

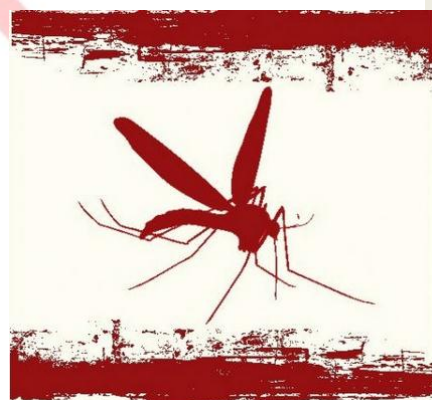
Setting New Standards For Vaccine Development & Testing

"The impact of vaccination on the health of the world's peoples is hard to exaggerate. With the exception of safe water, no other modality, not even antibiotics, has had such a major effect on mortality reduction and population growth."

Since the early recognition of vaccines by Edward Jenner in 1796, millions of lives have been saved by a variety of bacterial and human vaccines. Until recently, most vaccines were aimed at infants and children, but adolescents and adults (e.g., obesity and drug abuse) are increasingly being targeted. New methods of administering vaccines such as skin patches, aerosols via inhalation devices, and eating genetically engineered plants. Attempts are being made to develop vaccines to help cure chronic infections, as opposed to preventing disease. Vaccines are being developed to defend against bioterrorist attacks such as anthrax, plague, and smallpox. Malaria alone kills millions every year. There is an urgent need to develop effective vaccines for Malaria and HIV etc.

Biotech and vaccine manufactures have paid more attention to produce vaccine but fewer companies have developed reliable tests to determine efficacy of vaccines in animals and humans. ADI is at forefront of developing newer tests for a variety of old and new vaccines. It is for the first time that one can identify and measure the vaccine after adsorbing it on Alum. This brochure presents a brief summary of antibodies, reagents and test methods available for various vaccines.

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Vaccine & Drug Development: Custom Sample Testing

Drug and vaccine development requires not only the availability of appropriate test kits but efficient and timely testing of animal and human samples. Over the last 20-years, ADI has researched and developed 100s of unique ELISA kits for autoimmune antibodies, serum proteins, immunoglobulin's (Ig's), specific proteins such as tumor markers. ADI has also expanded the ELISA kits to establish efficacy of various vaccines by developing vaccine-specific antigen and antibody ELISA. ADI is now offering "Custom Testing of Samples" for various analytes.



ADI manufactures hundreds of specialized animal, human, and monkey ELISA kits

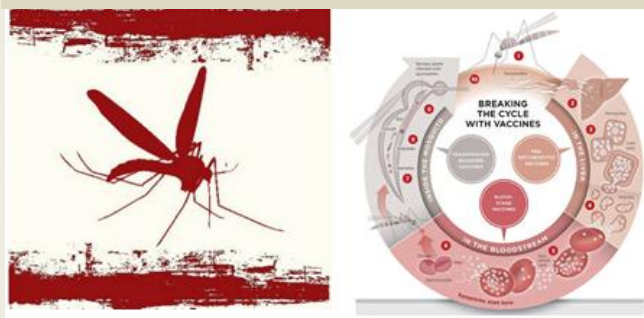
- [ELISA kits for vaccine testing \(Diphtheria, Pertussis, Tetanus, Rabies, Polio, Rubella, HIB, Malaria, Hepatitis, Influenza, Meningitis, Tuberculosis, Anthrax, Ebola, JEV, HPV etc\)](#)
- [Animal and human autoimmune ELISA kits \(anti-dsDNA, ANA, anti-SSA/B, Cardiolipin etc\)](#)
- [Therapeutic humanized antibodies \(Herceptin, Rituximab, Xolair and Humira etc\)](#)
- [Animal health screening \(MPV, MHV, MNV, EDIM, LCMV, KRV, Sendai etc\)](#)
- [Host Cell Proteins \(HCPs\) ELISA \(E. Coli, CHO, SP2/0; Protein A/G, BSA, Ovalbumin\)](#)
- [Serum Protein Profile \(Albumin, Transferrin, Lactoferrin, IgG, IgM, IgA, and IgE etc\)](#)
- [Environmental Chemicals, Drugs, and Antibiotic Residues ELISA \(Ampicillin, Sulphonamides, DES, Tylosin etc\)](#)
- [Serum Proteins, Hormones, and Tumor Markers \(Leptin, Adiponectin, Resistin, Insulin, CEA, PSA, AFP, CA125, CA199, EPO, BMPs, Defensins BD1-3, Peptide, Thyroid and steroid hormones\)](#)

Advantages of working with ADI as CRO?

- ✓ 20+ years of industry experience
- ✓ ADI is the sole manufacturer of 100s of ELISA kits. Other CROs will purchase kits from ADI. It cost more and loss of time.
- ✓ We know more about the kit and how to optimize the sample testing and maximize the use of the kits. All testing done at one place using a single lot of the kits
- ✓ Most competitive pricing and efficient documentation of data
- ✓ Confidential GLP-level testing
- ✓ [Contact ADI](#) for details and customized quote.

Malaria Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Malaria is a parasitic disease spread by mosquitoes. It affects about ~500 millions of people worldwide and killing an estimated 1 million annually. Over the last 50 years, vaccines for many debilitating diseases such as Diphtheria, Tetanus, Pertussis, Polio, Rabies, Mumps, Rubella, Tuberculosis, Hepatitis and Meningitis etc have been developed that are saving millions of lives worldwide. Despite many decades of research, an effective Malaria vaccine has remained elusive. The causative agent, the parasitic protozoan *Plasmodium*, is transmitted by mosquitoes. Four *Plasmodium* species infect humans. These are *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale* and *Plasmodium malariae*. *Plasmodium berghei* infects rodents. *P. falciparum* is the most widespread and also the most serious and potentially fatal form. The life cycle of the malaria is complex, with phases both in human host and the insect vector, the female anopheline mosquito. There are several *Plasmodium* forms: sporozoites, merozoites, gametocytes, gametes, ookinets, oocysts. Parasite may encode in the order of 2000 proteins, several hundred of which are antigenic. Proteins synthesized by each stage may be specific to that stage, such as liver stage-specific antigen (LSA-1), or be common to several stages, such as ring-infected erythrocyte surface antigen (RESA). The malaria parasite develops through several phases in the human body that evoke different immunologic responses, and vaccines for all phases are under development. The best-characterized protein of sporozoites is circumsporozoite protein-1 (CSP-1), an approximate 60 kDa protein located on the surface of developing and mature sporozoites and present in developing exoerythrocytic forms. It constitutes the major surface protein of the sporozoite. The central domain of CSP-1 is composed of an extensive array of tandemly repeated short sequences (NANP)_n and (NVDP)_n.



RTS,S is the most clinically advanced **malaria vaccine** candidate in the world today. It targets the pre-erythrocytic stage of the disease. RTS,S vaccine aims to induce antibodies to a parasitic protein (CSP-1) that is expressed in pre-erythrocytic stage and therefore prevent the parasite from infecting, maturing, and multiplying in the liver, and from re-entering the bloodstream and infecting red blood cells. RTS,S consists of two polypeptides that spontaneously form composite particulate structures on their simultaneous synthesis in yeast (*Saccharomyces cerevisiae*). RTS is a single polypeptide chain corresponding to **CSP-1 amino acids 207-395** of *P. falciparum* (3D7) that is **fused to HBsAg** (adw serotype). S is a polypeptide of 226 amino acids that corresponds to HBsAg. The particles were purified from yeast-cell cultures and constitute the antigen used in the formulations. RTS,S is being developed by PATH, GlaxoSmithKline and the Bill and

Melinda Gates Foundation. The addition of GSK's proprietary Adjuvant Systems (**AS01/AS02/QS21/Mpl** etc) aims to further improve the immune response. In October 2011, Phase III trial of RTS,S reported that it may protect approximately 50% of inoculated infants and children in malaria-endemic areas against infection and clinical disease caused by *Plasmodium falciparum*. No severe adverse events observed following the RTS,S vaccination were judged to be related to vaccination, though minor adverse events like headache, swelling, and malaise were. Antibodies to the *Plasmodium falciparum* circumsporozoite repeat region were measured by ELISA using a recombinant antigen R32LR that contains the sequence **[NVDP(NANP)15]2LR**. Antibodies to HBsAg were also measured by ELISA. Antibodies to the CSP-1 protein are protective in animals, and in studies of infection in challenge models. Field trials show a relation between anti-CSP-1 antibody titres and re-infection rates after curative treatment with anti-malarials. However, no association between anti-circumsporozoite antibody titres and clinical malaria has been identified.

The primary objectives of a vaccine are to produce antibodies that will neutralize the causative agent. Therefore, it is extremely important to have simple, reliable, cost-effective methods to quantify not only the antibody titers but also the isotypes of antibodies and then correlate them with disease progression and vaccine efficacy. The main component of **RTS,S malaria vaccine** is the recombinant protein sequence encoded by CSP-1 protein (amino acids 207-395 of *P. falciparum* (3D7) that is fused to 226-aa HBsAg proteins). HBsAg not only serve as carrier protein for CSP-1 but there is added benefit of inducing antibodies to HBsAg and protection from hepatitis B. A review of the Phase II clinical data on the antigenicity of the RTS,S vaccine reveals that anti-CSP-1 antibodies were measured using an antigen, **R32LR** (recombinant or synthetic peptides containing (NANP)₁₅ or (NANP)₃₀-(NVDP)₄-LR or about 65-130 peptide. This antigen is not the full-length CSP-1 that was actually used in the vaccine. The assumption made was that R32LR antigens detected antibodies from malaria samples or vaccinated animals. However, R32LR antigen is not a substitute for an extended protein used in the vaccine and the R32LR-antigen based ELISA may miss antibodies that will be directed against the epitopes not present in R32LR. The truncated antigen (R32LR) will also assume a different conformation or structure than the full length CSP-1 protein in the vaccine. It is strongly advisable to use full length CSP-1 protein that was actually used in the vaccine for antibody ELISA and to draw conclusions about the RTS,S antigenicity, malaria progression, and ultimately vaccine efficacy.

ADI is the first company to develop an antibody ELISA to determine the efficacy of the RTS,S vaccine. ADI's RTS,S antibody ELISAs (mouse, rabbit, and human) use the recombinant *P. falciparum* CSP-1 protein (207-395aa) that is the most critical and an active component of the RTS,S vaccine. ADI is further expanding the RTS,S antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Malaria Related Reagents and ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
RTS,S Malaria Vaccine (CSP-Antibody, <i>P. falciparum</i>) ELISA Kits	Mouse	970-300-MMG	970-310-MMM
	Rabbit	970-200-CSR	970-210-CSM
	Human	970-400-CHG	970-410-CHM
MSP, Malaria Vaccine (MSP-1 Antibody, <i>P. falciparum</i>) ELISA Kits	Mouse	970-320-MSG	970-330-MSM
	Rabbit	970-340-RMG	970-350-RMM
	Human	970-360-HMG	970-370-HMM

Note: ADI also developed antibody ELISA kits using (NANP)_n and (NVDP)_n synthetic peptides.



Malaria Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

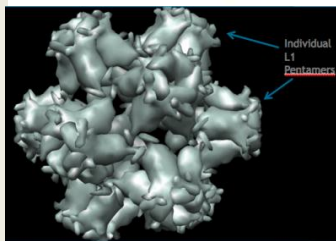
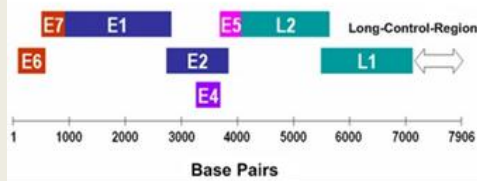
(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2721

Item	Catalog#	ProdDescription	ProductType
CSP Protein and peptides	CSPF11-S	Rabbit Anti-Circumsporozoite (CSP, P.falciparum) C-terminal (207-397 aa) protein antiserum	Antibodies
	CSPF15-P	YLKKIKNSL, P. falciparum circumsporozoite (CSP) peptide (CSP334-342)	Peptides pure
	CSPF15-R	Recombinant (E. coli, full length, CSP antigen (P. falciparum)	Recomb. Protein
	CSPF16-R	Recombinant CSP mosaic protein (107-129, 334-351 aa) P.falciparum purified	Recomb. Protein
	CSPF17-R-10	Recombinant (E. coli), purified, Circumsporozoite (CSP) (207-397 aa) P.falciparum Protein	Recomb. Protein
	CSPV11-M	Mouse Anti-Circumsporozoite (CSP) (P. vivax) IgG, aff pure #1	Antibodies
	CSPV16-R	Recombinant (E. coli) CSP; 353-aa and GST) antigen (P. vivax)	Recomb. Protein
	CSPY11-P	KIYNRNIVNRLGLD, P. yoelii circumsporozoite, PyCSP (57-70) peptide	Peptides pure
	CSPY12-P	SYVPSAEQI, P. yoelii circumsporozoite, PyCSP (280-288) peptide	Peptides pure
	DRAA31-A	Rabbit Anti-(DRAAGQPAG)3 peptide (repeat-sequence peptide of the P. vivax circumsporozoite protein, CSP) IgG, aff pure	Antibodies
	DRAA31-BSA	(DRAAGQPAG)3 peptide (repeat-sequence of the P. vivax CSP) conjugated with BSA	Conj. Peptides
	DRAA31-P	(DRAAGQPAG)3 (repeat-sequence P. vivax CSP) control/blocking peptide	Peptides pure
	DRADGQ3-P	(DRADGQPAG)3 peptide (repeat-sequence peptide of the P. vivax CSP protein, pure	Peptides pure
Hemoglobin (hb)	RP-650	Recombinant Malaria Cs Mosaic	Pure protein
	HBG25-P	DABCYL-GABA-ERMFLSFP-EDANS, Hb, 3037a, Malaria FRET Substrate II	Substrates
HRP	HBG31-P	DABCYL-GABA-ALERMFLSFP-EDANS, Hb, 2837a, Malaria FRET Substrate III	Substrates
	HRPF21-M	Mouse Anti-Histidine rich glycoprotein II (HRP II, P. falciparum) IgG, aff pure #1	Antibodies
HRP	HRPF22-M	Mouse Anti-Histidine rich glycoprotein II (HRP II, P. falciparum) IgM, aff pure	Antibodies
	HRPF25-R	Recombinant (E. coli) Histidine rich glycoprotein II (HRP II, P. falciparum)	Recomb. Protein
LSA	LSPF31-P	LEESQVNDIFNSLVKSVQEQQHNV, P. falciparum Liver-Stage Antigen 3-NRII, LSA3-NRII (81-106) peptide	Peptides pure
	LSPF32-P	DELFNELLNSVDVNGENILEESQ, P. falciparum Liver-Stage Antigen 3-NRI peptide	Peptides pure
MAP	MAPF15-P	DABCYL-ERNleFLSFP-EDANS, Malaria Aspartyl Proteinase FRET (Fluorescence Resonance Energy Transfer) Substrate I	Substrates
	MAPF15-P-5	DABCYL-ERNleFLSFP-EDANS, Malaria Aspartyl Proteinase FRET Substrate I	Substrates
Malaria Parasite	MFV11-M	Mouse Anti-Malaria (clone 1); reacts to P.vivax/falciparum	Antibodies
MSP-1	MSPF11-M	Mouse Anti-Merozoite surface protein-1 (MSP-1; P. falciparum) IgG, aff pure #1	Antibodies
	MSPF11-P	VTHESYQELVKKLEALEDV, MSP-1 P1, peptide of P. falciparum	Peptides pure
	MSPF12-P	GYRKPLDNKDNVGMEDYIKK, MSP-1 P2, peptide of P. falciparum	Peptides pure
	MSPF13-P	KLNSLNNPHNVLQNFVFFNK, MSP-1 P3, peptide of P. falciparum	Peptides pure
	MSPF15-R	Recombinant (E. coli) merozoite surface protein-1 (MSP-1; P. falciparum)	Recomb. Protein
	MSPF25-R	Recombinant (E. coli) merozoite surface protein-2 (MSP-2; P. falciparum)	Recomb. Protein
	MSPV11-P	LEYLLREKAKMAGTLIIPES, P. vivax PvMSP-1 peptide 19 (378-397)	Peptides pure
	MSPV12-P	SKDQIKKLTSLKNKLERRQN, P. vivax PvMSP-1 peptide 53 (1058-1077)	Peptides pure
	MSPV13-P	NFVGKFLQLPGHTDLLHL, P. vivax PvMSP-1 peptide 4 (78-97)	Peptides pure
	MSPV14-M	Mouse Anti-Merozoite surface protein-1 (MSP-1; P. vivax) IgG, aff pure #1	Antibodies
	MSPV14-P	FNQLMHVINFHYDLLRANVH, P. vivax PvMSP-1 peptide 6 (118-137)	Peptides pure
	MSPV15-M	Mouse Anti-Merozoite surface protein-1 (MSP-1; P. vivax) IgG, aff pure #2	Antibodies
	MSPV15-P	LDMLKKVVLGLWKPLDNKD, P. vivax PvMSP-1 peptide 8 (158-177)	Peptides pure
	MSPV16-R	Recombinant (E. coli) merozoite surface protein-1 (MSP-1; 108-aa; P. vivax)	Recomb. Protein
	MSPV26-R	Recombinant (E. coli) merozoite surface protein-2 (MSP-2; 460-aa; P. vivax)	Recomb. Protein
(NANP)n peptides	NANP101-P	(NANP)10 (40-aa NANP repeat-sequence peptide of the P. falciparum CSP	Peptides pure
	NANP51-A	Rabbit Anti-(NANP)5 peptide (CSP repeat, P. falciparum) IgG, aff pure	Antibodies
	NANP51-BSA	(NANP)5 peptide (CSP repeat, P. falciparum) conjugated with BSA	Conj. Peptides
	NANP51-P	(NANP)5 peptide control/blocking peptide	Peptides pure
(NVDP)n Peptides	NVDP41-A	Rabbit Anti-(NVDP)4 peptide (minor CSP repeat-sequence P. falciparum IgG, aff pure	Antibodies
	NVDP41-BSA	(NVDP)4 peptide (CSP repeat- P. falciparum conjugated with BSA	Conj. Peptides
	NVDP41-P	(NVDP)4 peptide (CSP repeat-sequence P. falciparum control/blocking peptide	Peptides pure
(PAPP)n Peptides	PAPP311-P	(PAPPNAAND)3 peptide (repeat-sequence peptide of the P. berghei circumsporozoite protein, CSP), pure	Peptides pure
pLDH	PLDH11-M	Mouse Anti-parasite specific lactate dehydrogenase (pLDH), (PAN PLDH) IgG	Antibodies
	PLDH14-M	Mouse Anti-parasite pLDH, (P. ovale specific) IgG	Antibodies
	PLDH22-M	Mouse Anti-pLDH (P. falciparum specific) IgG	Antibodies
	PLDH31-M	Mouse Anti- pLDH (P. vivax specific) IgG	Antibodies
(PPPPNAAND)n	PPPP312-P	(PPPPNPPND)3 peptide (repeat-sequence of P. berghei CSP	Peptides pure
	PPPP321-A	Rabbit Anti-(PPPPNAAND)3 peptide (repeat-sequence P. berghei CSP) IgG, aff pure	Antibodies
	PPPP321-BSA	(PPPPNAAND)3 peptide (repeat-sequence P. berghei CSP) conjugated with BSA	Conj. peptides
	PPPP321-P	(PPPPNAAND)3 peptide (repeat-sequence P. berghei CSP) blocking peptide	Peptides pure
RESAF15-R	RESAF15-R	Recombinant Ring-infected erythrocyte surface antigen (RESA) (P.falciparum)	Recomb. Protein
HSP	RP-649	Recombinant Malaria Protein Heat Shock protein (HSP)	Pure protein
Sag	SAGF11-M	Mouse Anti-S Antigen (Sag) (P. falciparum) IgG, aff pure #1	Antibodies
	SAGF12-M	Mouse Anti-S Antigen (Sag) (P. falciparum) IgG, aff pure #2	Antibodies
SERA	SERA15-R	Recombinant (E. coli) Serine-repeat antigen (SERA) P.falciparum	Recomb. Protein
MSP	SP-88357-1	MSP-1 (20 - 39), Merozoite Surface Peptide 1 (AA:Val-Thr-His-Glu-Ser-Tyr-Gln-Glu-Leu-Val-Lys-Lys-Leu-Glu-Ala-Leu-Glu-Asp-Ala-Val) (MW: 2301.60)	Pure Peptide
	SP-88358-1	MSP-1 P2, Malaria Merozoite Surface Peptide - 1 (AA: Gly-Tyr-Arg-Lys-Pro-Leu-Asp-Asn-Ile-Lys-Asp-Asn-Val-Gly-Lys-Met-Glu-Asp-Tyr-Ile-Lys-Lys) (MW: 2625.07)	Pure Peptide



Human Papilloma Virus (HPV) Vaccine: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Human papillomavirus (HPV) is a virus from the papillomavirus family of viruses that is capable of infecting humans. Like all papillomaviruses, HPVs establish productive infections only in keratinocytes of the skin or mucous membranes. While the majority of the nearly 200 known types of HPV cause no symptoms in most people, some types can cause warts (verrucae), while others can lead to cancers of the cervix, vulva, vagina, and anus in women or cancers of the anus and penis in men. HPV infection is a cause of nearly all cases of cervical cancer. Over 120 HPV types have been identified and are referred to by number. Types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59 are "high-risk" sexually transmitted HPVs. Two vaccines are available to prevent infection by some HPV types: **Gardasil**, marketed by Merck, and **Cervarix**, marketed by GlaxoSmithKline. Both vaccines utilize recombinant L1 proteins and protect against initial infection with HPV types 16 and 18, which cause most of the HPV associated cancer cases. Gardasil also protects against HPV types 6 and 11, which cause 90% of genital warts.



Gardasil is also effective in males, providing protection against genital warts, anal cancer, and some potentially precancerous lesions caused by some HPV types. An ongoing study of males demonstrated the efficacy of Gardasil in males who did not have HPV infection prior to vaccination. The vaccination is expected to protect against penile cancer and anal cancer caused by included HPV types, and research in this area is ongoing. The HPV genome (dsDNA of ~8000 base pairs) is composed of six early (E1, E2, E3, E4, E6, and E7) and two late (L1 and L2) proteins. After the host cell is infected E1 and E2 are expressed first. In the upper layers of the host epithelium, the late genes L1 and L2 are transcribed/translated and serve as structural proteins that encapsidate the amplified viral genomes. The papillomavirus capsid also contains a viral protein known as L2, which is less abundant. L2 is of interest as a possible target for more broadly protective HPV vaccines. HPV06 L1 (protein accession #CAU03682.1, 501-aa), HPV11 L1 (protein accession #CCB84764, 503-aa) HPV16 L1 (protein accession #ACA14209; 531aa/505-aa), HPV18 L1 (protein accession #AAP20601; 568-aa/427-aa).

Gardasil contains recombinant VLPs assembled from the L1 proteins of HPV types 6, 11, 16 and 18. Since VLPs lack the viral DNA, they cannot induce cancer. They do, however, trigger an antibody response that protects vaccine recipients from becoming infected with the HPV types represented in the vaccine. The L1 proteins are produced by separate fermentations in recombinant *S. cerevisiae* and self-assembled into VLPs.

ADI has cloned, expressed, and purified HPV L1s from HPV6, HPV11, HPV16, and HPV18 viruses. Specific antibody ELISA kits have been developed to test the efficacy of existing (Gardasil/Cervarix) or new HPV vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Human papilloma virus vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2735

ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#
HPV Vaccine (Gardasil/Cervarix) HPV6L1 antibody ELISA kit	Human	550-106-PHG	
	Mouse	550-306-PMG	
	Rabbit	550-206-PRG	
HPV Vaccine (Gardasil/Cervarix) HPV11L1 antibody ELISA kit	Human	550-111-PHG	
	Mouse	550-311-PMG	
	Rabbit	550-211-PRG	
HPV Vaccine (Gardasil/Cervarix) HPV16L1 antibody ELISA kit	Human	550-116-PHG	
	Mouse	550-316-PMG	
	Rabbit	550-216-PRG	
HPV Vaccine (Gardasil/Cervarix) HPV18L1 antibody ELISA kit	Human	550-118-PHG	
	Mouse	550-318-PMG	
	Rabbit	550-218-PRG	



Human Papilloma Virus (HPV) Vaccine: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2735

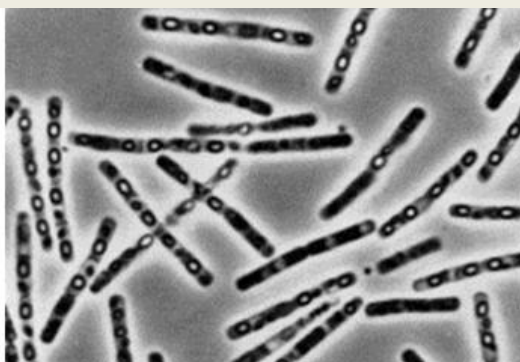
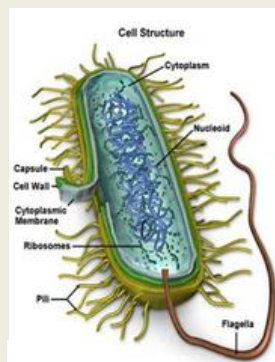
Items	Catalog#	Product Description	Product Type
HPV06	HPV06E71-M	Monoclonal Anti-Human Papilloma Virus 6 early protein 7 (E7) (HPV6E7) IgG,	Antibodies
	HPV06L11-M	Monoclonal Anti-Human Papilloma Virus 6 late protein L1 (HPV6L1) IgG	Antibodies
	HPV06L12-S	Rabbit Anti-Human Papilloma Virus 6 late protein L1 (HPV6L1, full length) antiserum	Antibodies
	HPV06L15-R-10	Recombinant (E.coli) Human Papilloma Virus 06 late protein L1 (HPV6L1), full length, His-tag	Recombinant protein
HPV11	HPV11L11-M	Monoclonal Anti-Human Papilloma Virus 11 (HPV11) late protein L1 (HPV11L1) IgG, aff pure #1	Antibodies
	HPV11L12-S	Rabbit Anti-Human Papilloma Virus 11 late protein L1 (HPV11L1, full length) antiserum	Antibodies
	HPV11L15-R-10	Recombinant (E.coli) Human Papilloma Virus 11 late protein L1 (HPV11L1), full length, His-tag	Recombinant protein
HPV16	HPV16E21-M	Monoclonal Anti-Human Papilloma Virus 16 early protein E2 (HPV16E2) IgG, aff pure #1	Antibodies
	HPV16E61-M	Monoclonal Anti-Human Papilloma Virus 16 (HPV16) early protein E6 (HPV16E6) IgG, aff pure #1	Antibodies
	HPV16E71-M	Monoclonal Anti-Human Papilloma Virus 16 (HPV16) early protein E7 (HPV16E7) IgG, aff pure #1	Antibodies
	HPV16L12-S	Rabbit Anti-Human Papilloma Virus 16 late protein L1 (HPV16L1, full length) antiserum	Antibodies
	HPV16L11-M	Monoclonal Anti-Human Papilloma Virus 16 (HPV16) late protein L1 (HPV16L1) IgG, aff pure #1	Antibodies
	HPV16L11-C	Recombinant purified Human Papilloma Virus 16 late protein L1 ((HPV16L1, full length) control for WB	Western Control
	HPV16E21-R-100	Recombinant (E.coli) Human Papilloma Virus 16 early protein (HPV16, E2+E6+E7 epitopes fused to GST protein	Recombinant protein
	HPV16L15-R-10	Recombinant (E.coli) Human Papilloma Virus 16 late protein L1 protein ((HPV16L1, his-tag), full length,	Recombinant protein
HPV18	HPV18E61-M	Monoclonal Anti-Human Papilloma Virus 18 early protein E6 (HPV18E6) IgG, aff pure #1	Antibodies
	HPV18E71-M	Monoclonal Anti-Human Papilloma Virus 18 early protein E7 (HPV18E7) IgG, aff pure #1	Antibodies
	HPV18L12-S	Rabbit Anti-Human Papilloma Virus 18 late protein L1 (HPV18L1, full length) antiserum	Antibodies
	HPV18L11-M	Monoclonal Anti-Human Papilloma Virus 18 late protein L1 (HPV18L1) IgG, aff pure #1	Antibodies
	HPV618L13-S	Mouse Anti-Gardasil vaccine L1s (Human Papilloma Virus/HPV6+11+16+18 late proteins) antiserum control for ELISA	Antibodies
	HPV18L11-C	Recombinant purified Human Papilloma Virus 18 late protein L1 (HPV18L1, full length) control for WB	Western Blot +ve Control
	HPV18E25-R-50	Recombinant (E.coli) Human Papilloma Virus 18 early protein (HPV18; E2+E6+E7 epitopes fused to GST protein	Recombinant protein
	HPV18L15-R-10	Recombinant (E.coli) Human Papilloma Virus 18 late protein L1 (HPV18L1), full length, His-tag	Recombinant protein
	SP-100307-1	HPV-E7-N (AA: Tyr-Met-Leu-Asp-Leu-Gln-Pro-Glu-Thr-Thr-Asp-Leu-Tyr-Cys-Tyr-Glu-Gln-Leu-Asn-Asp) (MW: 2467.72)	Synthetic peptide
	SP-100308-1	HPV-E7-C (AA: Ser-Ser-Glu-Glu-Glu-Asp-Glu-Ile-Asp-Gly-Pro-Ala-Gly-Gln-Ala-Glu-Pro-Asp-Arg-Ala) (MW: 2102.08)	Synthetic peptide
	SP-100309-1	HPV-E6-N (AA: Asp-Pro-Gln-Glu-Arg-Pro-Arg-Lys-Leu-Pro-Gln-Leu-Cys-Thr-Glu) (MW: 1810.07)	Synthetic peptide
	SP-100310-1	HPV-E6-M (AA: Ser-Glu-Tyr-Pro-His-Tyr-Cys-Tyr-Ser-Leu-Tyr-Gly-Thr-Thr-Leu-Glu-Gln-Gln-Tyr-Asn) (MW: 2459.64)	Synthetic peptide
	SP-100311-1	HPV-E6-C (AA: Pro-Leu-Cys-Pro-Glu-Glu-Lys-Gln-Arg-His-Leu-Asp-Lys-Lys-Gln-Arg-Phe-His-Asn-Ile) (MW: 2516.92)	Synthetic peptide

HPV_Vaccine_Flr Rev. 121001a



Anthrax Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Anthrax is a zoonotic disease caused by the spore-forming bacterium *Bacillus anthracis*. The disease most commonly occurs in wild and domestic mammals (e.g., cattle, sheep, goats, camels, antelope, and other herbivores). Anthrax occurs in humans when they are exposed to infected animals or tissue from infected animals or when they are directly exposed to *B. anthracis* or the spores. Depending on the route of infection, anthrax disease can occur in three forms: cutaneous, gastrointestinal, and inhalation. *B. anthracis* spores can remain viable and infective in the soil for many years.



B. anthracis has also been manufactured as a biological warfare agent because of the ability of its spores to be transmitted by the respiratory route, the high mortality of inhalation anthrax, and the greater stability of *B. anthracis* spores compared with other potential biological warfare agents. *B. anthracis* evades the immune system by producing an anti phagocytic capsule. In addition, *B. anthracis* produces three proteins - protective antigen

(PA), lethal factor (LF), and edema factor (EF) - that act in binary combinations to form two exotoxins known as lethal toxin and edema toxin. PA and LF form lethal toxin; PA and EF form edema toxin. LF is a protease that inhibits mitogen-activated protein kinase-kinase. PA is required for binding and translocating LF and EF into host cells. PA is an 83 kD protein that binds to receptors on mammalian cells and is critical to the ability of *B. anthracis* to cause disease. After binding to the cell membrane, PA is cleaved to a 63 kD fragment that subsequently binds with LF or EF. LF or EF bound to the 63kD fragment undergoes receptor-mediated internalization, translocation into the cytosol.

An improved vaccine for livestock, based on a live non encapsulated avirulent variant of *B. anthracis*, has served as the principal veterinary vaccine. AVA, Anthrax Vaccine Adsorbed (trade name **Biothrax**), the only licensed human anthrax vaccine in the United States, is produced by Emergent Biodefense Corporation (formerly BioPort) and is prepared from a cell-free filtrate of *B. anthracis* culture that contains no dead or live bacteria. The strain used to prepare the vaccine is a toxigenic, non-encapsulated strain known as V770-NP1-R. No living organisms are present in the vaccine. The filtrate contains a mix of cellular products including PA83 and is adsorbed to aluminum hydroxide as adjuvant. The amount of PA and other proteins per 0.5mL dose is unknown, and all three toxin components (LF, EF, and PA) are present in the product. Approximately 95% of vaccines seroconvert with a fourfold rise in anti-PA IgG titers after three doses. However, the precise correlation between antibody titer (or concentration) and protection against infection is not defined. While having some efficacy in protecting against anthrax, the dosage, safety and efficacy of this licensed vaccine is being debated by the Scientists as well as politicians. More advanced vaccines are based upon recombinant purified PA83 proteins (**Vaxgen**).

ADI has cloned, expressed, and purified various recombinant proteins of anthrax (PA, EF, LF) made antibodies in various animal, develop antigen determination kits, and antibody kits for testing various vaccines.

