



Credible Resources for Vector-Borne Diseases



INTRODUCTION

Vector-borne diseases account for a significant fraction of the global infectious disease burden, contributing to more than 1 billion cases and 1 million deaths annually.¹ Of the known vectors, hematophagous arthropods, such as mosquitoes, ticks, and sand flies, are responsible for the transmission of some of the most devastating diseases throughout the world. Presently, vaccines are not available for many vector-borne diseases and treatment may be limited. Further, accurate diagnosis of these diseases can be complicated due to a variety of factors, including analogous clinical presentation, serological cross-reactivity, or the possibility of co-infection. Thus, accurate methods for early detection are imperative in managing microbial dissemination and minimizing the impact of these diseases on public health.

To aid in these efforts, ATCC offers a wide range of microorganisms and nucleic acids that support research on prevalent vector-borne diseases, including:

- Anaplasmosis
- Babesiosis
- Chikungunya
- Dengue
- Ehrlichiosis
- Leishmaniasis
- Lyme disease
- Malaria
- Rocky Mountain spotted fever
- Trypanosomiasis
- West Nile fever
- Zika

These products are ideal for the development and validation of novel diagnostic assays and therapeutic treatments.

Visit us online at www.atcc.org/vectorborne to learn more about ATCC products that support reproducible and reliable vector-borne disease research, including additional strains, relevant nucleic acids, and associated products.

Table 1: Mosquito-borne Diseases

ATCC® No.	Organism	Strain Designation	Source Information
VR-1873™	Bunyamwera virus	Original	<i>Aedes</i> spp. mosquitos caught in Bunyamwera, Uganda
VR-298™	Cache Valley virus	Original	<i>Culiseta inornata</i> mosquitoes
VR-64™	Chikungunya virus		Serum of patient, Tanganyika, East Africa, 1953
VR-1960™	Chikungunya virus	37997	<i>Aedes furcifer</i> , Senegal
VR-3360™	Chikungunya virus	181/25	Human, Thailand
VR-1586™	Dengue virus type 1	Strain: TH-S-man (TC adapted)	Pooled serum from 6 patients, Hawaii, 1944
VR-1856™	Dengue virus type 1	Hawaii	Derived by adaptation of mouse-prepared product
VR-1584™	Dengue virus type 2	New Guinea C	Serum of febrile patient, New Guinea, 1944
VR-1810™	Dengue virus type 2	TH-36	Serum from patient diagnosed as Thai hemorrhagic fever, Thailand, 1958
VR-1490™	Dengue virus type 4	H241 (TC adapted)	Clinical specimen - Human, Philippines, 1956
VR-1934™	Inkoo virus	KN 3641	34 adult female <i>Aedes communis punctor</i> from Finland
VR-74™	Japanese encephalitis virus		Spinal fluid from fatally infected child, Japan
VR-712™	Jamestown Canyon virus	61V-2235	Animal tissue, Colorado
VR-1834™	La Crosse virus		Brain tissue from a 4-year-old female, Wisconsin, 1960
VR-1863™	Mayaro virus	TRVL 15537	
VR-1966™	Mayaro virus	07-18066-99	Human serum, Peru
30090™	<i>Plasmodium berghei</i>	NK65	Mosquito, Forest Gallery of Kisanga, Katanga, 1965
50175™	<i>Plasmodium berghei</i>	NK65A	Derived from M. Yoeli strain NK65 by mosquito passage, Univ. Illinois, Urbana, pre-1978
30930™	<i>Plasmodium falciparum</i>	FCR-1/FVO	Adult human male, Vietnam, 1966 (?)
30932™	<i>Plasmodium falciparum</i>	FCR-3/FMG [FCR-3/Gambia]]	Human clinical specimen, Fajara Gambia, 1976
30950™	<i>Plasmodium falciparum</i>	Honduras-1/CDC	Human, Cholutec, Honduras, 1980
30993™	<i>Plasmodium falciparum</i>	FCC-2/Hainan	Infected Human, Hainan Island, China, 1979
50028™	<i>Plasmodium falciparum</i>	FCR-8/West African	Human, West Africa (?), 1978
50113™	<i>Plasmodium falciparum</i>	HB-3	Clone of Honduras I/CDC, ATCC 30950, 1983
30075™	<i>Plasmodium fragile</i>	Nilgiri	<i>Macaca radiata</i> , Nilgiri Hills, India 1961
30192™	<i>Plasmodium knowlesi</i>	Malayan	<i>Macaca fascicularis</i> , West Malaysia, 1962
30141™	<i>Plasmodium relictum</i>	1P and 1P1	Mourning dove, Nebraska, 1937
30138™	<i>Plasmodium vivax</i>	Panama	Human, Panama, 1969
30151™	<i>Plasmodium vivax</i>	South Vietnam	Human, South Vietnam

