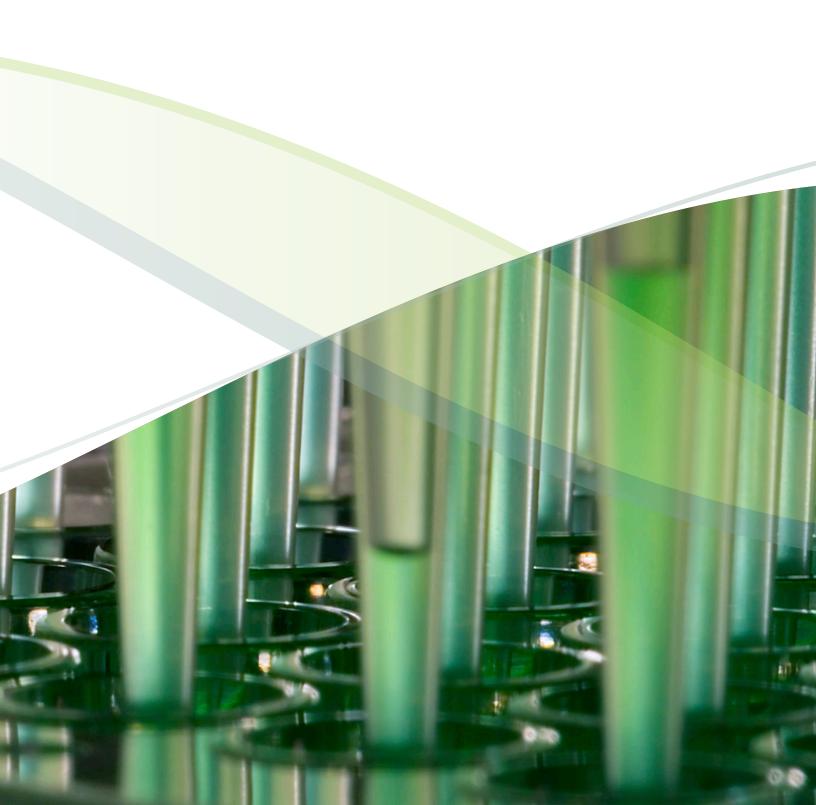


Quantitative Nucleic Acids

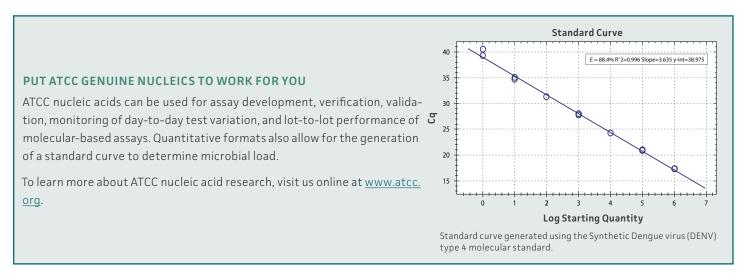


SKIP IN VITRO WITH ATCC® GENUINE NUCLEICS

The extraction, preparation, and verification of nucleic acids can often require extensive amounts of time, labor, and expense. To save you time and money, ATCC has developed stabilized, quantitative nucleic acids for use in inclusivity/exclusivity testing, establishing limits of detection, and validating or comparing test methods. Our portfolio of quantitative products includes:

- Synthetic nucleic acids DNA and RNA synthetically manufactured under ISO 13485 guidance to include key target regions from select bacterial and viral strains
- Genomic nucleic acids Whole genome preparations aseptically prepared from minimally passaged ATCC® Genuine Cultures
- **Certified reference materials** Genomic DNA produced under an ISO 17034 accredited process to confirm identity, well-defined characteristics, and an established chain of custody

So, skip in vitro and let ATCC do the work for you! Trust ATCC Genuine Nucleics for your laboratory's molecular needs, and get your research started today.



SYNTHETIC NUCLEIC ACIDS

ATCC performs extensive research on select organisms, and works with collaborators to identify key target regions within the genome that are compatible with primers used in molecular assays. Multiple sequence alignment allows for the development of a consensus sequence that is used to synthetically build the finished product.

- Eliminate the need to culture microorganisms
- Use in a BSL-1 facility
- No shipping restrictions
- Manufactured under ISO 13485 guidance
- Quantified using Droplet Digital[™] PCR (ddPCR[™])

Each preparation is extensively tested to ensure product identity, stability, quantity, and functionality with molecular applications. What's more, each DNA or RNA preparation is stabilized using a proprietary stabilization matrix to ensure consistent results, run after run.