Anthrax vaccine Related ELISA kits Ordering Information

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2720

ELISA Kit Description	Species	Total Ig's Cat#	IgG Specific Cat#	IgM Specific Cat#
Anthrax Vaccine Protective Antigen 83 (PA83) antibody ELISA kits	Human	900-160-83T		
	Mouse	900-100-83T	900-105-83G	
	Monkey	900-150-83T		
	Goat	900-130-83T		
	Bovine		900-110-83G	
	G.pig	900-140-83T		
	Rabbit	900-120-83T		
Anthrax Vaccine Anti-Edema Factor (EF) Antibody ELISA kits	Swine/Pig		900-115-83G	
	Rabbit	900-320-EFR		
Anthrax Vaccine Anthrax Lethal Factor (LF) antibody ELISA kits	Mouse	900-300-EFM		
	Mouse	900-200-LFM		

Anthrax B. Anthracis Protective Antigen 83 (PA83) Protein ELISA kit, Quantitative # 800-110-P63

Anthrax B. Anthracis Lethal Factor (LF) Protein ELISA Kit, Quantitative # 800-120-LF

Anthrax B. Anthracis Edema Factor (EF) Protein ELISA Kit, Quantitative #800-130-EF



Anthrax Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2720

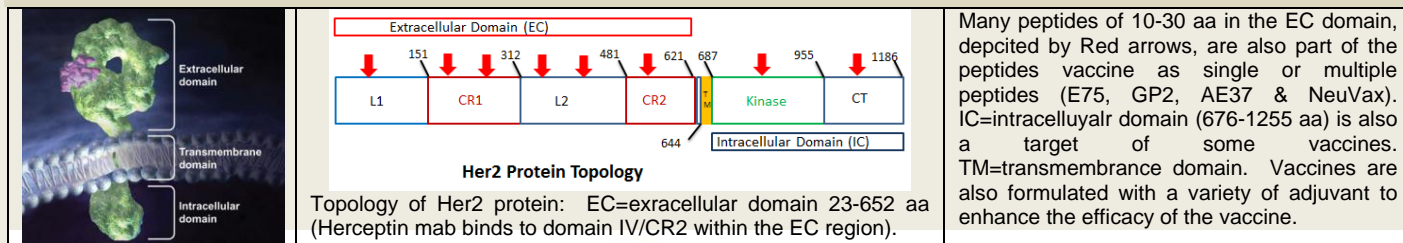
Item	Catalog#	Product Description	ProductType
Anthrax Receptors (ATR)	ATR11-A	Rabbit Anti-human Anthrax Toxin Receptor 1, aff pure IgG # 1	Antibodies
	ATR11-P	Human Anthrax toxin receptor protein Control/blocking peptide # 1	Peptide
	ATR12-A	Rabbit Anti-human Anthrax Toxin Receptor 1, aff pure IgG # 2	Antibodies
	ATR12-P	Human Anthrax toxin receptor 1 protein Control/blocking peptide # 2	Peptide
	ATR31-A	Rabbit Anti-human Anthrax Toxin Receptor 3, aff pure IgG #1	Antibodies
	ATR31-P	Human Anthrax toxin receptor 3 protein Control/blocking peptide # 1	Peptide
Anthrax Cell wall	CWBA-1	Cell wall, semi pure (B. Anthracis)	Protein
Anthrax EF	EF11-A	Goat Anti-Edema factor (B Anthracis) IgG	Antibodies
	EF12-A	Rabbit Anti-B. Anthracis Edema factor (EF) (C-terminal peptide) IgG#2	Antibodies
	EF12-C	Rabbit Purified Recombinant Anthrax toxin Edema Factor (EF) protein control for WB	Western control
	EF25-R	Purified Recombinant Anthrax toxin Edema Factor protein	Rec. Protein
Anthrax LF	LF11-M	Monoclonal Anti-Anthrax Lethal factor antigen IgG #1, aff pure	Antibodies
	LF12-MB	Monoclonal Anti-Anthrax Lethal factor (LF) protein IgG biotinylated	Antibodies
	LF13-A	Rabbit Anti-B. Anthracis Lethal factor (LF) (C-terminal peptide) IgG#3	Antibodies
	LF13-C	Purified Recombinant Anthrax lethal factor (LF) protein control for WB	Western control
	LF14-A	Rabbit Anti-B. Anthracis Lethal factor (LF) recombinant protein antiserum	Antibodies
	LF15-R	Purified Recombinant Anthrax Lethal Factor protein	Rec. Protein
	LF16-A	Goat Anti-lethal factor (B Anthracis) IgG	Antibodies
	LFPI-4	Lethal factor protease Inhibitor-1, Cell permeable, 14aa MEK2 analog, competitive inhibitor of LF	Peptide
	LFPS-1	Lethal factor Protease Substrate 1, Internally quenched Coumarin peptide substrate for monitoring LF protease activity (19aa)	Peptide
	LFPS-2	Lethal factor Protease Substrate 2, pNA derivative MEK2 peptide substrate for high-throughput screening of LF inhibitors (14aa)	Peptide
	LFPS-3	Lethal factor Protease Substrate 3, AMC derivative MEK2 peptide substrate for high-throughput screening of LF inhibitors (14aa)	Peptide
Anthrax PA83	PA83-R	Purified Recombinant Anthrax Protective Antigen (83 kD)	Rec. Protein
	PA11-M	Monoclonal Anti-Anthrax Protective antigen (PA83) IgG # 1, aff pure	Antibodies
	PA12-MB	Monoclonal Anti-Anthrax Protective antigen (PA83) IgG biotinylated	Antibodies
	PA16-A	Goat Anti-Protective Antigen 83 (PA83; B Anthracis) IgG	Antibodies
	PA16-B	Goat Anti-Protective Antigen 83 (PA83; B Anthracis) IgG-biotinylated	Antibodies
	PA17-A	Rabbit Anti-B. Anthracis Anthrax protective antigen 83 (PA83) (C-terminal peptide) IgG	Antibodies
	PA17-C	Purified Recombinant Anthrax Protective Antigen (PA83 kD) protein control for WB	Western control
	PA18-S	Rabbit Anti-B. Anthracis Anthrax protective antigen 83 (PA83) recomb. Protein antiserum	Antibodies
Anthrax PA20	PA20-C	Purified Recombinant Anthrax Protective Antigen (20 kD/PA20) protein control for WB	Western control
	PA20-R	Purified Recombinant Anthrax Protective Antigen (20 Kda)	Rec. Protein
Anthrax PA63	PA63-C	Purified Recombinant Anthrax Protective Antigen (63 kD/PA63) protein control for WB	Western control
	PA63-R	Purified Recombinant Anthrax Protective Antigen (63kD)	Rec. Protein
Anthrax Spore extract antigens	SA11-A	Rabbit Anti-Anthrax Spore extract antigen (90 kda), aff pure IgG #1	Antibodies
	SA12-M	Monoclonal Anti-Anthrax Spore extract antigen IgG # 2, aff pure	Antibodies
	SA12-MB	Monoclonal Anti-Anthrax Spore extract antigen IgG-biotinylated, aff pure	Antibodies
	SA13-M	Monoclonal Anti-Anthrax Spore extract antigen IgG # 3, aff pure	Antibodies

Anthrax_Vaccine_Flr Rev. 130207A



Breast Cancer Vaccines: Antibody Recombinant Proteins, and Peptides

Breast cancer is a type of cancer originating from breast tissue of humans and other mammals. Worldwide, breast cancer comprises 23% of all cancers in women. In 2008, breast cancer caused 458,503 deaths worldwide (13.7% of cancer deaths in women). Breast cancer is more than 100 times more common in women than in men. Prognosis and survival rates for breast cancer vary greatly depending on the cancer type, stage, treatment, and geographical location of the patient. Self-examination, mammography and clinical breast exam can indicate an approximate likelihood that a lump is cancer. Breast cancers are classified by several grading systems (histopathology, Grade, Stage, Receptor status such as ER/PR/Her2 positive). Each of these influences the prognosis and can affect treatment response. Breast cancer is usually treated with surgery and then possibly with chemotherapy or radiation, or both. A multidisciplinary approach is preferable. For the purpose of **"Breast Cancer Vaccine"**, we will review **"Her2 positive"** cancers that comprise about 30% of breast cancer.



HER2 (Human Epidermal Growth Factor Receptor 2) also known as Neu, ErbB-2, CD340 (cluster of differentiation 340) or p185 is a protein that in humans is encoded by the ERBB2 gene. HER2 is a member EGFR/ErbB family. The HER proteins, including Her2, regulate cell growth, survival, adhesion, migration, and differentiation—functions that are amplified or weakened in cancer cells. Since breast cancer cell overexpress and need Her2 protein for their proliferation, a direct or indirect neutralization of Her2 should impair the ability of breast cancer to spread and grow. **Herceptin** (trastuzumab made by Genentech and approved in 1998) is a humanized monoclonal antibody that binds to Her2 protein and interferes with its functions. Herceptin is made by recombinant DNA technology in then injected into patient. It increases the survival of people with cancer by 20-25 months in late stages. However, cancers usually develop resistance to trastuzumab. Approx. 70% of HER2+ patients do not respond to treatment. In fact resistance is developed rapidly by treatment, in virtually all patients. The antibody treatment is also expensive (\$100,000 per year). Another monoclonal antibody, **Pertuzumab**, which inhibits dimerization of HER2 and HER3 receptors, was approved by the FDA in 2012.

Breast cancer vaccines mimic the success of Herceptin by immunizing with either large recombinant Her2 protein fragments or various antigenic peptides (single or mixture). The objective is to induce the production of antibodies in the patients. This will reduce the cost of producing and injecting Herceptin and also reduce Her2 resistance. **NeuVax**, developed by Galena Biopharma, is a peptide-based vaccine aimed at preventing or delaying the recurrence of breast cancer in cancer survivors who achieve remission after standard of care treatment (e.g., surgery, radiation, chemotherapy). It consists of the **E75 synthetic peptide (Her2 369-377)** initially isolated from HER2/neu proto-oncogene combined with the immune adjuvant, granulocyte macrophage colony stimulating factor (rhGM-CSF from yeast).

GP2 peptide (654-662) is a 9 aa HLA-A2-restricted peptide derived from the transmembrane domain of HER2. It is as effective as E75 at inducing a CTL response, suggesting that it might be more immunogenic than E75. A phase I clinical study using GP2 in combination with GM-CSF is ongoing. **AE37 peptide** (776-790 aa) is a HER2/Neu-derived epitope linked to li-Key peptide (li-Key/HER2/neu hybrid peptide or AE37). A Phase I clinical trial administering AE37, a HER2/neu Class II epitopes to disease-free, NN breast cancer patients showed that the li-Key moiety, a 4-amino acid (LRMK) epitope from the MHC class II-associated invariant chain (li protein), increases T-helper cell stimulation. **QIAKGMSYL** is a peptide, derived from the ECD of Her2. It is naturally presented by various HER2 positive cell lines.

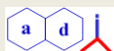
Multi peptide vaccines: These peptides are derived from the ICD and ECD of Her2. ECD-derived peptides (p42 (aa 42–56), p98 (aa 98–114) and p328 (aa 328–345); ICD-derived peptides (p776 (aa

776–790), p927 (aa 927–941) and p1166 (aa 1166–1180); Derived from both domains: p369 (aa 369–386), p688 (aa 688–703) and p971 (aa971–984). Peptides derived from the **HER-2/trastuzumab interface** Peptides derived from the HER-2/trastuzumab interface (**563CYC**: is a cyclic peptide containing the sequences 563–598); **585CYC** is a cyclic peptide containing sequences 585–598. **597CYC** is a cyclic peptide containing sequences 597–626. The last a.a cys is mutated to Leu so as to prevent interference with natural disulphide formation. **613** is a peptide containing sequences 613–626.

HER2 Protein Vaccines: HER2 ICD (aa 676–1255): phase I clinical trial showed T cell response specific for HER2 ICD in 89% of immunized patients and 82% developed anti-HER2 IgGs. **dHER2** is a recombinant anti-HER2 protein-based vaccine, made of the HER2 ECD and a portion of ICD this vaccine was evaluated in 15 patients with breast cancer and showed that Abs specific for HER2 ECD and ICD developed after 4 immunizations. **CHP-HER2** (aa1–146) is a recombinant vaccine composed of a truncated HER2 protein encoding aa terminal) complexed to a delivery system consisting of Cholesteryl Pullulan nanogels (CHP). **MVF-HER-2 vaccine:** Phase 1: HER2/neu peptide vaccine comprising measles virus epitope MVF-HER-2 (266-296) and MVF-HER-2 (597-626) emulsified with nor-MDP in ISA 720.

Her2 DNA Vaccines: DNA vaccines encode a modified human HER2 protein without tyrosine kinase activity. All of them induced both cellular and humoral immune responses leading to *in vivo* tumor protection. **pE2A** which encodes a full length HER2 in which Lys753 has been substituted by Ala to remove the ATP-binding Lys residue; **pE2M** encodes the HER2 signal peptide, extracellular and transmembrane domains but not the intracellular; **psecE2** encodes the 1–505) of ECD as a secreted protein. **pcytE2** (i.e., HER2 without signal peptide) elicited only a CD8+ T_H response; **p185**, encodes HER2 ECD and the TM domain, was effective in inhibiting carcinogenesis in a transgenic mouse model; **MVA-BN-HER2** formed by a non-replicating viral vector encoding a truncated form of HER2 protein (without its ICD) and two universal T epitopes of the tetanus toxin used to boost the immune system.

All of the above vaccines (her2 peptides, protein or DNA) must be able to induce robust antibodies to Her2 protein. It will also be important to identify subtype of her2-antibody as a result of vaccine. ADI has developed antibody ELISA kits for animals and humans to determine the efficacy of various existing Her2 vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. ELISA kits are also available to measure the her2 in animals and humans and if patients are producing antibodies to Her2 in response to Herceptin immunotherapy. We have also developed ELISA kits to detect if cancer patients or animals already have autoantibodies to her2 as a results tumor overexpressing her2.



Breast Cancer Vaccines: Antibody Recombinant Proteins, and Peptides

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2764

Items Description	Species	Cat#	
Herceptin /Trasuzumab ELISA Kit for serum or biological buffers	Human/Mouse /Rat	200-510-HLG	
Human Anti-Herceptin /Trasuzumab Antibody (HAHA) ELISA Kit	Human	200-520-HAG	
Her2 /neu/Erb2/CD340 protein ELISA kit, 96 tests	Human	200-530-HER	

Items Description	Species	IgG Specific Cat#	IgM Specific Cat#
Her2 Vaccine (Anti- Her2 Protein , EC-Domain) ELISA Kit	Human	200-600-HRH	200-610-HRM
	Mouse	200-620-HRH	200-630-HRM
Her2 Vaccine (Anti- E75 peptide) IgG ELISA kit	Human	200-640-HRH	200-650-HRM
	Mouse	200-660-HRH	200-670-HRM
Her2 Vaccine (Anti- AE37 peptide) IgG ELISA kit	Human	200-700-HRH	200-710-HRM
	Mouse	200-720-HRH	200-730-HRM

Breast Cancer Vaccines: Antibody Recombinant Proteins, and Peptides

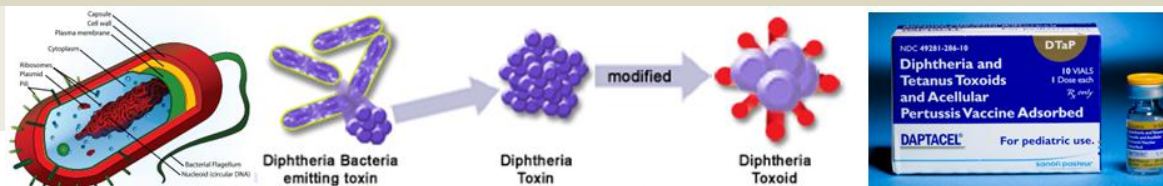
Catalog#	Product Description	Product Type	Catalog#	Product Description	Product Type
HER21-R-10	Recombinant (HEK) human Her2/Erb2/Neu (1-652)-hlgG-Fc fusion protein	Protein	HER2-776-P	HER2 peptide, (776 – 790 fused with LRMK, C-Term), GP2 vaccine candidate	peptides
HER22-R-5	Recombinant (sf9) human Her2/Erb2/Neu (676-1255)-GST fusion protein	Protein	HER2-MP1	HER2 multi peptide, (369-386, 688-703,971-984); vaccine candidate	peptides
HER23-R-10	Recombinant (HEK) human Her2/Erb2/Neu (1-652)-his tag	Protein	HER2-MP2	HER2 multi peptide, (776-790,927-941,116-1180); vaccine candidate	peptides
HER24-R-10	Recombinant (HEK) mouse Her2/Erb2/Neu (1-653)-his tag protein	Protein	HER2-MP3	HER2 multi peptide, (42-56,98-114,328-345); vaccine candidate	peptides
HER25-R-10	Recombinant (HEK) mouse Her2/Erb2/Neu (1-653)-hlgG1-Fc fusion	Protein	SM-101000-5	EGFR/HER2 kinase inhibitor (>99%, M.wt 485.94) (Afatinib/BIBW-2992	Chemical
HER26-R-10	Recombinant (HEK) rat Her2/Erb2/Neu (4-656)-his tag fusion protein	Protein	SM-101010-5	Inhibitor of EGFR/HER family (Her1, Her2, Her3 or Pan Her-inhibitor) (BMS-59926/AC480, Mol wt 567.01, >99%)	Chemical
HER27-R-10	Recombinant (HEK) rat Her2/Erb2/Neu (4-656)-his tag fusion protein	Protein	SM-101020-10	Inhibitor of EGFR/HDAC/Her2 (CUDC-101 Mol wt 434.49, >99%)	Chemical
HER28-R-10	Recombinant (HEK) rat Her2/Erb2/Neu (4-656)-hlgG1-Fc fusion protein	Protein	SM-101040-5	Cell permeable Inhibitor of EGFR/ERB family/Her2 (Neratinib/HKI-272,	Chemical
HER29-R-10	Recombinant (HEK) monkey/rhesus Her2/Erb2/Neu (1-652)-his tag protein	Protein	SM-101050-100	Cell permeable Inhibitor of EGFR2/FGFR/PDGFr/JAK1/Her2	Chemical
HER30-R-10	Recombinant (HEK) monkey/rhesus Her2/Erb2/Neu (1-652)-hlgG1-Fc	Protein	SP-102029-5	Herpes Virus Inhibitor 1 (AA: Tyr-Ala-Gly-Ala-Val-Val-Asn-Asp-Leu)	Pure Peptide
HER31-M	Rabbit mono anti-human Her2/Erb2/Neu (1-652) protein IgG	Antibodies	SP-51177-1	HER2/neu (869-877) peptide	Pure Peptide
HER32-A	Rabbit Anti-human Her2/Erb2/Neu (1-652) protein IgG	Antibodies	SP-52260-1	HER2/neu(654-662) GP2	Pure Peptide
HER33-M	Mouse mono anti-monkey/rhesus Her2/Erb2/Neu (1-652) protein IgG	Antibodies	SM-101060-25	Lapatinib Ditosylate (GW572016, GW2016, Tykerb, Tyverb), Autophos. Inhibitor of Her2/Erb2 (>98%)	Chemical
HER34-A	Rabbit Anti-monkey/rhesus Her2/Erb2/Neu (1-652) protein IgG	Antibodies	SM-101070-10	Canertinib (CI-1033), kinase Inhibitor of Her2/Erb2/EGFR (mol wt 485; >98%)	Chemical
HER2-369-P	HER2 peptide, (369 – 377), E 75 vaccine	peptides	SM-101080-5	CP-724,714, Potent and selective Inhibitor of Her2/Erb2 (mol wt 469; >98%)	Chemical
HER2-563-P	HER2 peptide, cyclic, (563-598, cys- cys disulphide bond); vaccine candidate	peptides	SM-101090-5	AZD8931, reversible and competitive Inhibitor of Her2/Erb2/ErB3	Chemical
HER2-585-P	HER2 peptide, cyclic, (585-598, cys- cys disulphide bond); vaccine candidate	peptides	SM-101100-5	AEE788 (NVP-AEE788), dual Inhibitor of Her2/Erb2/EGFR (mol wt 440; >98%)	Chemical
HER2-597-P	HER2 peptide, cyclic, (597-626, cys- cys disulphide bond) vaccine candidate	peptides	SM-101110-10	Mubritinib (TAK-165), potent Inhibitor of Her2/Erb2 (IC50=6 nm	Chemical
HER25-R-10	HER2/ErB2 recombinant protein (1-652, extracellular domain), Recombinant	peptides	SM-101120-5	Arry-380, Oral, potent Inhibitor of Her2/Erb2 Tyr kinase (IC50=8 nM; mol wt 869; >98%)	Chemical
HER2-613-P	HER2 peptide, cyclic, (613-626, cys- cys disulphide bond); vaccine candidate	peptides	SM-101130-5	Tak-285, dual Inhibitor of Her2/EGFR Tyr kinase (IC50=17 nM; >98%)	Chemical
HER2-654-P	HER2 peptide, (654 – 662), GP2 vaccine	peptides	SM-101140-25	Lapatinib, Inhibitor of Her2/EGFR (IC50=10 nM; mol wt 581; >98%)	Chemical
HER26-R-10	HER2/ErB2 recombinant protein (676–1255, intracellular domain), Recombinant	Protein			

Breast_Cancer_Vaccine_Flr Rev. 130207A



Diphtheria Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Diphtheria (Greek diphthera)—“pair of leather scrolls”) is an upper respiratory tract illness characterized by sore throat, low fever, and an adherent membrane on the tonsils, pharynx, and/or nasal cavity. It is caused by *Corynebacterium diphtheria*, an aerobic **Gram-positive bacterium**. Diphtheria causes the progressive deterioration of myelin sheaths in the central and peripheral nervous system leading to degenerating motor control and loss of sensation. Diphtheria is a contagious disease spread by direct physical contact or breathing the aerosolized secretions of infected individuals. In the 1920s there were an estimated 100,000 to 200,000 cases of diphtheria per year in the USA, causing 13,000 to 15,000 deaths per year. Children represented a large majority of these cases and fatalities. Common diphtheria has largely been eradicated in industrialized nations through widespread vaccination. **DPT (Diphtheria–Pertussis–Tetanus) vaccine** is recommended for all school aged children. Boosters of the vaccine are recommended for adults since the benefits of the vaccine decrease with age. **Diphtheria toxin** consists of a single polypeptide ~58 Kda. . Proteolysis yields two fragments (A ~21 kda and B ~37 Kda) which are held together by a disulfide bond. The toxin enters the host cell and is hydrolysed by a trypsin-like protease to give a fragment with enzymatic activity. **CRM197** is a non-toxic mutant containing a single amino acid substitution of Glu to Arg. Diphtheria Toxin/Toxoid and CRM197 are immunologically indistinguishable. CRM197 is used as a protein conjugate of several vaccines.



Diphtheria Vaccines: Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis) –GlaxoSmithKline; Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), DT (Pediatric), Td (Adult), DecavacTM (Tetanus/Diphtheria), Adacel (tetanus, Diphtheria, Acellular Pertussis) Sanofi Pasteur.

It is necessary to monitor the efficacy of vaccines and determine the anti-Diphtheria Ig levels in patients or for clinical trial using new formulation of vaccines. ADI has developed antibody ELISA kits to determine the efficacy of various existing Diphtheria vaccines and test new vaccines. ADI has also introduced **industry's first ELISA for direct testing of Diphtheria Toxoid adsorbed on Alum** (for vaccine identification and testing).

Diphtheria vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2723

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Anti-Diphtheria Toxin/Toxoid ELISA kit	Human	940-100-DHG	940-120-DHM
	Mouse	940-120-DMG	940-125-DMM
	G.pig	940-140-DGG	940-145-DGM
	Monkey	940-240-DKG	940-245-DKM
	Rabbit	940-130-DRG	940-135-DRM
Anti-CRM197 (Diphtheria Toxin mutant) ELISA kit	Mouse	940-220-DMG	940-225-DMM
	Rabbit	940-230-DRG	940-235-DRM
	Human	940-200-DHG	940-210-DHM

VacciGel Direct ELISA for the measurement of **Diphtheria Toxoid in Vaccines formulated in Alum**, 96 tests, Cat # VAC-DTX-200

Diphtheria Toxoid/Toxin (DTX) ELISA for the measurement **DTX in biological buffer**, cat # VAC-DTX-210

Item	Catalog#	Product Description	Product Type
Diphtheria Toxoid/Toxin	CRM197-N-100	Purified CRM197 (Diphtheria Toxin mutant) protein (antigen grade)	Pure Protein
	DTOX11-S	Rabbit Anti-Diphtheria Toxoid/Toxin antiserum	Antibodies
	DTOX12-B	Goat Anti-Diphtheria Toxoid/Toxin IgG-Biotin conjugate	Antibodies
	DTOX12-F	Goat Anti-Diphtheria Toxoid/Toxin IgG-FITC conjugate	Antibodies
	DTOX12-HRP	Goat Anti-Diphtheria Toxoid/Toxin IgG-HRP conjugate	Antibodies
	DTOX12-S	Goat Anti-Diphtheria Toxoid/Toxin IgG, unlabeled	Antibodies
	DTOX13-M	Monoclonal Anti-Diphtheria Toxin/Anatoxin IgG #1, unlabeled	Antibodies
	DTOX15-M	Monoclonal Anti-Diphtheria Toxin subunit A IgG, unlabeled	Antibodies
	DTOX15-N-500	Purified Diphtheria Toxoid protein (antigen grade)	Pure Protein
	DTOX16-M	Monoclonal Anti-Diphtheria Toxin (non-reactive with free A/B subunits) IgG	Antibodies
	DTOX16-S	G. Pig Anti-Diphtheria Toxoid/Toxin antiserum	Antibodies

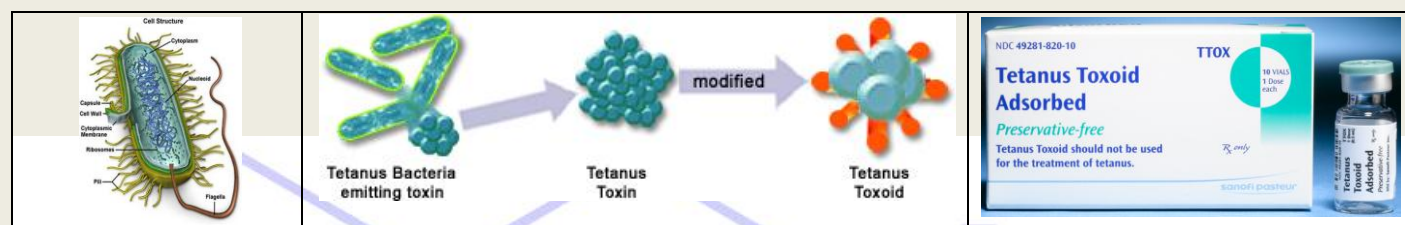
Diphtheria_Vaccine_Flr 130207A



Tetanus Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Tetanus, also called lockjaw, is a medical condition characterized by a prolonged contraction of skeletal muscle fibers. The primary symptoms are caused by tetanospasmin (also known as tetanus toxin); a neurotoxin produced by the Gram-positive, obligate anaerobic bacterium *Clostridium tetani*. Infection generally occurs through wound contamination and often involves a cut or deep puncture wound. As the infection progresses, muscle spasms develop in the jaw (thus the name "lockjaw") and elsewhere in the body. Infection can be prevented by proper immunization and by post-exposure prophylaxis. Nevertheless every year 400,000 - 800,000 persons die due to this infection. The majority of these persons live in under-developed countries. Tetanus begins when

spores of *Clostridium tetani* enter damaged tissue. The spores transform into rod-shaped bacteria and produce the neurotoxin tetanospasmin. This toxin is inactive inside the bacteria, but when the bacteria die, it is released and activated by proteases. Active tetanospasmin is carried by retrograde axonal transport to the spinal cord and brain stem where it binds irreversibly to receptors at these sites. Ultimately, this produces the symptoms of the disease. Tetanus affects skeletal muscle, a type of striated muscle used in voluntary movement. The other type of striated muscle, cardiac or heart muscle cannot be tetanized because of its intrinsic electrical properties.



There are several **Tetanus vaccines** available that can be used alone or in combination with other diseases (multivalent). It is often necessary to monitor the efficacy of vaccines and determine the anti-Tetanus Ig levels in patients or for clinical trial using new formulation of vaccines. ADI's monkey anti- Tetanus Toxoid IgG ELISA kit is an immunoassay for the quantitative determination of IgG class antibodies against Tetanus **Trihibit** (DTAP/Hib), **ActHib** (Hib-PRP-T), **Daptacel** (DTAP), **Tripedia** (DTAP), **Td** (Adult), **DecavacTM** (tetanus/Diphtheria), **Adacel** (tetanus, Diphtheria, Acellular

Pertussis), **DT** (Pediatric)-Sanofi Pasteur; **Pediarix** (DTAP/HepB/IPV), **Infanrix** (DTAP), **Boostrix** (Tetanus, Diphtheria, Acellular Pertussis)- GlaxoSmithKline..

ADI has developed antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. ADI has also introduced industry's first ELISA for direct testing of Tetanus Toxoid adsorbed on Alum (for vaccine identification and testing).

Tetanus Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2724

ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#	IgA Specific Cat#
Tetanus Vaccine (Anti-Tetanus Toxoid) antibody ELISAs	Human	960-100-TTH		
	Monkey	930-410-TKG		
	Mouse	960-130-TMG	960-140-TMM	960-120-TMA
	Rabbit	960-210-TRG	930-220-TRM	
	G. Pig	930-310-TGG	930-320-TGM	
VacciGel Direct ELISA for the measurement of Tetanus Toxoid (TTX) in Vaccines formulated in Alum , 96 tests, Cat # VAC-TTX-300				
Tetanus Toxoid/Toxin (TTX) ELISA for the measurement TTX in biological buffer , cat # VAC-TTX-310				

Tetanus Vaccine Related Antibodies, Proteins and other Reagents

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2724

Item	Catalog#	Product Description	Product Type
Tetanus Toxoid (TTX)	RP-343	Recombinant Anti-Tetanus Toxoid scFv IgG	Antibodies
	TTOX12-A	Rabbit Anti-C. tetani purified toxin IgG (tetanus shock toxin)	Antibodies
	TTOX13-A	Goat Anti-C. tetani purified toxin IgG (tetanus shock toxin)	Antibodies
	TTOX14-M	Monoclonal Anti-C. tetani purified toxin IgG (tetanus shock toxin)	Antibodies
	TTOX15-S	Anti-C. tetani purified toxin IgG (tetanus shock toxin)	Antibodies

Please contact ADI for custom testing of animal and human samples.

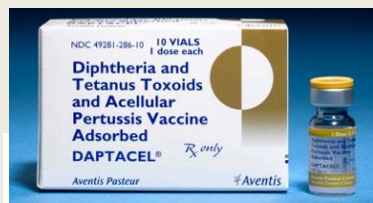
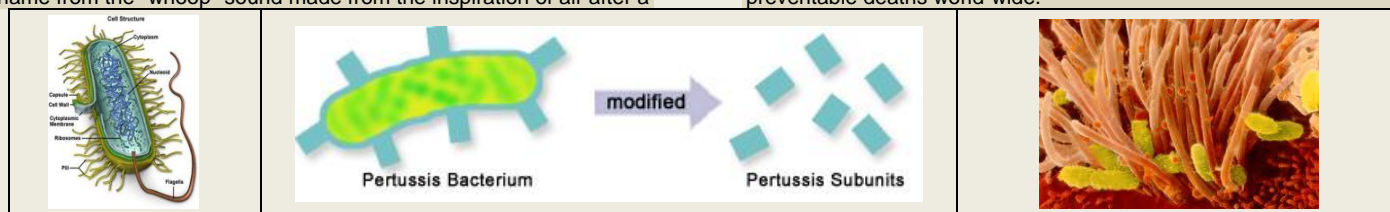
Tetanus_Vaccine_Flr.doc Rev. 130207A



Pertussis Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Pertussis, also known as the whooping cough, is a highly contagious disease caused by the bacterium *Bordetella pertussis*. It derived its name from the "whoop" sound made from the inspiration of air after a

cough. Despite generally high coverage with the DTP and DTaP vaccines, pertussis is one of the leading causes of vaccine-preventable deaths world-wide.



B. pertussis vaccine was first developed in 1920 using whole bacterium. In 1942, the whole-cell pertussis vaccine was combined with diphtheria and tetanus toxoids to generate the first **DTP combination** vaccine.

Whole cell vaccines have some side effects. **Acellular pertussis vaccine** consisting of purified haemagglutinins (HAs: filamentous HA/FHA and leucocytosis-promoting-factor HA), are being using alone or in combination with DTaP (aP represents acellular vaccine). Those with three or more components consisting of filamentous hemagglutinin (**FHA**), pertussis toxin (**PT**) and pertactin (**PRN**) are considered to be more effective than one/two-component Pa vaccines that contain only PT or both PT and FHA. Pertactin (PRN or p69 protein) is a highly immunogenic virulence factor of *B. pertussis*. Specifically, it is an outer membrane protein that promotes adhesion to tracheal epithelial cells. P.69 is produced as a large (910-amino-acid) precursor molecule. It is proteolytically processed at its N and C termini to produce P.69 and P.30, which are located at the cell surface and in the outer membrane, respectively. P.69 contains the amino acid triplet arginine-glycine-aspartic acid (RGD), a sequence motif which functions as a cell-binding site in a number of mammalian proteins. Pertussis toxin has numerous biological activities and probably plays a role in hampering the host immune response. PT is a protein-based **A/B-type exotoxin** because they are formed from two subunits. The "A" subunit possesses enzyme activity, and is transferred to the host cell

following a conformational change in the membrane-bound transport "B" subunit. Pertussis toxin is an exotoxin with six subunits (named S1 through S5—each complex contains two copies of S4). Together, these proteins form the PT secretion complex. PT is involved in the colonization of the respiratory tract and the establishment of infection.

Filamentous hemagglutinin (fimbrial hemagglutinin or **FHA**) is one of two hemagglutinins produced by phase I strains of *Bordetella pertussis*. The use of FHA as one component of a new acellular vaccine is currently under investigation. On a weight basis, FHA is five to seven times more active in hemagglutination (HA) assays than is pertussis toxin. Moreover, the HA-activity of FHA, but not that of pertussis toxin, is abolished in the presence of low levels of cholesterol. FHA is a protein with an approximate molecular weight of 200,000 daltons.

Pertussis Vaccines: Trihibit (DTAP/Hib), ActHib (Hib-PRP-T), Daptacel (DTAP), Tripedia (DTAP), Adacel (tetanus, Diphtheria, Acellular Pertussis) - Sanofi Pasteur; PedvaxHib (Hib-PRP-OMP) - Merck; Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis) - GlaxoSmithKline.

ADI has developed antibody ELISA kits to determine the efficacy of various Pertussis vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. ADI has also introduced industry's first **ELISA for direct testing of Pertussis Toxoid adsorbed on Alum** (for vaccine identification and testing) or in purified/semi purified preparations of toxoid during vaccine manufacturing.