Table 1: Mosquito-borne Diseases (continued)

ATCC® No.	Organism	Strain Designation	Source Information
30152™	<i>Plasmodium vivax</i>	Sal 1	Human, Cangrejera, La Paz, El Salvador, 1970
30197™	<i>Plasmodium vivax</i>	SAL II	Human, Las Guarumas, La Paz, El Salvador, 1970
VR-3345™	Ross River virus	T-48	<i>Aedes vigilax</i> , Australia
VR-1891™	Usutu virus	SAAR 1776	Mosquito in Ndumu, Natal, South Africa, 1959
VR-1892™	Usutu virus	ENT MP 1626	Mosquito in Zika forest, Entebbe area, Uganda, 1962
VR-1507™	West Nile virus	385-99	Tissue, animal, Bronx New York, USA, 1999
VR-1510™	West Nile virus	B 956	Human blood, Uganda, 1937
VR-1251™	Western equine encephalitis virus	Fleming	
VR-84™	Zika virus	MR 766 (Original)	Blood from experimental forest sentinel rhesus monkey, Uganda, 1947
VR-1838™	Zika virus	MR 766	Blood from experimental forest sentinel rhesus monkey, Uganda, 1947
VR-1839™	Zika virus	IBH 30656	Human blood in Ibadan, Nigeria, 1968
VR-1843™	Zika virus	PRVABC59	Human serum specimen, Puerto Rico, December 2015
VR-1843HK™	Heat-inactivated Zika virus	PRVABC59	Human serum specimen, Puerto Rico, December 2015
VR-1844™	Zika virus	FLR	Human serum, Columbia, December 2015
VR-1845™	Zika virus	P6-740	<i>Aedes aegypti</i> , Malaysia, July 1966
VR-1848™	Zika virus	R103451	Placenta of a human isolated on January 6, 2016 infected from travel to Honduras in 2015
VR-1859™	Zika virus	H/PAN/2015/CDC-259359	Panamanian isolate, 2015
VR-1860™	Zika virus	H/PAN/2015/CDC-259364	Panamanian isolate, 2015
VR-1868™	Zika virus	R116265	Human serum specimen, Mexico, June 2016

ATCC® No.	Product Description
VR-1864™	Monoclonal Anti-Zika virus envelope (E) protein Clone ZV-2 (produced <i>in vitro</i>)
PRA-405D™	Genomic DNA from <i>Plasmodium falciparum</i> strain 3D7 [ATCC® PRA-405™]
VR-3246SD™	Quantitative Synthetic Chikungunya virus (CHIKV) RNA
VR-3228SD™	Quantitative Synthetic Dengue virus type 1 RNA
VR-3229SD™	Quantitative Synthetic Dengue virus type 2 RNA
VR-3230SD™	Quantitative Synthetic Dengue virus type 3 RNA
VR-3231SD™	Quantitative Synthetic Dengue virus type 4 RNA
VR-3239SD™	Quantitative Synthetic Eastern equine encephalitis virus RNA
VR-3254SD™	Quantitative Synthetic Rift Valley fever virus DNA
VR-3236SD™	Quantitative Synthetic Saint Louis encephalitis virus RNA
VR-3198SD™	Quantitative Synthetic West Nile Virus RNA
VR-3253SD™	Quantitative Synthetic Yellow fever virus RNA
VR-1838DQ™	Quantitative Genomic RNA from Zika virus strain MR 766 [ATCC® VR-1838™]
VR-1843DQ™	Quantitative Genomic RNA from Zika virus strain PRVABC59 [ATCC® VR-1843™]
VR-3252SD™	Quantitative Synthetic Zika virus (ZIKV) RNA
MP-22™	Synthetic Dengue Viral RNA Panel

