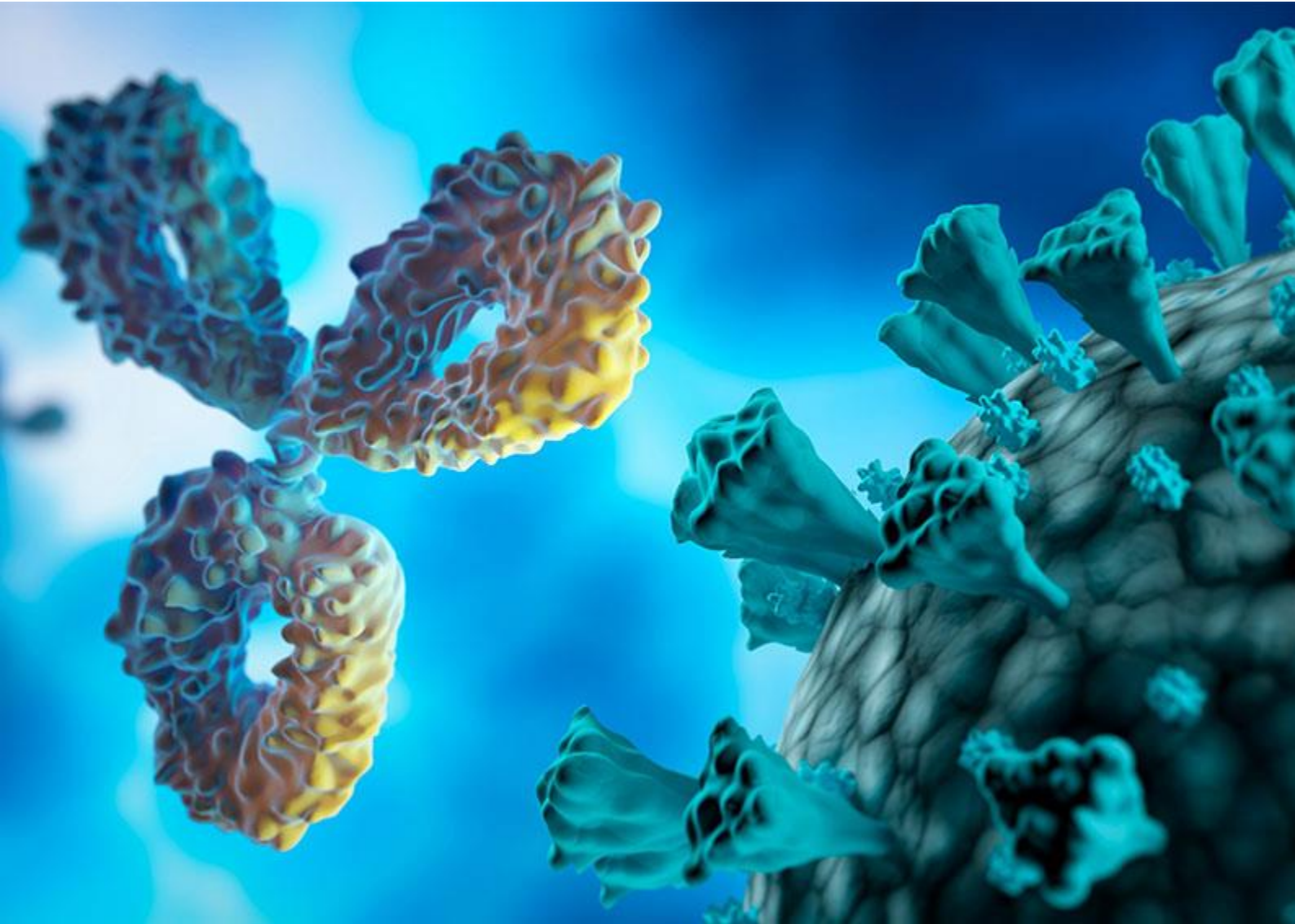


Influenza Virus Antibodies



Influenza Antibodies for Vaccine Research and Immunoassay Development

Creative Diagnostics provides highly sensitive and specific antibodies against different subtypes of influenza virus.

CD Creative Diagnostics[®]

Content

Influenza A Antibodies.....	3
Product List.....	4
Influenza B Antibodies.....	7
Product List.....	7
Influenza Neutralizing Antibodies.....	8
Antibodies for Influenza Antigen Test	9
Antibody Pairs for Pan Influenza A NP Detection	9
Antibody Pairs for Pan Influenza B NP Detection	10
Features	10
Contact Us	10

Flu, or influenza, is a contagious respiratory illness caused by influenza viruses. It spreads worldwide through the air via coughs or sneezes or through contact with infected surfaces. Due to the limited proofreading activity of the viral polymerase, the antigenic drift flu strains continually emerge year by year.