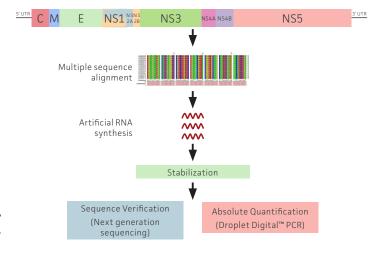


Table 1: Quantitative Synthetic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
VR-3283SD™	African swine fever virus	Fragments from B646L, A489, 505-2R, C717R, B962L, B119L, G1340L and D1133L genomic regions.	Agricultural Research
<u>VR-3249SD</u> ™	BK virus	Full length genome of BK virus derived from a plasmid clone	Blood-borne Disease Research
VR-3233SD™	Hepatitis C virus	Fragments from 5'UTR and X-tail region (3'UTR)	Blood-borne Disease Research
<u>VR-3247SD</u> ™	Human gammaherpesvirus 4 (Epstein-Barr virus)	Fragments from LMP2, BNRF-1, EBER-1, BAMH1W, EBNA-2, BHRF-1, EBNA-1 Region, BXLF-1, BALF-5, and LMP-1	Blood-borne Disease Research
VR-3261SD™	Human herpesvirus 8	Fragments from the minor capsid protein (ORF 26) and the latency-associated nuclear antigen (LANA or ORF 73)	Blood-borne Disease Research
<u>VR-3237SD</u> ™	Sapovirus	Fragments from the RNA-dependent RNA polymerase, VP1, and polyprotein regions.	Digestive System Disease Research
<u>VR-3238SD</u> ™	Astrovirus	Fragments from ORF1a, ORF1b, ORF2, and 3' UTR regions	Digestive System Disease Research
<u>PRA-3000SD</u> ™	Cyclospora cayetanensis	Full 18S rRNA gene sequence, and full ITS1 and ITS2 sequences	Digestive System Disease Research
<u>PRA-3011SD</u> ™	Cryptosporidium hominis	Fragments from 18s rRNA, heat shock protein 70 (hsp70), COWP, GP60, dnaJ-like protein, and LIB13 regions	Digestive System Disease Research
PRA-3007SD™	Dientamoeba fragilis	Fragmetns from the 18S ribosomal RNA, internal transcribed spacer 1 (ITS1), and 5.8S ribosomal RNA regions	Digestive System Disease Researc
<u>PRA-3006SD</u> ™	Giardia lamblia	Fragments from the 18S ribosomal RNA, beta-giardin, triosephosphate isomerase, and glutamate dehydrogenase regions.	Digestive System Disease Researc
<u>VR-3257SD</u> ™	Hepatitis A virus	Fragments from the 5' untranslated region, viral capsid proteins (VP1- 4), self-cleaving peptide 2A, proteinase 3C, and 3D RNA polymerase.	Digestive System Disease Researc
<u>VR-3258SD</u> ™	Hepatitis E virus	Fragments from the 5' untranslated region, methyl transferase, Y domain, X domain, helicase, RNA-directed RNA polymerase, and open reading frames 2 and 3 (ORF2 and ORF3)	Digestive System Disease Researc
VR-3260SD™	Human parechovirus 3	Fragments from the 5'UTR and the viral protein VP1.	Digestive System Disease Researc
VR-3255SD™	Murine Norovirus	Fragments from the 5'UTR, NS1/2, NS5, NS6, NS7, Gp1, VF1, GP2, GP3, and 3'UTR	Digestive System Disease Researc