Table 2: Tick-borne Diseases

ATCC® No.	Organism	Strain Designation	Isolation Source
VR-1436™	<i>Anaplasma marginale</i>	South Idaho, USA (S64-Id2AM)	Whole blood from a naturally infected 13 year old Hereford cow from south-central Idaho herd, USA
VR-1437™	<i>Anaplasma ovis</i>	Idaho, USA (S65-Id1AO)	Blood from <i>Ovis aries</i> (domestic sheep)
PRA-302™	<i>Babesia duncani</i>	WA1	Human blood, Washington State, 1991
30221™	<i>Babesia microti</i>	Gray	Human, Nantucket Island, MA, 1970
PRA-99™	<i>Babesia microti</i>	Peabody mjr	Human blood, Nantucket Island, Massachusetts, USA, 1973
PRA-398™	<i>Babesia microti</i>	GI (Ingram strain)	Blood, human babesiosis, Nantucket, MA, 1983
PRA-399™	<i>Babesia microti</i>	Nan-Hs-2011 (N11-50)	Blood, human babesiosis, Nantucket, MA, 2010
PRA-400™	<i>Babesia microti</i>	Naushon	Tick (<i>Ixodes scapularis</i>), Naushon Island, MA, 1986
PRA-401™	<i>Babesia microti</i>	Lab Strain 1	Mouse blood, Greenwich, CT, 2004
51992™	<i>Borrelia afzelii</i>	BO23	Human skin, Germany
BAA-2496™	<i>Borrelia bavariensis</i>	PBi	Human cerebrospinal fluid
35210™	<i>Borrelia burgdorferi</i>	B31	Tick, <i>Ixodes dammini</i> , New York
35211™	<i>Borrelia burgdorferi</i>	IRS	Tick, <i>Ixodes ricinus</i> , Switzerland
51990™	<i>Borrelia burgdorferi</i>	MM1	White footed mouse, <i>Peromyscus leucopus</i> , Minnesota, USA
53899™	<i>Borrelia burgdorferi</i>	297	Cerebrospinal fluid
55131™	<i>Borrelia burgdorferi</i>	HB19M	Human blood, Belgium
43381™	<i>Borrelia coriaceae</i>	Co53 [CIP 104208T]	Soft tick, <i>Ornithodoros coriaceus</i> , California
51383™	<i>Borrelia garinii</i>	CIP 103362	Tick, <i>Ixodes ricinus</i> , France
51991™	<i>Borrelia garinii</i>	Fuji P1	<i>Ixodes persulatus</i> , Mt. Fuji, Japan
VR-1842™	Bourbon virus	Original	Human male with recent tick exposure in Bourbon County, Kansas, 2014
VR-1933™	Heartland virus	MO-4	Human leukocytes, Missouri, 2009
VR-1262™	Powassan virus	Byers	Presumed from brain of human patient, Canada, 1958
VR-1957™	Powassan virus	T18-23-81	Tick (<i>Ixodes cookei</i>) on <i>Marmota</i> spp. in Ontario, Canada
VR-1593™	<i>Rickettsia asiatica</i>	IO-1	Fukushima, Japan
VR-1814™	<i>Rickettsia buchneri</i>	ISO-7	Ovarian tissue of female <i>Ixodes scapularis</i> , 2007
VR-610™	<i>Rickettsia canadensis</i>	2678	<i>Haemaphysalis leporispalustris</i> (whole ticks)
VR-1444™	<i>Rickettsia canadensis</i>	CA410	<i>Haemaphysalis leporispalustris</i> in California, USA
VR-613™	<i>Rickettsia conorii</i>	7 [7]	<i>Ornithodoros moubata</i> ticks. Received by Rocky Mountain Lab in 1946
VR-1472™	<i>Rickettsia honei</i>	RB	Human with fever and rash, Australia, originally isolated on Vero cells
VR-1363™	<i>Rickettsia japonica</i>	YH	Blood of patient with oriental spotted fever, Japan
VR-1376™	<i>Rickettsia massiliae</i>	Mtul [strain Mtu1]	Hemolymph of <i>Rhipicephalus turanicus</i> (Tick) from the South of France
VR-1928™	<i>Rickettsia monacensis</i>	IrR/Munich	Tick (<i>Ixodes ricinus</i>), Munich, Germany, 1998
VR-1637™	<i>Rickettsia parkeri</i>	Maculatum C	