Influenza viruses are members of the Orthomyxoviridae family. The viral genome comprises eight negative-sense, single-stranded viral RNA (vRNA) segments. There are four genera of this family: types A, B, C, and Thogotovirus, of which, however, only genera A and B are clinically relevant for humans. The eight genome segments of influenza A and B viruses are loosely encapsidated by the nucleoprotein (NP). NP is a structural protein that is one of the main determinants of the virus type. The polymerase complexes consisting of the three polymerase proteins PB1, PB2, and PA are located at the ends of the nucleocapsids. These helical capsids are encircled by the M1 matrix protein and by a host-derived lipid bilayer envelope in which the virus surface glycoproteins haemagglutinin (HA) and neuraminidase (NA), as well as the M2 matrix protein, are embedded.

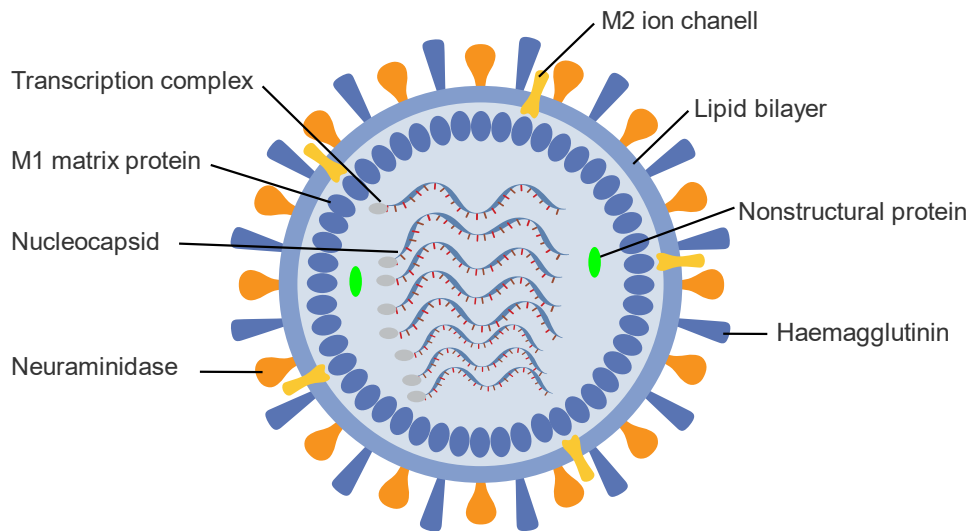


Fig. 1 Influenza virus structure

- Hemagglutinin (HA): The HA protein is processed into HA1 and HA2 by serine proteases during viral replication, which gives virus infectivity. The HA2 is involved in the fusion of viral envelope with host cell membrane, while the HA1 contains the receptor binding and antigenic sites. It is also an antigen that can be recognized by the immune system.
- Neuraminidase (NA): It is capable of destroying receptor, cleaving terminal sialic acid residues from cell-surface glycoproteins and gangliosides to release offspring virus from the host cell. Additionally, the NA also removes sialic acid residues from the virus envelope, avoiding the aggregation of viral particles to enhance infectivity.
- Matrix protein M1 (M1): M1 interacts with both viral RNA and nucleoprotein, bringing them together within the RNP complex. It also associates with NEP, mediating the M1-RNP export via nucleoporins into the cytoplasm.
- Matrix ion channels M2 (M2): It is the target of the amantadine class of anti-influenza drugs, which inhibit ion channel activity and prevent virus from unshelling. As a surface protein, it can be a vaccine component.
- Nuclear export protein (NEP/NS2): NEP, together with M1, is involved in the translocation of M1-RNP into the cytoplasm.
- Nucleoprotein (NP): Viral RNA is packaged with NP into a helical RNP complex.
- Ribonucleoprotein (RNP): The RNA, coated with nucleoprotein (NP) and heterotrimeric RNA-dependent RNA polymerase (three subunits: PB1, PB2, and PA), assembles into a helical RNP complex.

Influenza A Antibodies

Influenza A virus is the most common flu virus infecting humans, mammals, and avian. HA and NA are the dominant surface proteins of influenza A virus. There are 18 known types of HA (H1 through H18) and 11 known types of NA (N1 through N11, respectively).