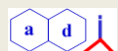
Pertussis Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2722

Species	Species	Total IgG Cat#	IgM Specific Cat#	IgA Specific Cat#
B. pertussis whole vaccine (Pertussis Toxin, FHA and LPS) antibody ELISA	Human	960-110-PHG	960-220-PHM	960-200-PHA
	Mouse	960-120-PHG		
	Monkey	960-210-PHG	960-220-PHM	
B. pertussis vaccine (Toxin/toxoid) Antibody ELISAs	Mouse	960-130-PMG	960-140-PMG	960-140-PMG
	Rabbit	960-150-PRG	960-160-PRM	960-160-PRM
	G. Pig	960-170-PMG	960-180-PMM	960-180-PMM
B. pertussis vaccine (Pertactin/PRN) Antibody ELISAs	Mouse	960-230-PGG		
	Rabbit	960-240-PRG		
	Human	960-250-PHG		
	Monkey	960-260-PMG		
B. pertussis vaccine Filamentous hemeagglutinin (FHA) Antibody ELISAs	Human	960-340-FHG	960-350-FHM	
	Mouse	960-300-FMG	960-310-FMM	
	Rabbit	960-320-FRG	960-330-FRM	

VacciGel Direct ELISA for the measurement of Pertussis Toxoid (PTX) in Vaccines formulated in Alum, 96 tests, Cat # VAC-PTX-400

Pertussis Toxoid/Toxin (PTX) ELISA for the measurement DTX in biological buffer, cat # VAC-PTX-410

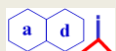


Pertussis Vaccine Related Antibodies, Proteins and other Reagents

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2722

Item	Catalog#	Product Description	Product Type
Filamentous hemeagglutinin (FHA)	FHA11-S	Rabbit Anti-B. pertussis Filamentous hemeagglutinin (FHA) protein antiserum	Antibodies
	FHA15-N-10	Filamentous Hemeagglutinin (FHA) (B. pertussis), purified	Pure protein
	FHA21-S	Rabbit Anti-B. pertussis Filamentous hemeagglutinin (FHA) IgM negative control for ELISA, IF, Western	Antibodies
	FHA22-S	Rabbit Anti-B. pertussis Filamentous hemeagglutinin (FHA) IgM positive control for ELISA, IF, Western	Antibodies
	FHA31-S	Rabbit Anti-B. pertussis Filamentous hemeagglutinin (FHA) IgG negative control for ELISA, IF, Western	Antibodies
	FHA32-S	Rabbit Anti-B. pertussis Filamentous hemeagglutinin (FHA) IgG positive control for ELISA, IF, Western	Antibodies
FIM	FIM235-N-10	Recombinant purified FIMBRIAE 2/3 (FHA) (B. pertussis), antigen grade	Pure protein
B. pertussis Pertactin	PRN11-C	Recombinant (E. coli) B. pertussis Pertactin (91 kda) protein control for Western	Pure protein
	PRN11-S	Rabbit Anti-B. pertussis Pertactin (full length, 91 kda) protein antiserum	Antibodies
	PRN15-R-10	Recombinant (E. coli) B. pertussis Pertactin (full length, 91 kda, his-tag) purified protein	Pure protein
B. pertussis Toxin	PTOX15-N-50	Pertussis Toxin (islet activating protein, B. pertussis), purified	Pure protein
	PTOX15-S	Rabbit Anti-B. pertussis Toxin IgM negative control for ELISA, IF, Western	Antibodies
	PTOX16-S	Rabbit Anti-B. pertussis Toxin IgM positive control for ELISA, IF, Western	Antibodies
	PTOX17-S	Rabbit Anti-B. pertussis Toxin IgG negative control for ELISA, IF, Western	Antibodies
	PTOX18-S	Rabbit Anti-B. pertussis Toxin IgG positive control for ELISA, IF, Western	Antibodies
	PTOX21-S	G. Pig Anti-B. pertussis Toxin IgG negative control for ELISA, IF, Western	Antibodies
	PTOX22-S	G. Pig Anti-B. pertussis Toxin IgG positive control for ELISA, IF, Western	Antibodies
	PTOX23-S	G. Pig Anti-B. pertussis Toxin IgM negative control for ELISA, IF, Western	Antibodies
	PTOX24-S	G. Pig Anti-B. pertussis Toxin IgM positive control for ELISA, IF, Western	Antibodies
	PTOX31-S	Mouse Anti-B. pertussis Toxin IgG positive control for ELISA, IF, Western	Antibodies
	PTOX32-S	Mouse Anti-B. pertussis Toxin IgM negative control for ELISA, IF, Western	Antibodies
	PTOX33-S	Mouse Anti-B. pertussis Toxin IgG negative control for ELISA, IF, Western	Antibodies
	PTOX34-S	Mouse Anti-B. pertussis Toxin IgG positive control for ELISA, IF, Western	Antibodies
	PTOX35-N-10	Pertussis Toxin A promoter (B. pertussis), purified	Pure protein
	PTOX36-N-10	Pertussis Toxin B promoter (B. pertussis), purified	Pure protein
	PTOX41-F	Monoclonal Anti-B. pertussis LPS (Los-A) IgG-FITC Conjugate	Antibodies
	PTOX41-M	Monoclonal Anti-B. pertussis/B.bronchiseptica LPS (Los-A) IgG unlabeled	Antibodies
	PTOX42-M	Monoclonal Anti-B. pertussis Toxin IgG unlabeled	Antibodies
	PTOX43-M	Monoclonal Anti-B. pertussis Toxin subunit S1, IgG unlabeled	Antibodies
	PTOX44-M	Monoclonal Anti-B. pertussis Toxin subunit S2, IgG unlabeled	Antibodies
	PTOX45-M	Monoclonal Anti-B. pertussis Toxin subunit S3, IgG unlabeled	Antibodies

Pertussis_Vaccine_Flr.doc Rev. 121107A



VacciGel™ ELISA for direct identification and quantitation of vaccines formulated in Alum

VacciGel™ series ELISAs are an innovative and industry's first test for the direct identification and measurement of vaccine components adsorbed on Alum adjuvants. The proprietary methods require NO ANTIGEN ELUTION or harsh treatment of the Alum gel. The assay can be completed in ~2 hrs at room temp. VacciGel™ series is available for Hepatitis B, Diphtheria, Tetanus, Pertussis, Rabies, and HCG (anti-fertility) vaccines.

Currently, the only adjuvants approved for human vaccine are aluminum containing compounds, including aluminum hydroxide (Al(OH)₃) or Alhydrogel®, aluminum phosphate (AlPO₄), and potassium aluminum sulfate (KAl(SO₄)₂·12H₂O) or alum. To ensure vaccine quality, regulatory authorities require the manufacturer to measure vaccine content in the final product. World Health Organization (WHO) recommends that at least 80% of the tetanus vaccine be adsorbed to the gel. In particular, it is essential to determine the amount as well as the identity and integrity of the vaccine; Rabies vaccine.

antigens bound to aluminum containing adjuvants following formulation. Aluminum-based gels are typically fibrous or beaded in suspension. The presence of aggregates, turbidity, flocculent gels or beads in solution prevents direct quantitation of protein content in formulations using assays such as Lowry, BCA, or Bradford protein assay, not to mention that these assays are all non-specific and low in sensitivity. Alhydrogel formulations also do not allow complete dissolution or extraction making it very difficult to know the identity of the vaccines or know the amount of the protein after their dispensing. There have been occasions when Tetanus vaccine has been mislabeled, intentionally or unintentionally, with the HCG-vaccine (anti-fertility). Therefore, there is an urgent need for an assay that can quickly identify and measure the vaccine contents without any extraction or dissolution. The US licensed vaccines that contain aluminum adjuvants are: DTP (diphtheria-tetanus-pertussis vaccine), DTaP (diphtheria-tetanus-acellular pertussis vaccine); Some but not all Hib (Haemophilus influenzae type b) conjugate vaccines; Pneumococcal conjugate vaccine; Hepatitis B vaccines, All combination DTaP, Tdap, Hib, or Hepatitis B vaccines, Hepatitis A vaccines; Human Papillomavirus (HPV) vaccine; Anthrax



- What are these vaccines?
- Is this Tetanus or anti-fertility vaccine?
- Are the vaccines still potent and have the expected vaccine contents?

Find out with VacciGel™ ELISAs to identify and measure the vaccine formulated in gels

VacciGel™ Direct ELISA Features

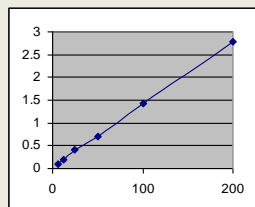
- Direct testing of vaccines formulated in Aluminum gels (Alhydrogels, Adjuphos or Alum)
- High sensitivity ELISA allow testing at 1:10-1:100 diluted vaccines
- No complicated protocol, instruments or extraction procedure that may destroy the vaccines
- Room temp assay in < 2 hrs. Stability ~12 months
- Use **VacciGel™ ELISA** for routine manufacturing, Vaccine identification, and antigen dose at the time of manufacture and lot testing; Shelf life etc.
- **VacciGel™ ELISA** available for Hepatitis B, Diphtheria, Tetanus, Pertussis, Rabies, and HCG (anti-fertility) vaccines

This kit For in vitro research use only.

VacciGel™ direct ELISA for the detection and measurement of Hepatitis B vaccine (HBsAg) adsorbed onto the Alhydrogel, Cat #VAC-HBS-100



Merck Recombivax
HBsAg @ 10 µg/ml



HBsAg in Alhydrogel (ng/ml)

VacciGel™ Direct ELISA for Hepatitis B Vaccine #VAC-HBS-100

- Standards: Recombinant HBsAg adsorbed on Alhydrogel (Aluminum hydroxide); 12.5-200 ng/ml
- Standards calibrated to Merck Recombivax
- Vaccine sample: 100 µl (1:100-1:500 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- **Sensitivity: HBsAg ~10 ng/ml vaccine**
- **Standard vaccine contains HBsAg @ =10 µg/ml**

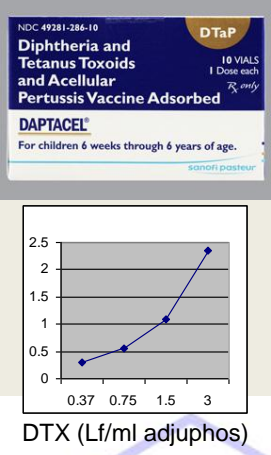
Suitable for Hepatitis B vaccines (monovalent or multivalent):

Merck vaccines: Comvax (HepB/Hib), Recombivax HB (Hep B), PedvaxHib (Hib-PRP-OMP)

GlaxoSmithKline vaccines- Engerix-BPED/Adol (HepB Ped/Adol), Engerix-B for adults (HepB), Pediarix (DTAP/HepB/IPV)

WyethLederle vaccines- Trihibit (DTAP/Hib), ActHib (Hib-PRP-T) - Sanofi Pasteur; HibTiter (Hib-Hboc)

VacciGel™ direct ELISA for the detection and measurement of Diphtheria Vaccine (Diphtheria Toxoid adsorbed onto the Adjuphos gel, Cat #VAC-DTX-200



VacciGel™ Direct ELISA for Diphtheria Vaccine #VAC-DTX-200

- Standards: DTX adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.1-3 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:10-1:100 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Diphtheria Toxoid ~0.1 Lf/ml vaccine (standard vaccine)**
- Standard Daptacel vaccine contains Diphtheria Toxoid @ =30 Lf/ml**

Suitable for Diphtheria vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis –

Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

VacciGel™ Direct ELISA for Diphtheria Vaccine #VAC-DTX-200

- Standards: DTX adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.1-3 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:10-1:100 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Diphtheria Toxoid ~0.1 Lf/ml vaccine (standard vaccine)**
- Standard Daptacel vaccine contains Diphtheria Toxoid @ =30 Lf/ml**

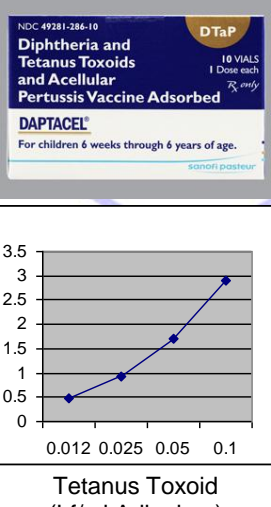
Suitable for Diphtheria vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis –

Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

VacciGel™ direct ELISA for the detection and measurement of Tetanus Vaccine (Tetanus Toxoid adsorbed onto the Adjuphos gel, Cat #VAC-TTX-300



VacciGel™ Direct ELISA for Tetanus Vaccine #VAC-TTX-300

- Standards: Tetanus Toxoid adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.001-1 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:100-1:1000 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Tetanus Toxoid ~0.001 Lf/ml vaccine**
- Standard Daptacel vaccine contains TTX @ =10 Lf/ml**

Suitable for Tetanus vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis

Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

VacciGel™ Direct ELISA for Tetanus Vaccine #VAC-TTX-300

- Standards: Tetanus Toxoid adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.001-1 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:100-1:1000 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Tetanus Toxoid ~0.001 Lf/ml vaccine**
- Standard Daptacel vaccine contains TTX @ =10 Lf/ml**

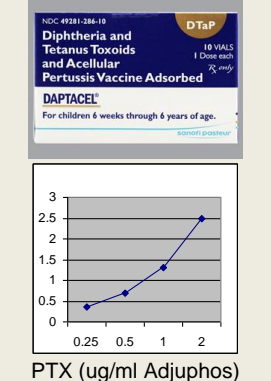
Suitable for Tetanus vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis

Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

VacciGel™ direct ELISA for the detection and measurement of Pertussis Vaccine (Pertussis Toxoid adsorbed onto the Adjuphos gel, Cat #VAC-PTX-400



VacciGel™ Direct ELISA for Pertussis Vaccine #VAC-PTX-300

- Standards: Tetanus Toxoid adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.001-1 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:100-1:1000 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Tetanus Toxoid ~0.001 Lf/ml vaccine**

Suitable for Pertussis vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis –

Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

VacciGel™ Direct ELISA for Pertussis Vaccine #VAC-PTX-300

- Standards: Tetanus Toxoid adsorbed on Adjuphos gel (Aluminum phosphate AIPO₄); 0.001-1 Lf/ml
- Standards calibrated to Sanofi Triple vaccine Daptacel
- Vaccine sample: 100 ul (1:100-1:1000 diluted)
- Assay Time: 105 min at room temp (3 incubations)
- Sensitivity: Tetanus Toxoid ~0.001 Lf/ml vaccine**

Suitable for Pertussis vaccines (monovalent or multivalent):

GlaxoSmithKline-Pediarix (DTAP/HepB/IPV), Infanrix (DTAP), Boostrix (Tetanus, Diphtheria, Acellular Pertussis –

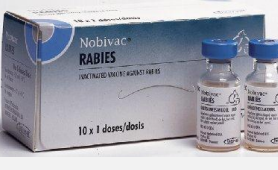

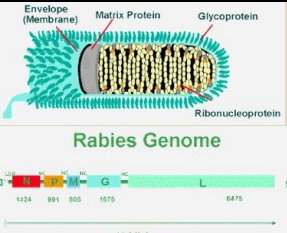
Sanofi Pasteur-Trihibit (DTAP/Hib), Daptacel (DTAP), Tripedia (DTAP), Td (Adult)- Adacel (tetanus, Diphtheria, Acellular Pertussis), Decavac™ (tetanus/Diphtheria)

Aventis Pasteur-DT (Pediatric)

Vaccigel_Direct_ELISA_Flr 130207A

Rabies Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Rabies is a disease that causes acute encephalitis (inflammation of the brain) in warm-blooded animals. It is zoonotic (i.e., transmitted by animals), most commonly by a bite from an infected animal but occasionally by other forms of contact. Rabies is almost invariably fatal if post-exposure prophylaxis is not administered prior to the onset of severe symptoms. Early-stage symptoms of rabies are malaise, headache and fever, progressing to acute pain, violent movements, uncontrolled excitement, depression, and hydrophobia. Worldwide, the vast majority of human rabies cases (~ 97%) come from dog bites. Rapid and accurate laboratory diagnosis of rabies in humans and other animals are essential for timely administration of post exposure prophylaxis. The nature of rabies disease dictates that laboratory tests be standardized, rapid, sensitive, specific, economical, and reliable. The standard test for rabies testing is dFA and RFFIT. However, these test labor intensive, take a long time, and also require handling of the live virus, and more expensive. They are also not suited for large sample testing or field trials.

<p>Human Rabies Vaccine</p> 	 <p>Recombinant Oral VRG Vaccine bait for animals (Coyote, racoon, etc)</p>	 <p style="text-align: center;">Rabies Genome</p>	<p>The rabies virus is a member of the <i>Lyssavirus</i> genus, which are approximately cylindrical in shape. They are characterized by an extremely broad host spectrum ranging from plants to insects and mammals; human-infecting viruses. The lipoprotein envelope carries knob-like spikes composed of Glycoprotein G. Spikes do not cover the planar end of the virion (virus particle). Beneath the envelope is the membrane or matrix (M) protein layer which may be invaginated at the planar end. The core of the virion consists of helically arranged ribonucleoprotein.</p>
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ADI's Anti-Rabies ELISA kit is based on whole-inactivated virus or recombinant proteins (**VRG and RV-NP**) are intended to use as a rapid screening test for the detection of rabies antibodies in serum samples of experimental animals to test the efficacy of existing vaccines or new formulation of vaccines. **Rabies vaccines:** Vaxirab, Verorab, Raboral (Merial). **VRG vaccine** is the recombinant vaccinia virus containing the rabies glycoprotein. It is used extensively to immunize wild animals (bats, coyote raccoons etc).

Rabies vaccine Related ELISA kits (See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2726

ELISA Kit Description	Species	Total Ig'Cat#	IgG Specific Cat#	IgM Specific Cat#
Rabies Vaccine (Rabies Virus 1-3) antibody ELISA Kits	Dog		600-010-DRV	
	Human		600-020-HRV	
	Mouse		600-030-MRG	
	Rabbit		600-040-RRG	600-045-RRM
	Horse		600-050-HRG	
	Dog/Canine	600-060-CRG		
	Monkey	600-070-CRG		
	Pig/Swine		600-080-PRG	
Rabies Vaccine (Rabies Virus Glycoprotein (RVG)) antibody ELISA Kits	Ferret (Fishers/Skunks)		600-090-FRG	
	Dog Fox/Coyote		600-110-DRV	
	Human		600-120-HRV	
	Mouse		600-130-MRG	
	Rabbit		600-140-RRG	
	Horse		600-150-HRG	
	Swine/Pig		600-160-PRG	
	Ferret (Fishers/Skunks)		600-170-FRG	
Rabies Vaccine (Rabies Virus Nucleoprotein (RV-NP)) antibody ELISA Kits	Dog/Fox/Coyote	600-210-DRV	600-210-DRV	
	Human		600-220-HRV	
	Mouse		600-230-MRG	
	Rabbit		600-240-RRG	
	Horse		600-250-HRG	
Pseudorabies Antibody ELISA kits	Swine/Porcine		AE-200130-2	

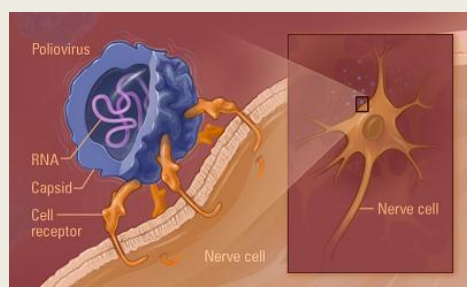
Rabies Related Antibodies, Peptides, and Recombinant Proteins

Items	Cat#	Product Description	Product Type
Rabies Virus VRG RV-NP	RBV14-M	Mouse monoclonal Anti-Rabies Virus IgG, aff pure	Antibodies
	RBV12-FITC	Goat Anti-Rabies Virus IgG-FITC conjugate	Antibodies
	RBV12-S	Rabbit Anti-Rabies Virus antiserum	antiserum
	RBV11-M	Mouse monoclonal Anti-Rabies Virus IgG, aff pure	Antibodies
	RBVGP11-S	Rabbit Anti-Rabies Virus Glycoprotein (~58 kda, RVG) antiserum	antiserum
	RBVGP25-R-10	Recombinant (E. coli) purified Rabies Virus Glycoprotein (~58 kda, RVG)	Pure protein
	RBVNP12-S	Rabbit Anti-Rabies Virus Nucleoprotein (RV-NP) (~56 kda, RV-NP) antiserum	antiserum
	RBVNP15-R-10	Recombinant (yeast) purified nucleocapsid protein (full length ~56 kda, yeast, >95%)	Pure protein

Rabies_Vaccine_Flr 130207A



Polio Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies



around 90% of polio infections cause no symptoms at all, affected individuals can exhibit a range of symptoms if the virus enters the blood stream. In about 1% of cases the virus enters the central nervous system, preferentially infecting and destroying motor neurons, leading to muscle weakness and acute flaccid paralysis. Different types of paralysis may occur, depending on the nerves involved. Spinal polio is the most common form, characterized by asymmetric paralysis that most often involves the legs. Bulbar polio leads to weakness of muscles innervated by cranial nerves. Bulbospinal polio is a combination of bulbar and spinal paralysis.

The term poliomyelitis is used to identify the disease caused by any of the three serotypes of poliovirus. Two basic patterns of polio infection are described: a minor illness which does not involve the central nervous system (CNS), sometimes called abortive poliomyelitis, and a major illness involving the CNS, which may be paralytic or non-paralytic. In most people with a normal immune system, a poliovirus infection is asymptomatic. The virus enters the

Poliomyelitis, often called polio or infantile paralysis, is an acute viral infectious disease spread from person to person, primarily via the fecal-oral route. Although

central nervous system in about 3% of infections. Most patients with CNS involvement develop non-paralytic aseptic meningitis, with symptoms of headache, neck, back, abdominal and extremity pain, fever, vomiting, lethargy and irritability. Approximately 1 in 200 to 1 in 1000 cases progress to paralytic disease, in which the muscles become weak, floppy and poorly controlled, and finally completely paralyzed; this condition is known as acute flaccid paralysis. Depending on the site of paralysis, paralytic poliomyelitis is classified as spinal, bulbar, or bulbospinal. Encephalitis, an infection of the brain tissue itself, can occur in rare cases and is usually restricted to infants. It is characterized by confusion, changes in mental status, headaches, fever, and less commonly seizures and spastic paralysis.

A laboratory diagnosis is usually made based on recovery of poliovirus from a stool sample or a swab of the pharynx. Antibodies to poliovirus can be diagnostic, and are generally detected in the blood of infected patients early in the course of infection. Analysis of the patient's cerebrospinal fluid (CSF), which is collected by a lumbar puncture ("spinal tap"), reveals an increased number of white blood cells (primarily lymphocytes) and a mildly elevated protein level. Detection of virus in the CSF is diagnostic of paralytic polio, but rarely occurs.

Two types of vaccines are used throughout the world to combat polio. The first is Salk vaccine, or inactivated poliovirus vaccine (IPV), is based on poliovirus grown in a type of monkey kidney tissue culture (Vero cell line), which is chemically inactivated with formalin. Subsequently, Albert Sabin developed another live, oral polio vaccine (OPV). It was produced by the repeated passage of the virus through non-human cells at sub-physiological temperatures.

ADI has developed antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. The ADI's Poliomyelitis IgG ELISA Kit is an immunoassay suitable for detecting IgG in serum, plasma or other biological fluids. ADI has also introduced industry's first ELISA for direct testing of Diphtheria Toxoid adsorbed on Alum (for vaccine identification and testing) or in purified/semi-purified preparations of toxoid during vaccine manufacturing.

Related ELISA kits (See Details at the website)

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2727

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Polio Vaccine Antibody ELISA Kits	Human	970-100-PHG	
	Mouse	970-120-PMG	
	Rabbit	970-130-PRG	970-130-PRM
	Monkey	970-150-PMG	

Polio Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2727

Item	Catalog #	Product Description	Product Type
Polio Virus	POLV11-S	Rabbit Anti-Poliomyelitis Virus 1-3 antiserum	Antibodies
	POLV12-M	Mouse monoclonal Anti-Poliomyelitis Virus 1-3 IgG, aff pure	Antibodies
	POLV13-A	Goat Anti-Poliomyelitis Virus 1-3 IgG	Antibodies
	POLV13-BTN	Goat Anti-Poliomyelitis Virus 1-3 IgG-Biotin Conjugate	Antibodies
	POLV13-FITC	Goat Anti-Poliomyelitis Virus 1-3 IgG-FITC Conjugate	Antibodies
	POLV13-HRP	Goat Anti-Poliomyelitis Virus 1-3 IgG-HRP Conjugate	Antibodies

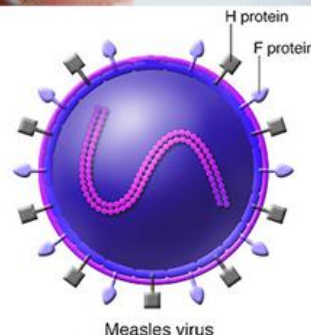
Polio_Vaccine_Flr Rev. 130207A



Measles Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Measles, also known as **Rubeola** or **German measles** (not to be confused with rubella, a different disease) or Morbilli, is an infection of the respiratory system caused by a virus, specifically a paramyxovirus of the genus Morbillivirus. Morbilliviruses, like other paramyxoviruses, are enveloped, single-stranded, negative-sense RNA viruses. Symptoms include fever, cough, runny nose, red eyes and a generalized, maculopapular, and erythematous rash. Measles is spread through respiration and is highly contagious—90% of people without immunity sharing living space with an infected person will catch it. The infection has an average incubation period of 14 days (range 6–19 days) and infectivity lasts from 2–4 days prior, until 2–5 days following the onset of the rash (i.e. 4–9 days infectivity).

Laboratory diagnosis of measles can be done with confirmation of positive measles IgM antibodies or isolation of measles virus RNA from respiratory specimens. The contact with any infected person in any way, including semen through sex, saliva, or mucus can cause infection. In developed countries, most children are immunized against measles by the age of 18 months, generally as part of a three-part MMR vaccine (measles, mumps, and rubella). In developing countries where measles is highly endemic, the WHO recommend that two doses of vaccine be given at six months and at nine months of age. **MMR II vaccine** (Merck) is a live virus vaccine for vaccination against measles (rubeola), mumps, and rubella (German measles). Attenuated Measle virus, derived from Enders' attenuated Edmonston strain and propagated in chick embryo cell culture, is used in MMR II vaccine. MMR II is supplied freeze-dried (lyophilized) and contains live viruses. The vaccine is a mixture of three live attenuated viruses, administered via injection. The vaccine is sold by Merck as M-M-R II, GlaxoSmithKline Biologicals as Priorix, Serum Institute of India as Tresivac, and Sanofi Pasteur as Trimovax. The component viral strains of MMR vaccine were developed by propagation in animal and human cells. The live



viruses require animal or human cells as a host for production of more virus. For example, in the case of mumps and measles viruses, the virus strains were grown in embryonated hens' eggs and chick embryo cell cultures. This produced strains of virus which were adapted for the hens egg and less well-suited for human cells. These strains are therefore called attenuated strains. They are sometimes referred to as neuroattenuated because these strains are less virulent to human neurons than the wild strains. The Rubella component, Meruvax, is propagated using a human cell line (WI-38, named for the Wistar Institute) derived in

1961 from embryonic lung tissue. The MMRV vaccine, a combined measles, mumps, rubella and varicella vaccine, has been proposed as a replacement for the MMR vaccine to simplify administration of the vaccines.

ADI has developed antibody ELISA kits to determine the efficacy of various existing Measles vaccines or test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Measles vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2748

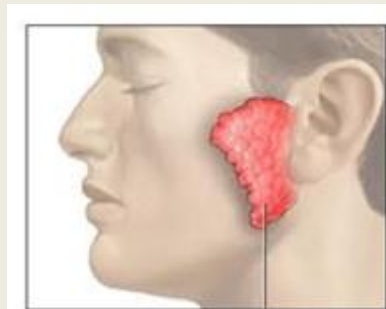
ELISA Kit Description	Species	IgA Specific Cat#	IgG Specific Cat#	IgM Specific Cat#
Measles Vaccine antibody ELISA kits	Human	530-120-HMA	530-100-HMG	530-110-HMM
	Mouse	530-150-MMA	530-130-MMG	530-140-MMG

Measles Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

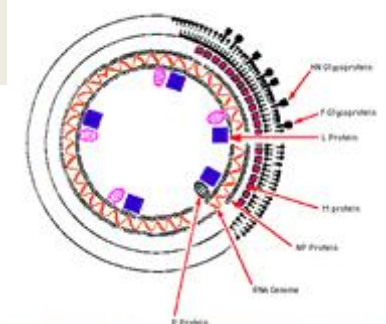
Items	Catalog#	Product Description	Product Type
Measles Virus	MESL11-A	Monoclonal Anti-Measles (Rubeola/Edmonston strain) Virus IgG	Antibodies
	MESL11-A	Rabbit Anti-Measles (Rubeola/Edmonston strain) Virus IgG	Antibodies
	MESL15-N-500	Measles (Rubeola) Virus (Edmonston) proteins/antigen extract	Pure protein
Measles Agglutinin	RP-1609	Recombinant (E. Coli) purified Measles virus hemagglutinin immunodominant mosaic (106-114+519-550) protein	Pure protein
	RP-1610	Recombinant (E. Coli) purified Measles virus hemagglutinin immunodominant region (399-525) protein	Pure protein
Measles Agglutinin	RP-1611	Recombinant (E. Coli) purified Measles virus nucleocapsid protein (89-165)	Pure protein
	RP-655	Recombinant Measles Virus Hemagglutinin Mosaic (1-30,115-150,379-410)	Pure protein
Measles polymerase	RP-1612	Recombinant (E. Coli) purified Measles virus Large Polymerase (2059-2183)	Pure protein
	RP-1613	Recombinant (E. Coli) purified Measles virus Large Polymerase (58-149)	Pure protein
	RP-651	Recombinant Measles Virus Large Polymerase (58-149)	Pure protein
	RP-653	Recombinant Measles Virus Large Polymerase (2059-2183)	Pure protein
Nonstructural protein	RP-1614	Recombinant (E. Coli) purified Measles virus Non-Structural C-Protein (1-51aa)	Pure protein
	RP-652	Recombinant Measles Virus Non-Structural C-Protein (1-51)	Pure protein

Measles_Vaccine_Flr 130207A





Swollen parotid gland



Mumps and epidemic parotitis is a viral disease of the human species, caused by the mumps virus. Painful swelling of the salivary glands (classically the parotid gland) is the most typical presentation. Painful testicular swelling (orchitis) and rash may also occur. The symptoms are generally not severe in children. The disease is generally self-limited, running its course before receding, with no specific treatment apart from controlling the symptoms with pain medication. Mumps is a contagious disease that is spread from person to person through contact with respiratory secretions such as saliva from an infected person. Mumps can also be spread by sharing food. A person infected with mumps is contagious from approximately 6 days before the onset of symptoms until about 9 days after symptoms start.

A physical examination confirms the presence of the swollen glands. Usually the disease is diagnosed on clinical grounds and no confirmatory laboratory testing is needed. If there is uncertainty about the diagnosis, a test of saliva or blood may be carried out; a newer diagnostic confirmation, using real-time nested polymerase chain reaction (PCR) technology, has also been developed. An estimated 20%-30% of cases are asymptomatic. As with any inflammation of the salivary glands, serum amylase is often elevated.

Before the development of vaccination and the introduction of a vaccine, it was a common childhood disease worldwide. It is still a significant threat to health in the third world, and outbreaks still occur sporadically in developed countries. The most common preventative

measure against mumps is immunization with a mumps vaccine. The vaccine may be given separately or as part of the MMR immunization vaccine which also protects against measles and rubella. The efficacy of the vaccine depends on the strain of the vaccine, but is usually around 80%. The Jeryl Lynn strain is most commonly used in developed countries but has been shown to have reduced efficacy in epidemic situations. The Leningrad-Zagreb strain commonly used in developing countries appears to have superior efficacy in epidemic situations.

In developed countries, most children are immunized against measles by the age of 18 months, generally as part of a three-part **MMR vaccine** (measles, mumps, and rubella). In developing countries where measles is highly endemic, the WHO recommend that two doses of vaccine be given at six months and at nine months of age. Vaccine efficacy can be measured by the number of reported cases in the USA. For measles, 894,134 cases reported in 1941 compared to 288 cases reported in 1995 resulted in a 99.97% decrease in reported cases; for mumps, 152,209 cases reported in 1968 compared to 840 cases reported in 1995 resulted in a 99.45% decrease in reported cases; and for rubella, 57,686 cases reported in 1969 compared to 200 cases reported in 1995 resulted in a 99.65% decrease. **MMR II vaccine (Merck)** is a live virus vaccine for vaccination against measles (rubeola), mumps, and rubella (German measles). Attenuated Measles virus, derived from Enders' attenuated Edmonston strain and propagated in chick embryo cell culture, is used in MMR II vaccine.

MMR II is a mixture of three live attenuated viruses, administered via injection. The shot is generally administered to children around the age of one year, with a second dose before starting school (i.e. age 4/5). The vaccine is sold by Merck as M-M-R II, GlaxoSmithKline Biologicals as **Priorix**, Serum Institute of India as **Tresivac**, and Sanofi Pasteur as **Trimovax**. The component viral strains of **MMR vaccine** were developed by propagation in animal and human cells. The live viruses require animal or human cells as a host for production of more virus. For example, in the case of **mumps and measles viruses**, the virus strains were grown in embryonated hens' eggs and chick embryo cell cultures. This produced strains of virus which were adapted for the hen's egg and less well-suited for human cells. These strains are therefore called **attenuated strains**. The **Rubella component, Meruvax**, is propagated using a human cell line (WI-38, named for the Wistar Institute) derived in 1961 from embryonic lung tissue. The **MMRV vaccine**, a combined measles, mumps, rubella and varicella vaccine, has been proposed as a replacement for the MMR vaccine to simplify administration of the vaccines.

ADI has developed antibody ELISA kits to determine the efficacy of various existing Mumps vaccines or test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Mumps vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2749

ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#	IgA Specific Cat#
Mumps Vaccine antibody ELISA kits	Human	520-100-HMG	520-110-HMM	520-120-HMA
	Mouse	520-130-MMG	520-140-MMG	520-150-MMG

Items	Catalog#	Product Description	Product Type
Mumps Virus	MUMS11-S	Rabbit Anti-Mumps virus (Enders) Virus antiserum	Antibodies
	MUMS12-M	Monoclonal Anti-Mumps virus (Enders) Virus IgG	Antibodies
	MUMS15-N-500	Mumps virus (Enders) proteins/antigens extract	Antigen

Mumps_Vaccine_Flr Rev. 121107A



Rubella Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies



Rubella, commonly known as **German measles**, is a disease caused by the rubella virus. The name "rubella" is derived from the Latin, meaning little red. The name rubella is sometimes confused with rubeola, an alternative name for measles; the diseases are unrelated. Rubella is a common childhood infection usually with minimal systemic upset although transient arthropathy may occur in adults. Serious complications are very rare. Acquired (i.e. not congenital) rubella is transmitted via airborne droplet emission

from the upper respiratory tract of active cases. There is no carrier state: the reservoir exists entirely in active human cases. The disease has an incubation period of 2 to 3 weeks. The disease is caused by Rubella virus, a togavirus that is enveloped and has a single-stranded RNA genome. Rubella virus specific IgM antibodies are present in people recently infected by Rubella virus but these antibodies can persist for over a year and a positive test result needs to be interpreted with caution. Rubella infections are prevented by active immunization programs using live, disabled virus vaccines. Two **live attenuated virus vaccines**, RA 27/3 and Cendehill strains were effective in the prevention of adult disease. However their use in pre pubertile females did not produce a significant fall in the

overall incidence rate of CRS in the U.K. Reductions were only achieved by immunization of all children. The vaccine is now usually given as part of the MMR vaccine.