<u>VR-3234SD</u> ™	Norovirus GI	Fragments from the RNA-dependent RNA polymerase and VP1 regions	Digestive System Disease Researc
<u>VR-3235SD</u> ™	Norovirus GII	Fragments from the RNA-dependent RNA polymerase, VP1, and VP2 regions	Digestive System Disease Research
<u>VR-3264SD</u> ™	Human herpesvirus 6	Fragments from U31, U38, U57, U65/U66, U67, U90, and U94 regions	Neurological Disease Research
<u>VR-3265SD</u> ™	Human herpesvirus 7	Fragments from U10, U31, U38, U39, U42, and U57 regions	Neurological Disease Research
<u>BAA-4009SD</u> ™	Mycobacterium leprae	Fragments from the RLEP, Ag85B, 16S rRNA, and <i>rpoB</i> regions	Neurological Disease Research
VR-3270SD™	Monkeypox virus	Fragments from J2L, D14L, F3L, F8L, A27L, A29L, B6R, B7R, and N3R regions	Pox Disease Research
<u>VR-3282SD</u> ™	Avian paramyxovirus (Newcastle disease virus)	Fragments from the M (Matrix protein), F (Fusion protein), and L (Large RNA polymerase protein) gene regions and targets Class II NDV (velogenic assays favored).	Respiratory Disease Research
BAA-4000SD™	Coxiella burnetii	Fragments from the com1, icd, transposase (IS1111A), gyrA, and sodB regions	Respiratory Disease Research
VR-3251SD™	Human bocavirus	Fragments from the 5'UTR, NS1, NP1, VP1, VP2, and 3' UTR genes.	Respiratory Disease Research
<u>VR-3262SD</u> ™	Human coronavirus strain HKU1	Fragments from from the acidic tandem repeat region, growth factor-like protein, NTPase/helicase domain, RNA-dependent RNA polymerase, spike, and nucleocapsid regions	Respiratory Disease Research
<u>VR-3263SD</u> ™	Human coronavirus strain NL63	Fragments from NSP3 (ORF 1A), Rdrp (nsp12), NTPase (nsp13), nsp16, spike protein, nucleocapsid, and 3' UTR	Respiratory Disease Research
<u>VR-3250SD</u> ™	Human metapneumovirus (hMPV)	Fragments from the N, P, M, F, and L genes	Respiratory Disease Research
VR-3248SD™	Middle East respiratory syndrome coronavirus (MERS-CoV)	Fragments from the ORF1ab, ORF5, upper envelope (upE), ORF8b, nucleocapsid (N) protein gene, and 3' UTR regions	Respiratory Disease Research
<u>VR-3281SD</u> ™	Parvovirus B19	Fragments from VP1, VP2, and NS1 regions. This construct targets genotype 1.	Respiratory Disease Research
<u>MYA-5006SD</u> ™	Pneumocystis jirovecii	Fragments from the mtLSU rRNA, mtSSU rRNA, DHPS, MSG, KEX-1, and Beta-tubulin regions.	Respiratory Disease Research
<u>VR-3276SD</u> ™	Severe acute respirtory syndrome-related coronavirus 2 (SARS-CoV-2)	Fragments from ORF 1ab (including ORF-1b-nsp14 and RdRp), Envelope, and Nucleocapsid regions.	Respiratory Disease Research