While more than 130 influenza A subtype combinations have been identified in nature, primarily from wild birds, there are potentially many more influenza A subtype combinations given the propensity for virus "reassortment". H1N1 and H3N2 strains are currently circulating as seasonal influenza A viruses.

Creative Diagnostics provides highly sensitive and specific antibodies against different subtypes of IAV. These antibodies are suitable for common immunoassays such as direct or indirect ELISA, sandwich immunoassays and Western blotting.

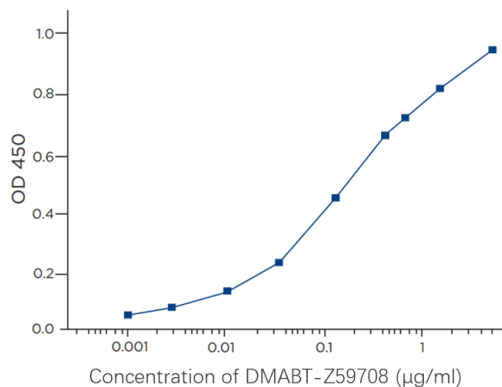


Fig.2 Specific activity of the DMABT-Z59708 in ELISA with the purified influenza A virus H1N1.

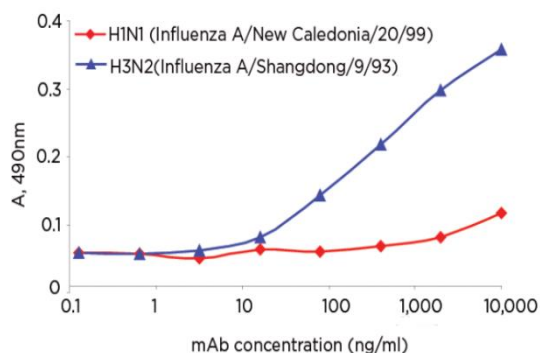


Fig.4 Titration curves of the CABT-CS770 that is specific to hemagglutinin H3.

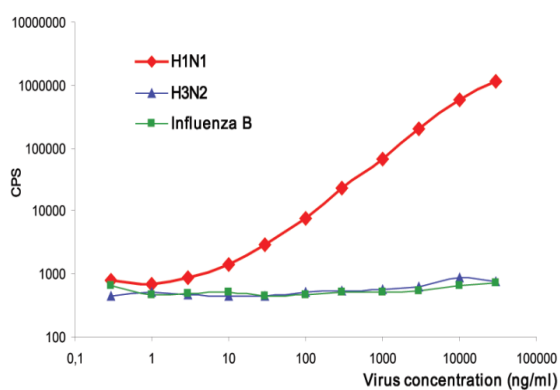


Fig.3 A calibration curves for influenza A sandwich fluoroimmunoassay using anti-H1 antibodies.

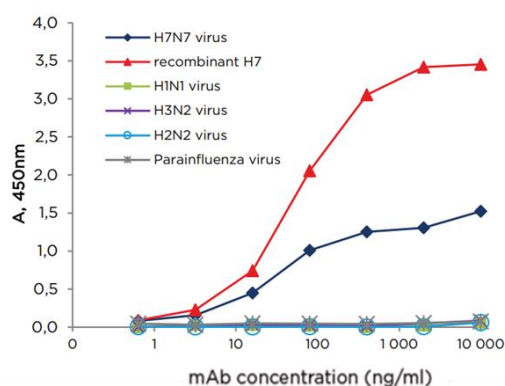


Fig.5 Titration curves of the CABT-CS778 that is specific to haemagglutinin H7.

Product List

Subtype	Cat. No	Product Name	Host	Application
H1N1	CABT-WN1081	Anti-IAV H1N1 Mab	Mouse	sELISA, WB
	CABT-WN1082	Anti-IAV H1N1 Mab	Mouse	sELISA, WB
	DMAB9764	Anti-IAV H1N1 HA Mab	Rabbit	WB, ELISA
	DMABT-Z59708	Anti-IAV H1N1 (A/USSR/90/77) HA Mab	Mouse	ELISA, IHC-Fr, ICC, IF
	CABT-CS082	Anti-IAV H1N1 (A/California/07/2009) HA Mab	Mouse	ELISA, IHC-P, FCM, ICC/IF, IP
	CABT-CS758	Anti-IAV H1N1 (A/California/06/2009) HA Mab	Mouse	WB, ELISA, IP, IF
	CABT-CS759	Anti-IAV H1N1 (A/New Caledonia/20/99) HA Mab	Mouse	WB, ELISA, IP, IF
	CABT-CS761	Anti-IAV H1N1 (A/Brisbane/59/2007) HA Mab	Mouse	WB, ELISA, IP, IF