Rubella virus is the only member of the genus of Rubivirus and belongs to the family of Togaviridae, whose members commonly have a genome of single-stranded RNA of positive polarity which is enclosed by an icosahedral capsid. There are prominent "spikes" (projections) of 6 nm composed of the viral envelope proteins **E1** and **E2** embedded in the membrane. The E1 glycoprotein is considered immunodominant in the humoral response induced against the structural proteins and contains both neutralizing and hemagglutinating determinants. The genome has 9,762 nucleotides and encodes 2 nonstructural polypeptides (p150 and p90) within its 5'-terminal two-thirds and 3 structural polypeptides (C, E2, and E1) within its 3'-terminal one-third. Both envelope proteins E1 and E2 are glycosylated.

MMR II vaccine is a mixture of three live attenuated viruses, administered by injection. The vaccine is sold by Merck as M-M-R II, GlaxoSmithKline Biologicals as **Priorix**, Serum Institute of India as **Tresivac**, and Sanofi Pasteur as **Trimovax**. The live viruses require animal or human cells as a host for production of more viruses. For example, in the case of mumps and measles viruses, the virus strains were grown in embryonated hens' eggs and chick embryo cell cultures. This produced strains of virus which were adapted for the hen's egg and less well-suited for human cells. These strains are therefore called attenuated strains. The Rubella component, **Meruvax**, is propagated using a human lung cell line (WI-38). The **MMRV vaccine**, a combined measles, mumps, rubella and varicella vaccine, has been proposed as a replacement for the MMR vaccine to simplify administration of the vaccines.

ADI has developed antibody ELISA kits to determine the efficacy of existing Rubella vaccines or test new vaccines.

Rubella vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2750

ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#
Rubella Vaccine (Virus Antibody) ELISA Kits	Human	510-100-HRG	510-110-HRM
	Mouse	510-120-MRG	510-130-MRM
	Mouse	510-100-HRG	510-110-HRM

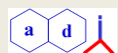
Rubella Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2750

item	Catalog #	Product Description	Product Type
Rubella Virus	RUBL11-A	Goat Anti-Rubella virus (HPV77 strain) IgG	Antibodies
	RUBL11-BTN	Goat Anti-Rubella virus (HPV77 strain) IgG-Biotin conjugate	Antibodies
	RUBL11-FITC	Goat Anti-Rubella virus (HPV77 strain) IgG-FITC conjugate	Antibodies
	RUBL11-HRP	Goat Anti-Rubella virus (HPV77 strain) IgG-HRP conjugate	Antibodies
	RUBL12-M	Monoclonal Anti-Rubella virus (HPV72) IgG, aff pure	Antibodies
	RUBL15-N-500	Rubella virus (HPV77 strain) proteins/antigens extract	Antibodies
E1 protein	RP-1413	Recombinant Rubella Virus E1 Mosaic protein	Pure protein
	RUBL17-M	Monoclonal Anti-Rubella virus structural glycoprotein E1 IgG, aff pure	Antibodies
	RUBL13-M	Monoclonal Anti-Rubella virus envelop protein E1 IgG, aff pure	Antibodies
E2 Protein	RUBL14-M	Monoclonal Anti-Rubella virus envelop protein E2 IgG, aff pure	Antibodies
	RP-1414	Recombinant Rubella Virus E2 protein	Pure protein
Capsid	RP-1415	Recombinant Rubella Virus Capsid C protein	Pure protein
	RUBL15-M	Monoclonal Anti-Rubella virus capsid protein IgG, aff pure	Antibodies
Core	RUBL16-M	Monoclonal Anti-Rubella virus core protein IgG, aff pure	Antibodies

Rubella_vaccine_Flr

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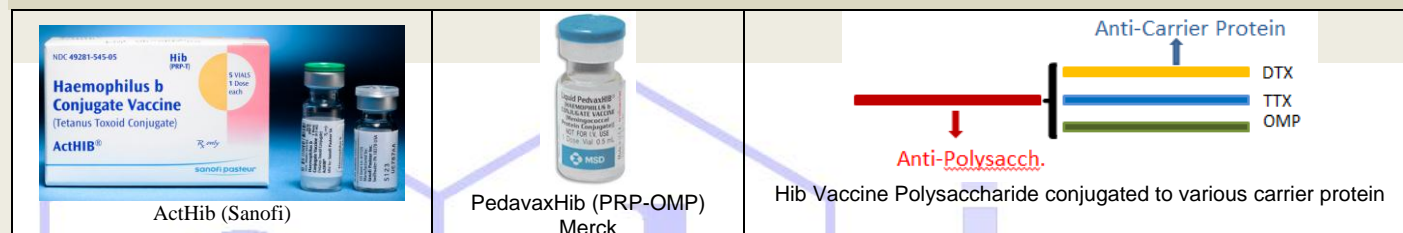


Haemophilus influenzae B (Hib) Vaccines Antibody ELISA Kits and Reagents

Haemophilus influenzae type B vaccine (Hib janan or PRP vaccine) is a conjugate vaccine developed for the prevention of invasive disease caused by Haemophilus influenzae type b bacteria. Vaccinations against Haemophilus influenzae (Hib) have decreased early childhood meningitis significantly in developed countries and recently in developing countries.

In 1930, 2 major categories of H. influenzae were defined: the unencapsulated strains and the encapsulated strains. Encapsulated strains were classified on the basis of their distinct capsular antigens. There are six generally recognized types of encapsulated H. influenzae: a, b, c, d, e, and f. Genetic diversity among unencapsulated strains is greater than within the encapsulated group. The presence of the capsule in encapsulated type b (Hib), a serotype causing conditions such as epiglottitis, is known to be a

major factor in virulence. Their capsule allows them to resist phagocytosis and complement-mediated lysis in the non-immune host. Vaccination with Hib conjugate vaccine is effective in preventing Hib infection. Most strains of H. influenzae are opportunistic pathogens. Naturally-acquired disease caused by H. influenzae seems to occur in humans only. In infants and young children, H. influenzae type b (Hib) causes bacteremia, pneumonia, and acute bacterial meningitis. Occasionally, it causes cellulitis, osteomyelitis, epiglottitis, and infectious arthritis. Due to routine use of the Hib conjugate vaccine in the U.S. since 1990, the incidence of invasive Hib disease has decreased to 1.3/100,000 in children. However, Hib remains a major cause of lower respiratory tract infections in infants and children in developing countries where vaccine is not widely used.



Several vaccines are now available for routine use against Hib.that can be used alone or in combination with other diseases (multivalent). Earlier polysaccharide vaccines only produced age-dependent and variable immunity. The shortcomings of the polysaccharide vaccine led to the production of the Hib polysaccharide-protein conjugate vaccine. There are currently three types of **conjugate vaccine** utilizing different proteins in the conjugation process, all of which are highly effective: tetanospasmin (also called tetanus toxin), mutant diphtheria protein, and meningococcal group B outer membrane protein. Hib vaccine combined with diphtheria-tetanus-pertussis-polio vaccines and Hepatitis B vaccines are available in the US. The World Health Organization (WHO) has certified several Hib vaccine combinations, including a pentavalent diphtheria-pertussis-tetanus-hepatitis B-Hib, for use in developing countries.

Hib conjugate vaccines have been shown to be universally effective against all manifestations of Hib disease, with a clinical efficacy among fully vaccinated children estimated to be between 95-100%. The vaccine has also been shown to be immunogenic in patients at high risk of invasive disease. Hib vaccine is not effective against non-type B Haemophilus influenzae. However, non-type B disease is rare in comparison to pre-vaccine Haemophilus influenzae type B disease.

It is necessary to monitor the efficacy of vaccines and determine the anti-H. influenza B IgG levels in patients or for clinical trials using new formulation of vaccines. ADI has developed industry's first ELISA kit to determine the antibodies to Hib vaccine's PRP only. ADI also have separate ELISA kit to measure antibodies to Diphtheria Toxoid, Tetanus Toxoid or HBsAg (the PRP-carrier proteins). 's mouse Anti- H. influenza B PRP IgG ELISA kit is an immunoassay for the quantitative determination of IgG class antibodies against PRP using the following vaccines:

Hib Vaccines: Influenzae B Comvax (HepB/Hib; Merck), PedvaxHib (Hib-PRP-OMP) –Merck; Trihibit (DTAP/Hib), ActHib (Hib-PRP-T) - Sanofi Pasteur; HibTiter (Hib-Hboc) – WyethLederle

Hib Vaccine Related Reagents and ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2725

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Hib Vaccine Anti-Polysaccharide (PRP) Antibody ELISA Kit Note: this kit measure antibody to the PRP-moiety and not the conjugated proteins.	Human	980-100-PHG	
	Monkey	980-150-PKG	
	Mouse	980-120-PMG	
	Rabbit	980-130-PRG	980-140-PRM

H.influenzae (Hib) Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2725

Item	Catalog #	Product Description	Product Type
Haemophilus influenzae, Type B antibodies	HIB12-S	Rabbit Anti-Haemophilus influenzae, Type B (heat killed, whole bacteria) antiserum	Antibodies
	PRPB11-S	Rabbit Anti-Haemophilus influenzae, Type B PRP (Hib-PRP) antiserum	Antibodies

Hib_Vaccine_Flr.doc Rev. 120929A



Meningitis Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Meningococcal meningitis, a form of meningococcal disease, is a serious bacterial infection. Unlike viral meningitis, it can potentially kill an otherwise healthy young person within a few days after the first symptoms appear. Meningitis is inflammation of the protective membranes covering the brain and spinal cord, known collectively as the meninges. The inflammation may be caused by infection with viruses, bacteria, or other microorganisms, and less commonly by certain drugs. Meningitis can be life-threatening because of the inflammation's proximity to the brain and spinal cord; therefore the condition is classified as a medical emergency.

 <p>MenVeO (Novartis)</p>	 <p>Menactra (Sanofi)</p>	 <p>Meningitis Bacterial immunogenic polysaccharides (Red color) are used as vaccine or after conjugating it with Diphtheria Toxoid or its mutant CRM197.</p>
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Meningococcal vaccine is a vaccine used against *Meningococcus*, a bacterium that causes meningitis, meningococcemia, septicemia, and rarely carditis, septic arthritis, or pneumonia. *Neisseria meningitidis* has 13 clinically significant serogroups. These are classified according to the antigenic structure of their polysaccharide capsule. **Six serogroups, A, B, C, Y, W135 and X** are responsible for virtually all cases of the disease in humans. There are currently three vaccines available in the US to prevent meningococcal disease, all quadrivalent in nature, targeting serogroups A, C, W-135 and Y: **Two conjugate vaccines** (MCV-4), **Menactra** (Polysaccharides conjugated to Diphtheria Toxoid) and **Menveo** (Conjugated to toxoid diphtheria mutant CRM197); **One polysaccharide vaccine (MPSV-4), Menomune**, produced by Sanofi Pasteur; **Mencevax** (GlaxoSmithKline, CRM197 conjugate) and NmVac4-A/C/Y/W-135 (JN-International Medical Corporation, conjugated to Diphtheria Toxoid) are used worldwide, but have not been licensed in the United States. The duration of immunity mediated by Menomune (MPSV4) is three years or less in children aged under 5 because it does not generate memory T cells. For this reason, Menomune is suitable for travelers requiring short-term protection, but not for national public health prevention programs. Menveo and Menactra contain the same antigens as Menomune, but the antigens are conjugated to a diphtheria-toxoid polysaccharide–protein complex, resulting in anticipated enhanced duration of protection, increased immunity with booster vaccinations, and effective herd immunity. Diphtheria Toxoid when conjugated to bacteria polysaccharides acts as carrier protein and adjuvant. The antibodies are produced against both the carbohydrate part and the toxoid.

ADI has developed antibody ELISA kits to determine the antibody titer against the polysaccharide as well as the toxoid. These kits will help determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Meningitis vaccine Related ELISA kits

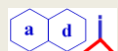
(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2765

Items Description	Species	IgG Specific Cat#
Meningitis Vaccine Group A Oligosaccharides -CRM197 conjugated vaccine antibody ELISA Kits	Human	600-300-100
	Mouse	600-300-200
	Rabbit	600-310-300
Meningitis Vaccine Group CWY Oligosaccharides -CRM197 conjugated vaccine antibody ELISA Kits	Human	600-300-105
	Mouse	600-300-205
	Rabbit	600-320-305
Meningitis Vaccine Group ACWY Oligosaccharides -CRM197 conjugated vaccine antibody ELISA Kits Note: ADI also has separate ELISA kits to monitor antibodies to Diphtheria Toxoid.	Human	600-300-115
	Mouse	600-310-215
	Rabbit	600-330-315

Meningitis vaccine Related Antibodies and Reagents

Item	Catalog#	Product Description	Product Type
Anti-Meningococcal Group	MENA11-S	Rabbit Anti-Meningococcal Group A Oligosaccharides-Diphtheria CRM197 antiserum	antiserum
	MENA12-S	Rabbit Anti-Meningococcal Group CWY Oligosaccharides-Diphtheria CRM197 antiserum	antiserum
	MENA13-S	Rabbit Anti-Meningococcal Group ACWY Oligosaccharides-Diphtheria CRM197 antiserum	antiserum
Antibodies and antigens	MENA14-F	Anti-Meningococcal Group ABC serotypes antigens IgG-FITC conjugate	Antibodies
	MENA14-HP	Anti-Meningococcal Group ABC serotypes antigens IgG-HRP conjugate	Antibodies
	MENA14-UL	Anti-Meningococcal Group ABC serotypes antigens IgG, Unlabeled	Antibodies

Meningitis_Vaccine_Flr 130207A



Streptococcus Pneumoniae Vaccines: ELISA Kits, Carbohydrates and Antibodies

Streptococcus pneumoniae, or pneumococcus, is a Gram-positive, alpha-hemolytic, aerotolerant anaerobic member of the genus *Streptococcus*. The organism causes many types of pneumococcal infections other than pneumonia. These invasive pneumococcal diseases include acute sinusitis, otitis media, meningitis, bacteremia, sepsis, osteomyelitis, septic arthritis, endocarditis, peritonitis, pericarditis, cellulitis, and brain abscess. *S. pneumoniae* is one of the most common causes of bacterial meningitis in adults and young adults, along with *Neisseria meningitidis*, and is the leading cause of bacterial meningitis in adults in the world. *S. pneumoniae* have a polysaccharide capsule that acts as a virulence factor for the organism; more than 90 different serotypes are known, and these types differ in virulence, prevalence, and extent of drug resistance. The genome of *S. pneumoniae* is a closed, circular DNA structure that contains a core set of 1553 genes, plus 154 genes in its virulome, which contribute to virulence, and 176 genes that maintain a noninvasive phenotype. Genetic information can vary up to 10% between strains. Diagnosis is generally made based on clinical suspicion along with a positive culture from the samples. *S. pneumoniae* is, in general, optochin sensitive, although optochin resistance has been observed. Worldwide, *Streptococcus pneumoniae* (pneumococcus) is a significant cause of morbidity and mortality, especially in infants and elderly people. Serotype specific antibodies against the capsular polysaccharides provide protection against the corresponding serotypes. Serotypes specific polysaccharides (free or conjugated to CRM197) are the active ingredients of various vaccines.

A pneumococcal vaccine is a vaccine against *Streptococcus pneumoniae*. Types include **Pneumococcal polysaccharide vaccine & Pneumococcal conjugate vaccine**. The polysaccharide vaccine most commonly used today consists of purified polysaccharides from 23 serotypes (1, 2, 3, 4, 5, 6b, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19F, 19A, 20, 22F, 23F and 33F). **Pneumovax-23 by Merck** contains purified polysaccharides from 23 serotypes and it is not conjugated. Pneumococcal conjugate vaccine (PCV) contains polysaccharides conjugated to diphtheria toxin CRM197. There are currently three PCV vaccines available on the global market: Prevnar (called Prevenar in some countries), **Synflorix** and Prevnar 13. **Prevnar-7 or PCV-7** (Wyeth) is a heptavalent vaccine (4, 6B, 9V, 14, 18C, 19F, and 23F), **Synflorix** (GlaxoSmithKline) is a decavalent vaccine (**PCV-10**), meaning that it contains ten serotypes of pneumococcus (1, 4, 5, 6B, 7F, 9V, 14, 18C, 19F, and 23F). **Prevnar 13/PCV-13** (Pfizer) is a triskaivalent vaccine, meaning that it contains thirteen serotypes of pneumococcus (1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F) which are conjugated to a carrier protein.



Non conjugated vaccine (Pneumovax) immunity is induced primarily through stimulation of B-cells which release IgM without the assistance of T cells. Pneumovax gives at least 85% protection in those under 55 years of age for five years or longer. Immunization is suggested for those at highest risk of infection, including those 65 years or older; generally the vaccine should be a single lifetime dose, as there is a high risk of side effects if repeated. The standard 23-valent vaccines are ineffective for children under two years old. **Conjugated vaccine** (Prevnar, Synflorix) consists of capsular polysaccharides covalently bound to the

diphtheria toxoid CRM197, which is highly immunogenic but non-toxic. This combination provokes a significantly more robust immune response by recruiting CRM197-specific type 2 helper T cells, which allow for immunoglobulin type switching (to produce non-IgM immunoglobulin) and production of memory B cells. Among other things, this results in mucosal immunity and eventual establishment of lifelong immunity after several exposures. This immune response is less robust than the response provoked by conjugated vaccines, which has several consequences. The vaccine is ineffective in children less than two years old, presumably due to their less mature immune systems. Non-responders are also common amongst older adults. Immunization is not lifelong, so individuals must be re-vaccinated every 5–6 years. Since no mucosal immunity is provoked, the vaccine does not affect carrier rates, promote herd immunity, or protect from upper or lower respiratory tract infections.

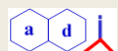
ADI has now developed antibody ELISA kits to determine the efficacy of pneumococcal vaccines in animal and humans. Antibody tests kits are available for non-conjugated vaccine **Pneumovax (23-serotypes)**; **Conjugated (CRM197) vaccines Prevnar-7 (pCV-7), Prevnar-10 (PCV-10/Synflorix) and Prevnar-13 (PCV-13)**. The kits are designed to detect IgG and IgM antibody titers to the carbohydrates to the given serotypes present in the vaccines. Separate kits are available to detect antibodies to CRM197 as well. ADI can also provide any serotype antibody kit (single or a combination of serotypes such as 6A upon order). These kits are the first commercial kits for pneumococcal vaccine and should be highly useful to research and test the efficacy of the existing or the new vaccines.

Streptococcus Pneumoniae Vaccines Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2781

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Anti-S. Pneumococcal vaccine (Prevnar-7/PCV-7) ELISA kits (7 serotypes: 4,6B,9V,14,18C,19F, and 23F)	Mouse	560-100-07G	560-105-07M
	Human	560-110-07G	560-115-07M
Anti-S. Pneumococcal vaccine (Synflorix/PCV-10) ELISA kits (10 serotypes: 1, 4, 5, 6B, 7F, 9V, 14, 18C, 19F, and 23F)	Mouse	560-130-10G	560-135-10M
	Human	560-140-10G	560-145-10M
Anti-S. Pneumococcal vaccine (PCV-13) ELISA kits (13 serotypes 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F)	Mouse	560-160-13G	560-165-13M
	Human	560-170-13G	560-175-13M
Anti-S. Pneumococcal vaccine (Pneumovax) ELISA kits (23 serotypes: 1, 2, 3, 4, 5, 6b, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19F, 19A, 20, 22F, 23F and 33F)	Mouse	560-180-23G	560-185-23M
	Human	560-190-23G	560-195-23M
Anti-CRM197 (Diphtheria Toxin mutant) ELISA kits	Mouse	940-220-DMG	940-225-DMM
	Human	940-200-DHG	940-210-DHM

Streptococcus_Pneumonia_Vaccine_Flr.pdf Rev. 130131A



Alpha Diagnostic Intl Inc. USA, Email: service@4adi.com; ☎ (800) 786-5777; Web Site: www.4adi.com

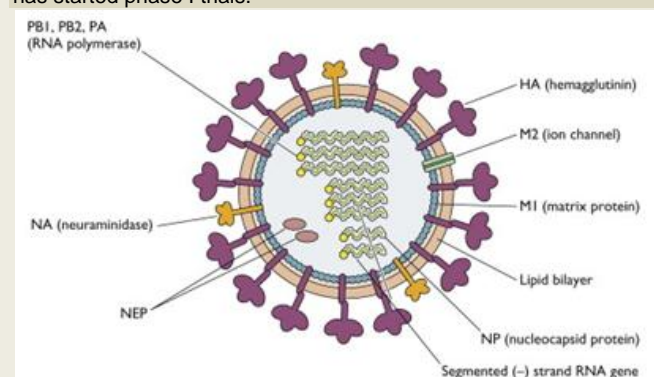
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Influenza A & B Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Influenza A virus causes influenza in birds and some mammals, and is the only species of influenza virus A. Occasionally, viruses are transmitted from wild aquatic birds to domestic poultry, and this may cause an outbreak or give rise to human influenza pandemics. The physical structure of all influenza A viruses is similar. The Influenza A virus genome is contained on eight single (non-paired) RNA strands that code for eleven proteins (**HA, NA, NP, M1, M2, NS1, NEP, PA, PB1, PB1-F2, PB2**). The several subtypes are labeled according to an H number (for the type of hemagglutinin) and an N number (for the type of neuraminidase). There are 17 different H antigens (**H1 to H17**) and nine different N antigens (**N1 to N9**). Influenza A virus subtype H5N1, also known as "bird flu", A(H5N1) or simply H5N1, is a subtype of the influenza A virus which can cause illness in humans and many other animal species. It is epizootic (an epidemic in nonhumans) and panzootic (affecting animals of many species, especially over a wide area), killing tens of millions of birds and spurring the culling of hundreds of millions of others to stem its spread. Influenza viruses have a relatively high mutation rate that is characteristic of RNA viruses. The ability of various influenza strains to show species-selectivity is largely due to variation in the hemagglutinin genes that can significantly alter the ability of viral hemagglutinin proteins to bind to receptors on the surface of host cells. The influenza vaccination, also known as a **flu shot**, is an annual vaccination using a vaccine specific for a given year to protect against the highly variable influenza virus.

The annual flu (seasonal flu) in the U.S. results in approximately 36,000 deaths and more than 200,000 hospitalizations each year. In addition to this human toll, influenza is annually responsible for a total cost of over \$10 billion in the U.S. The influenza virus constantly mutates, forcing scientists to play catch-up and produce a new seasonal vaccine each year. The annually updated, **trivalent influenza vaccine** consists of hemagglutinin (HA) surface glycoprotein components from influenza H3N2, H1N1, and B influenza viruses. In 20112, scientist discovered a "**super antibody (FI6)**" against the hemeagglutinin protein that is common to most influenza strains. It is hoped that this protein may be a candidate to make "**universal vaccine**". In 2008 Acambis announced work on a universal flu vaccine (**ACAM-FLU-ATM**) based on the less variable M2 protein component of the flu virus shell. The Wistar Institute received a patent for using "a variety of peptides" in a flu vaccine. In 2010, NIAID of the U.S. NIH announced a breakthrough; the effort targets the stem, which mutates less often than the head of the virus. DNA vaccines such as **VGX-3400X** (aimed at multiple H5N1 strains) contain DNA fragments (plasmids). Inovios SynCon DNA vaccines include H5N1 and H1N1 subtypes. Some universal flu vaccines have started early stage clinical trials. BiondVax are targeting the less variable stalk of the **haemagglutinin molecule with Multimeric-001**. This is aimed at type A (inc H1N1) and Type B influenza and has started a phase IIa study. Dynavax have developed a **vaccine N8295** based on two highly conserved antigens NP and M2e and their TLR9 agonist, and started clinical

trials in June 2010. ITS's **fp01** includes 6 peptide antigens to highly conserved segments of the PA, PB1, PB2, NP & M1 proteins, and has started phase I trials.



Fluzone is a split-virus vaccine that is produced by chemical disruption of the influenza virus. It is incapable of causing influenza. Fluzone Intradermal is formulated to contain HA of each of the following three influenza strains recommended for the 2012-2013 influenza season: A/California/07/2009 NYMC X-179A (H1N1), A/Victoria/361/2011 IVR-165 (H3N2) and B/Texas/6/2011 (a B/Wisconsin/1/2010-like virus). **FLUARIX** is a vaccine prepared from influenza viruses hemagglutinin (HA) in the recommended ratio of 15 mcg HA of each of the following 3 strains: A/California/7/2009 NYMC X-181 (H1N1), A/Victoria/210/2009 NYMC X-187 (H3N2) (an A/Perth/16/2009-like virus), and B/Brisbane/60/2008) propagated in embryonated chicken eggs. **FLUVIRIN®** is an inactivated influenza virus vaccine indicated for immunization of persons 4 years of age and older against influenza virus disease caused by influenza virus subtypes A and type B contained in the vaccine. **FLUVAL** 2012/2013- influenza a virus a/california/7/2009 x-179a (h1n1) antigen, influenza a virus a/victoria/361/2011 ivr-165 (h3n2) antigen and influenza b virus b/hubei-wujiagang/158/2009 bx-39 antigen suspension.

ADI has developed antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Influenza A/B Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2736

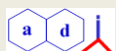
Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#	Antibody Type IgA Cat#
Influenza A Virus Vaccine ELISA kits	Rabbit	920-070-H1G		
	Swine/Pig	920-010-PAG	920-020-PAM	920-030-PAA
	Human	920-040-HAG	920-050-HAM	920-060-HAA
	Chicken	920-100-AIV	920-105-AIM	
	Chicken H5N1	920-300-H51		
Influenza B Virus Vaccine ELISA kits	Human	920-400-HBG		
	Mouse	920-500-MBG		
	Rabbit	920-605-RBG	920-610-RBM	



Influenza A Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Cat#	Description	Product Type
AR-232-U	H5 Avian Influenza Virus (HAS15-5), RNA Aptamer, unlabeled	RNA Aptamers
AR-242-U	Human Influenza A virus H3N2 (P30-10-16), RNA Aptamer, unlabeled	RNA Aptamers
H11N2-01-A	Anti-Hemagglutinin HA1 Influenza A Virus (H11N2; A/duck/Yangzhou/906/2002) IgG	Pure protein
H11N2-01-C	Recombinant Purified Hemagglutinin Influenza A Virus (H11N2; A/duck/Yangzhou/906/2002) control	Pure protein
H1N1-01-A	Anti-Hemagglutinin Influenza A Virus H1N1 H1 (H1N1) (A/New Caledonia/20/99) IgG	Pure protein
H1N1-01-C	Recombinant Purified Hemagglutinin Influenza A Virus H1N1 (A/New Caledonia/20/99) protein control	Pure protein
H1N1-01-R-10	Recombinant Purified Hemagglutinin Influenza A Virus H1N1 (A/New Caledonia/20/99) protein	Pure protein
H1N1-02-A	Anti-Hemagglutinin Influenza A Virus H1N1 H1 (Pan H1N1 reacts with multiple strains of H1N1) IgG	Pure protein
H5N11-C	Recom Purified Hemagglutinin Influenza A Virus H5N1 (A/chicken/India/NIV33487/2006) (17-531aa)	Pure protein
H5N11-S	Rabbit Anti-Hemagglutinin Influenza A Virus H5N1 (A/chicken/India/NIV33487/2006) (17-531aa) protein	Antibodies
H5N12-S	Mouse Anti-Hemagglutinin Influenza A Virus H5N1 (A/chicken/India/NIV33487/2006) (17-531aa) protein	Antibodies
H5N15-R-10	Rec. Pure Hemagglutinin Influenza A Virus H5N1 (A/chicken/India/NIV33487/2006) (17-531aa), His-tag	Pure protein
H5N15-R-100	Rec. Purified Hemagglutinin Influenza A Virus H5N1 (A/chicken/India/NIV33487/2006) (17-531aa), His-tag	Pure protein
HIB12-S	Rabbit Anti-Haemophilus influenzae, Type B (heat killed, whole bacteria) antiserum	Antibodies
INFA11-M	Mouse Anti-Influenza A virus IgG, aff pure	Antibodies
MA-20170	Mouse Monoclonal Anti-Human Influenza A virus Nucleoprotein	Antibodies
MA-20171	Mouse Monoclonal Anti-Human Influenza B virus Nucleoprotein	Antibodies
PRPB11-S	Rabbit Anti-Haemophilus influenzae, Type B PRP (Hib-PRP) antiserum	Antibodies
RP-1520	Influenza A Virus (H1N1) Beijing 262/95	Pure protein
RP-1521	Influenza A Virus (H1N1) New Caledonia 20/99 IV 116	Pure protein
RP-1522	Influenza A Virus (H3N2) Shangdong 9/93	Pure protein
RP-1523	Influenza A Virus (H3N2) Kiev 301/94 like /Johannesburg 33/94	Pure protein
RP-1524	Influenza A Virus (H3N2) Panama 2007/99	Pure protein
RP-1525	Influenza A Virus (H1N1) Taiwan 1/86	Pure protein
RP-1526	Influenza B Virus Qingdao 102/91 (purified virus, inactivated)	Virus/inactivated
RP-1527	Influenza B Virus Tokio 53/99 (purified virus, inactivated)	Pure protein
RP-1528	Influenza B Virus Victoria 504/00 (purified 7/6/2011, inactivated)	Pure protein
RP-1591	Influenza B Virus Florida 04/06 (purified virus, inactivated)	Pure protein
RP-1592	Influenza B Virus Malaysia 2506/04 (purified virus, inactivated)	Inactivated Virus
RP-1593	Recombinant Hemagglutinin Influenza B Virus Malaysia 2506/04 (HA full length, insect cells)	Pure protein
RP-638	Recombinant Hemagglutinin Influenza A Virus H1N1 New Caledonia 20/99 (HA full length, Sf9 cells)	Pure protein
RP-639	Recombinant Hemagglutinin Influenza A Virus H1N1 Texas 36/91	Pure protein
RP-640	Recombinant Hemagglutinin Influenza A Virus H7N7 Netherlands 219/03	Pure protein
RP-641	Recombinant Hemagglutinin Influenza A Virus H5N1 Vietnam 1203/04	Pure protein
RP-642	Recombinant Hemagglutinin Influenza A Virus H3N2 New York 55/04 (HA protein full length, Sf9 cells)	Pure protein
RP-643	Recombinant Hemagglutinin Influenza A Virus H3N2 Wyoming 3/03	Pure protein
RP-644	Recombinant Hemagglutinin Influenza A Virus H9N2 Hong Kong 1073/99	Pure protein
RP-645	Recombinant Hemagglutinin Influenza A Virus H1N1 California/04/2009	Pure protein
RP-646	Recombinant Hemagglutinin Influenza B Virus Ohio 01/05 (HA full length, insect cells)	Pure protein
RP-647	Recombinant Hemagglutinin Influenza A Virus H3N2 Wisconsin 67/05	Pure protein
RP-648	Recombinant Hemagglutinin Influenza B Virus Jilin 20/03 (HA full length, insect cells)	Pure protein
SEND21-M	Monoclonal Anti-Parainfluenza virus 3 IgG	Antiserum
SEND22-M	Monoclonal Anti-Parainfluenza virus 2 IgG	Antiserum
SEND23-S	Goat Anti-Sendai (Sev/Parainfluenza virus 2/3) antiserum	Antiserum
SP-53126-5	Influenza HA (307 - 319) (AA: Pro-Lys-Tyr-Val-Lys-Gln-Asn-Thr-Leu-Lys-Leu-Ala-Thr) (MW: 1503.82)	Pure Peptide
SP-56844-5	Influenza HA (518 - 526) (AA: Ile-Tyr-Ser-Thr-Val-Ala-Ser-Ser-Leu) (MW: 940.07)	Pure Peptide
SP-58255-5	Influenza A NP (366 - 374) Strain A/NT/60/68 (AA: Ala-Ser-Asn-Glu-Asn-Met-Asp-Ala-Met) (MW: 982.06)	Pure Peptide
SP-64000-5	Influenza HA (110 - 120) (AA: Ser-Phe-Glu-Arg-Phe-Glu-Ile-Phe-Pro-Lys-Glu) (MW: 1428.62)	Pure Peptide
SP-64021-5	Influenza NP (147 - 155) (AA: Thr-Tyr-Gln-Arg-Thr-Arg-Ala-Leu-Val) (MW: 1107.29)	Pure Peptide
SP-68060-5	Influenza A NP (366 - 374) Strain A/PR/8/35 (AA: Ala-Ser-Asn-Glu-Asn-Met-Glu-Thr-Met) (MW: 1026.12)	Pure Peptide
SP-68061-5	PA (224-233), Influenza (AA: Ser-Ser-Leu-Glu-Asn-Phe-Arg-Ala-Tyr-Val) (MW: 1185.31)	Pure Peptide
SP-83168-5	NS2(114 - 121), Influenza (AA: Arg-Thr-Phe-Ser-Phe-Gln-Leu-Ile) (MW: 1011.20)	Pure Peptide
SP-83170-5	PB1(703 - 711), Influenza (AA: Ser-Ser-Tyr-Arg-Arg-Pro-Val-Gly-Ile) (MW: 1034.19)	Pure Peptide
SP-86614-5	Influenza NP (50 - 57) (AA: Ser-Asp-Tyr-Glu-Gly-Arg-Leu-Ile) (MW: 952.04)	Pure Peptide
SP-86615-5	Influenza NP (482 - 489) (AA: Ser-Asn-Glu-Gly-Ser-Tyr-Phe-Phe) (MW: 949.98)	Pure Peptide
SP-86616-5	Influenza HA (529 - 537) (AA: Ile-Tyr-Ala-Thr-Val-Ala-Gly-Ser-Leu) (MW: 894.04)	Pure Peptide
SP-86617-5	Influenza HA (210 - 219) (AA: Thr-Tyr-Val-Ser-Val-Gly-Thr-Ser-Thr-Leu) (MW: 1027.15)	Pure Peptide
SP-86618-5	Influenza HA (204 - 212) (AA: Leu-Tyr-Gln-Asn-Val-Gly-Thr-Tyr-Val) (MW: 1056.19)	Pure Peptide
SP-86619-5	Influenza HA (110 - 119) (AA: Ser-Phe-Glu-Arg-Phe-Glu-Ile-Phe-Pro-Lys) (MW: 1299.50)	Pure Peptide
SP-86620-5	Influenza A NP (366 - 374) (AA: Ala-Ser-Asn-Glu-Met-Asn-Asp-Ala-Met) (MW: 982.06)	Pure Peptide
SP-86621-1	Influenza A M2 coat protein (22 - 46)	Pure Peptide
SP-88515-1	Hemagglutinin (48-68) / Influenza virus	Pure Peptide

Influenza_A_Flr 130207A



Japanese Encephalitis Virus (JEV) Vaccines Antibody ELISA Kits, Recombinant Proteins, and Antibodies

Japanese encephalitis—previously known as Japanese B encephalitis to distinguish it from von Economo's A encephalitis—is a disease caused by the mosquito-borne Japanese encephalitis virus. The Japanese encephalitis virus is a virus from the family Flaviviridae. Domestic pigs and wild birds are reservoirs of the virus; transmission to humans may cause severe symptoms. One of the most important vectors of this disease is the mosquito *Culex tritaeniorhynchus*. This disease is most prevalent in Southeast Asia and the Far East. Japanese encephalitis has an incubation period of 5 to 15 days and the vast majority of infections are asymptomatic: only 1 in 250 infections develop into encephalitis. Severe rigors mark the onset of this disease in humans. Fever, headache and malaise are other non-specific symptoms of this disease which may last for a period of between 1 and 6 days. Signs which develop during the acute encephalitic stage include neck rigidity, cachexia, hemiparesis, convulsions and a raised body temperature between 38 and 41 degrees Celsius. Mental retardation developed from this disease usually leads to coma. Mortality of this disease varies but is generally much higher in children. The causative agent Japanese encephalitis virus is an enveloped virus of the genus flavivirus; it is closely related to the West Nile virus and St. Louis encephalitis virus. Positive sense single stranded RNA genome is packaged in the capsid, formed by the capsid protein. The outer envelope is formed by envelope (E) protein and is the protective antigen. Japanese Encephalitis is diagnosed by detection of antibodies in serum and CSF (cerebrospinal fluid) by ELISA.