Table 1: Quantitative Synthetic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
VR-3277SD [™]	Severe acute respirtory syndrome-related coronavirus 2 (SARS-CoV-2)	Fragment from the 5' Glycoprotein (Spike) region	Respiratory Disease Research
<u>VR-3278SD</u> ™	Severe acute respirtory syndrome-related coronavirus 2 (SARS-CoV-2)	Fragment from the 3' Glycoprotein (Spike) region	Respiratory Disease Research
<u>VR-3279SD</u> ™	Severe acute respirtory syndrome-related coronavirus 2 (SARS-CoV-2)	Fragment from the nsp9 and nsp12 (RdRp) regions.	Respiratory Disease Research
VR-3280SD [™]	Severe acute respirtory syndrome coronavirus [2003] (SARS-CoV)	Fragment from the nsp9 (RdRp), nsp11 and N regions.	Respiratory Disease Research
BAA-4001SD™	Chlamydia trachomatis LGV Type 1	Fragments from MOMP, 16S rRNA, pmpH, dnaB, putative virulence plasmid integrase regions, and conserved hypothetical virulence plasmid protein	Reproductive Health Research
<u>BAA-4002SD</u> ™	Chlamydia trachomatis LGV Type 2	Fragments from MOMP, 16S rRNA, pmpH and dnaB regions	Reproductive Health Research
BAA-4003SD™	Chlamydia trachomatis LGV Type 3	Fragments from MOMP, 16S rRNA, pmpH and dnaB regions	Reproductive Health Research
VR-3351SD [™]	Human immunodeficiency virus 1 (HIV-1)	Fragments from the 5' LTR, gag gene, pol gene (including protease, reverse transcriptase, and integrase regions), tat gene, rev gene, and nef gene.	Reproductive Health Research 8 Blood-borne Disease Research
<u>VR-3259SD</u> ™	Human T-cell leukemia virus 2 (HTLV-2)	Proviral genome sequence of HTLV-2 except the long terminal repeats (LTRs)	Reproductive Health Research Blood-borne Disease Research
<u>VR-3232SD</u> ™	Hepatitis B virus	Fragments from the highly conserved precore, core, P, S and X regions	Reproductive Health Research Blood-borne Disease Research
VR-3266SD [™]	Human immunodeficiency virus 2 (HIV-2)	Fragments from the envelope (ENV), group specific antigen (GAG) and DNA polymerase (POL) regions	Reproductive Health Research Blood-borne Disease Research
<u>VR-3240SD</u> ™	Human papillomavirus 16	Full length genome of HPV 16 derived from a plasmid clone	Reproductive Health Research
VR-3241SD™	Human papillomavirus 18	Full length genome of HPV 18 derived from a plasmid clone	Reproductive Health Research
VR-3256SD [™]	Human papillomavirus 31	Full length genome of HPV 31 derived from a plasmid clone	Reproductive Health Research
BAA-2641SD™	Mycoplasma genitalium	Fragments from the 16S gene, mgpA, and gap	Reproductive Health Research
BAA-2642SD™	Treponema pallidum	Fragments from the polA, tpr, 23S gene, arp,16S gene, flaA, 47kDa protein gene, and bmp	Reproductive Health Research
BAA-4004SD™	Ureaplasma urealyticum	Fragments from 16S rRNA, ureA, intergenic region 1, ureB, intergenic region 2, ureC, ureG, and MBA regions	Reproductive Health Research
PRA-3008SD	Babesia canis	Partial sequence of 18S ribosomal RNA	Vector-borne Disease Research
VR-3272SD™	Bourbon virus	Fragments from the PB1 and NP regions	Vector-borne Disease Research
<u>VR-3246SD</u> ™	Chikungunya virus	Fragments from the 5' UTR, nsP1, nsP2, nsP3, nsP4, E2, and E1 genes	Vector-borne Disease Research
VR-3228SD™	Dengue virus type 1	Fragments from the capsid, membrane, and envelope regions	Vector-borne Disease Research
<u>VR-3229SD</u> ™	Dengue virus type 2	Fragments from the capsid, membrane, and envelope regions	Vector-borne Disease Research
VR-3230SD [™]	Dengue virus type 3	Fragments from the capsid, membrane, and envelope regions	Vector-borne Disease Research
VR-3231SD [™]	Dengue virus type 4	Fragments from the capsid, membrane, and envelope regions	Vector-borne Disease Research
VR-3239SD™	Eastern equine encephalitis virus	Fragments from the capsid, NSP1, NSP3, 3' UTR, E1 envelope glycoprotein, and the E2 envelope glycoprotein regions	Vector-borne Disease Research
<u>PRA-3001SD</u> ™	Plasmodium malariae	Fragments from the 18S rRNA gene, UTR, cyclooxygenase 1 and 3 (Cox1 & Cox3), and Cytochrome B (Cytb) region	Vector-borne Disease Research
PRA-3004SD [™]	Plasmodium vivax	Fragments from 18s rRNA, mitochondrial DNA, cox3, cox1, cytB, and Aspartic protease PM4 regions	Vector-borne Disease Research
VR-3273SD™	Powassan virus lineage I	Fragments from the E, NS1, NS5, and 3' UTR regions.	Vector-borne Disease Research
VR-3275SD™	Powassan virus lineage II	Fragments from the E, NS1, NS5, and 3' UTR regions.	Vector-borne Disease Research
VR-3254SD [™]	Rift Valley fever virus	Fragments from the long, medium, and small genome segments, including the Gn, Nss, and Nsm genes	Vector-borne Disease Research
VR-3236SD™	Saint Louis encephalitis virus	Fragments from the NS1 gene, premembrane, envelope, NS5 gene, and 3' UTR regions	Vector-borne Disease Research
<u>PRA-3012SD</u> ™	Trypanosoma cruzi	Fragments from 18S rRNA, Kinetoplast minicircle, and Lathosterol oxidase (TcSC5D) regions, and a full-length satellite sequence.	Vector-borne Disease Research