	CABT-CS763	Anti-IAV H1N1 (A/Michigan/45/2015) HA Mab	Mouse	WB, ELISA, IP, IF
	CABT-CS784	Anti-IAV H1N1 (A/New Caledonia/20/99) NP Mab	Mouse	ELISA, IHC, WB
	DPABY-059	Anti-IAV H1N1 Pab	Goat	WB, IF, IHC-P
	CABT-CS797	Anti-IAV Pan H1N1 HA Pab	Rabbit	WB
	CABT-CS081	Anti-IAV H1N1 (A/California/07/2009) HA Pab	Rabbit	ELISA
	CABT-CS791	Anti-IAV H1N1 (A/California/07/2009) HA1 Pab	Rabbit	WB, ELISA
	CABT-CS792	Anti-IAV H1N1 (A/New Caledonia/20/99) HA1 Pab	Rabbit	WB, ELISA
	CABT-CS806	Anti-IAV H1N1 (A/New Caledonia/20/1999) NA Pab	Rabbit	WB, ELISA
	CABT-CS808	Anti-IAV H1N1 (A/New Caledonia/20/1999) NP Pab	Rabbit	WB, ELISA
	CABT-CS800	Anti-Swine Flu H1N1 (A/California/06/2009) M2 Pab	Rabbit	WB, ELISA
	CABT-CS789	Anti-Swine Flu H1N1 (A/California/06/2009) HA Pab	Rabbit	ELISA, IP
	CABT-CS804	Anti-Swine Flu H1N1 (A/California/06/2009) NA Pab	Rabbit	WB, ELISA
	CABT-CS798	Anti-Swine Flu H1N1 (A/California/06/2009) M1 Pab	Rabbit	WB, ELISA
	CABT-CS809	Anti-Swine Flu H1N1 (A/California/06/2009) NS1 Pab	Rabbit	WB, ELISA, IP
H2N2	DPAB3953	Anti-IAV H2N2 (A/CHICKEN/NY/29878/91) HA Pab	Rabbit	WB, ELISA
H3N2	CABT-CS767	Anti-IAV H3N2 (A/Hong Kong/4801/2014) HA Mab	Mouse	WB, ELISA
	CABT-CS770	Anti-IAV H3N2 (A/Shangdong/9/93) HA Mab	Mouse	WB, ELISA
	CABT-CS774	Anti-IAV H3N2 (A/Switzerland/9715293/2013) HA Mab	Mouse	ELISA, WB, IF, IP
	DPAB3970	Anti-IAV H3N2 (A/Wyoming/3/03) HA Pab	Rabbit	ELISA, IP
	CABT-CS786	Anti-IAV H3N2 (Influenza A/Wisconsin/67/X-161/05) HA Pab	Rabbit	WB, ELISA
	CABT-CS795	Anti-IAV H3N2 (Influenza A/Wisconsin/2005) HA1 Pab	Rabbit	WB, ELISA
	CABT-CS799	Anti-IAV H3N2 (A/Brisbane/10/2007) M2 Pab	Rabbit	WB, ELISA
	CABT-CS803	Anti-IAV H3N2 (A/pintail duck/ALB/86/1976) M2 Pab	Rabbit	WB, ELISA
	DPAB3968	Anti-IAV H3N2 (A/Brisbane/10/07) HA Pab	Rabbit	ELISA, IP
H4N6	DPAB3962	Anti-IAV H4N6 (A/environment/Maryland/1101/06) HA Pab	Rabbit	WB, ELISA
H5N1	DMABT-H21824	Anti-IAV H5N1 NP Mab [Biotin]	Mouse	IF
	CABT-CS777	Anti-IAV H5N1 (A/Anhui/1/2005) HA Mab	Mouse	WB, ELISA, IP, IF
	CABT-CS737	Anti-IAV H5N1 (A/chicken/VietNam/NCVD-016/2008) HA1 Mab	Mouse	ELISA
	CABT-CS713	Anti-IAV H5N1 (A/Anhui/1/2005) HA Pab	Rabbit	ELISA
	CABT-CS745	Anti-IAV H5N1 (A/chicken/VietNam/NCVD-016/2008) HA1 Pab	Rabbit	WB, ELISA
	CABT-CS729	Anti-IAV H5N1 (A/Hong Kong/483/1997) HA Pab	Rabbit	WB, ELISA
	CABT-CS719	Anti-IAV H5N1 (A/Hong kong/213/2003) HA Pab	Rabbit	WB, ELISA
	CABT-CS727	Anti-IAV H5N1 (A/Vietnam/1194/2004) HA Pab	Rabbit	WB, ELISA

