a number of vaccine candidates have been developed in the last decade that are highly protective in non-human primates. Among these vaccines are recombinant Adenoviruses (Ad5/chAd3), recombinant Vesicular Stomatitis viruses (VSV), recombinant Human Parainfluenza viruses and virus-like particles. There is sufficient evidence from studies in animal studies and NHP (non-human primates) that a vaccine protective against ebolaviruses is possible.