Table 1: Quantitative Synthetic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
<u>VR-3274SD</u> ™	West Nile virus	Fragments from the 5' UTR, capsid, anchored capsid protein, membrane glycoprotein precursor (prM), Envelope protein (ENV), Nonstructural protein NS1, Nonstructural protein NS2A, Nonstructural protein NS3, RNA-dependent RNA polymerase NS5 and 3' UTR regions.	Vector-borne Disease Research
<u>VR-3253SD</u> ™	Yellow fever virus	Fragments from the capsid protein C, Pre-M, Envelope protein, NS1, NS2A, NS3, and NS5 regions.	Vector-borne Disease Research
<u>VR-3252SD</u> ™	Zika virus	Fragments from the membrane glycoprotein precursor M, Envelope, NS1, NS2B, NS3, NS4B, and NS5 regions	Vector-borne Disease Research
VR-3268SD™	Lassa virus	Fragments from 5' UTR and glycoprotein regions	Zoonotic Disease Research
VR-3269SD™	Nipah virus	Complete nucleocapsid protein and fragments from the matrix and glycoprotein regions	Zoonotic Disease Research

GENOMIC NUCLEIC ACIDS

ATCC genomic nucleic acids are whole genome preparations aseptically prepared from minimally passaged ATCC® Genuine Cultures. Each preparation is supported by stringent quality control testing to ensure product authenticity and functionality, including one or more of the following analyses:

- Agarose gel electrohoresis to ensure integrity
- Spectrophotometry to evaluate purity
- Droplet Digital[™] PCR (ddPCR[™]) to calculate concentration
- PCR to confirm functional activity
- Sequencing and short tandem repeat analyses confirm species identity

Further, each of our products is manufactured under ISO 9001 certified and ISO/IEC 17025 accredited processes, so you can trust your results and reproduce your data – every time.

Table 2: Quantitative Genomic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
<u>1015DQ</u> ™	Aspergillus niger		Agricultural Research
<u>27374DQ</u> ™	Campylobacter fetus subsp. fetus	Brain of sheetp fetus	Agricultural Research
<u>17752DQ</u> ™	Megasphaera elsdenii		Agricultural Research
VR-552DQ™	Canid herpesvirus 1	Respiratory tract of a dog	Animal Disease Research
9649DQ™	Lactobacillus delbrueckii subsp. delbrueckii	Sour grain mash	Biotechnology Research
<u>17023DQ</u> ™	Rhodobacter sphaeroides		Biotechnology Research
VR-538DQ [™]	Human herpesvirus 5	Adenoid tissue from 7-year-old female	Blood-related Disease Research
<u>VR-1367DQ</u> ™	Human herpesvirus 3 (Varicella-zoster virus)	Vesicular fluid from child with chickenpox; Georgia	Blood-related Disease Research
700532DQ™	Neisseria meningitidis	Patient with meningococcal septicaemia	Blood-related Disease Research
<u>12453DQ</u> ™	Proteus mirabilis		Blood-related Disease Research
<u>25285DQ</u> ™	Bacteroides fragilis	Appendix abscess	Digestive System Disease Research
<u>50608DQ</u> ™	Blastocystis hominis	Isolated 1986	Digestive System Disease Research
<u>33559DQ</u> ™	Campylobacter coli	Pig feces	Digestive System Disease Research
33291DQ™	Campylobacter jejuni subsp. jejuni	Feces	Digestive System Disease Research
33560DQ™	Campylobacter jejuni subsp. jejuni	Bovine feces	Digestive System Disease Research
700819DQ [™]	Campylobacter jejuni subsp. jejuni	Human feces	Digestive System Disease Research
<u>750DQ</u> ™	Candida tropicalis	Patient with bronchomycosis	Digestive System Disease Research
66029DQ™	Candida tropicalis		Digestive System Disease Research
8090DQ™	Citrobacter freundii		Digestive System Disease Research
<u>9689DQ</u> ™	Clostridioides difficile		Digestive System Disease Research
<u>43598DQ</u> ™	Clostridioides difficile	Human feces, asymptomatic neonate, Belgium	Digestive System Disease Research
BAA-1382DQ™			- ·
Brittisolba	Clostridioides difficile	Clinical isolate; Switzerland	Digestive System Disease Research