	DPAB3959	Anti-IAV H5N1 (A/Vietnam/1203/2004) HA Pab	Rabbit	WB, ELISA
	DPAB3960	Anti-IAV H5N1 (A/Vietnam/1203/2004) M1 Pab	Rabbit	WB, ELISA
	CABT-CS807	Anti-IAV H5N1 (A/Vietnam/1203/2004) NA Pab	Rabbit	WB, ELISA
	CABT-CS810	Anti-IAV H5N1 (A/Vietnam/1203/2004) NS1 Pab	Rabbit	WB, ELISA
	CABT-CS740	Anti-IAV H5N1 (A/turkey/Turkey/1/2005) HA Pab	Rabbit	WB, ELISA
	CABT-CS793	Anti-IAV H5N1 (A/Bar-headed Goose/Qinghai/12/05) HA1 Pab	Rabbit	WB, ELISA
	CABT-CS741	Anti-IAV H5N1 (A/Common magpie/Hong Kong/2256/2006) HA Pab	Rabbit	WB, ELISA
	CABT-CS718	Anti-IAV H5N1 (A/Cambodia/R0405050/2007) HA Pab	Rabbit	WB, ELISA
	CABT-CS731	Anti-IAV H5N1 (A/Egypt/N05056/2009) HA Pab	Rabbit	WB, ELISA
	CABT-CS720	Anti-IAV H5N1 (A/Hubei/1/2010) NA Pab	Rabbit	WB, ELISA
H5N2	CABT-CS710	Anti-IAV H5N2 (A/American green-winge teal/California/HKWF609/07) HA Pab	Rabbit	WB, ELISA
H5N3	CABT-CS708	Anti-IAV H5N3 (A/duck/Hokkaido/167/2007) HA Pab	Rabbit	WB, ELISA
H5N8	CABT-CS711	Anti-IAV H5N8 (A/duck/NY/191255-59/2002) HA Pab	Rabbit	WB, ELISA
H6N2	DPAB3956	Anti-IAV H6N2 (A/duck/Hainan/6/2004) HA Pab	Rabbit	WB, ELISA
H7N1	CABT-CS764	Anti-IAV H7N1 (A/FPV/Rostock/1934) HA Mab	Mouse	WB, ELISA
H7N2	DPAB3957	Anti-IAV H7N2 (A/chicken/MD/MINHMA/2004) HA Pab	Rabbit	WB, ELISA
H7N7	CABT-CS778	Anti-IAV H7N7 (A/Chicken/Netherlands/1/03) HA Mab	Mouse	WB, ELISA, IP, IF
	DMAB28208	Anti-IAV H7N7 (A/chicken/Netherlands/1/03) NA Mab	Mouse	ELISA, IP, IF
	CABT-RM295	Anti-IAV H7N7 (A/Netherlands/219/03) HA Mab	Mouse	WB, ELISA
	DPAB3966	Anti-IAV H7N7 (A/Chicken/Netherlands/1/03) NA Pab	Rabbit	WB, ELISA
H7N9	CABT-CS179	Anti-IAV H7N9 (A/Shanghai/1/2013) HA Pab	Rabbit	WB, ELISA
	CABT-CS788	Anti-IAV H7N9 (A/Shanghai/2/2013) HA Pab	Rabbit	ELISA, IP
	CABT-CS802	Anti-IAV H7N9 (A/northern shoverl/Mississippi/11OS145/2011) M2 Pab	Rabbit	WB, ELISA
H9N2	CABT-B8413	Anti-IAV H9N2 (A/Hong Kong/1073/99) NA Mab	Mouse	ELISA
	CABT-CS781	Anti-IAV H9N2 (A/Hong Kong/33982/2009) HA Mab	Mouse	ELISA, WB, IF, IP
	CABT-CS210	Anti-IAV H9N2 (T/W/66) Pab	Chicken	ID, HI, IB
	CABT-B8414	Anti-IAV H9N2 (A/Hong Kong/1073/99) NA Pab	Rabbit	ELISA
	DPAB3958	Anti-IAV H9N2 (A/chicken/HongKong/NT366/03) HA Pab	Rabbit	WB, ELISA
	CABT-CS805	Anti-IAV H9N2 (A/Chicken/HongKong/NT366/03) NA Pab	Rabbit	WB, ELISA
	CABT-CS801	Anti-IAV H9N2 (A/chicken/Korea/GH2/2007) M2 Pab	Rabbit	WB, ELISA
H10N3	CABT-CS682	Anti-IAV H10N3 (A/duck/Hong Kong/786/1979) HA Pab	Rabbit	WB, ELISA, HI
H14N5	DPAB3963	Anti-IAV H14N5 (A/mallard/Gurjev/263/1982) HA Pab	Rabbit	WB