The causative agent Japanese encephalitis virus is an enveloped virus of the genus flavivirus and is closely related to the West Nile virus and St. Louis encephalitis virus. The positive sense single stranded RNA genome is packaged in the capsid which is formed by the capsid protein. The outer envelope is formed by envelope (E) protein and is the

protective antigen. It aids in entry of the virus to the inside of the cell. The genome also encodes several nonstructural proteins also (NS1, NS2a, NS2b, NS3, NS4a, NS4b, NS5). NS1 is produced as secretory form also. NS3 is a putative helicase, and NS5 is the viral polymerase. It has been noted that the Japanese encephalitis virus (JEV) infects the lumen of the endoplasmic reticulum (ER) and rapidly accumulates substantial amounts of viral proteins for the JEV. Japanese Encephalitis is diagnosed by detection of antibodies in serum and CSF (cerebrospinal fluid) by IgM capture ELISA. Viral antigen can also be shown in tissues by indirect fluorescent antibody staining.

Infection with JEV confers life-long immunity. All current vaccines are based on the genotype III virus. Two kinds of JEV vaccines were made available. One of them was an inactivated mouse brain-derived vaccine (the Nakayama and/or Beijing-1 strain), made by BIKEN and marketed by Sanofi Pasteur as JE-VAX, until production ceased in 2005. The other was an inactivated vaccine cultivated on primary hamster kidney cells (the Beijing-3 strain). The Beijing-3 strain was the main variant of the vaccine used in the People's Republic of China from 1968 until 2005. Three **second-generation vaccines** have entered markets since then: SA14-14-2, IC51 and ChimeriVax-JE. The live-attenuated SA14-14-2 strain was introduced in China in 1988. It is much cheaper than alternative vaccines, and is administered to 20 million Chinese children each year. A purified, formalin-inactivated, whole virus vaccine known as IC51 (marketed in Australia and New Zealand as JESPECT and elsewhere as **IXIARO**) was licensed for use in the United States, Australia, and Europe during the spring of 2009. It is based on a SA14-14-2 strain and cultivated in Vero cells. Another vaccine, a live-attenuated yellow fever-Japanese encephalitis chimeric vaccine known as **ChimeriVax-JE** (marketed as **IMOJEV**) was licensed for use in Australia in August 2010. China licensed a live attenuated vaccine in 1988 and more than 200 million doses have been given; this vaccine is available in Nepal, Sri Lanka, South Korea and India. There is also a new chimeric vaccine based on the yellow fever 17D vaccine that is currently under development. Recombinant envelop protein-based vaccines are also being developed.

ADI's JEV vaccine ELISA utilizes highly purified recombinant JEV virus glycoprotein as the antigen to capture anti-JEV Ig's. This kit is designed to detect anti-JEV Ig's (IgG, IgM or other isotypes). It remains to be determined if any of the current JEV vaccines induced antibodies to the JEV glycoprotein paving the way to produce new generation of recombinant vaccines. These kits will also help determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

JEV Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

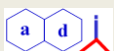
Items Description	Species	Antibody Type Ig's (G+A+M) Cat#	Antibody Type IgG Cat#	Antibody Type IgM Cat#
JEV Vaccine (Nucleoprotein) Antibody ELISA kits	Human		910-160-JEM	910-170-JEM
	Mouse	910-100-JEM	910-1-120-JEM	540-120-JEM
	Rabbit		910-140-JEM	910-150-JEM

JEV Vaccine Related Antibodies kits

Item	Catalog#	Product Description	Product Type
JEV proteins and antibodies	JEV15-R-10	Recombinant Japanese Encephalitis Virus (JEV) envelop protein E (full length)	Pure protein
	RP-1435	Recombinant Japanese Encephalitis Virus (JEV) gE immunodominant regions	Pure protein

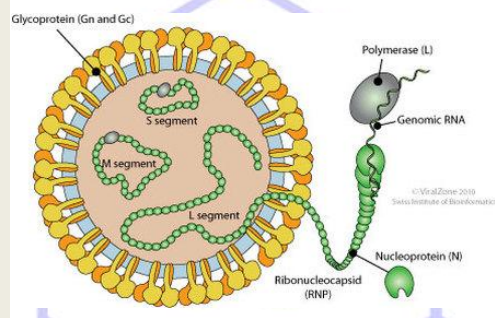
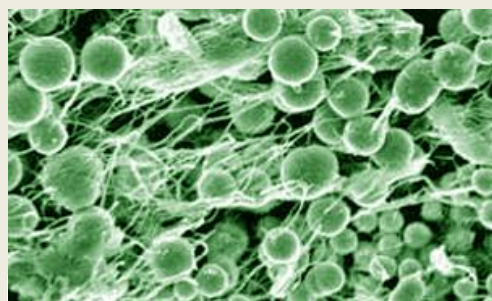
JEV_Vaccine_Flr

130207A



Crimean-Congo Hemorrhagic Fever Virus (CCHFV) Vaccines ELISA Kits, Proteins and Antibodies

Crimean–Congo hemorrhagic fever (CCHF) is a widespread tick-borne viral disease, a zoonosis of domestic animals and wild animals, that may affect humans. The pathogenic virus, especially common in East and West Africa, is a member of the Bunyaviridae family of RNA viruses. Clinical disease is rare in infected mammals, but commonly severe in infected humans, with a 30% mortality rate. Outbreaks of illness are usually attributable to handling infected animals or people. Crimean-Congo hemorrhagic fever is found in Eastern Europe, particularly in the former Soviet Union. It is also distributed throughout the Mediterranean, in northwestern China, central Asia, southern Europe, Africa, the Middle East, and the Indian subcontinent.



The virus is a member of the genus *Nairovirus*, family *Bunyaviridae*. The genome is circular, ambisense RNA in three parts - Small (S), Middle (M) and Large (L). The L segment encodes the RNA polymerase; the M segment encodes the envelope proteins (Gc and Gn); and the S segment encodes the nucleocapsid protein. The envelope protein is initially translated as a glycoprotein precursor which is then cleaved into two smaller proteins. Based on the sequence data seven genotypes have been recognised: Africa 1 (Senegal), Africa 2 (Democratic Republic of the Congo and South Africa), Africa 3 (southern and western Africa), Europe 1 (Albania, Bulgaria, Kosovo, Russia and Turkey), Europe 2 (Greece), Asia 1 (the Middle East, Iran and Pakistan) and Asia 2 (China, Kazakhstan, Tajikistan and Uzbekistan).

Typically, after a 1–3 day incubation period following a tick bite (5–6 days after exposure to infected blood or tissues), flu-like symptoms appear, which may resolve after one week. In up to 75% of cases, however, signs of hemorrhage appear within 3–5 days of the onset of illness in case of bad containment of the first symptoms: first mood instability, agitation, mental confusion and throat petechiae, then soon nosebleeds, bloody urine and vomiting, and black stools. The liver becomes swollen and painful. Disseminated intravascular coagulation may occur as well as acute kidney failure and shock, and sometimes acute respiratory distress syndrome. Patients usually begin to show signs of recovery after 9–10 days from when the symptoms appear, however 30% of the cases result in death on the second week of the illness. Treatment is primarily symptomatic and supportive, as there is no established specific treatment. Ribavirin is effective in vitro and has been used during outbreaks, but there is no trial evidence to support its use.

Vaccines: A Turkish research team led by Refik Saydam Health Institute has developed treatment-serum derived from blood of several CCHF-patients, which have been proven to be %90 effective in CCHF-patients. The vaccine is pending for approval by FDA.

ADI has cloned, expressed and purified CCHFV nucleoprotein (482-aa, ~55 Kda) that is being used as a candidate for newer subunit vaccine for Congo virus. ADI's Congo virus nucleoprotein antibody ELISA kit can be used to determine the level of antibodies during natural infection or in vaccinated individuals.

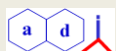
CCHFV vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2763

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Congo Virus Vaccine Crimean-Congo hemorrhagic fever virus (CCHFV) nucleoprotein antibody ELISA Kit	Mouse	AE-320400-1	AE-320410-1
	Human	AE-320420-1	AE-320430-1
	Rabbit	AE-320440-1	

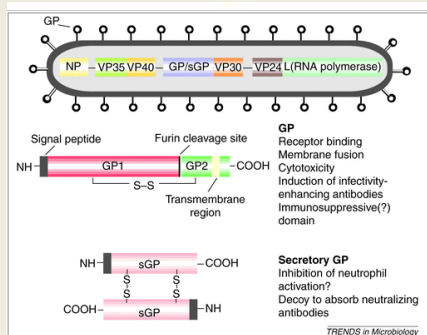
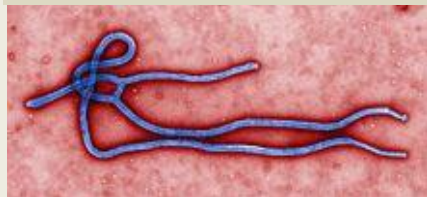
Item	Catalog#	Product Description	Product Type
Crimean-Congo hemorrhagic fever virus proteins and antibodies	CCHFV11-C	Recombinant (E.coli) Crimean-Congo hemorrhagic fever virus nucleoprotein protein (CCHFV, full length, his-tag, 55 kda) control for WB	Western control
	CCHFV11-S	Rabbit Anti-Crimean-Congo hemorrhagic fever virus nucleoprotein protein (CCHFV-NP, full length) antiserum	Antiserum
	CCHFV15-R-10	Recombinant (E.coli) Crimean-Congo hemorrhagic fever virus nucleoprotein protein (full length, his-tag, 55 kda), purified	Antigen protein

Congo_Virus_Vaccine_Flr . 130207A



Zaire-Ebola Virus Vaccine ELISA Kits, Recombinant Proteins, and Antibodies

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 species has a single virus member, Ebola virus (EBOV). Ebolavirus species Zaire (ZEBOV) causes highly lethal hemorrhagic fever, resulting in the death of 90% of patients within days. Most information on immune responses to ZEBOV comes from in vitro studies and animal models. 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 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, and they assemble in the cell.

EVD is clinically indistinguishable from Marburg virus disease (MVD), and it can also easily be confused with many other diseases prevalent in Equatorial Africa, such as other viral hemorrhagic fevers, falciparum malaria, typhoid fever, shigellosis, 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 ebolavirus-induced disease. DNA vaccines, adenovirus-based vaccines, and VSIV-based vaccines have entered clinical trials.

ADI has cloned and expressed Ebola virus nucleoprotein (~720 aa, ~82 kda, full length) that is highly antigenic and made appropriate antibodies. Antibody ELISA kit was developed to determine the efficacy of various existing vaccines and test new vaccines. These kits help determine the levels of Ebola virus nucleoprotein antibody during natural infection or in vaccinated individuals.

Notes: None of the reagents used in the kit are derived from Ebola virus or ever exposed to the virus. The proteins are recombinant and antibodies developed in experimental animals such as mouse and rabbits. So there is no cause for any concerns in using the Ebola virus antibody ELISA kits.

Zaire-Ebola vaccine Related ELISA kits

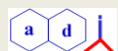
(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2762

ELISA Kit Description	Species	Total Ig's	IgG Specific Cat#	IgM Specific Cat#
Zaire-Ebola Virus Vaccine antibody ELISA	Rabbit		AE-320540-1	
	Mouse		AE-320500-1	AE-320510-1
	Human		AE-320520-1	AE-320530-1
	Monkey		AE-320550-1	AE-320560-1

Zaire-Ebola vaccine Related Antibodies, Proteins and other Reagents

Item	Catalog#	Product Description	Product Type
Zaire-Ebola virus proteins and antibodies	ZEV11-C	Recombinant Zaire-Ebola virus nucleoprotein protein control for Western	Western control
	ZEV11-S	Rabbit Anti-Zaire-Ebola virus nucleoprotein protein protein antiserum	Antiserum
	ZEV12-M	Monoclonal Anti-Zaire-Ebola virus IgG, aff pure	Antibodies
	ZEV15-R-10	Recombinant (E.coli) Zaire-Ebola virus nucleoprotein protein(full length 82 kda), purified	Antigen protein

Zaire-Ebola_Vaccine_Flr Rev. 130207A



West Nile Virus (WNV) Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

West Nile virus (WNV) is a mosquito-borne zoonotic arbovirus belonging to the genus *Flavivirus* in the family *Flaviviridae*. This flavivirus is found in temperate and tropical regions of the world. It was first identified in the West Nile subregion in the East African nation of Uganda in 1937. WNV is now considered to be an endemic pathogen in Africa, Asia, Australia, the Middle East, Europe and in the United States, which in 2012 has experienced one of its worst epidemics. The main mode of WNV transmission is via various species of mosquitoes which are the prime vector, with birds being the most commonly infected animal and serving as the prime reservoir host - especially passerines which are of the largest order (Passeriformes) of birds. Symptoms may include fever, headaches, fatigue, muscle pain or aches, malaise, nausea, anorexia, vomiting, myalgias and rash. People of advanced age, the very young, or those with immunosuppression, either medically induced, such as those taking immunosuppressive drugs, or due to a pre-existing medical condition such as HIV infection, are most susceptible. The specific neurological diseases which may occur are West Nile encephalitis, which causes inflammation of the brain, West Nile meningitis, which causes inflammation of the meninges which are the protective membranes that cover the brain and spinal cord, West Nile meningoencephalitis, which causes inflammation of the brain and also the meninges surrounding it, and West Nile poliomyelitis - spinal cord inflammation which results in a syndrome similar to polio, which may cause acute flaccid paralysis.



WNV is one of the Japanese encephalitis antigenic serocomplex of viruses. The genetic

material of WNV is a positive-sense, single strand of RNA, which is between 11,000 and 12,000 nucleotides long; these genes encode seven nonstructural proteins and three structural proteins. The RNA strand is held within a nucleocapsid formed from 12-kDa protein blocks; the capsid is contained within a host-derived membrane altered by two viral glycoproteins. Preliminary diagnosis is often based on the patient's clinical symptoms, places and dates of travel (if patient is from a non-endemic country or area), activities, and epidemiologic history of the location where infection occurred. Preliminary diagnosis is often based on the patient's clinical symptoms, places and dates of travel (if patient is from a non-endemic country or area), activities, and epidemiologic history of the location where infection occurred. Definitive diagnosis of WNV is obtained through detection of virus-specific antibody Immunoglobulin M (IgM/IgG) antibodies by ELISA.



WNV Vaccine: Currently, no vaccine against WNV infection is available for humans. There are some vaccines available for veterinary use. A vaccine for horses (ATCvet code: QI05AA10;) based on killed viruses exists; some zoos have given this vaccine to their birds,

although its effectiveness is unknown. Some animal vaccines use inactivated WNV (K-WN/**WNV-Innovator**, Fort Dodge; Pfizer) alone or in combination with Tetanus or encephalitis. **Equine Recombitek rWNV vaccine** (Merial) consists of a canarypox virus vector with insertion and expression of the membrane (prM) and envelope (E) proteins of WNV. The latest equine vaccine approved in 2006 is a single-dose, attenuated **West Nile virus, live flavivirus chimera vaccine (WN-FV)** (PreveNile; Intervet, De Soto, KS) for horses and is marketed without an adjuvant. The recombinant chimera expresses the E and prM proteins of WNV in a yellow fever vector (YF17D). The vaccine has been labeled for use in horses for the prevention of West Nile virus viremia and as an aid in the prevention of WNV disease and encephalitis. Typically, efficacy of the vaccine has been followed by the protection of the horses or other animals from live virus challenge. In some studies the antibody neutralization tests were performed but no specific antibodies tests (ELISA) were performed to measure the antibody titer to the Envelop or the prM-proteins.

ADI has developed antibody ELISA kits to determine the efficacy of WNV vaccines. Antibody tests are available for the envelop and prM protein of the WNV. To Recombinant proteins and antibodies to WNV are also available to facilitate research on WNV vaccine. A novel recombinant WNV fusion protein (Capsid+prM+Envelop) protein has been cloned, expressed, and purified. This fusion protein invoked very strong antibody response than achieved with the WNV whole virus or DNA vaccines. Recombinant WNV subunit-vaccine is being tested by ADI as a potential human vaccine candidate.

West Nile Virus Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2777

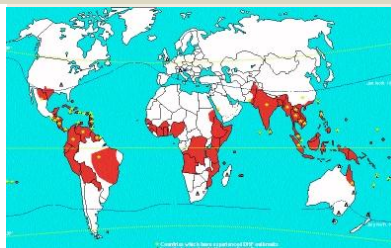
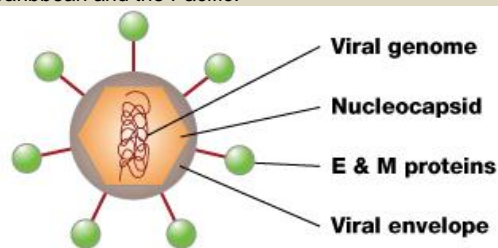
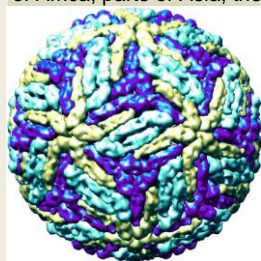
Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
West Nile Virus Mosaic Proteins Vaccine (Capsid+prM+Envelop) Antibody ELISA kits	Mouse	910-210-WNG	540-110-DHM
	Horse	910-310-WNG	910-320-WNG
	Human	910-410-WNG	910-420-WNG
West Nile Virus prM Vaccine Antibody ELISA kits	Mouse	910-230-WNG	910-240-WNG
	Horse	910-330-WNG	910-340-WNG
	Human	910-430-WNG	910-440-WNG
West Nile Virus Envelop Vaccine Antibody ELISA kits	Mouse	910-250-WNG	910-260-WNG
	Horse	910-450-WNG	910-460-WNG
	Human	910-430-WNG	910-440-WNG

West_Nile_Virus_Vaccine_Flr. 130207A



Dengue virus Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Dengue fever, also known as break bone fever, is an infectious tropical disease caused by the dengue virus. The term dengue fever came into general use only after 1828. The word dengue is Spanish for "affectation," "careful," or "fastidious." The term probably described the cautious, stiff movements of patients suffering from the muscle, bone, and joint pain caused by dengue fever. Some researchers believe that the name came from a Swahili phrase Ka dinga pepo, or a disease caused by an evil spirit. Dengue symptoms include fever, headache, muscle and joint pains, and a characteristic skin rash that is similar to measles. In a small proportion of cases the disease develops into the life-threatening dengue hemorrhagic fever (DHF), resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs. Dengue is transmitted by several species of mosquito within the genus *Aedes*, principally *A. aegypti*. The virus has four different but related types 1-4 (Den1-4); infection with one type usually gives lifelong immunity to that type, but only short-term immunity to the others. Subsequent infection with a different type increases the risk of severe complications. There are up to 100 million cases of dengue fever worldwide every year; the most common occurrences are in urban parts of subtropical and tropical areas, such as Central and South America, parts of Africa, parts of Asia, the Caribbean and the Pacific.



Dengue fever virus (DENV) is an RNA virus of the family *Flaviviridae*; genus *Flavivirus*. Other members of the same genus include yellow fever virus, West Nile virus, St. Louis encephalitis virus, Japanese

encephalitis virus, tick-borne encephalitis virus, Kyasanur forest disease virus, and Omsk hemorrhagic fever virus. Most are transmitted by arthropods (mosquitoes or ticks), and are therefore also referred to as arboviruses (arthropod-borne viruses). The dengue virus genome code for the three different types of protein molecules (**C**, **prM** and **E**) that form the virus particle and seven other types of protein molecules (NS1, NS2a, NS2b, NS3, NS4a, NS4b, NS5) that are only found in infected host cells and are required for replication of the virus. The diagnosis of dengue is typically made clinically, on the basis of reported symptoms and physical examination; this applies especially in endemic areas. Additional lab tests include cell culture, PCR, and antibody detection by ELISA. As there is **no approved Dengue vaccine**, prevention is sought by reducing the habitat and the number of mosquitoes and limiting exposure to bites. A number of vaccines are undergoing testing. The most developed is based on a weakened combination of the yellow fever virus and each of the four dengue serotypes.

ADI has developed antibody ELISA kits to determine the efficacy of Dengue vaccines. Recombinant proteins and antibodies to DEN1-4 are also available to facilitate research on Dengue vaccine.

Dengues Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Dengue Virus Vaccine Antibody ELISA kits (detect antibodies to whole viral inactivated proteins)	Human	540-100-DHG	540-110-DHM
	Mouse	540-120-DHG	540-130-DHM

Type	Catalog#	Product Description	Product Type
DEN-1	RP-1594	Recombinant (<i>E. coli</i>) Dengue Virus Type 1 E Antigen (DENV E), antigen grade (>95% pure)	Pure protein
	RP-1601	Recombinant (<i>E. coli</i> , his-tag) Dengue Virus NS1, Type 1 protein, full length	Pure protein
	RP-1605	Recombinant (<i>E. coli</i>) Dengue Virus Type 1 envelop protein (D-III), pure (>95%)	Pure protein
	RP-1608	Recombinant (<i>E. coli</i>) Dengue Virus Type 1 N-terminus envelop immunodominant regions, pure	Pure protein
	RP-344	Recombinant Dengue Virus NS3 Type 1 protein	Pure protein
DEN-2	AB-14310	Mouse Anti-Dengue Type 2 (envelop) IgG, aff pure	Antibodies
	AB-22122	Monoclonal Anti-Dengue Virus Type 2, NS1 glycoprotein, culture medium	Antibodies
	RP-1595	Recombinant (<i>E. coli</i>) Dengue Virus Type 2 E Antigen (DENV E), antigen grade (>95% pure)	Pure protein
	RP-1607	Recombinant (<i>E. coli</i> , his-tag) Dengue Virus NS1 Type 2 immunodominant protein	Pure protein
	RP-1620	Recombinant (<i>E. coli</i> , his-tag) Dengue Virus NS1, Type 2 protein	Pure protein
	RP-345	Recombinant Dengue Virus NS1 c-end Type 2 protein	Pure protein
	RP-346	Recombinant (<i>E. coli</i> , GST-tag) Dengue Virus NS1 n-end Type 2 protein	Pure protein
DEN-3	RP-1598	Recombinant (<i>E. coli</i>) Dengue Virus Type 2 (and type 1, 2, and 3) E Antigen (DENV E)	Pure protein
	RP-1596	Recombinant (<i>E. coli</i>) Dengue Virus Type 3 E Antigen (DENV E), antigen grade (>95% pure)	Pure protein
	RP-1600	Recombinant (<i>E. coli</i> , his-tag) Dengue Virus NS1, Type 3 protein, full length	Pure protein
DEN-4	RP-1603	Recombinant (<i>E. coli</i>) Dengue Virus Type 3 envelop protein (D-III), pure (>95%)	Pure protein
	RP-1597	Recombinant (<i>E. coli</i>) Dengue Virus Type 4 E Antigen (DENV E), antigen grade (>95% pure)	Pure protein
	RP-1599	Recombinant (<i>E. coli</i> , his-tag) Dengue Virus NS1, Type 4 protein, full length	Pure protein
DEN1-4	RP-1604	Recombinant (<i>E. coli</i>) Dengue Virus Type 4 envelop protein (D-III), pure (>95%)	Pure protein
	AB-21120	Rabbit Anti-Dengue Type 1-4 viruses antiserum	Antibodies
	AB-21121	Monoclonal Anti-Dengue Virus Type 1-4 (pan, E antigen) IgG	Pure protein
	RP-1602	Recombinant (<i>E. coli</i>) Dengue Virus Type 1+4, 2, and 3 envelop proteins antigen grade pure	Pure protein
	RP-1606	Recombinant (<i>E. coli</i>) Dengue Virus Type 1-4 envelop+NS domains, pure (>95%)	Pure protein

Dengue_Vaccine_Flr 130207A



Varicella Zoster Virus Vaccines (VZV) Antibody ELISA Kits, Recombinant Proteins, and Antibodies

Varicella zoster virus (VZV) is one of eight herpes viruses known to infect humans and other vertebrates. It commonly causes chicken-pox in children and adults and herpes zoster (shingles) in adults and rarely in children. As with the other herpes viruses, VZV causes both acute illness and lifelong latency. Before vaccination became widespread, acute primary infection (varicella or "chickenpox") was common during childhood--especially in temperate climates. Primary infection is much less common in recent years as a result of childhood vaccination, but still may occur in unvaccinated individuals and in instances of vaccine failure. Varicella usually is a benign and self-limiting illness, but can be more severe in adults and in individuals with cellular immunodeficiency. These individuals are at much higher risk of pneumonia and disseminated disease with visceral involvement. Zoster typically presents as a painful, localized cutaneous eruption occurring along 1 or more contiguous dermatomes. As with varicella, zoster usually is self-limited in the immunocompetent host, but immunocompromised persons are at risk of more severe illness with cutaneous or visceral dissemination.



Humans are the only known natural hosts of VZV. Transmission of VZV occurs through direct contact with infectious lesions or by inoculation of aerosolized infected droplets onto a susceptible mucosal surface. The virus is transmitted easily; the rate of secondary cases of varicella in susceptible household contacts typically exceeds 90%. Infectivity usually begins 1-2 days before the onset of rash, and patients remain infectious until all vesicular lesions are dried and crusted. In the immunocompetent host, the period of infectiousness is usually 5-7 days after the lesions first appear. In immunocompromised patients, however, healing can be slow and patients may remain infectious for up to several weeks. (25-34). Within the human body it can be treated by a number of drugs and therapeutic agents including acyclovir for the chicken pox, famciclovir, valaciclovir for the shingles, zoster-immune globulin (ZIG), and vidarabine. VZV immune globulin is also a treatment.

A live attenuated VZV Oka/Merck strain vaccine is available and is marketed in the United States under the trade name **Varivax**. In 2006, the United States Food and Drug Administration approved **Zostavax** for the prevention of shingles. Zostavax is a more concentrated formulation of the Varivax vaccine, designed to elicit an immune response in older adults whose immunity to VZV wanes with advancing age.

Varicella-zoster virus is known by many names, including: chickenpox virus, varicella virus, zoster virus, and human herpes virus type 3 (HHV-3). VZV is closely related to the herpes simplex viruses (HSV), sharing much genome homology. The known envelope glycoproteins (gB, gC, gE, gH, gI, gK, gL) correspond with those in HSV; however, there is no equivalent of HSV gD. The genome is a linear duplex DNA molecule; a laboratory strain has 124,884 base pairs. Laboratory tests are available to diagnose herpes zoster. The most popular test detects VZV-specific IgM antibody in blood; this appears only during chickenpox or herpes zoster and not while the virus is dormant. In larger laboratories, lymph collected from a blister is tested by polymerase chain reaction for VZV DNA, or examined with an electron microscope for virus particles.

VZV vaccines: Varivax (Merck) is a chickenpox vaccine for children, adolescents and adults. Zostavax is a vaccine for shingles for adults age 60 and older. Zostavax is a live vaccine developed by Merck & Co. that has been shown to reduce the incidence of herpes zoster (known as shingles) by 51.3% in a study of 38,000 adults aged 60 and older who received the vaccine.

ADI has developed antibody ELISA kits to determine the efficacy of VZV vaccines or test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Varicella Zoster Virus vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2751

ELISA Kit Description	Species	IgG Specific Cat#	IgM Specific Cat#	IgA Specific Cat#
Varicella Zoster Virus (VZV) Vaccine Antibody (chickenpox) ELISA Kits	Human	520-200-HVG	520-210-HVM	520-220-HVG
	Mouse	520-230-HVG	520-240-HVM	520-250-HVG

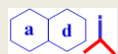
Varicella Zoster Virus Related Antibodies, Peptides, and Recombinant Proteins Ordering Information

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2751

	Catalog#	Product Description	Product Type
Varicella Zoster Virus	VZV11-M	Monoclonal Varicella Zoster Virus (chickenpox) antigens IgG (pan, recognizes several VZV proteins)	Antigens
	VZV12-M	Monoclonal Varicella Zoster Virus (chickenpox) nucleocapsid (155 kda protein) IgG	Antigens
	VZV13-M	Monoclonal Varicella Zoster Virus (chickenpox) early gene 62 (175 kda) protein) IgG	Antigens
	VZV14-M	Monoclonal Varicella Zoster Virus gp1/IV (chickenpox) glycoprotein I/IV protein) IgG	Antigens
	VZV15-N-500	Varicella Zoster Virus (chickenpox) antigens/proteins (strain Ellen/HF Cells)	Antigens
	VZV16-N-500	Varicella Zoster Virus (chickenpox) antigens/proteins (Rod Ellen/Vero cells)	Antigens

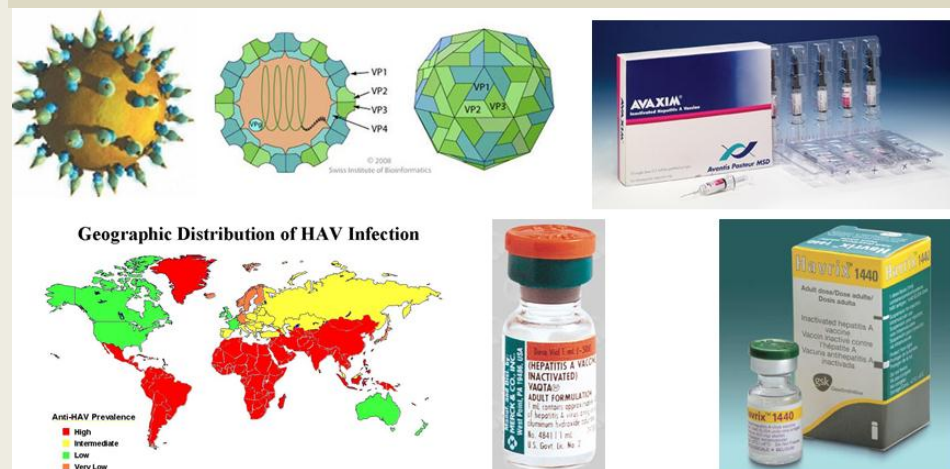
Varicella_Zoster_Vaccine_Flr

130207A



Hepatitis A Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Hepatitis A is a self-limited disease and chronic stage or other complications are rare. Infections occur early in life in areas with poor sanitation and crowded living conditions. With improved sanitation and hygiene, infections are delayed and consequently the number of persons susceptible to the disease increases. Because the disease is transmitted through the fecal-oral route, in dense populated regions an outbreak can arise from single contaminated source. The Hepatitis virus (HAV) is a Picornavirus; it is non-enveloped and contains a single-stranded RNA packaged in a protein shell. HAV has four major, structural polypeptides (VP1-4; 60 copies of VP1, 30-33 kD; VP2, 24-30 kD; VP3 (21-28 kD) and it localizes exclusively in the cytoplasm of human hepatocytes. The infection with HAV induces strong immunological response and elevated levels first of IgM and then IgG are detectable within a few days after the onset of the symptoms. IgG is an indicator of past infection and immunity to HAV. HAV virus is detected by the presence of HAV antigens or antibodies using ELISA. HAV occurs endemically in all parts of the world. At least 1.5 million new cases are reported each year.



Hepatitis A vaccines : Hepatitis A is the most common vaccine-preventable virus acquired during travel, so people travelling to places where the virus is common like the Indian Subcontinent, Africa, Central America, South America, the far East, and Eastern Europe should also be vaccinated. Protection is proven to last at least 10 years and is estimated to last 21 to 27 years if the full course is administered. Three vaccines are manufactured from cell-culture-adapted HAV propagated in human fibroblasts. Following purification from cell lysates, the HAV preparation is formalin-inactivated and adsorbed to an aluminium hydroxide adjuvant.

Avaxim: made by Sanofi Pasteur. Inactivated Hepatitis A virus produced in MRC-5 cells. **Epaxal:** made by Crucell. Also **Havrix:** made by GlaxoSmithKline. Inactivated Hepatitis A virus produced in MRC-5 cells.

ADI's HAV ELISA kit is an enzyme linked-immunosorbent assay (ELISA) for qualitative determination of human hepatitis A virus (HAV-IgG) in serum or plasma. This kit is designed to determine the efficacy of existing HAV vaccines or new formulations. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. Various HAV recombinant proteins and antibodies are also available to further research into HAV subunit Vaccine.