ATCC® No.	Product Description
35210D-5™	Genomic DNA from <i>Borrelia burgdorferi</i> Strain B31 [ATCC® 35210™]
30221D™	Quantitated Genomic DNA from <i>Babesia microti</i> strain Gray [ATCC® 30221™]
35210DQ™	Quantitative Genomic DNA from <i>Borrelia burgdorferi</i>

LYME DISEASE RESEARCH TOOLS

Lyme disease, also known as Lyme borreliosis, is a tick-borne disease caused by *Borrelia* spirochetes. If left untreated, Lyme disease can result in arthritis, neurological symptoms, and heart problems. To help support research on this disease, ATCC offers *Borrelia* strains representing the three species most frequently associated with Lyme disease in the United States and Europe – *B. burgdorferi*, *B. afzelii*, and *B. garinii*. To view a full listing of these strains, visit ATCC online at www.atcc.org/vectorborne.



Table 3: Kissing Bug-borne Diseases

ATCC® No.	Organism	Strain Designation	Isolation Source
30028™	<i>Trypanosoma conorrhini</i>		Kissing bug, <i>Triatoma rubrofasciata</i> , Oahu Island, HI, 1947
30537™	<i>Trypanosoma conorrhini</i>	Singapore	Kissing bug, <i>Triatoma rubrofasciata</i> , Singapore, Malaysia, 1969
30803™	<i>Trypanosoma conorrhini</i>	77244	Adult kissing bug, <i>Triatoma rubrofasciata</i> , Manila, Philippines, 1977
30013™	<i>Trypanosoma cruzi</i>	Culbertson	Human, Brazil, 1926
30160™	<i>Trypanosoma cruzi</i>	Corpus Christi	10-month-old girl, Corpus Christi, TX, 1955
30161™	<i>Trypanosoma cruzi</i>	Houston	6-month-old boy, Houston, TX, 1955
50791™	<i>Trypanosoma cruzi</i>	M/HOM/AR/74/CA-I CL72	Clone 72 Derived from strain CA-I, originally isolated from a Human male with chronic myocarditis, San Luis Province, Argentina, 1974, Cloned by J. Dvorak, 1980
50792™	<i>Trypanosoma cruzi</i>	M/HOM/BR/68/CAN III CL1	Human male, Brazil, 1968, Cloned by M. Miles, 1968
50795™	<i>Trypanosoma cruzi</i>	M/HOM/AR/80/MIRANDA CL83	Human male, Argentina, 1980, Cloned by J. Dvorak, 1980
50820™	<i>Trypanosoma cruzi</i>	ESMERALDO CL2	Clone 2 Derived from strain Esmeraldo which was originally isolated by xenodiagnosis from an acute case of Chagas' disease in a Human male from northeastern Brazil, 1977, Cloned by M. Miles
50823™	<i>Trypanosoma cruzi</i>	SYLVIO-X10	Obtained from the fifth instar of <i>Rhodnius prolixus</i> used for xenodiagnosis of an acute case of sylvatic-Derived Chagas' disease, Para, Brazil, 1978
50829™	<i>Trypanosoma cruzi</i>	TULAHUEN CL98	Clone 98 Derived from the Tulahuen strain, 1980
50830™	<i>Trypanosoma cruzi</i>	WA250 CL1	Clone 1 Derived from strain WA-250 which was originally isolated from an opossum, <i>Didelphis albiventris</i> , 1977
50832™	<i>Trypanosoma cruzi</i>	Y	Chagas' disease patient, Belo Horizonte, Brazil, 1953
50834™	<i>Trypanosoma cruzi</i>	CA-I CL72 Lampit Resistant	Lampit (=Nifurtimox) resistant strain Derived from CA-I CL72 (=ATCC 50791)
50832GFP™	<i>Trypanosoma cruzi</i>	Y GFP CL1	ATCC 50832 transfected with GFP
30282™	<i>Trypanosoma cyclops</i>	7549	Monkey, <i>Macaca nemestrina</i> , West Malaysia, 1969
30032™	<i>Trypanosoma rangeli</i>	Venezuelan E1 Tocuyo	Human, Venezuela, 1956