H15N8	DPAB3964	Anti-IAV H15N8(A/Australia/83/2000) HA Pab	Rabbit	WB
H12N5	DPAB3961	Anti-IAV H12N5 (A/pintail/Alaska/102/05) HA Pab	Rabbit	WB, ELISA

Influenza B Antibodies

Influenza B was obtained in 1940. It is only found in humans and usually causes milder symptoms than type A virus. Although it can trigger seasonal illness and human epidemics, influenza B virus has not caused a pandemic. Influenza B viruses are not divided into subtypes, but instead are further classified into two lineages: B/Yamagata and B/Victoria. The proportion of influenza B viruses from each lineage that circulate can vary by geographic location and by season. In recent years, flu B/Yamagata viruses have circulated much less frequently in comparison to flu B/Victoria viruses globally.

Creative Diagnostics provides several antibodies that are specific to IBV HA, NP. The antibodies were raised against the purified influenza virus type B. They are highly specific to IBV and they do not cross-react with IAV or other viral proteins that were tested.

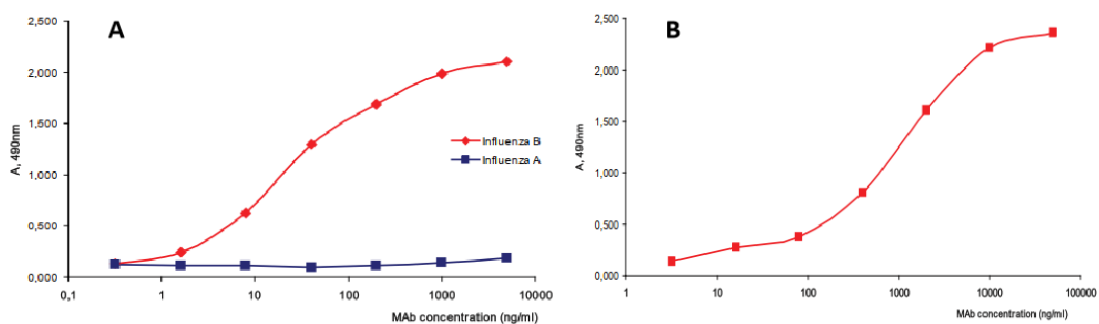


Fig.6 Titration curves of the HA MAb (DMAB3814) that is specific to IBV HA in indirect (A) and direct (B) ELISA.

Product List

Cat. No	Product Name	Host	Application
DMAB3814	Anti-IBV HA2 Mab	Mouse	ELISA, WB
DMAB3815	Anti-IBV HA2 Mab	Mouse	ELISA, WB
CABT-RM296	Anti-IBV M1 Mab	Mouse	ELISA, WB
DPBT-66890GI	Anti-IBV Pab	Goat	IHC, ELISA, IF, WB
DPBT-66889GI	Anti-IBV Pab [HRP]	Goat	IHC, ELISA, IF, WB
DPAB0197	Anti-IBV Pab [Biotin]	Goat	ELISA, IF, WB
DPAB0198	Anti-IBV Pab [FITC]	Goat	ELISA, IF, WB
DPAB4264	Anti-IBV HA Pab	Rabbit	ELISA, WB
CABT-CS790	Anti-IBV (B/Malaysia/2506/2004) HA Pab	Rabbit	WB, ELISA
DPAB3967	Anti-IBV (B/Malaysia/2506/2004) NP Pab	Rabbit	ELISA, WB
CABT-CS796	Anti-IBV (B/Brisbane/60/2008) HA2 Pab	Rabbit	WB, ELISA
DPATB-H83571	Anti-IBV Glycoprotein NB Pab	Rabbit	IHC-P, WB, ELISA