Hepatitis A vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2730

Items Description	Species	Antibody Type IgG Cat#
Anti-Hepatitis A Virus (HAV) ELISA kit, Qualitative, 5x96 tests	Human	4300-AHG

Hepatitis A Recombinant Proteins and Antibodies

Item	Catalog#	Product Description	Product Type
Hepatitis A Virus proteins and antibodies	HAV11-M	Mouse anti-Hepatitis A Virus (HAV) IgG, clone 1	Antibodies
	RP-436	Recombinant Hepatitis A Virus (HAV) VP4-VP2	Recombinant protein
	RP-437	Recombinant Hepatitis A Virus (HAV) VP3	Recombinant protein
	RP-438	Recombinant Hepatitis A Virus (HAV) VP1	Recombinant protein
	RP-439	Recombinant Hepatitis A Virus (HAV) VP1-P2A (722-830)	Recombinant protein
	RP-440	Recombinant Hepatitis A Virus (HAV) P2C	Recombinant protein
	RP-441	Recombinant Hepatitis A Virus (HAV) P2C-P3B	Recombinant protein
	RP-442	Recombinant Hepatitis A Virus (HAV) P3C	Recombinant protein
	RP-443	Recombinant Hepatitis A Virus (HAV) VP1-P2A (669-782)	Recombinant protein
	RP-444	Recombinant Hepatitis A Virus (HAV) P2C-P3A	Recombinant protein

HAV_Vaccine_Flr

130207A



Hepatitis B Vaccines Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Hepatitis B is an infectious inflammatory illness of the liver caused by the **hepatitis B virus (HBV)** that affects hominoidea, including humans. Originally known as "serum hepatitis", the disease has caused epidemics in parts of Asia and Africa, and it is endemic in China. About a third of the world population has been infected at one point in their lives, including 350 million who are chronic carriers. Hepatitis B virus is an **hepadnavirus**—hepa from hepatotropic (attracted to the liver) and dna because it is a DNA virus. Although replication takes place in the liver, the virus spreads to the blood where viral proteins and antibodies against them are found in infected people.



The virus particle, (virion) consists of an outer lipid envelope and an icosahedral **nucleocapsid** core composed of protein. The nucleocapsid encloses the viral DNA and a DNA polymerase that has reverse transcriptase activity similar to retroviruses. The outer envelope contains embedded proteins which are involved in viral binding of, and entry into, susceptible cells. The virus is one of the smallest enveloped animal viruses. There are four known genes encoded by the genome, called C, X, P, and S. The core protein is coded for by gene C (**HBcAg**). **HBsAg** is produced by proteolytic processing of the pre-core protein. The DNA polymerase is encoded by gene P. Gene S is the gene that codes for the surface antigen (**HBsAg**). The HBsAg gene is one long open reading frame but divided into three

sections, **pre-S1, pre-S2, and S**. Because of the multiple start codons, polypeptides of three different sizes called large, middle, and small (**pre-S1 + pre-S2 + S, pre-S2 + S, or S**) are produced. The hepatitis B surface antigen (HBsAg) is most frequently used to screen for the presence of this infection. It is the first detectable viral antigen to appear during infection. **Hepatitis B vaccine** is a vaccine developed for the prevention of hepatitis B virus infection. The vaccine contains the viral envelope proteins, hepatitis B surface antigen (HBsAg). Presently **recombinant DNA vaccines** are available, which means they are produced by inserting the gene for HBV into common baker's yeast where it is grown, harvested, and purified. HBV infection cannot occur from receiving hepatitis B vaccine. The common brands available are **Hiberix** and **Engerix-B** (GSK), **Recombivax** (Merck) **Elovac B** (Human Biologicals Institute), **Genevac B** (Serum Institute), **Shanvac B** etc.

ADI has developed antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. **Vaccigel HBsAg ELISA** is industry's first ELISA for the direct measure of the antigen adsorbed on Alum (Hepatitis Vaccine).

Hepatitis B vaccine Related ELISA kits (http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2731)

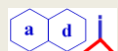
Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Hepatitis B Vaccine (HBsAg antibody) ELISA kits	Human	4200	4205
	Human	4220-AHB	
	Human	4230-AHB-R (rapid Test)	
	Mouse	4210	4215
	Rabbit	4240	
Hepatitis B vaccine (HBsAg) ELISA kit for the detection of antigen in human serum (qualitative) cat #4105			
Hepatitis B vaccine (HBsAg) ELISA kit for the detection of Recombinant HBsAg (quantitative) Cat #4110			
VacciGel Direct ELISA for the measurement of Hepatitis B Vaccine (HBsAg) formulated in Alum , #VAC-HBS-100			

Hepatitis B vaccine Related Antibodies and Reagents kits

Item	Catalog#	Product Description	Product Type
Hepatitis B	AB-15010	Mouse Anti-Hepatitis B Virus (AD & AY Antigens) IgG	Antibodies
	AB-16310	Anti-Hepatitis B Surface Antigen A (HBsAg) IgG	Antibodies
	AR-233-U	Hepatitis B Virus (HBV) Polymerase (P protein) (A9), RNA Aptamer, unlabeled	RNA Aptamers
	HBSAG15-N	Hepatitis B surface Antigen (HBsAg) - Ay (High Pure)	Pure protein
	HBSAG18-N	Hepatitis B surface Antigen (HBsAg) - Ad (High Pure)	Pure protein
	HBSAG19-R-1	Recombinant purified Hepatitis B surface Antigen (HBsAg)	Purified antigen
	RP-342	Mouse Recombinant Anti-Hepatitis B Virus Surface Antigen (HBsAg) Ck IgG	Antibodies
	RP-445	Recombinant Hepatitis B Surface Antigen ayw subtype, Saccharomyces	Pure protein
	RP-446	Recombinant Hepatitis B Surface Antigen preS1	Pure protein
	RP-448	Recombinant Hepatitis B Surface Antigen adr subtype, Saccharomyces	Pure protein
	RP-449	Recombinant Hepatitis B Surface Antigen preS2	Pure protein
	RP-450	Recombinant Hepatitis B Surface Antigen adr subtype, CHO	Pure protein
	RP-451	Recombinant Hepatitis B Surface Antigen ayw subtype, pichia	Pure protein
	SP-102028-1	Hepatitis B Virus Receptor Binding Fragment	Pure Peptide

Hepatitis_B_Vaccine_Flr

130207AA



Hepatitis C Vaccines (HCV) Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Hepatitis C is an infectious disease affecting primarily the liver, caused by the hepatitis C virus (HCV). The hepatitis C virus (HCV) is a small, enveloped, single-stranded, positive-sense RNA virus.[4] It is a member of the hepacivirus genus in the family Flaviviridae. There are seven major genotypes of HCV, which are indicated numerically from one to seven. In the United States, about 70% of cases are caused by genotype 1, 20% by genotype 2, and about 1% by each of the other genotypes. Genotype 1 is also the most common in South America and Europe. The infection is often asymptomatic, but chronic infection can lead to scarring of the liver and ultimately to cirrhosis, which is generally apparent after many years. In some cases, those with cirrhosis will go on to develop liver failure, liver cancer or life-threatening esophageal and gastric varices.

HCV is spread primarily by blood-to-blood contact associated with intravenous drug use, poorly sterilized medical equipment and transfusions. An estimated 130–170 million people worldwide are infected with hepatitis C. The existence of hepatitis C (originally "non-A non-B hepatitis") was postulated in the 1970s and proven in 1989. Hepatitis C only infects humans and chimpanzees.

The virus persists in the liver in about 85% of those infected. This persistent infection can be treated with medication: the standard therapy is a combination of peg interferon and ribavirin, with either boceprevir or telaprevir added in some cases. Overall, 50–80% of people treated are cured. Those who develop cirrhosis or liver cancer may require a liver transplant. Hepatitis C is the leading cause of liver transplantation, though the virus usually recurs after transplantation. No vaccine against hepatitis C is available.

ADI has developing antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. Recombinant proteins from various HCV genotypes and antibodies are available to further research into the development of HCV vaccines.

Hepatitis C vaccine Related Antibodies and Reagentes kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2732

Catalog#	Product Description	Product Type
AB-15610	Mouse Anti-Hepatitis C Virus (HCV) NS3 IgG	Antibodies
HCV16-R	Recombinant (P. pastoris) HCV core protein (N-term 120 aa, ~16 Kda) (insoluble)	Rec. Protein
HCV21-R	Recombinant (E. coli, his-tag) HCV core protein Mosaic (nucleocapsid immunodominant regions)	Rec. Protein
HCV23-R	Rec. (E. coli) HCV Antigen mosaic (Core1b, Core 3g, NS3, NS41, NS411, & NC5) (insoluble)	Rec. Protein
HCV36-R	Recombinant (E. coli) HCV Antigens-GST fusion protein (mosaic of several antigenic epitopes)	Rec. Protein
HNS35-R	Recombinant (E. coli) Hepatitis C Virus (HCV) NS3 protein (insoluble)	Rec. Protein
HNS36-R	Recombinant (E. coli) Hepatitis C Virus (HCV) NS3 Helicase, protein (soluble)	Rec. Protein
HNS37-R	Recombinant (E. coli) HCV NS3 1a helicase protein (full length336) immunodominant regions	Rec. Protein
HNS45-R	Recombinant (E. coli) HCV NS4 protein, fragments of the NS4 immunodominant region derived from 11 Hepatitis C Virus (HCV) genotypes, (soluble)	Rec. Protein
HNS55-R	Recombinant (E. coli) HCV NS5 protein, fragments of the NS5 immunodominant regions, (soluble)	Rec. Protein
RP-457	Rec. ant Hepatitis C Virus (HCV) NS4 a+b, Biotin	Rec. Protein
RP-458	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-3/10	Rec. Protein
RP-459	Recombinant Hepatitis C Virus (HCV) NS4	Rec. Protein
RP-460	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-1a	Rec. Protein
RP-461	Recombinant Hepatitis C Virus (HCV) NS3 Gen.1b	Rec. Protein
RP-462	Rec. Hepatitis C Virus (HCV) NS4 Mosaic	Rec. Protein
RP-463	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-1a (2322-2423)	Rec. Protein
RP-464	Recombinant Hepatitis C Virus (HCV) Combined	Rec. Protein
RP-465	Rec. Hepatitis C Virus (HCV) NS3 Genotype-1c	Rec. Protein
RP-466	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-2c (1192-1459)	Rec. Protein
RP-467	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-2b (1192-1459)	Rec. Protein
RP-468	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-6a (1192-1459)	Rec. Protein
RP-469	Rec. Hepatitis C Virus (HCV) NS3 Genotype-5a	Rec. Protein
RP-470	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-1	Rec. Protein
RP-471	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-2a	Rec. Protein
RP-472	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-3a	Rec. Protein
RP-473	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-4	Rec. Protein
RP-474	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-5	Rec. Protein
RP-475	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-6a	Rec. Protein
RP-476	Recombinant Hepatitis C Virus (HCV) NS5 Gen.1	Rec. Protein
RP-478	Recombinant Hepatitis C Virus (HCV) NS4, Horseradish Peroxidase Labeled	Rec. Protein

Catalog#	Product Description	Product Type
RP-479	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-3	Rec. Protein
RP-480	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-4	Rec. Protein
RP-481	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-5	Rec. Protein
RP-482	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-6	Rec. Protein
RP-483	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) 22kDa, Biotin	Rec. Protein
RP-484	Recombinant Hepatitis C Virus (HCV) NS4 a+b, Rhodamine Labeled	Rec. Protein
RP-485	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-1a	Rec. Protein
RP-486	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-1b	Rec. Protein
RP-487	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-2	Rec. Protein
RP-488	Recombinant Hepatitis C Virus (HCV) NS5 Gen. 2a	Rec. Protein
RP-489	Recombinant Hepatitis C Virus (HCV) NS5 Gen. 3a	Rec. Protein
RP-490	Recombinant Hepatitis C Virus (HCV) NS5 Gen. 3a	Rec. Protein
RP-491	Recombinant Hepatitis C Virus (HCV) NS5 Gen. -3b	Rec. Protein
RP-492	Recombinant Hepatitis C Virus (HCV) NS5 Genotype-6a	Rec. Protein
RP-493	Recombinant Hepatitis C Virus (HCV) NS5	Rec. Protein
RP-494	Recombinant Hepatitis C Virus (HCV) NS5, Biotin	Rec. Protein
RP-495	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-2b	Rec. Protein
RP-496	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-3b	Rec. Protein
RP-497	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) (105-302)	Rec. Protein
RP-498	Rec. Hepatitis C Virus (HCV) Nucleocapsid (core) 24	Rec. Protein
RP-499	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) 22kDa	Rec. Protein
RP-501	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core), Horseradish Peroxidase Labeled	Rec. Protein
RP-502	Recombinant Hepatitis C Virus (HCV) NS3, Biotin	Rec. Protein
RP-503	Recombinant Hepatitis C Virus (HCV) Nucleocapsid (core) Genotype-1b	Rec. Protein
RP-504	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-1a (1192-1459)	Rec. Protein
RP-505	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-1b (1192-1459)	Rec. Protein
RP-506	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-1a (1356-1459)	Rec. Protein
RP-507	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-1b (1356-1459)	Rec. Protein
RP-508	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-2b (1356-1459)	Rec. Protein
RP-509	Recombinant Hepatitis C Virus (HCV) NS3 Genotype-3 (1356-1459)	Rec. Protein
RP-510	Rec. HCV NS3 Genotype-4 (1356-1459)	Rec. Protein
RP-511	Rec. HCV NS3 Genotype-5 (1356-1459)	Rec. Protein
RP-512	Rec. HCV NS3 Genotype-6 (1356-1459)	Rec. Protein

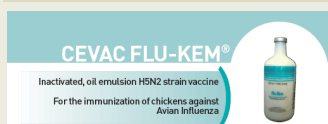
Hepatitis_C_Vaccine_Flr Rev 130207A



Chicken Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

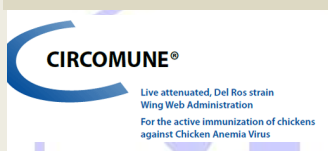


Poultry industry is a major industry generating billions of dollars worldwide. Poultry farming is the raising of domesticated birds such as chickens, turkeys, ducks, and geese, for the purpose of farming meat or eggs for food. Therefore, it is very important that the animals are raised in a clean and hygienic environment. Like humans or other animals, chickens suffer from various bacterial and viral diseases requiring treatment with antibiotics and vaccines. There are four main types of disease affecting poultry: metabolic and nutritional diseases; infectious diseases; parasitic diseases; and behavioral diseases. Infectious diseases are often contagious, which means they can be spread directly or indirectly from one living thing to another. These include **Avian Encephalomyelitis, Avian Influenza (AIV), Avian Tuberculosis, Chicken Anaemia Virus Infection (or CAV), Chlamydiosis, Egg Drop Syndrome (or EDS), Fowl Cholera (or Pasteurellosis), Fowl Pox, Infectious Bronchitis, Infectious Bursal Disease (or Gumboro), Infectious Coryza, Infectious Laryngotracheitis, Lymphoid Leukosis, Marek's Disease (MDV), Mycoplasmosis, Necrotic Enteritis, Newcastle Disease (NDV), Salmonellosis**. Vaccination plays an important part in the health management of the poultry flock. Some of the most common vaccines are infection with **E. coli** (O157:H7" strain) and Salmonella.



Avian influenza (AI) is a highly contagious viral infection which may cause up to 100% mortality in domestic chickens or turkeys. The disease is caused by a virus belonging to the family Orthomyxoviridae. Influenza viruses have two surface proteins, **haemagglutinin (HA)** and **neuraminidase (N)**, that determine their subtype and the animal species they infect. When AI viruses of two haemagglutinin types, H5 and H7, infect domestic poultry (chickens or turkeys) they often mutate and virulent disease arises in these birds which is called highly pathogenic avian influenza (HPAI). The initial infection that does not cause or causes minimal disease is called

low pathogenic avian influenza (LPAI). **OPTIMUNE® AIV vaccine** and **CEVAC FLU-KEM** contains the low pathogenic Avian Influenza virus Type A, Subtype H5N2, that is chemically inactivated and suspended in an oil emulsion.



Chicken anaemia virus (CAV) infection is an acute viral infection of chickens that is found worldwide. CAV can infect chickens of all ages but disease is only seen in young chickens and is characterized by depression, anorexia, anaemia, haemorrhage and a sudden rise in mortality. CAV is a small DNA virus. Vaccination of antibody-negative breeder flocks prior to the start of egg production is recommended. **Nobilis CAV P4** is a live attenuated vaccine against Chicken. **Anaemia Virus. CIRCUMUNE® W** is a live chicken Infectious Anemia Virus vaccine, Del Ros strain, for administration in the drinking water.



Infectious bronchitis (IBV) is a highly contagious viral respiratory infection of chickens; however the virus will also infect the urogenital and gastrointestinal tracts. Infectious bronchitis is caused by a coronavirus. Numerous vaccines are available commercially. The vaccine used should contain specific virus known to be present in the area. All vaccines contain live virus and those that give the best protection unfortunately can also produce symptoms of the disease. **MAXIMUNE® 8** and **CEVAC® ND IB IBD EDS K** contains in inactivated form of the virus in oil adjuvant.



Marek's disease virus (MDV) is a highly contagious viral infection that predominantly affects chickens. The disease is one of the most common diseases affecting poultry flocks worldwide. Mortality rates can be very high in susceptible birds. MD is caused by a highly cell-associated (virus particles that remain attached to or within the host cell after replication) but readily transmitted herpesvirus. There are three serotypes of MD virus. Virulent (disease causing) chicken isolates fall into serotype 1. Avirulent (not disease causing) chicken isolates fall into serotype 2. Serotype 3 designates the related avirulent virus that is commonly found in turkeys.

VECTORMUNE® HVT IBD & SB1 is live Marek Disease vaccines containing a genetically engineered Marek Disease virus of serotype 3 (turkey Herpesvirus or HVT) expressing key protective Infectious Bursal Disease antigens and a serotype 2 (SB-1) Marek Disease virus.



Newcastle virus disease (NDV) is a highly contagious viral infection that affects many species of domestic and wild birds. The disease can result in digestive, respiratory and/or nervous signs. Newcastle disease is caused by a paramyxovirus that can vary in pathogenicity from mild to highly pathogenic. Live Newcastle virus (**NDV**) vaccine and **CEVAC® NEW K** contain B1 Type, LaSota Strain virus in inactivated form with an oil adjuvant.

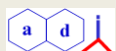
ADI has developed antibody ELISA kits for chicken viruses to determine the efficacy of existing vaccines and test new vaccines. **The antibody titer can be determined in serum or directly in egg yolks** using special antibody diluents that stabilizes and extracts the antibodies from egg yolks.

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#
Avian Influenza A virus (AIV) vaccine Antibody ELISA	Chicken	920-100-AIV	920-105-AIM
Chicken Anemia Virus (AV) vaccine antibody ELISA	Chicken	920-110-AV	
Chicken Infectious Bronchitis Virus (IBV) vaccine antibody ELISA	Chicken	920-120-IBV	
Avian Marek's disease virus (MDV) vaccine antibody ELISA	Chicken	920-130-MDV	
Chicken Newcastle Disease Virus (NDV) vaccine antibody ELISA	Chicken	920-140-NDV	
Chicken Avian Influenza virus (H5N1) vaccine antibody ELISA	Chicken	920-300-H51	

Chicken_Vaccines_Flr

Rev. 130207A





Toxoplasmosis is a disease caused by a parasite called *Toxoplasma gondii*. The parasite mostly infects warm-blooded animals including humans but the primary host is the felid (cat) family. The primary hosts are the cats they carry the virus and can possibly infect other animals. Pigs can get infected by eating contaminated water and food with cat feces, or by eating other contaminated dead pigs' ears, and tails, or by eating infected rodents or other uncooked meat. Once the parasites invade the pigs' organisms it will form cysts in muscles and other organs where they remain viable for long periods of time. The parasites will mature and eventually it can be a source to infect human. The presence of the parasites in pigs rarely results in clinical disease unless infection occurs in pregnant pigs which can lead to SMEDI (stillbirth, mummification, embryonic death and infertility). If a human eats pig meat infected with *Toxoplasma gondii*, it will show two stages; acute and latent. During acute toxoplasmosis will include the following symptoms; swollen lymph nodes and muscle aches. Latent toxoplasmosis is the time where bradyzoites will form cysts in nervous and muscle tissue. Toxoplasmosis parasite can also trigger schizophrenia, bipolar disorders, Parkinson's Disease, Tourette's syndrome and ADD (attention deficit disorders). Over half of the world's human population is estimated to carry a *Toxoplasma* infection. Trimethoprim/sulfamethoxazole is the drug of choice to prevent *Toxoplasma*, but is not the drug to treat. Swine have received special attention from the public health because they are an important reservoir of *Toxoplasma* for human populations due to the longevity of the tissue cysts, and the wide dissemination of the infection in this animal species. **Toxovax (Merck)** is a live vaccine containing $>10^5$ tachyzoites of the S48 strain of *Toxoplasma gondii* per dose for sheep or other animals. Vaccination with Toxovax is known to protect for at least two lambing seasons.



Foot-and-mouth disease (FMD) is caused by the foot-and-mouth disease virus (FMDV) which is a single stranded RNA virus from the Picornaviridae family and Aphthovirus genus. It is a very small nonenveloped icosahedral virus. The foot-and-mouth disease virus occurs in seven major serotypes: O, A, C, SAT-1, SAT-2, SAT-3, and Asia-1. These serotypes show some regionality, and the O serotype is most common. FMDV is a very contagious disease and can be death threatened. It can infect cattle, water buffalo, sheep, goats and pigs, but not human. The symptoms of this disease include fever and blister-like lesions followed by erosions on the tongue and lips, in the mouth and between the hooves. **Raksha fmd vaccine (India)** contains inactivated fmd virus strains o, a, c and asia-1 adsorbed on aluminium hydroxide as an adjuvant. **FMD vaccine (intervet, Merck)** Decivac® FMD DOE contain antigens of the FMDV types O, A, C, Asia1 and SAT1, SAT2, SAT3 (monovalent or multivalent) for the active immunisation of pigs, cattle, buffalo, sheep and goats against Foot and Mouth Disease.



Pseudorabies is a viral disease in swine which is caused by porcine herpesvirus 1, which is also called pseudorabies virus (PRV) or suid herpesvirus-1 (SuHV-1) and is also known as Aujeszky's disease, and in cattle as mad itch.. PRV is considered to be the most economically important viral disease of swine in areas where hog cholera has been eradicated. The word "pseudorabies" means "false rabies," or "rabies-like;" pseudorabies is related to the herpes virus, not the rabies virus. PRV is in the group I double stranded DNA from the family Herpesviridae and genus Varicellovirus. PRV infected pigs show no clinical symptoms unless it infects pregnant pigs which will lead to SMEDI (stillbirth, mummification, embryonic death and infertility). Adult pigs are the host carrier for the virus, but it will infect cattle, sheep, cats, dogs, goats, raccoons, opossums, skunks and rodents. Symptoms for those infected animals are scratching and biting themselves followed by neurological signs and eventually death. For dogs and cats pseudorabies is so dangerous that it can cause sudden death without even having symptoms. However, PRV are harmless in human. **Pseudorabies** vaccines (Pocilis AD Begonia, Merck) A live attenuated vaccine for the immunization of pigs against Aujeszky's disease virus infections (Pseudorabies). The vaccine based on the virus strain NIA-3(tk- and gE-). Diluvac Forte® is used as a diluent. The gE deletion allows field infections to be differentiated from vaccination responses.



Hog Cholera is also called Classical swine fever (CSF). It is very contagious among pigs and wild boar. The virus responsible for this disease is called CSFV. It is classified in the Group IV ((+) ssRNA), it is a lipid-enveloped pathogen which belongs to the genus Pest virus in the family Flaviviridae. CSFV is very similar to a ruminant pestiviruses which cause Bovine Viral Diarrhoea (BVDV) and Border Disease (BDV). Pigs and wild boars are the only hosts for CSF. The virus will live in the blood, tissues, secretions and excretions from the infected animal. It is transmitted mostly by the oral route, conjunctiva, mucous membrane, skin abrasion, insemination and percutaneous blood transfer. Once the animal is infected the incubation period is normally from 3 to 4 days but can range between 2 to 14 days. After four days to three weeks of the virus entered the animal's system the symptoms will start with fever which will lead to loss of appetite, depression, withdrawal from other animals, reddened and draining eyes, vomiting, constipation or diarrhea, and coughing and difficulty in respiration. CSFV is diagnosed by histology or the presence of antibodies by ELISA. Porcilis CSF Live is based on the Classical Swine Fever virus strain GPE-. The resulting vaccine is highly effective and proven safe as it does not spread to other pigs. The resulting vaccine is highly effective and proven safe as it does not spread to other pigs.



Porcine Circovirus (PCV) is a single stranded DNA virus (group II). It is a non-enveloped with an un-segmented circular genome. PCV is the smallest virus to be able to replicate autonomously in eukaryotic cells. PCV replicates in the nucleus of infected cells using the host's polymerase for genome amplification. There are two strains, the Type 1 PCV and Type 2 PCV. Type 1 PCV has not been found any disease affecting swine. Type 2 PCV causes postweaning multisystemic wasting syndrome (PMWS) which eventually leads to depletion of lymphocytes. Side effect of PCV2 infection includes poor growth, weight loss, enlarged lymph nodes, difficulty breathing, jaundice, fever, stomach ulcers, diarrhea and sudden death. An effective vaccination is now available. Foster PCV2 vaccine (Fort Dodge) contains inactivated virus (ATCvet code: QI09AA07). Porcilis vaccine against porcine circovirus type 2 (PCV2) contains ORF2 subunit antigen: at least 4.5 log2 ELISA units For the active immunisation of pigs to reduce the virus load in blood and lymphoid tissues and to reduce mortality and weight loss associated with PCV2 infection occurring during the fattening period.





Porcine Encephalitis Virus is also known as **Japanese Encephalitis virus (JEV)**. Japanese encephalitis virus is the virus responsible for the Japanese B encephalitis disease. JEV is a positive single stranded enveloped RNA virus that belongs to the Flaviviridae family from the genus Flavivirus. JEV is called arbovirus because it is transmitted by the Culex tritaeniorhynchus mosquitoes. The main reservoir of JEV is the pigs, and once transmitted to human it can cause severe symptoms. The pigs infected by the virus shows no symptoms except in pregnant ones which will lead to miscarriage or abnormal fetus. Human can get infected with the virus by the Culex mosquitoes. Mosquitoes will

become infected when they fed themselves with infected pigs, those mosquitoes now can infect human. This virus cannot be transferred from human to human or pigs to human, only from mosquitoes to humans. Once the virus enters the human body it follows an incubation period of four to fourteen days. The symptoms will start with fever and headache, however it can progress giving worse symptoms such as neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis. Japanese Encephalitis Vaccine, JE-VC (Novartis), contains strain SA14-14-2 Inactivated, adsorbed, and it is for human use.



Porcine Reproductive and Respiratory Syndrome (PRRS) is also known as Blue-Ear Pig Disease. It is a virus that causes a disease of pigs, called porcine reproductive and respiratory syndrome (PRRS). This economically important, pandemic disease causes reproductive failure in breeding stock and respiratory tract illness in young pigs. Initially referred to as "mystery swine disease" and "mystery reproductive syndrome, It is a disease that is caused by the virus **PPRSV** (Porcine Reproductive and Respiratory Syndrome Virus). The disease costs the United States swine industry around \$600 million annually. PRRSV is a small enveloped single stranded positive sense RNA virus. The virus has a high affinity for the macrophage found in the lung. The virus multiplies itself inside the macrophage which eventually kills the macrophage. Without macrophages the body has no defense mechanism, allowing other bacteria and viruses to proliferate and damage the body. The two prototype strains of PRRSV are the North American strain, VR-2332, and the European strain, the Lelystad virus (LV). The European

and North American PRRSV strains cause similar clinical symptoms. Porcilis PRRS vaccine (Merck) for piglet and sows is a Live attenuated PRRS virus strain DV



Porcine Parvovirus (PPV) is a Group II, a single stranded DNA virus from the family Parvoviridae and its genus is Parvovirus. PPV is one of the most common causes of infectious infertility. It is a very strong virus which multiplies itself in the pig's intestine without giving the pig any symptoms. PPV is a very difficult virus to remove from the pig's environment. PPV has unique characteristics of being resistant to most disinfectants and being able to survive living outside of its host for a long period of time. PPV will show symptoms in pregnant pigs only if the pregnancy is for the first time during the first 55 days. Its structure is composed of a viral capsid made of 2-3 proteins known as VP1-3 which forms an icosahedral structure. This specific structure makes the virus resistant to pH, solvents and temperature as high as 50 °C. PPV causes a reproductive disease in pigs called SMEDI which stands for stillbirth, mummification, embryonic death and infertility. The disease is mostly spread by ingestion of contaminated food and water, infected feces and sometimes sexual contact and contact with aborted tissue. PARVOSUIN® vaccine is an Inactivated porcine parvovirus, NADL-2 strain: ≥ 1/32 HAL;in oil

adjuvant.

Alpha Diagnostic Intl's has developed ELISA kits to detect and measure the presence of antibodies to various Procine/Swine/Hog viral diseases (Toxoplasmosis, Swine Foot and Mouth Virus (FMDV), Pseudorabies (PRV), Classical Swine Flu (CSFV), Porcine Circovirus (PCV2), Porcine/Swine Epidemic Encephalitis B (JEV), Porcine Parvovirus (PPV), and **Porcine Reproductive and Respiratory Syndrome (PRRS)**.

Swine Diseases/Vaccine Related ELISA kits

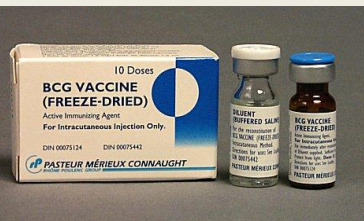
(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2746

Items Description	Antibody Type IgG Cat#
Swine/Porcine Toxoplasmosis Antibody ELISA kit	AE-200100-2
Swine Foot and Mouth Virus (FMDV) antibody ELISA kit	AE-200120-2
Swine Foot and Mouth Disease (FMDV) IgG Distinguishing kit	AE-200125-2
Porcine/Swine Pseudorabies (PRV) Antibody ELISA kit	AE-200130-2
Porcine/Swine Pseudorabies (PRV) Virus IgE Antibody Distinguishing kit	AE-200135-2
Swine/Hog) Classical Swine Flu (CSFV) or Cholera Virus Antibody ELISA kit	AE-200140-2
Porcine Circovirus (PCV2) ELISA kit, 4x96 tests	AE-200150-2
Porcine/Swine Epidemic Encephalitis B (JEV) antibody ELISA kit	AE-200160-2
Swine/Porcine Parvovirus (PPV) Antibody ELISA kit, 2x96 tests	AE-200170-2
Porcine Reproductive and Respiratory Syndrome virus (PPRSV) Antibody ELISA kit	AE-200180-2

Porcine_Swine_Vaccine_Flr Rev. 120110A

Tuberculosis Vaccines: Antibody ELISA Kits, Recombinant Proteins, Peptides and Antibodies

Tuberculosis, MTB, or TB (short for tubercle bacillus) is a common, and in many cases lethal, infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*. The infectious agents of tuberculosis are acid-resistant rod-like bacteria of the family Mycobacteriaceae, genus *Mycobacterium*. The organism was detected by Robert Koch in 1882. Mycobacterioses (tuberculosis, leprosy, atypical mycobacterioses, paratuberculosis, and perhaps Crohn's Disease) are diseases of men and animals with the largest diffusion on earth. One third of the world's population is thought to have been infected with *M. tuberculosis*, with new infections occurring at a rate of about one per second. TB killed 1.4 million people in 2010. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit their saliva through the air. Most infections are asymptomatic and latent, but about one in ten latent infections eventually progresses to active disease which, if left untreated, kills more than 50% of those so infected. Individuals with HIV are at risk for infection by tuberculosis due to their impaired immune system. The two antibiotics most commonly used are isoniazid and rifampicin but antibiotic resistance is a serious concern. Treatment of TB uses antibiotics to kill the bacteria. Drug-resistant TB is a serious public health issue in many developing countries, as its treatment is longer and requires more expensive drugs.



The main cause of TB is *Mycobacterium tuberculosis*, a small, aerobic, nonmotile bacillus. The high lipid content of this pathogen accounts for many of its unique clinical characteristics. If a Gram stain is performed, MTB either stains very weakly "Gram-positive" or does not retain dye as a result of the high lipid and mycolic acid content of its cell wall. The only currently available vaccine as of 2012 is **bacillus Calmette–Guérin (BCG with live attenuated bacteria)** which, while it is effective against disseminated disease in childhood, confers inconsistent protection against contracting pulmonary TB. Nevertheless, it is the most widely used vaccine worldwide, with more than 90% of all children being vaccinated. A number of **new TB vaccines** are

currently in phase I and II clinical trials. **MVA85A** (modified vaccinia Ankara 85A, Oxford University) is a **subunit vaccine to BCG**. This vaccine produces higher levels of long-lasting cellular immunity when used together with the old TB vaccine called BCG. It uses the attenuated MVA as a vaccine delivery platform to present **antigen 85A** to the immune system. The other strategy is using genetically modified vaccinia virus.

Mycobacterium tuberculosis (H37Rv strain) has circular chromosomes of about 4,200,000 nucleotides long and ~4000 gene.

The closely related proteins of the **antigen 85 complex**, initially identified in *Mycobacterium bovis* BCG by crossed immunoelectrophoresis, are major secreted products of mycobacteria growing in synthetic media. Three closely related components, termed antigens 85A, 85B, and 85C, have been demonstrated in *M. bovis* BCG and *M. tuberculosis*. Although the antigens are genetically distinct, they are highly homologous and cross-react with polyclonal and monoclonal antibodies raised against individual components. The genes encoding **antigen 85A**, a 32-kDa protein also referred to as **P32**, have been cloned from **M. bovis BCG** and **M. tuberculosis**, while genes for **85B**, a 30- to 31-kDa protein variously termed MPB59 or alpha antigen, have been isolated from *M. bovis* BCG, *Mycobacterium kansasii*, and *Mycobacterium leprae*. Sequence analysis revealed 85% identity between the *M. bovis* BCG 85A and 85B components in the amino acid sequence of the mature secreted proteins. Many mycobacterial antigens have been identified, such as 71, 65, 38, 23, 19, 16, 14 and 12-kDa proteins. The 38-kDa protein is an immunodominant lipoprotein antigen isolated as a component of antigen 5 by affinity chromatography, and is specific only for the *M. tuberculosis* complex. It is the most extensively studied antigen. The 16-kDa antigen is an immunodominant antigen, frequently called 14 kDa, related to the family of low molecular weight heat-shock proteins. This antigen contains B-cell epitopes specific for the *M. tuberculosis* complex.

The only available procedure in addition to the skin tuberculin test was direct microscopic identification of the dyed bacteria in sputum. Recently specific antigens have been prepared either by purification of natural material or by recombinant methods.

ADI has developed antibody ELISA kits to determine the efficacy of various existing vaccines and test new vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes.