ATCC® No.	Product Description
30266D™	Genomic DNA from <i>Trypanosoma cruzi</i> strain Tulahuen [ATCC® 30266™]
50823D™	Genomic DNA from <i>Trypanosoma cruzi</i> strain SYLVIO-X10 [ATCC® 50823™]

Table 4: Sand Fly-borne Diseases

ATCC® No.	Organism	Strain Designation	Isolation Source
PRA-417™	<i>Leishmania aethiopica</i>	MHOM/ET/72/L100 GFP	Transfected with GFP. Strain MHOM/ET/72/L100 was originally isolated from a human, Ethiopia, 1972
50135™	<i>Leishmania braziliensis</i>	MHOM/BR/75/M2903	Human, Serra das Carajas, Para, Brazil, 1975
50133™	<i>Leishmania chagasi</i>	MHOM/BR/74/PP75	Child, Ituacu, Bahia, Brazil, 1974
30030™	<i>Leishmania donovani</i>	Khartoum	Human, Sudan, 1959
50212™	<i>Leishmania donovani</i>	MHOM/IN/80/DD8	Bone marrow of 9-year-old Indian male, Bihar, India, 1980
PRA-413™	<i>Leishmania donovani</i>	AG83 [MHOM/IN/1983/AG83]	Bone marrow aspirate, Kala-azar patient, India, 1983
50134™	<i>Leishmania infantum</i>	MHOM/TN/80/IPT-1	Child, Monastir, Tunisia, 1980
50918™	<i>Leishmania infantum</i>	LIVT-2	Popliteal lymph node of a foxhound, Virginia
30012™	<i>Leishmania major</i>		Human, Teheran, Iran, 1949
50155™	<i>Leishmania major</i>	MHOM/SU/73/5-ASKH	Human, Askhabad, Turkmenkaya, USSR, 1973
PRA-384™	<i>Leishmania major</i>	MHOM/SN/74/SD	Cutaneous leishmaniasis, Senegal, 1973
30031™	<i>Leishmania mexicana</i>	Guatemalan	Human, Guatemala, 1948
50156™	<i>Leishmania mexicana</i>	MNYC/BZ/62/M379	<i>Nyctomys sumichrasti</i> , Cayo District, Belize, 1962.
50157™	<i>Leishmania mexicana</i>	MHOM/BZ/82/BEL21	Human, Cayo District, Belize, 1982
PRA-416™	<i>Leishmania mexicana</i>	MNYC/BZ/62/M379 GFP	Transfected with GFP. Strain MNYC/BZ/62/M379 was originally isolated from a Sumichrast's vesper rat, Cayo District, Belize, 1962
50158™	<i>Leishmania panamensis</i>	MHOM/PA/71/LS94	
50129™	<i>Leishmania tropica</i>	MHOM/SU/74/K27	Human, Baku, Azerbaidjanskaya, USSR, 1974
VR-1756™	Sandfly fever Sicilian virus		

ATCC® No.	Product Description
35685D-5™	Genomic DNA from <i>Bartonella bacilliformis</i> strain KC583 [ATCC® 35685™]
30030D™	Genomic DNA from <i>Leishmania donovani</i> strain Khartoum [ATCC® 30030™]
50134D™	Genomic DNA from <i>Leishmania infantum</i> strain MHOM/TN/80/IPT-1 [ATCC® 50134™]
30012D™	Genomic DNA from <i>Leishmania major</i> [ATCC® 30012™]
50129D™	Genomic DNA from <i>Leishmania tropica</i> MHOM/SU/74/K27 [ATCC® 50129™]
MP-13™	<i>Leishmania</i> Genomic DNA Panel