Influenza Neutralizing Antibodies

HA from influenza viruses is a spike-shaped protein that extends from the surface of the virus. The HA precursor (HA0) trimerizes in the ER and in the virion surface is processed by tissue trypsin generating two polypeptides: HA1 and HA2, which interact through disulfide bonds. HA1 comprises the globular region of the molecule (head), which contains the RBS, and the upper part of the stem region. HA2 covers the major part of the stem region, and it contains the fusion peptide. Most of the classical neutralizing Abs against influenza are directed to the conformational epitopes on HA, particularly the globular domain, which has been well-characterized as the immunodominant region of this protein. Neutralizing antibodies bind to the globular head of HA are often strain-specific and other neutralizing antibodies bind to the more conserved stem region of HA provide the broadly neutralizing activity to many different strains of flu viruses. A number of broadly protective monoclonal antibodies against influenza viruses have been isolated and characterized to provide the information for vaccine design or be used as therapeutics.

Neutralizing antibodies have high applicable values for diagnostic research and vaccine development. Creative Diagnostics has developed several neutralizing antibodies against IAV H1N1, H5N1, H7N7, and H10N8. The activities of these antibodies have been extensively validated in Hemagglutinin Inhibition (HI) assay. These reagents can be used as reference antibodies in neutralization assays, and possibly animal studies as well.

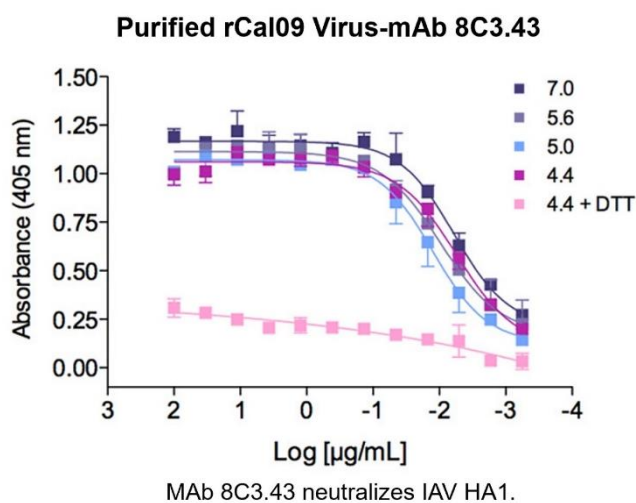


Fig.7 Neutralization titers of 8C3.43

Cat#	Product name	Host	Application
CABT-NS1230	Anti-IAV HA Mab, clone CR9114	Human	NEUT, FC, ELISA
CABT-YN1204	Anti-IAV HA Globular Head Mab, clone Flu-5J8	Human	ELISA, FC, NEUT
CABT-NS1028	Anti-IAV HA Mab, clone D280	Rabbit	IP, NEUT, ELISA
CABT-NS1029	Anti-IAV HA Mab, clone D280	Mouse	IP, NEUT, ELISA
CABT-NS1067	Anti-IAV H1N1 HA Mab, clone 3-23D	Rabbit	HI, NEUT, ELISA, IF
CABT-YN1154	Anti-IAV H1N1 HA Mab, clone 8C3.43	Mouse	HI, NEUT, IF, ELISA, WB
CABT-YN1156	Anti-IAV H1N1 M2 (A/WSN/1933) Mab, clone 25D3	Mouse	WB, FC, ICC, IF, IP, BL, NEUT
CABT-CS766	Anti-IAV H2N2 HA Mab	Mouse	ELISA, NEUT, IF, IP
CABT-CS772	Anti-IAV H3N2 HA Mab	Mouse	NEUT, WB, ELISA, IP, IF
CABT-CS773	Anti-IAV H3N2 HA Mab	Mouse	NEUT, ELISA, IP, IF
CABT-B2102	Anti-IAV H5N1 HA Mab	Mouse	ELISA, WB, Neut
CABT-B2103	Anti-IAV H5N1 HA Mab	Human	NEUT, HI
CABT-YN1152	Anti-IAV H5N1 HA Mab, clone I122	Human	NEUT, HI

CABT-B2106	Anti-IAV H7N7 HA Mab	Rabbit	NEUT, HI
CABT-YN1161	Anti-IAV H7N9 HA Mab, clone 113	Rabbit	FC, BL, NEUT, ELISA
CABT-CS779	Anti-IAV H9N2 HA Mab	Mouse	ELISA, NEUT, IF, IP
CABT-B2104	Anti-IAV H10N8 HA Mab	Mouse	NEUT, HI
CABT-B2105	Anti-IAV H10N8 HA Mab	Human/mouse chimeric	ELISA, HI
DPAB3965	Anti-IAV H16N3 HA Pab	Rabbit	WB, ELISA, NEUT

Antibodies for Influenza Antigen Test

Influenza viral nucleoprotein (NP) is a structural protein that plays a critical role in virus replication and host adaptation. Antibodies targeting NP proteins are commonly used for immunodetection of influenza viruses in various assays, including ELISA, lateral flow assay (LFA), and direct fluorescent antibody tests. These assays can be used in both research and clinical diagnostics.