Tuberculosis vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2749

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#	Antibody Type IgA Cat#
Mycobacterium Tuberculosis Vaccine Antibody ELISA kit	Human	990-110-THG	990-120-THM	990-100-THA
	Mouse	990-210-TMG	990-220-TMM	
	Rabbit	990-310-TRG	990-320-TRM	
	Monkey	990-400-MTG	990-410-MTM	
M. Tuberculosis Vaccine 6kDa/ESAT-6 antibody ELISA kit	Mouse	990-230-06G	990-235-06M	
M. Tuberculosis vaccine 16kDa/Hspx antibody ELISA kit	Mouse	990-240-16G	990-245-16M	
M. Tuberculosis MVA85A vaccine antibody (38kda/Ag85b) ELISA kit	Mouse	990-250-38G	990-255-38M	
	Human	990-260-38G	990-265-38M	

Tuberculosis vaccine Related Antibodies, Proteins and other Reagents

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2749

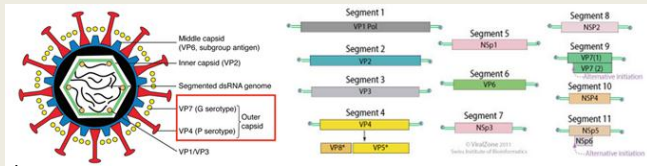
Items	Catalog#	Product Description	Product Type
M. Tuberculosis Ag85	Ag85A111-P	M. tuberculosis Protein Ag85A T-cell immunodominant CD8 peptide, MHC class I H-2Ld-restricted epitope (LTSELPGLWLANRHVKPTGS, WT: 2191.5)	Pure Peptide
	Ag85A112-P	M. tuberculosis Protein Ag85A T-cell immunodominant CD8 peptide, MHC class I H-2Ld-restricted epitope (MPVGGQSST, MW:863)	Pure Peptide
	Ag85B211-P	M. tuberculosis Protein Ag85b (199-207) HLA-A2 binding peptide (KLVANNTLRL)	Pure Peptide
	MTB381-C	Recombinant purified M. tuberculosis antigen 38kDa/Ag85B control for Western	Western control
	MTB381-M	Monoclonal Anti-Mycobacterium tuberculosis antigen 38kDa/Ag85B IgG	Antibodies
	MTB38-R	Recombinant purified (E. coli) Mycobacterium tuberculosis antigen (38kDa/Ag85B)	Recomb. Protein
	MTB6381-S	Anti-M. Tuberculosis antigens (6Kda/ESAT+16kDa+38KDa/Ag85b proteins antiserum	whole BCG vaccine
	RP-999	Recomb. M. tuberculosis major secretory protein Antigen 85B (38kda Antigen, Ag85b)	Pure protein
MTB16 kda/HspX	MTB161-C	Recombinant purified M. tuberculosis antigen (16kDa/HspX) control for Western	Western control
	MTB161-M	Monoclonal Anti-Mycobacterium tuberculosis antigen (16kDa/HspX) IgG	Antibodies
	MTB16-R	Recombinant purified (E. coli) Mycobacterium tuberculosis antigen (16kDa/HspX)	Recomb. Protein
	MTB161-C	Recombinant purified M. tuberculosis antigen (16kDa/HspX) control for Western	Western control
	MTB161-M	Monoclonal Anti-Mycobacterium tuberculosis antigen (16kDa/HspX) IgG	Antibodies
	MTB16-R	Recombinant purified (E. coli) Mycobacterium tuberculosis antigen (16kDa/HspX)	Recomb. Protein
MTB6kda ESAT-6	MTB061-C	Recombinant purified M. tuberculosis antigen (6kDa/ESAT-6) control for Western	Western control
	MTB061-M	Monoclonal Anti-Mycobacterium tuberculosis antigen (6kDa/ESAT-6) IgG	Antibodies
	MTB06-R	Recombinant purified (E. coli) Mycobacterium tuberculosis antigen (6kDa/ESAT-6)	Recomb. Protein
	MTB161-C	Recombinant purified M. tuberculosis antigen (16kDa/HspX) control for Western	Western control
	MTB161-M	Monoclonal Anti-Mycobacterium tuberculosis antigen (16kDa/HspX) IgG	Antibodies
	MTB16-R	Recombinant purified (E. coli) Mycobacterium tuberculosis antigen (16kDa/HspX)	Recomb. Protein
	RP-977	Recombinant purified ESAT-6 (6 kDa early secretory antigen of T cells; M. Tuberculosis)	Pure protein
	RP-977-100	Recombinant purified ESAT-6 (6 kDa early secretory antigen of T cells; M. tuberculosis)	Pure protein
BCG vaccine	BCG11-S	Rabbit Anti-Bacillus calemette-Guerin (BCG) proteins (M. bovis) antiserum	whole BCG vaccin
CFP10	CFP101-M	Monoclonal Anti-M. tuberculosis 10 Kda cultural filtrate protein (CFP10) IgG	Antibodies
	CFP151-P	Culture filtrate protein 10 (CFP10/M. tuberculosis) (71-85) antigenic peptide (EISTNIRQAGVQYSR, MW:1721.9)	Pure Peptide
Hsp/hspX	HSP651-C	Recombinant purified M. tuberculosis Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2) control for Western	Western control
	HSP651-M	Monoclonal Anti-M. tuberculosis Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2) IgG	Antibodies
	HSP651-P	Heat shock protein (M. leprae HSP65; 417-429) specific P62 peptide (LLQAAPALDKLKL, MW:1393.7)	Pure Peptide
	HSP652-P	Heat shock protein (M. leprae/M. tuberculosis HSP65; 417-429) P38 peptide (AGGGVTLLQAAPALD, MW:1353.5)	Pure Peptide
	HSP653-P	Heat shock protein (M. leprae HSP65; 343-355) P61 peptide (RVAQIRTEIENSD, MW:1530.7)	Pure Peptide
	HSP654-P	Heat shock protein (M. bovis HSP65; 243-255) indicator peptide in HLA-DQ2 binding assays (KPLLIIAEDVEGEY, MW:1588.8)	Pure Peptide
	HSP701-C	Recombinant purified M. tuberculosis Heat Shock Protein 70 (hsp70/Dnak/ML2496) control for Western	Western control
	HSP701-M	Monoclonal Anti-M. tuberculosis Heat Shock Protein 70 (hsp70/Dnak/ML2496) IgG	Antibodies
	HSP701-M	Monoclonal Anti-M. tuberculosis Heat Shock Protein 70 (hsp70/Dnak/ML2496) IgG	Antibodies
	RP-627	Recombinant purified Mycobacterium Tuberculosis Heat Shock Protein 65 (hsp65/groEL-2/Cpn60-2)	Pure protein
	RP-628	Recombinant purified Mycobacterium Tuberculosis Heat Shock Protein 70 (hsp70/Dnak/ML2496)	Pure protein
PPD	PPD11-A	Rabbit Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG	Antibodies
	PPD11-BTN	Rabbit Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG-biotin conjugate	Antibodies
	PPD11-FITC	Rabbit Anti-purified protein derivative (PPD and most proteins of M. tuberculosis) IgG-FITC conjugate	Antibodies
M. Tuberculosis	RV17341-M	Monoclonal Anti-M. tuberculosis Rv1734 dormant protein from H37Rv strain IgG	Antibodies
	RV20311M	Monoclonal Anti-M. tuberculosis Rv2031 dormant protein from H37Rv strain IgG	Antibodies
	RV26231-M	Monoclonal Anti-M. tuberculosis Rv2623 dormant protein from H37Rv strain IgG	Antibodies
	UBQ151-P	Ubiquitin 2 (Ub2, 65-76) peptide with anti-M. tuberculosis activity (STLHLVLRLRGG)	Pure Peptide

Tuberculosis_Vaccine_Flr Rev. 130207A



Rotavirus (EDIM) Vaccine ELISA Kits, Recombinant Proteins, and Antibodies

Rotavirus gastroenteritis is a mild to severe disease characterized by vomiting, watery diarrhoea, and low-grade fever. Rotavirus is the most common cause of severe diarrhoea among infants and young children. Rotavirus is usually an easily managed disease of childhood, but worldwide more than 450,000 children under five years of age still die from rotavirus infection each year, most of who



live in developing countries, and almost two million more become severely ill. The incidence and severity of rotavirus infections has declined significantly in countries that have added rotavirus vaccine to their routine childhood immunization policies. Rotavirus is a genus of dsRNA virus in the family Reoviridae. There are five species of this virus, referred to as A, B, C, D, and E. **Rotavirus A**, the most common, causes more than 90% of infections in humans. As with influenza virus, a dual classification system is used based on two proteins on the surface of the virus. The glycoprotein VP7 defines the **G serotypes** and the protease-sensitive protein VP4 defines **P serotypes**. The genome of rotavirus consists of 11 unique double helix molecules of RNA which are 18,555 nucleotides in total. Each helix, or segment, is a gene, numbered 1 to 11 by decreasing size. Each gene codes for one protein, except genes 9, which codes for two. Viral particles are up to 76.5 nm in diameter and are not enveloped. There are six viral proteins (VPs) that form the virus particle (virion). These structural proteins are called **VP1, VP2, VP3, VP4, VP6 and VP7**. In addition to the VPs, there are six nonstructural proteins (**NSP1-NSP6**) that are only produced in cells infected by rotavirus. VP6 forms the bulk of the capsid. It is highly antigenic and can be used to identify rotavirus species. This protein is used in laboratory tests for rotavirus A infections.

Specific diagnosis of infection with rotavirus A is made by finding the virus in the stool by ELISA. Two approved **vaccines** against Rotavirus are available: **Rotarix** by GlaxoSmithKline and **RotaTaq** by Merck. Both are taken orally and contain attenuated live virus. Rotarix is a human, live attenuated rotavirus vaccine containing a rotavirus strain of G1P specificity. ROTARIX is indicated for the prevention of rotavirus

gastroenteritis caused by G1 and non-G1 types (G3, G4, and G9) when administered as a 2-dose series in infants and children. RotaTaq contains five rotaviruses produced by reassortment. Four reassortant rotaviruses express one of the outer capsid, VP7, proteins (serotypes G1, G2, G3, or G4) from the human rotavirus parent strain and the attachment protein VP4 (type P7) from the



bovine rotavirus parent strain. The fifth reassortant virus expresses the attachment protein VP4, (type P1A), from the human rotavirus parent strain and the outer capsid protein VP7 (serotype G6) from the bovine rotavirus parent strain. Rotavirus vaccines are licensed in more than 100 countries, but only 31 countries have introduced routine rotavirus vaccination as of 2011. The obvious concerns about using the live virus vaccines revolve around safety and efficacy. One of the live rotavirus vaccines (**Rotashield**) was withdrawn after 1 year because of its association with intussusception. Rotarix, produced in monkey cells (Vero), have been shown to be contaminated with pig/swine virus (PCV) and still considered safe. Several new vaccines formulations are being tested: Inactivated rotavirus strains, virus-like particles (VLPs), and subunit vaccine (VP2/VP6). **The capsid protein VP6** ~45 kda forms the intermediate layer of the virus and it is the most abundant (780 molecule per virus) and antigenic protein. VP6 is highly conserved with only about 10-12% divergence in any two mammalian groups A rotavirus. When rotavirus enters cells, its outer layer proteins, VP4 and VP7, are removed before replication, thus exposing virus layered with VP6. Recombinant VP6 protein vaccine has been shown to protect animals from rotavirus infection.

ADI has cloned and expressed murine rotavirus VP6 that is highly conserved in human, monkey, mouse, bovine, sheep, and porcine rotaviruses. Antibodies to VP6 are also available. Antibody ELISA kit was developed to determine the efficacy of various existing vaccines and test new vaccines. These kits help determine the levels of VP6 antibody during natural infection or in vaccinated individuals.

Roavirus vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

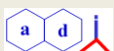
Items	Species	IgG Specific Cat#	IgM Specific Cat#	IgA-Specific Cat#
Rotavirus (EDIM) VP6 Vaccine antibody ELISA	Mouse	AE-300400-1	AE-300401-1	AE-300402-1
	Rat	AE-300410-1		
	Rabbit	AE-300420-1		
	Human	AE-300430-1	AE-320431-1	AE-320432-1
	Monkey	AE-300440-1		
	Bovine	AE-300450-1	AE-300450-1	AE-300452-1
	Sheep	AE-300460-1		

Rotavirus vaccine Related Antibodies, Proteins and other Reagents

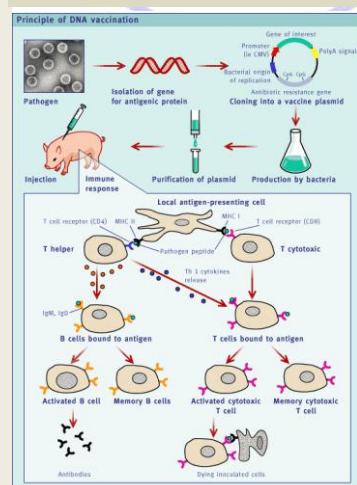
Item	Catalog#	Product Description	Product Type
EDIM	EDIM14-S	Rabbit Anti-Epizootic diarrhea of infant mice (EDIM)/rotavirus Capsid Protein 6 (VP6)	Antiserum
	EDIM15-M	RecombiVirus Mouse monoclonal Anti-Epizootic diarrhea of infant mice (EDIM)/rotavirus Capsid Protein 6 (VP6) IgG, aff pure	Antibodies
	EDIM15-R-10	Recombinant (E. coli, his-tag, ~46 Kda) Epizootic diarrhea of infant mice (EDIM)/rotavirus Capsid Protein 6 (VP6), full length (>95% pure)	Pure Protein
	EDIM17-M	RecombiVirus Mouse monoclonal Anti-Rotavirus (all serotypes) (p43/VP6) IgG, aff pure	Antibodies
	EDIM18-S	Anti-Nebraska calf diarrhea virus (NCDV) antiserum	antiserum

Rotavirus_Vaccine_Flr

Rev. 130207A



Vaccines are among the greatest achievements of modern medicine. Global use of vaccines have eliminated naturally occurring cases of smallpox, and nearly eliminated polio, while other diseases, such as typhus, rotavirus, hepatitis A and B and others are well controlled. Conventional vaccines, however, only cover a small number of diseases, and infections that lack effective vaccines kill millions of people every year, with AIDS, hepatitis C and malaria being particularly common. **First generation vaccines** are **whole-organism vaccines** – either live and weakened, or killed forms. Live, attenuated vaccines, such as smallpox and polio vaccines, are able to induce killer T-cell (TC or CTL) responses, helper T-cell (TH) responses and antibody immunity. However, there is a small risk that attenuated forms of a pathogen can revert to a dangerous form, and may still be able to cause disease in immuno-compromised vaccine recipients (such as those with AIDS). While killed vaccines do not have this risk, they cannot generate specific killer T cell responses, and may not work at all for some diseases. **Second generation vaccines** consisting of defined protein antigens (such as tetanus or diphtheria toxoid) or recombinant protein components (such as the hepatitis B surface antigen) were developed to minimize risk and cost of the whole cell vaccines. **Subunit vaccines** are also able to generate TH and antibody responses, but not killer T cell responses. DNA vaccine idea started with the landmark discovery of protein expression by the injection of naked DNA into mouse muscle Wolf in 1990. **DNA vaccines** are **third generation vaccines**, and are made up of a small, circular piece of bacterial DNA (called a plasmid) that has been genetically engineered to produce one or two specific proteins (antigens) from a pathogen. The vaccine DNA is injected into the cells of the body, where the "inner machinery" of the host cells "reads" the DNA and uses it to synthesize the pathogen's proteins. Because these proteins are recognized as foreign, when they are processed by the host cells and displayed on their surface, the immune system is alerted, which then triggers a range of immune responses.



well as the targeting of different lymphoid compartments. Generally, saline needle injections (either IM or ID) tend to induce TH1 responses, while gene gun delivery raises TH2 responses. One of the greatest advantages of DNA vaccines is that they are able to induce **cytotoxic T lymphocytes (CTL)** without the inherent risk associated with live vaccines. CTL responses can be raised against immunodominant and immunorecessive CTL epitopes, as well as subdominant CTL epitopes, in a manner which appears to mimic natural infection. This may prove to be a useful tool in assessing CTL epitopes of an antigen, and their role in providing immunity. The efficiency of DNA immunization can be improved by stabilising DNA against degradation, and increasing the efficiency of delivery of DNA into antigen presenting cells. This has been demonstrated by coating biodegradable cationic microparticles (such as poly(lactide-

co-glycolide) formulated with cetyltrimethylammonium bromide) with DNA. Such DNA-coated microparticles can be as effective at raising CTL as recombinant vaccinia viruses, especially when mixed with alum. Alternative delivery methods have included aerosol instillation of naked DNA on mucosal surfaces, such as the nasal and lung mucosa, and topical administration of pDNA to the eye and vaginal mucosa. Mucosal surface delivery has also been achieved using cationic liposome-DNA preparations, biodegradable microspheres, attenuated Shigella or Listeria vectors for oral administration to the intestinal mucosa, and recombinant adenovirus vectors

Naked DNA vaccination usually induces a humoral immune response, characterized by the production of antigen specific antibodies. In general, the antibody level is very low to undetectable after the first DNA injection but increases both with the number of injections and the amount of injected DNA. Neutralizing antibodies have been detected against the viruses (Herpes, JEV etc), bacteria (C. pseudotuberculosis), protozoa (C. parvum, T. annulata etc), and parasites (A. marginale and T. ovis). There are indications that multigenic DNA vaccines containing several plasmids can provide protective immunity.



DNA Vaccines Status: Several hundred clinical trials are ongoing at various stages for DNA vaccines. Positive results were announced for a **bird flu DNA vaccine** in 2006 (H5N1). A DNA vaccine to protect horses from West Nile virus (**recombitek, rWNV, Fort Dodge**) has been approved in 2004. rWNV consists of a canarypox virus vector with insertion and expression of the

membrane (prM) and envelope (E) proteins of WNV genes. The latest equine vaccine approved in 2006 is a single-dose, attenuated **West Nile virus, live flavivirus chimera vaccine (WN-FV)** (PreveNile; Intervet, De Soto, KS) for horses and is marketed without an adjuvant. The recombinant chimera expresses the E and prM proteins of WNV in a yellow fever vector (YF17D). The vaccine has been labeled for use in horses for the prevention of West Nile virus viremia and as an aid in the prevention of WNV disease and encephalitis. A preliminary study in DNA vaccination against **multiple sclerosis (BHT-3009 by Bayhill Therapeutics)** was reported as being effective. The MS vaccine expressed full length human myelin basic protein (MBP) and reduced the levels of autoantibodies to MBS.

Presence of autoantibodies to dsDNA and many other auto antigens is a hallmark of lupus erythematosus (SLE). Humans and animals those are genetically disposed for SLE may easily be induced to make anti-dsDNA antibodies. These antibodies occur essentially only during the course of lupus and serve as markers for diagnosis and prognosis. The importance of anti-dsDNA to disease pathogenesis is substantiated by evidence that they promote glomerulonephritis either by immune complex deposition or the direct binding to cross-reactive renal antigens. Moreover, animal studies have shown that it is easier to mount antibody response to E.coli (heterologous DNA) than to homologous DNA. Anti-bacterial DNA antibodies cross-react with the host (human/animal) DNA and create SLE-like symptoms. DNA-vaccines typically contain foreign DNA (bacterial or viral) and the gene of interest. In addition, many peptides act as DNA-mimotope and produce anti-DNA antibodies. Therefore, it is essential that all DNA-vaccines and recombinant Protein vaccines are tested for their potential to make anti-dsDNA antibodies.

(See [Details at the website](http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719))

ADI has developed anti-DNA IgG antibody ELISA to test DNA-vaccines. ADI is further expanding the antibody ELISAs to measure IgG (and IgG1, IgG2a, IgG3, IgG4) and IgM classes. ELISA kits are also available to measure autoantibodies to various other antigens (RNP, Histone, etc).

DNA Vaccines & Anti-DNA Antibody ELISA Kits

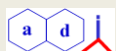
Items	Ab isotype	Mouse Cat#	Rat Cat#	Human Cat#	Monkey Cat#
DNA Vaccine Anti-dsDNA IgG ELISA	Ig's (G+A+M)	5110			670-100-DNM
	IgG (IgG1-3)	5120	650-130-DDN	3100	
	IgG1	5120-1			
	IgG2a	5120-2a			
	IgG2b	5120-2b			
	IgG3	5120-3			
	IgA	5120-A		3105	
	IgM	5130		3110	
	IgE	5120-E			
DNA Vaccine Anti-ssDNA IgG ELISA	Ig's (G+A+M)	5310			
	IgG	5320	650-330-DSN		

DNA Vaccine Antibody Detection

DNA-vaccine typically contain a protein expression vector that is expected to be translated by the host (mouse, human etc). For example, **recombitek, rWNV, Fort Dodge, DNA Vaccine** expresses the membrane (prM) and envelope (E) proteins of West Nile Virus. The success of the vaccine will depend upon the expression of the protein followed by the production of antibodies in mouse or human or other host receiving the DNA vaccine. Serum antibodies are generally detected by direct antigen ELISAs. ADI has produced ELISA kits that contain optimized reagents including the specific antibody conjugates necessary to detect the antibodies. Users will only supply the specific antigen for coating the ELISA plates. Antibody detection can be completed in <2 hours using supplied reagents in the kit.

Catalog #	Product Description	Product Type
80120	Cervid (Deer, Elk, Moose Serum Antibody detection ELISA kit, Qualitative	Kit
80150	Mouse Serum Antibody detection ELISA kit, Qualitative	Kit
80155	Rat Serum Antibody detection ELISA kit, Qualitative	Kit
80160	Rabbit Serum Antibody detection ELISA kit, Qualitative	Kit
80165	Goat Serum Antibody detection ELISA kit, Qualitative	Kit
80166	Sheep Serum Antibody detection ELISA kit, Qualitative	Kit
80170	Human Serum Antibody detection ELISA kit, Qualitative	Kit
80171	G. Pig Serum Antibody detection ELISA kit, Qualitative	Kit
80175	Monkey Serum Antibody detection ELISA kit, Qualitative	Kit
80176	Chicken Serum Antibody detection ELISA kit, Qualitative	Kit
80177	Chicken IgY Antibody detection in whole egg yolks ELISA kit, Qualitative	Kit
80180	Hamster Serum Antibody detection ELISA kit, Qualitative	Kit
80185	Bovine Serum Antibody detection ELISA kit, Qualitative	Kit
80186	Pig Serum Antibody detection ELISA kit, Qualitative	Kit
80187	Turkey Serum Antibody detection ELISA kit, Qualitative	Kit
80188	Ferret Serum Antibody detection ELISA kit, Qualitative	Kit
80188-A	Ferret Serum antigen-specific IgA Antibody detection and titration ELISA kit	Kit
80188-G	Ferret Serum antigen-specific IgG Antibody detection and titration ELISA kit	Kit
80188-M	Ferret Serum antigen-specific IgM Antibody detection and titration ELISA kit	Kit

DNA_Vaccines_Flr 130207A



Snake Anti-Venoms: Venoms, Antibodies and ELISA Kits

Snake venom is highly modified saliva containing zootoxins used by snakes to immobilize and digest prey or to serve as a defense mechanism against a potential predator or other threat. The venom produced by the snake's venom gland apparatus is delivered by an injection system of modified fangs that enable the venom to penetrate into the target. Venoms contain more than 20 different compounds, 100s proteins and polypeptides. A complex mixture of proteins, enzymes, and various other substances with toxic and lethal properties serves to immobilize the prey animal, enzymes play an important role in the digestion of prey, and various other substances are responsible for important but non-lethal biological effects. Some of the proteins in snake venom have very specific effects on various biological functions including blood coagulation, blood pressure regulation, and transmission of the nervous or muscular impulse and have been developed for use as pharmacological or diagnostic tools or even useful drugs. **Snakebite** is an injury caused by a bite from a snake, often resulting in puncture wounds inflicted by the animal's fangs and sometimes resulting in envenomation. **Envenomation** is the process by which venom is injected into animals and humans. Although the majority of snake species are non-venomous and typically kill their prey with constriction rather than venom, venomous snakes can be found on every continent except Antarctica. The number of human fatalities attributed to snake bites varies greatly by geographical area. Although deaths are relatively rare in Australia, Europe and North America, the morbidity and mortality associated with snake bites is a serious public health problem in many regions of the world, particularly in rural areas lacking medical facilities, and each year tens of thousands of people die from snake bites.



Antivenom (or **antivenin** or **antivenene**) is a biological product used in the treatment of venomous bites or stings. Antivenom is created by milking venom from the desired snake, spider or insect. The venom is then diluted and injected into a horse, sheep or goat (**antivenom host**). The subject animal will undergo an immune response to the venom,

producing antibodies against the venom's active molecule which can then be harvested from the animal's blood and used to treat envenomation. Antivenoms can be classified into **monovalent** (when they are effective against a given species' venom) or **polyvalent** (when they are effective against a range of species, or several different species at the same time). The first antivenom for snakes (called an **anti-ophidic serum**) was developed in 1895 against the **Indian Cobra (Naja naja)** by Albert Calmette, a French scientist at Pasteur Institute. Antivenoms for therapeutic use are often preserved as freeze-dried ampoules (powder), but some are available only in liquid form and must be kept refrigerated. The majority of antivenoms (including all snake antivenoms) are administered intravenously; however, stonefish and redback spider antivenoms can be given



Horse Polyvalent Antivenoms (antivenoms mix against 4 snake venoms) are available from Indian companies (Pics L to R: Serum Institute of India, Haffkine Inst., VINS Bio, and Bharat Serum) are made in horses and typically purified (Fab2). Supplied as lyophilized powder; used intravenously.

intramuscularly but are less effective. **Antivenoms bind to and neutralize the venom**, halting further damage, but do not reverse damage already done. Thus, they should be administered as soon as possible after the venom has been injected. Antivenom is typically the sole effective treatment for a life-threatening condition.



Antivenoms preparations are included in the **World Health Organization (WHO) List of Essential Medicines** and should be part of any primary health care package where snakebites occur. Currently, there is an urgent need to ensure availability of safe, effective and affordable antivenoms, particularly to those in developing countries and to improve the regulatory control over the manufacture, import and sale of antivenoms. Antivenom (whole antiserum from horse (equine), sheep (ovine), goat (caprine) or chicken) is usually purified to remove most serum proteins leaving mostly immunoglobulin (Ig's). Whole crude

antibodies may also be subjected to antibody fragmentation to prepare only the **Fab2 fragments** of the antibodies to minimize exposure to the foreign proteins to minimize subsequent hypersensitivity reaction (anaphylaxis) or a delayed hypersensitivity (serum sickness). In the U.S. the only approved antivenom for pit viper (rattlesnake, copperhead and water moccasin) snakebite is based on a purified product made in sheep known as **CroFab** (Crotalidae Polyvalent Immune Fab (Ovine/Sheep)) is the only widely available antivenom indicated for the management of patients with minimal to moderate North American Crotalid envenomation (rattlesnake, water moccasin/cottonmouth and copperheads).



Sheep (Ovine) Polyvalent Antivenoms (mixture of antivenoms against the 3 snake venoms) are available from **CroFab (USA)** and **Bioclon (Mexico)** are made in **Sheep/Ovine** and typically purified (Fab2). Supplied as lyophilized powder; used intravenously.

Snake Anti-Venoms: Venoms, Antibodies and ELISA Kits

ADI has developed antibody ELISA kits to determine the efficacy of various antivenoms. These kits will not only identify the type but the biological potency of the antivenoms. It will also be possible to test the potency of the antivenoms at various stages of production, purification, vialing, lyophilization, and shelf life under various conditions and age. In addition, ADI has produced new antivenoms in rabbits and chicken to further promote research and test new vaccine or antivenom formulations. All ELISA kits are supplied with necessary controls and measure antivenom subtype antibody activity (IgG or IgM) against individual venom. Additional ELISA kits are available to establish residual concentrations of Horse or Sheep IgG-Fc or whole IgG in antivenom formulations containing Fab.

Antivenom Test Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2782

Items	Description	Cat#
Horse Antivenoms (Indian)	Horse Anti-Cobra (Naja Naja) Antibody ELISA Kits	570-100-CHG
	Horse Anti- Indian Krait (Bungarus Caeruleus) Antibody ELISA Kits	570-110-KHG
	Horse Anti- Russell's Viper (Vipera Russelli) Antibody ELISA Kits	570-120-RHG
	Horse Anti- Saw Scaled Viper (Echis Carinatus) Antibody ELISA Kits	570-130-SHG
	Horse Anti-Common (Cobra, Crait, Russels and Saw scaled vipers) Antibody ELISA Kits	570-140-XHG
Sheep/Ovine Antivenoms (N. America)	Sheep Anti-Diamond-back Rattlesnake (Crotalus atrox) Antibody ELISA Kits	570-200-DSG
	Sheep Anti- Pit Viper Copperhead (Agkistrodon contortrix) Antibody ELISA Kits	570-210-CSG
	Sheep Anti- Water Moccasin/cottonmouth pit viper (Agkistrodon piscivorus) Antibody ELISA Kits	570-220-MSG
Horse	Sheep/Ovine Fab ELISA kit (measure total concn of antivenom Fab)	7610-Fab
	Sheep/Ovine Antivenom Fc residue/contamination measurement ELISA	7615-Fc
Sheep	Horse/Equine Fab ELISA kit (measure total concn of antivenom Fab)	7710-Fab
	Horse/Equine Antivenom Fc residue/contamination measurement ELISA	7715-Fc
Papain	Carica papaya Papain ELISA kit (for measuring papain residue/contaminant in therapeutics), 96 tests	800-160-CPP

Antibody and other reagents for research use

Item Description	Cat#
Rabbit Anti-Common Asian venom Antiserum (Cobra, Crait, Russels and Saw scaled vipers)	VNM11-S
Chicken Anti-Common venom Antiserum (Cobra, Crait, Russels and Saw scaled vipers)	VNM12-S
Rabbit Anti-Common N. American (Diamondback, copperhead and Mocaccasin snakes) venom antiserum	CATX15-S
Chicken Anti-Common N. American (Diamondback, copperhead and Mocaccasin snakes) venom antiserum	CATX16-S
Rabbit Anti-Diamondback Rattlesnake (Crotalus atrox) venom antiserum	CATX11-S
Chicken Anti-Diamond-back Rattlesnake (Crotalus atrox) venom antiserum	CATX12-S
Recombinant Protein A+G-Agarose (Aff matrix) for the purification of antivenom Fab	PRTAG25-AS-1
Carica papaya Papain-Agarose aff matrix for the purification of IgG Fab/Fc	CPP16-AS-5
Carica papaya Papain (>12 U/mg) for the purification of IgG Fab/Fc (1 g or bulk available)	CPP15-N-100

Snake_Anti-Venoms_Vaccine_Flr.pdf Rev. 130131A



Keyhole Limpet Hemocyanin (KLH) Vaccine Antibody ELISA Kits

Keyhole limpet hemocyanin (KLH) is a large, multisubunit, oxygen-carrying, metalloprotein found in the hemolymph of the giant keyhole limpet, *Megathura crenulata*, that lives off the coast of California from Monterey Bay to Isla Asuncion off Baja California. Keyhole limpet hemocyanin is an extremely large, heterogeneous glycosylated protein consisting of subunits with a molecular weight of 350,000 and 390,000 in aggregates with molecular weights of 4,500,000-13,000,000. Each domain of a KLH subunit contains two copper atoms that together bind a single oxygen molecule (O₂). The KLH protein is potentially immunogenic yet safe in humans and is therefore highly prized as a vaccine carrier protein. Keyhole limpet hemocyanin (KLH) is used extensively as a carrier protein in the production of antibodies for research, biotechnology and therapeutic applications. Haptens are substances with a low molecular weight such as peptides, small proteins and drug molecules that are generally not immunogenic and require the aid of a carrier protein to stimulate a response from the immune system in the form of antibody production. KLH is the most widely employed carrier proteins for this purpose.



KLH is being tested as a therapeutic vaccine for a variety of cancers, including non-Hodgkins lymphoma, cutaneous melanoma, breast and bladder cancer. These vaccines use specific tumor-associated antigens (Haptens) conjugated to KLH to stimulate the body's immune system to generate anti-tumor immune responses which can destroy tumor cells. The KLH carrier protein is responsible for conferring immunogenicity to the tumor antigens in these vaccines. The rapidly growing interest in therapeutic vaccines (i.e. active immunotherapies) for cancer and the documented efficacy of KLH as a superior carrier protein for cancer vaccines are creating a significant biopharmaceutical market for KLH formulations. Highly purified, clinical grade preparations of KLH,

KLH is also used as model antigen to investigate the effect of adjuvants or to test the integrity of the immune functions. ADI has developed ELISA kits to accurately measure the antibody to KLH (IgG and IgM) or Vacmune/Immucothel (manufactured by Biosyn for clinical applications) in various animals, monkey and human samples. These kits will help assess the efficacy of antigen-KLH conjugate, dose response, effects of adjuvant and overall efficacy of a given vaccine

vacmune or immunotheil, have been made available by Biosyncorp.

The **innate immune system**, also known as non-specific immune system and first line of defense, comprises the cells and mechanisms that defend the host from infection by other organisms in a non-specific manner. This means that the cells of the innate system recognize and respond to pathogens in a generic way, but unlike the adaptive immune system, it does not confer long-lasting or protective immunity to the host. Innate immune systems provide immediate defense against infection, and are found in all classes of plant and animal life. The basal level of ant-KLH IgG and IgM differs under normal and disease conditions.

The major functions of the vertebrate innate immune system include:

- Recruiting immune cells to sites of infection, through the production of chemical factors, including specialized chemical mediators, called cytokines.
- Activation of the complement cascade to identify bacteria, activate cells and to promote clearance of dead cells or antibody complexes.
- The identification and removal of foreign substances present in organs, tissues, the blood and lymph, by specialised white blood cells.
- Activation of the adaptive immune system through a process known as antigen presentation.
- Acting as a physical and chemical barrier to infectious agents.