Table 5: Tsetse Fly-borne Diseases

ATCC® No.	Organism	Strain Designation	Isolation Source
PRA-380™	<i>Trypanosoma brucei</i>	Lister 427 procyclic form	Unknown; possibly Derived from s427 strain, Uganda, 1960
30026™	<i>Trypanosoma brucei gambiense</i>	Cheich	Human, Dakar, 1950
30024™	<i>Trypanosoma brucei rhodesiense</i>	Wellcome CT	Human blood, Tinde, Tanganyika, 1934
PRA-406™	<i>Trypanosoma brucei rhodesiense</i>	KETRI 243	Human clinical isolate, Busoga, Uganda, 1961
PRA-407™	<i>Trypanosoma brucei rhodesiense</i>	KETRI 269	Human clinical isolate, Kitanga, Tanzania, 1960
PRA-408™	<i>Trypanosoma brucei rhodesiense</i>	KETRI 2538	Human clinical isolate, Tete Province, Mozambique, 1980

ATCC® No.	Product Description
PRA-377D™	Genomic DNA from <i>Trypanosoma brucei brucei</i> strain TREU 927/4 (GUTat 10.1) [ATCC® PRA-377™]

Table 6: Flea-, Lice-, Gnat-, and Mite-borne Diseases

ATCC® No.	Organism	Strain Designation	Isolation Source
51734™	<i>Bartonella clarridgeiae</i>	[Houston-2 cat]	Animal blood, Houston Texas, USA
700095™	<i>Bartonella clarridgeiae</i>	NCSU 94-F40	Animal blood, blood of cat implicated in a case of cat scratch disease, North Carolina, USA
49927™	<i>Bartonella elizabethae</i>	F9251 [B91-002005]	Human blood, Brighton, Massachusetts, USA
49793™	<i>Bartonella henselae</i>	87-66	Blood of a 31-year-old male with AIDS, Oklahoma City, OK, USA
49882™	<i>Bartonella henselae</i>	Houston-1 [CIP 103737, G5436]	Human blood from an HIV-positive male, Houston Texas, USA
700693™	<i>Bartonella koehlerae</i>	C-29	Animal blood, California, USA
51694™	<i>Bartonella quintana</i>	90-268	Human blood, Oklahoma City, Oklahoma, USA
BAA-1498™	<i>Bartonella rochalimae</i>	BMGH	43-year-old woman with splenomegaly, fever, anemia, and recent travel to Peru, September 5, 2003
BAA-1343™	<i>Bartonella tamiae</i>	Th239	Febrile patient in Thailand, June, 2004
51672™	<i>Bartonella vinsonii</i>	NCSU 93-CO1	Domestic dog with endocarditis, North Carolina
700727™	<i>Bartonella vinsonii</i>	OK 94-513	Human blood, Jackson Wyoming, USA, 1994
BAA-1342™	<i>Bartonella washoensis</i> subsp. <i>cynomysii</i>	CL8606co	Prairie dog
VR-1896™	Epizootic hemorrhagic disease virus 1	OV202	Asymptomatic, farmed white-tailed deer, Gadsden County, Florida, USA. Isolated on September 22, 2015.
VR-1897™	Epizootic hemorrhagic disease virus 2	OV215	Spleen of a farmed white-tailed deer, Gadsden County, Florida, USA, 2016
VR-609™	<i>Orientia tsutsugamushi</i>	Scrub typhus strain Kato	Blood of patient in Niigata Pref., Japan
VR-148™	<i>Rickettsia akari</i>	MK (Kaplan)	Blood from patient, New York City, 1946
30085™	<i>Trypanosoma lewisi</i>	New Orleans-67	Rat, <i>Rattus norvegicus</i> , New Orleans, 1967
30182™	<i>Trypanosoma musculi</i>	L (Lincicome)	Mouse, <i>Mus sp.</i> , USA, (?)

ATCC® No.	Product Description
49882D-5™	Genomic DNA from <i>Bartonella henselae</i> strain Houston-1 [ATCC® 49882™]
BAA-1505D-5™	Genomic DNA from <i>Yersinia pestis</i> strain TS
BAA-1506D-5™	Genomic DNA from <i>Yersinia pestis</i> strain A12
BAA-1504D-5™	Genomic DNA from <i>Yersinia pestis</i> strain Kim
30022D™	Genomic DNA from <i>Trypanosoma lewisi</i> strain Lincicome [ATCC® 30022™]


Some of the strains referenced in this guide are not available for international distribution. Visit us online at www.atcc.org to check the availability of specific strains in certain geographical areas. Though each of the following species has been shown to cause vector-borne disease in humans, ATCC has not tested individual strains for pathogenicity.


REFERENCES


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