Due to the high frequency of antigenic drift or shift among different influenza strains, broad-spectrum influenza antibodies are particularly desired for flu diagnostics. Creative Diagnostics has identified six antibody pairs against the NP protein of Influenza A and Influenza B, respectively. These matched pairs are validated in the sandwich ELISA assay with high sensitivity (pg level) and can be used to detect antigens from different biological samples such as nasal aspirates and swabs, cell lysates etc.

High Sensitivity (pg level)

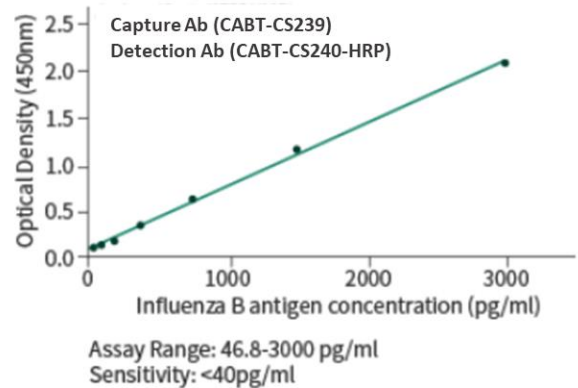
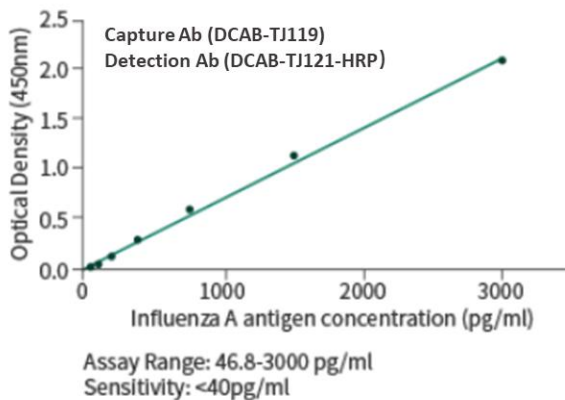


Fig.8 IAV (left) and IBV (right) antibody pair used in sandwich ELISA

Antibody Pairs for Pan Influenza A NP Detection

Antibody Pairs	Cat#	Product Name	Host	Application
1	DCABY-4497	Anti-IAV NP Mab	Mouse	ELISA (cap)
	DCABY-4498	Anti-IAV NP Mab	Mouse	ELISA (det)
2	DCAB-TJ119	Anti-IAV NP Mab	Mouse	ELISA (cap)
	DCAB-TJ121	Anti-IAV NP Mab	Mouse	ELISA (det)
3	DCABY-4738	Anti-IAV NP Mab	Mouse	ELISA (cap)
	DCABY-4739	Anti-IAV NP Mab	Mouse	ELISA (det)

Antibody Pairs for Pan Influenza B NP Detection

Antibody Pairs	Cat#	Product Name	Host	Application
1	CABT-CS239	Anti-IBV NP Mab	Mouse	ELISA (cap)
	CABT-CS240	Anti-IBV NP Mab	Mouse	ELISA (det)
2	DMAB3820	Anti-IBV NP Mab	Mouse	ELISA (cap)
	DCAB-TJ115	Anti-IBV NP Mab	Mouse	ELISA (det)
3	DMAB3819	Anti-IBV NP Mab	Mouse	ELISA (cap)
	DCAB-TJ115	Anti-IBV NP Mab	Mouse	ELISA (det)

Features

- High sensitivity for NP detection
 - Broad spectrum and high specificity: These antibody pairs can detect a broad spectrum of strains within the target subtype, without any cross-reactivity with the other subtypes.
 - High binding affinity
- Antibody cocktail can successfully detect both A and B type flu: The combination of A and B antibody pairs can allow detection of both subtypes.**
- High production quality

Contact Us

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