KLH is also used as model antigen to investigate the effect of adjuvants or to test the integrity of the immune functions. ADI has developed ELISA kits to accurately measure the antibody to KLH (IgG and IgM) or Vacmune/Immucothel (manufactured by Biosyn for clinical applications) in various animals, monkey and human samples. These kits will help assess the efficacy of antigen-KLH conjugate, dose response, effects of adjuvant and overall efficacy of a given vaccine

KLH vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2743

Items Description	Species	Antibody Type IgG Cat#	Antibody Type IgM Cat#	Antibody Type IgA Cat#
KLH Vaccine (antibody) ELISA kits	Human	700-140-KLG	700-145-KLM	
	Mouse	700-130-KLM		
	Rabbit	700-110-KLR		
	Goat	700-100-KLG		
	Chicken	700-120-KLC		
	Monkey	700-170-KLG	700-180-KLM	
	Canine	700-195-KLG	700-190-KLM	

KLH vaccine Related Antibodies and Reagentes kits

Item	Catalog#	Product Description	Product Type
KLH protein and antibodies	KLH11-G	Keyhole Limpet Hemocyanin (KLH)-Agarose affinity gel for removing KLH antibodies	Aff support
	KLH12-M	Monoclonal Anti-KLH (keyhole leimpet hemocyanin) Ascites	Antibodies
	KLH13-S	Goat Anti-KLH (keyhole limpet hemocyanin) antiserum #3	Antiserum
	KLH14-S	Rabbit Anti-KLH (keyhole limpet hemocyanin) antiserum #4	Antiserum
	KLH15-S	Chicken Anti-KLH (keyhole limpet hemocyanin) antiserum #5	Antiserum

KLH_Vaccine_Flr

Rev. 121107A



CpG oligodeoxynucleotides (or CpG ODNs) as Vaccine Adjuvant and ELISA kits

CpG oligodeoxynucleotides (or CpG ODN) are short single-stranded synthetic DNA molecules that contain an unmethylated CG (Cytosine-guanine) di nucleotide in a specific base sequence (CpG motifs). The p refers to the phosphodiester backbone. CpG oligodeoxynucleotides (ODNs) represent a novel pharmacotherapeutic class with profound immunomodulatory properties. These CpG motifs are not seen in eukaryotic DNA, in which CG dinucleotides are suppressed and, when present, usually methylated, due to this they are considered pathogen-associated molecular patterns (PAMPs). The CpG PAMP is recognized by the pattern recognition receptor (PRR) Toll-Like Receptor 9 (TLR9), which is constitutively expressed only in B cells and plasmacytoid dendritic cells (pDCs) in humans and other higher primates. Unmethylated CpG ODNs (18–24 bp in length) possess immunomodulatory properties similar to bacterial DNA and they act as immuno stimulants. The immunostimulatory properties of CpGs include induction of a Th1-type response with prominent release of IFN- α , IL-12, and IL-18.

Synthetic CpG have a partially or completely phosphorothioated backbone instead of the typical phosphodiester backbone and a poly G tail at the 3' end, 5' end, or both. Numerous sequences have been shown to stimulate TLR9 with variations in the number and location of CpG dimers, as well as the precise base sequences flanking the CpG dimers. CpG ODNs are classified into 5 classes, based on their sequence, secondary structures, and effect on human peripheral blood mononuclear cells (PBMCs). The five classes are **Class A (Type D)**, **Class B (Type K)**, **Class C**, **Class P**, and **Class S**. Three major classes of immunostimulatory CpG-ODNs are well characterized according to their in vitro activities and chemical compositions. **Class A** stimulate the production of large amounts of Type I interferons, the most important one being IFN α , and induce the maturation of pDCs. They are also strong activators of NK cells through indirect cytokine signaling. **Class B** ODN are strong stimulators of human B cell and monocyte maturation. They stimulate the maturation of pDC to a lesser extent than Class A ODN and very small amounts of IFN α . **Class C** ODN combine features of both types A and B. They contain a complete phosphorothioate backbone and a CpG-containing palindromic motif. They induce strong IFN- α production from pDC and B cell stimulation.

Several groups have studied the sequence requirements, specificity, signaling pathways and kinetics of the TLR (Toll-like receptor) 9 suppression by 'inhibitory DNA motifs', which led to a revised classification of **inhibitory ODNs**. **Class I: G-stretch ODNs**: TLR9-specific competitors, some iODNs may also affect TLR7 and TLR8 signaling. **Class II: ODNs with telomeric repeats**: TLR-independent inhibitors of STAT signaling (cellular uptake via an "ODN receptor"?). **Class III: Inhibitors of DNA uptake** in a sequence independent manner **Class IV: Long phosphorothioate ODNs** as direct competitors of TLR9 signaling in a sequence independent manner.

Product ordering Information (Data sheets and Prices are posted at the website)

Items	Description	TLR Type	Unlabeled Cat #	Biotin Conj. Cat #	Negative Control*
ODN1585	ODN 1585-Type A murine TLR9 agonist, Antigen grade; 5'-ggGGTCAACGGTTGAgggggg-3' (20 mer)	Murine TLR9 agonist	ODN1585-1 ODN1585-5	ODN1585-B	ODN1585-1NC ODN1585-5NC
ODN 1668	ODN 1668- Type B murine TLR9 Agonist, Antigen grade; 5'-tccatgacggttcctgatgct-3' (20 mer)	Murine TLR9 agonist	ODN1668-1 ODN1668-5	ODN1668-B	ODN1668-1NC ODN1668-5NC
ODN 1826	ODN 1826- Type B murine TLR9 Agonist, antigen grade; 5'-tccatgacggttcctgacggtt-3' (20 mer)	Murine TLR9 agonist	ODN1826-1 ODN1826-5	ODN1826-B	ODN1826-1NC ODN1826-5NC
ODN 2006	ODN 2006 -Type B-human TLR9 agonist, antigen grade; 5'-tcgctgtttgtcggtttgtcggtt-3' (24 mer)	Human TLR9 agonist	ODN2006-1 ODN2006-5	ODN2006-B	ODN2006-1NC ODN2006-5NC
ODN 2007	ODN 2007-Type B bovine/porcine TLR9 agonist, antigen grade; 5'-tcgctgtttgtcggtttgtcggtt-3' (22 mer)	Bovine TLR9 agonist	ODN2007-1 ODN2007-5	ODN2007-B	ODN2007-1NC ODN2007-5NC
ODN 2216	ODN 2216-Type A human TLR9 Agonist, antigen grade, 5'-ggGGAACGATCGTCgggggg-3'(20 mer)	Human TLR9 agonist	ODN2216-1 ODN2216-5	ODN 2216-B	ODN 2216-1NC ODN 2216-5NC
ODN 2336	ODN 2336-Type A human specific TLR 9 agonist, antigen grade; 5'-gggGACGACGTCGTGgggggg -3' (21 mer)	Human TLR9 agonist	ODN2336-1 ODN2336-1	ODN2336-B	ODN2336-1NC ODN2336-5NC
ODN 2395	ODN 2395-Type C human/murine TLR9 agonist, antigen grade. 5' tcgtcggtttcggcgcgcgcgcg-3' (22 mer)	Human TLR9 agonist	ODN2395-1 ODN2395-5	ODN2395-B	ODN2395-1NC ODN2395-1NC
ODN M362	ODN M362-Type C human/murine TLR9 agonist, antigen grade; 5'-tcgtcggttcggaacgacggttgat-3' (25 mer)	Human TLR9 agonist	ODNM362-1 ODNM362-1	ODNM362-B	ODNM362-1NC ODNM362-5NC
AT-ODN-1	AT ODN-Non-CpG AT rich ODN. TLR9 agonist, Antigen grade. 5'-tataattttaattccaaga-3' (20 mer)	TLR9 agonist	ATODN1-1	4	4
AT-ODN-2	AT ODN-Non-CpG AT rich ODN. TLR9 agonist, Antigen grade 5'-tataattttccaactagc-3' (22 mer)	TLR9 agonist	ATODN2-1	4	4
AT-ODN-2	AT ODN-Non-CpG AT rich ODN. TLR9 agonist, Antigen grade; 5'-ttaacaattttccaaga-3' (22 mer)	TLR9 agonist	ATODN3-1	4	4
Neutral ODN	Control for inhibitory ODNs. No agonistic or Antagonist activity, Antigen grade; 5'-tgctcctggagggtgtgt-3' (18 mer)	Control	ODN-NT-1	4	4
ODN BW006	ODNBW006 CpG ODN (contains structure type B sequence at 5' and Type A at the 3' end), antigen grade; 5'-tcgacggttcgctgcttcgcttc-3' (23 mer)		ODN006-1	4	4



CpG oligodeoxynucleotides (or CpG ODNs) as Vaccine Adjuvant and ELISA kits

Items	Description	TLR Tyep	Unlabeled Cat #	Biotin Conj. Cat #	Negative Control*
ODN 2088	ODN 2088- Class I Murine TLR9 Antagonist, antigen grade; 5'-tcctggcggggaagt-3' (15 mer)	Murine TLR9 Antagonist	ODN2088-1 ODN2088-1	4	ODN2088-1 ODN2088-1
ODN 4084-F	ODN 4084-Type B Inhibitory TLR9 Antagonist, antigen grade; 5'-cctggatgggaa-3' (15 mer)	TLR9 Antagonist	ODN4084F-1 ODN4084F-5	4	ODN4084F-1 ODN4084F-5
ODN INH-1	ODN INH-1 -Class R (restricted) inhibitory ODN- TLR 9 Antagonist, antigen grade; 5'-cctggatgggaattcccatccagg-3' (23mer)	TLR9 Antagonist	ODNIHN1-1	4	4
ODN INH-47	ODN INH-47- Class R (restricted) inhibitory ODN- TLR 9 Antagonist, antigen grade, 5'-tatggatttaattaaaatccata-3' (23mer)	TLR9 Antagonist	ODNINH47-1	4	4
ODN TTAGGG	ODN TTAGGG-Inhibitory ODN Human TLR9 antagonist, Antigen grade; 5'-tttaggttaggttaggttaggg-3' (25 mer)	Human TLR9 antagonist	ODNTT-1	4	ODNTT-1NC
G-ODN	G-ODN Murine TLR9 antagonist, Antigen grade; 5'-ctcctattgggggtttcctat-3' (21 mer)	Murine TLR9 antagonist	GODN-1	4	4
Core-iODN	Inhibitory ODN class I prototype (TLR7 and TLR8), antigen grade; 5'-tcctggagggg-3' (11mer)	TLR9 and TLR7 antagonist	CIODN-1	4	4
Super-iODN	Inhibitory ODN- class I/II hybrid (TLR7 and TLR8), antigen grade, 5'-cctcaatagggtgagggg-3' (18mer)	TLR9 and TLR7 antagonist	SIODN-1	4	4
Dual-iODN	Inhibitory ODN-prototype class I (TLR9 and TLR7 antagonist), antigen grade; 5'-tgctcctggaggggtgt-3' (18mer)	TLR9 and TLR7 antagonist	DIODN-1	4	4

Notes: 1. Bases in capital are phosphodiester and those in lower case are phosphorothioate. Palindromic sequences are underlined. 2. Bases depicted in *italics* show AT-ODN sequence. 3. Negative control contains GpC nucleotides instead of CpG. 4. Contact ADI to place a special order for Biotin or FITC Conjugates.

ELISA Kits for the study of Adjuvant effect on antibody response

The main function of adjuvants (conventional oil-based, special formulation or ODNs) is to enhance antibody response to a given antigen. The antibody levels or titer in the host species (mouse, rat, rabbit, G. pig, Ferret, Hamster, monkey or human etc) is typically measure by ELISA. ADI provides several species specific [ELISA kits to measure antibody titer](#). These kits contain all necessary reagents, except user's specific antigen, for about 1000 tests. Please see details at:

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2473

ADI also has ELISA kit for IgG, IgM, IgA, IgE or individual IgG isotypes (IgG1, 2a, 2b, IgG3) in serum or plasma for mouse, rat, human etc.

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2446

ELISA Kits for the study of Adjuvant effect on antibody response using model antigens

Several model proteins have been used as model antigens (Bovine serum albumin/BSA or HSA, ovalbumin or OVA, Keyhole limpet hemocyanins/KLH, thyroglobulin, DNP-KLH/Albumin or Tetanus Toxoid or TTX or Diphtheria Toxoids. Adjuvants (conventional or ODN-based) have been used to study antibody response to a model antigen in a given species of host. ADI has specific antibody ELISA kits for these model antigens. Please see available kits at:

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2449

ELISA Kits to measure ODN-induced anti-dsDNA or anti-ssDNA antibody

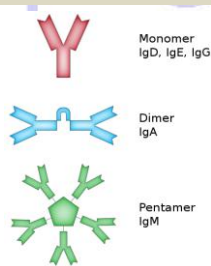
It is possible that some DNA-sequences (ODNs) when used as adjuvant may invoke anti-DNA antibodies. The presence of absence of anti-DNA antibodies must be investigated if any ODNs is intended for vaccines.

http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2448

ODN_Vaccine_Flr rev 121107A



The **immune system** is a system of biological structures and processes within an organism that protects against disease. To function properly, an immune system must detect a wide variety of agents, from viruses to parasitic worms, and distinguish them from the organism's own healthy tissue. If a pathogen breaches these barriers, the **innate immune system** provides an immediate, but non-specific response. Innate immune systems are found in all plants and animals. If pathogens successfully evade the innate response, vertebrates possess a second layer of protection, the **adaptive immune system**, which is activated by the innate response. Here, the immune system adapts its response during an infection to improve its recognition of the pathogen. This improved response is then retained after the pathogen has been eliminated, in the form of an **immunological memory**, and allows the adaptive immune system to mount faster and stronger attacks each time this pathogen is encountered. Disorders of the immune system can result in **autoimmune diseases**, inflammatory diseases and cancer. White blood cells or **immune cells** are cells of the immune system involved in defending the body against both infectious disease and foreign materials. **Immunoglobulins (Ig's) or antibodies** are major components of the immune system. Antibodies are secreted by a type of white blood cell called a plasma cell. Activated B cells differentiate into either antibody-producing cells called plasma cells that secrete soluble antibody or memory cells that survive in the body for years afterward in order to allow the immune system to remember an antigen and respond faster upon future exposures. **T helper cells** (Th cells) are a sub-group of lymphocytes that play an important role in the immune system, particularly in the adaptive immune system. They are essential in **B cell antibody class switching**, in the activation and growth of **cytotoxic T cells**, and in maximizing bactericidal activity of phagocytes such as macrophages.



Five different antibody isotypes (IgA, IgD, IgE, IgG, and IgM) are known in mammals. IgG subclasses are defined by the type of heavy chains. Antibody isotypes perform different roles and help direct the appropriate immune response for each different type of foreign object they encounter. Immunoglobulin class switching (CSR) is a biological mechanism that changes a B cell's production of antibody from one class to

another. There are four IgG subclasses in humans, named in order of their abundance in serum: IgG1 (66%), IgG2 (23%), IgG3 (7%), and IgG4 (4%). The IgG2 in mouse is subdivided into IgG2a and IgG2b. Antibodies can occur in two physical forms, a soluble form that is secreted from the cell, and a membrane-bound form that is attached to the surface of a B cell and is referred to as the B cell receptor (BCR). The basic functional unit of each antibody is an immunoglobulin (Ig) monomer; secreted antibodies can also be dimeric with two Ig units as with IgA or pentameric IgM. Antibodies are ~150 kDa globular plasma proteins containing two identical class γ heavy chains of about 50 kDa and two identical light chains of about 25 kDa. Each IgG has two antigen binding sites. Representing approximately 75% of serum immunoglobulin in humans, IgG is the most abundant antibody isotype found in the circulation allowing it to control infection of body tissues. By binding many kinds of pathogen—representing viruses, bacteria, and fungi—IgG protects the body from infection. It does this via several immune mechanisms: IgG-mediated binding of pathogens causes their immobilization and binding together via agglutination; IgG coating of pathogen surfaces allows their recognition and ingestion by phagocytic immune cells; IgG activates the classical pathway of the complement system, a cascade of immune protein production that results in pathogen elimination; IgG binds and neutralizes toxins. IgG also plays an important role in **antibody-dependent cell-mediated cytotoxicity (ADCC)**. It is associated with **Type II and Type III Hypersensitivity**. IgG antibodies are generated following class switching and maturation of the antibody response and thus participate predominantly in the secondary immune response. It is

the only isotype that can pass through the human placenta, thereby providing protection to the fetus in utero.

The functional activity of antibodies also depends on Ig's isotypes. IgM is the first antigen receptor (BCR) made during B cell development and the first antibody secreted during an immune response. Four subisotypes of **IgG** in humans have somewhat varied biological functions. IgG is made later in a primary response than **IgM**, but it is produced more rapidly in a memory response. IgG is the predominant serum antibody with the longest half-life. **IgA** is present in serum and predominates in mucosal secretions: breast milk, saliva, tears, and respiratory, digestive, and genital tract mucus. Secretory IgA provides a first-line defense where pathogens enter the body. More IgA is made than any other isotype. IgG1 and IgG3 are most effective in complement binding and activation, and IgG2 may contribute to protection against disease. Furthermore, affinity differences have been found in antibodies with similar antigen-binding specificities but different IgG isotypes. IgG1 and IgG3 are mainly directed at protein antigens, whereas IgG2 is predominantly found after vaccination with polysaccharide antigens in adults. **IgE** produced in response to parasites and to allergens. Immunoglobulin D (**IgD**) is an antibody isotype that makes up about 1% of proteins in the plasma membranes of immature B-lymphocytes where it is usually co-expressed with another cell surface antibody called IgM. IgD is also produced in a secreted form that is found in very small amounts in blood serum.

T cell cytokines are responsible for class switching. In the mouse:
Th1 response mediated by macrophage (Cytokines: IFN- γ /IL-10/IL-2): Isotypes (IgG2a)
Th2 response (Cytokines: IL-4, IL-5/6/10/13): Isotypes (IgG1, IgE)
Treg response (Cytokines: TGF β) Isotypes (IgG2b, IgA)

Antibody response or isotype of an antibody is also influenced by the type of antigen (protein, bacteria, virus, or small molecule) immunization routes (intravenous, subcutaneous, intradermal etc), antigen dose and duration (amount of the antigen and frequency of exposure, and multiplicity of immunization) and the presence of other agents in the antigens (proteins, DNA, and adjuvants etc). Adjuvants (Squalene, Alhydrogel, Incomplete Freund's adjuvant) primarily invoke Th2 response whereas TLR5 agonist (Flagellin, CpG ODNs type A/B/C, Poly I/C or dsDNA induce Th1 response.

A **vaccine** is a biological preparation that improves immunity to a particular disease. A vaccine typically contains an agent that resembles a disease-causing microorganism, and is often made from weakened or killed forms of the microbe (bacteria or virus), its toxins or one of its antigenic proteins. The immune system recognizes vaccine agents as foreign, destroys them, and "remembers" them. When the diseases causing or virulent version of an agent is encountered, the body recognizes the antigenic proteins on the bacteria or virus, and thus is prepared to respond, by (1) neutralizing the target agent before it can enter cells, and (2) by recognizing and destroying infected cells before that agent can multiply to vast numbers. This is part of the **adaptive (or acquired) immune response**. This process of acquired immunity is the basis of **vaccination**. Success of a given vaccine depends upon its ability to produce high affinity, neutralizing antibodies with minimum exposure of the active vaccine ingredients (whole cells or bacteria or purified protein) and to provide long-term immunity. Therefore, it is essential to study how antibody response and isotype are influenced by a given agent. **Ovalbumin (OVA)** also used as allergenic antigen, **Bovine serum albumin (BSA)**, used model protein antigen) and **Dinitrophenol (DNP)**, as hapten or small molecule antigen) have been used as "model antigens" to study antibody response. In addition, these model antigens have also served to examine the immune-status of an individual or animal during a disease or as a result of exposure to a given drug.

ADI has developed ELISA kits for various model antigens (ovalbumin, BSA, DNP, and DNA) to study basic mechanism of isotype switching and factors affecting it.

Vaccine Model Antigens (Ovalbumin, DNP, and DNA) ELISA Kits and Reagents

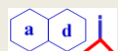
(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=2719

ELISA type	Antibody Type	Mouse Cat#	Rat Cat#	Monkey Cat#	Rabbit Cat#
Anti-Ovalbumin (OVA) Antibody ELISA Kits	Total Ig's(G+A+M)	600-100-OGG	610-100-OGG	670-130-OVM	620-100-OGG
	IgG	600-105-OGG			
	IgG1	600-110-OG1			
	IgG2a	600-120-O2A			
	IgG2b	600-130-O2B			
	IgG3	600-140-OG3			
	IgA	600-150-OGA			
	IgM	600-170-OGM	610-120-OGM		
Anti-Dinitrophenol (DNP) Antibody ELISA Kits	IgE	600-165-OGE	610-110-OGE		
	Ig's (G+A+M)	640-200-DGG	650-110-DGG		
	IgG	640-210-DGG			
	IgM	640-220-DGM	650-120-DGE		
Anti-dsDNA Antibody ELISA	IgE	640-200-DGE	650-100-DGM		
	Total Ig's(G+A+M)	5110		670-100-DNM	
	IgG	5120	650-130-DDN		
	IgG1	5120-1			
	IgG2a	5120-2a			
	IgG2b	5120-2b			
	IgG3	5120-3			
	IgA	5120-A			
Anti-ssDNA Antibody ELISA	IgM	5130			
	IgE	5120-E			
	Ig's (G+A+M)	5310			
	IgG	5320	650-330-DSN		
	IgM	5330			

Vaccine Model Antigens (Ovalbumin, DNP, and DNA) Antibodies and Reagents

Items	Catalog#	ProdDescription	ProductType
DNP	DNP11-S	Mouse Anti-Dinitrophenyl (DNP) antiserum	Antiserum
	DNP13-A	Rabbit Anti-Dinitrophenyl (DNP) aff pure	Antibodies
	DNP14-M	Mouse Anti-Dinitrophenyl (DNP IgE, aff pure	Antibodies
	DNP15-M	Mouse Anti-Dinitrophenyl (DNP IgG1, aff pure	Antibodies
	DNP15-MW	Mouse Anti-Dinitrophenyl (DNP IgG1, aff pure (w/o azide)	Antibodies
	DNP25-N-10	Dinitrophenyl (DNP)-KLH protein Conjugate	Pure Protein
	DNP35-AS-1	Dinitrophenyl (DNP)-BSA protein Conjugated to Agarose (affinity matrix)	Pure Protein
	DNP35-BTN-10	Dinitrophenyl (DNP)-Biotin-BSA protein Conjugate	Pure Protein
	DNP35-N-10	Dinitrophenyl (DNP)-BSA protein Conjugate	Pure Protein
	DNP55-N-10	Dinitrophenyl (DNP)-Ovalbumin (OVA) protein Conjugate	Pure Protein
	DNP65-N-10	Dinitrophenyl (DNP)-human serum albumin (HSA) protein Conjugate	Pure Protein
	DNP70-N-10	Dinitrophenyl (DNP)-Chicken Gamma Globulin (CGG) Conjugate	Pure Protein
	DNP75-N-10	Dinitrophenyl (DNP)-rabbit serum albumin (RSA) protein Conjugate	Pure Protein
	DNP80-N-10	Dinitrophenyl (DNP)-Sheep serum albumin (SSA) protein Conjugate	Pure Protein
	DNP85-N-10	Dinitrophenyl (DNP)-Lipopolysaccharide (LPS) Conjugate	Pure Protein
	DNP90-N-1	Dinitrophenol (2,4-DNP), >98% pure (protein analyses grade)	Pure Protein
Ovalbumin (OVA)	CAF11-S	Chicken Allantoic fluid (SPF eggs) tested -ve for various chicken viruses	Kit
	CSNC11-S	Chicken serum (SPF) tested -ve for various chicken viruses	Kit
	GSH15-N-100	Glutathione-Ovalbumin conjugate for ELISA	Pure protein
	GSH16-N-100	Glutathione-Bovine serum albumin (BSA) conjugate for ELISA	Pure protein
	NITT16-N	Nitrated egg ovalbumin protein for ELISA or controls (in PBS)	Pure Protein
	OVA11-A	Rabbit Anti-chicken Egg Ovalbumin (OVA) IgG, aff pure	Antibodies
	OVA11-AS	Anti-chicken egg ovalbumin IgG-agarose (aff matrix)	Aff support
	OVA11-S	Rabbit Anti-chicken Egg Ovalbumin IgG	Antiserum
	OVA13-M	Monoclonal Anti-chicken Egg Ovalbumin ascites (IgG1)	Antibodies
	OVA14-S	Mouse polyclonal Anti-chicken Egg Ovalbumin ascites (IgA+G+M+E)	Antiserum
	OVA15-AS	Chicken Egg Ovalbumin-agarose (aff matrix) to remove anti-ovalbumin Ig's	Aff support
	OVA15-N-1000	Chicken egg ovalbumin protein (ELISA, antigen, allergy grade)	Rec. Protein
	OVA16-S	Rat polyclonal Anti-chicken Egg Ovalbumin serum (IgA+G+M+E)	Antiserum

Vaccine_Model_Ovalbumin_DNP_Flr Rev. 121030A



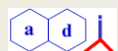
Bioprocess/Vaccine (HCP) Contaminants Detection and Removal ELISA Kits

Vaccines are among the greatest achievements of modern medicine. Vaccines are derived from either whole cells (bacteria or virus; live or attenuated) grown in chick embryo or in mammalian host cells. Subunit vaccines may be recombinant proteins expressed in *E. coli* or year or other host cells. Depending upon the source of the material, purified active vaccine components may still have remnants of the host (cellular proteins or host cell proteins or HCP, culture medium proteins (Fetal bovine serum or BSA, or Fetuin etc). These extraneous proteins or components are typically known host cell contaminants. FDA requires that the finished vaccine material be tested for the appropriate contaminant and their concentration kept to an acceptable level. Many additives or excipients (Proteins, bacteriostatic agents or adjuvants) are added to stabilize the vaccines or to enhance antigenicity (adjuvants). Elevated levels of the contaminants may be allergenic (ovalbumin) or carry risk of prophylaxis due to the production of antibodies to foreign proteins or risk of animal or human derived diseases.

Excipient/Contaminants	Use	Vaccine (Brand)
Albumin Egg (Ovalbumin or OVA)	Rabies Virus Grown chick embryo fibroblast	Rabies (RabAvert)
Albumin , Human serum (HSA)	Growth medium, protein stabilizer	Measles (attenuvax), MMR (MMR-II), Mumps (Mumpsavax), Rabies (Imovax), Rubella (Meruvax)
Albumin , Bovine serum (BSA)	Growth medium, protein stabilizer	Hepatitis A (Harvix, Vaqta); Measles (Attenuvax), MMR (MMR-II), Mumps (Mumpsavax), Rabies (Imovax, Rabavert), Rubella (Meruvax), Vaccinia (Dryvax), Varicella (Varivax)
Egg Proteins or Ovalbumin	HCP contaminants	Influenza (all brands), Yellow Fever (YF-Vax)
Gelatin	Stabilizer in free-drying or solvent	DTaP (Tripedia), Influenza (Fluzone), JEV (JEVax), Measles (Attenuvax), Mumps (Mumpsavax), Rubella (Meruvax II), MMR (MMR-II), Rabies (RabAvert), Typhoid oral (Vivotif), Varicella (Varivax), Yellow fever (YF-vax)
MRC-5 cells /proteins	HCP contaminants	Hepatitis A (Harvix, vaqta), Hepatitis A-B (Twinrix), Rabies (Imovax), Poliovirus inactivated (Poliovax), Varicella (Varivax)
Yeast proteins	Growth medium	DTap-Heb B-IPV (Pediatrix), Hepatitis A-B (Twinrix), Hepatitis B (Engerix-B, Recombivax HB), Hib (HibTiter), Hib-hepatitis (Comvax); medium for growing <i>C. diptheriae</i> strain C7 for CRM197 protein and for conjugation to polysaccharides (HibTiter, Prevnar)
Bovine Proteins		DTaP-Hep B IPV (Poliovirus component, Pediatrix), Pneumococcal (Pneumovax-23), Typhoid oral (Vivotif)
Bovine Calf Serum or FCS	Cells grown in media containing FCS (BSA or Fetuin as HCP contaminants)	
E. Coli	<i>E. coli</i> HCPs contaminants for vaccine components expressed and/or purified from <i>E. coli</i> cells	
Chinese Hamster Ovary Cells (CHO)	CHO HCPs contaminants for vaccine components expressed and/or purified from CHO cells	
Protein A/G	Protein A/G used as affinity matrix to purify recombinant proteins (antigens) containing Fc-fusion protein partner or recombinant antibodies or monoclonal purified using Protein A/G affinity matrices	
Plasmid DNA	Hepatitis A (Vaqta) (Prototype for DNA-Vaccines)	

ADI has developed simple, rapid, and highly sensitive ELISA kits to detect and measure various protein contaminants (BSA, HSA, Ovalbumin, Protein A, Protein G) and HCPs (*E. coli*, CHO cells). ELISA kits are available to detect the antibodies to these contaminants in animals and humans. ADI has also developed reagents and methods to remove the bioprocess contaminants.

Species	Product Description	Cat#
Chicken/Chick Embryo	Ovalbumin ELISA Kit for the measurement of Ovalbumin contamination in vaccines made in chick embryo	6050
	Chicken Egg Ovalbumin ELISA Kit (for high concn of ovalbumin such as eggs)	6010
	Chicken IgG ELISA for vaccine components grown in chick embryo	6020
Bovine Transgenic animals	Bovine Albumin (BSA) ELISA Kit (for high concn of BSA such as in fetal bovine serum or serum)	8000
	Bovine Albumin (BSA) ELISA Kit (for measuring residual BSA in vaccines)	8100
	Bovine Lactoferrin ELISA Kit for measuring residual protein in the milk of transgenic animals	8090
	Bovine IgG ELISA kit for measuring residual protein in vaccine grown in bovine serum or transgenic	8010
	Bovine Transferrin ELISA kit for measuring residual protein in vaccine grown in transgenic animals	8070
HSA	Human Serum Albumin (HSA) ELISA Kit for measuring HSA in vaccines	1210
Pig/Swine (Transgenic)	Pig Albumin ELISA kit for measuring albumin in recombinant protein derived from transgenic animals	9000
	Pig IgG ELISA kit for measuring IgG in recombinant protein derived from transgenic animals	9020
Goat/Sheep (Transgenic)	Goat IgG ELISA kit	7520
	Sheep IgG ELISA kit	7620
HCP	E Coli proteins (5 strains) host cell proteins (HCPs) ELISA kit	800-130-ECP
	Chinese Hamster Ovary Cell (CHO) host cell Proteins (HCPs) ELISA kit	800-140-CHO
	SP20 Mouse Myeloma Cells (SP20) Proteins host cell Proteins (HCPs) ELISA Ki	800-150-SP2
	Protein-A ELISA Kit, 96 tests, Quantitative	800-110-PRA
	Protein-G ELISA Kit, 96 tests, Quantitative	800-120-PRG
GST	Glutathione Transferase (GST -fusion protein) ELISA Kit	800-400-GST
GFP	Green Fluorescent Protein (GFP -fusion protein) ELISA Kit	800-420-GFP
His-tag	Histidine-tag (poly-His/Hisx6) Protein (His-tag -fusion protein) ELISA Kit	800-440-HIS



Bioprocess/Vaccine (HCP) Contaminants Detection and Removal ELISA Kits

ADI has also developed ELISA kits to monitor the presence of antibodies to various Bioprocess contaminants or additives to see if they actually invoke an antibody response when injected into animals or humans.

Items Description	Species	Antibody Type Ig's Cat#	Antibody Type IgG Cat#	Antibody Type IgM Cat#
E. coli proteins/contaminants antibody ELISA	Mouse	500-100-ECP		
	Rabbit	500-120-ECP		
Bovine Serum Albumin (BSA) antibody ELISA	Goat		710-100-BSG	
	Rabbit		710-110-BSR	
	Chicken		710-120-BSC	
	Mouse		710-130-BSM	
	Human		710-140-BSM	
Glutathione Transferase (GST, Fusion protein) Antibody ELISA	Goat		720-100-GSG	
	Rabbit		720-110-GSR	
	Chicken		720-120-GSC	
Bovine Fetuin (calf serum contaminant) Antibody ELISA	Rabbit	800-170-BFR		
	Mouse	800-180-BFM		

Antibodies & Kits to remove small scale bioprocess contaminants

It is not only possible to detect and measure various bioprocess contaminants (purified proteins such as BSA, HSA, Protein A/G, Fetuin, Transferrin etc or complex components such as serum or chick embryo allantoic fluid) but also used specific affinity matrices to remove them.

Contaminant	Product Description	Cat#	Type
Albumin	Albumin-X, Albumin (multiple species) removal kit (sufficient to remove 2-3 mg albumin or process ~50-100 ul serum; 10 mini-columns ~250 ul resin)	700-300-10	Kit
	Albumin (Human, Mouse, rat, bovine and others) removal kit (synthetic dye based matrix; sufficient to remove 20-40 mg BSA from Bioprocessed material), 2 ml	800-200-BSA	Kit
	Bovine serum albumin (BSA) removal kit (Antibody based aff matrix; sufficient to remove 1-2 mg BSA from Bioprocessed material), 2 ml aff column	800-302-BSA	Kit
	Bovine Serum albumin-agarose (aff matrix)	BSA15-AS	Aff support
Fetuiins	Monoclonal Anti-Human Fetuin A (Alpha-2 HS-Glycoprotein, AHSG, A2HS) IgG	FETA13-M	Antibodies
	Monoclonal Anti-Mouse Fetuin A (Alpha-2 HS-Glycoprotein, AHSG, A2HS) IgG	FETA14-M	Antibodies
	Purified human serum Fetuin A (Alpha-2 HS-Glycoprotein, AHSG, A2HS) protein	FETA25-N-1	Pure protein
	Anti-Bovine Fetuin (Alpha-2 HS-Glycoprotein, AHSG, A2HS) antiserum	FETB11-S	Antibodies
	Anti-Human recombinant Fetuin A (Alpha-2 HS-Glycoprotein, AHSG, A2HS) IgG	FETB12-A	Antibodies
	Bovine Fetuin (Alpha-2 HS-Glycoprotein, AHSG, A2HS), BSE-TSE free (New Zealand Origin), Low endotoxin	FETB15-N-1	Pure Protein
	Bovine Fetuin (Alpha-2 HS-Glycoprotein, AHSG, A2HS), BSE-TSE free (Australian Origin), Low endotoxin	FETB16-N-1	Pure Protein
Chick Embryo/Allantoic Fluid	Chicken Allantoic Fluid host cell protein's ELISA kit, 2x 96 tests, Quantitative	810-100-CAF	Kit
	Chicken Allantoic fluid (SPF eggs) tested -ve for various chicken viruses, Salmonella and Mycoplasma (suitable for chicken virus ELISA kits)	CAF11-S	control
	Chicken serum (SPF) tested -ve for various chicken viruses, Salmonella and Mycoplasma (suitable for chicken virus ELISA kits)	CSNC11-S	control
	Rabbit Anti-chicken egg ovalbumin IgG-agarose (aff matrix)	OVA11-AS	Aff support
	Rabbit Anti-chicken Egg Ovalbumin IgG	OVA11-S	Antiserum
	Monoclonal Anti-chicken Egg Ovalbumin ascites (IgG1)	OVA13-M	Antibodies
	Ovalbumin-agarose (aff matrix) to remove anti-ovalbumin Ig's from samples	OVA15-AS	Aff support
	Chicken egg ovalbumin protein (ELISA, antigen, allergy grade)	OVA15-N-1000	Rec. Protein
FBS	Rabbit Anti-Fetal Bovine Serum (FBS) protein IgG	FBS11-A	Antibodies
	Rabbit Anti-FBS protein IgG-Agarose affinity matrix to remove fetal bovine serum	FBS12-AS	Aff Support

Bioprocess_Contaminants_HCPs_flr 130207A