Table 2: Quantitative Genomic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
BAA-1870DQ™	Clostridioides difficile		Digestive System Disease Research
13124DQ™	Clostridioides perfringens	Clinical isolate, Switzerland	Digestive System Disease Research
PRA-67DQ™	Cryptosporidium parvum	Animal feces; 2002	Digestive System Disease Research
30459DQ™	Entamoeba histolytica	Colonic biopsy of rectal ulcer from adult human male with amebic dysentery; Mexico City, Mexico, 1967	Digestive System Disease Research
<u>29212DQ</u> ™	Enterococcus faecalis	Urine	Digestive System Disease Research
51299DQ™	Enterococcus faecalis	Peritoneal fluid, St. Louis, Missouri, US	Digestive System Disease Research
700802DQ™	Enterococcus faecalis	Human blood, patient, St. Louis, Missouri, US, 1987	Digestive System Disease Research
700221DQ™	Enterococcus faecium	Human feces, Connecticut	Digestive System Disease Research
<u>8739DQ</u> ™	Escherichia coli	Feces	Digestive System Disease Research
11229DQ™	Escherichia coli		Digestive System Disease Research
10798DQ™	Escherichia coli	Feces from diphtheria convalescent	Digestive System Disease Research
25922DQ™	Escherichia coli 06	Clinical isolate	Digestive System Disease Research
43895DQ™	Escherichia coli 0157:H7	Raw hamburger meat implicated in a hemorrhagic ${\it colit}$ is outbreak	Digestive System Disease Research
<u>700926DQ</u> ™	Escherichia coli	Derived from parent strain W1485 by acridine orange curing of the F plasmid	Digestive System Disease Research
<u>700928DQ</u> ™	Escherichia coli	Human clinical specimen, blood and urine from a women with acute pyelonephritis, Baltimore, Maryland	Digestive System Disease Research
<u>BAA-2192DQ</u> ™	Escherichia coli 0145:Nonmotile	Human stool, South Dakota, USA	Digestive System Disease Research
<u>BAA-2193DQ</u> ™	Escherichia coli O45:H2	Stool, Maine	Digestive System Disease Research
BAA-2196DQ™	Escherichia coli O26:H11	Stool, Michigan	Digestive System Disease Research
BAA-2215DQ™	Escherichia coli O103:H11	Idaho	Digestive System Disease Research
BAA-2219DQ™	Escherichia coli O121:H19	Human stool, Virginia	Digestive System Disease Research
BAA-2326DQ™	Escherichia coli O104:H4	Stool sample from patient with hemolytic uremic syndrome, 2011	Digestive System Disease Research
BAA-2440DQ™	Escherichia coli 0111	Human	Digestive System Disease Research
27766DQ™	Faecalibacterium prausnitzii	Human feces	Digestive System Disease Research
30888DQ™	Giardia intestinalis	Human female, Portland, OR, 1971	Digestive System Disease Research
43504DQ™	Helicobacter pylori	Gastric antrum	Digestive System Disease Research
700392DQ™	Helicobacter pylori	Stomach of a human patient with gastritis; UK	Digestive System Disease Research
VR-930DQ™	Human adenovirus 41	Feces from child with gastroenteritis, Netherlands, 1973	Digestive System Disease Research
VR-850DQ™	Human Coxsackievirus A 21	Stool from male with paralytic illness, California	Digestive System Disease Research
VR-30DQ™	Human Coxsackievirus B3	Stool from febrile patient with minor illness	Digestive System Disease Research
VR-1775DQ™	Human Enterovirus 71	Stool sample from 2-month-old male with aseptic meningitis	Digestive System Disease Research
VR-931DQ™	Human adenovirus 40	Feces, infantile gastroenteritis, Netherlands, 1979	Digestive System Disease Research
BAA-679DQ™	Listeria monocytogenes	Tissue, animal - rabbit, Cambridge United Kingdom, 1924	Digestive System Disease Research
25830DQ™	Morganella morganii subsp. morganii	Patient with summer diarrhea	Digestive System Disease Research
<u>BAA-968D</u> ™	Mycobacterium avium subsp. paratuberculosis	Animal feces; Wisconsin, 1990	Digestive System Disease Research
14029DQ™	Plesiomonas shigelloides		Digestive System Disease Research
VR-824DQ™	Reovirus 3	Child with diarrhea	Digestive System Disease Research
VR-2018DQ™	Rotavirus A	Diarrhea stool from patient positive for rotavirus	Digestive System Disease Research
VR-3391DQ™	Rotavirus A	Human infant, Bethesda, Maryland	Digestive System Disease Research
13076DQ™	Salmonella enterica subsp. enterica serovar Enteritidis		Digestive System Disease Research
13311DQ™	Salmonella enterica subsp. enterica serovar Typhimurium	Feces, food poisoning	Digestive System Disease Research
14028DQ™	Salmonella enterica subsp. enterica serovar Typhimurium	Tissue from pools of heart and liver from 4-week-old chickens	Digestive System Disease Research
700720DQ™	Salmonella enterica subsp. enterica serovar Typhimurium	Wild type strain isolated from a natural source; 1948	Digestive System Disease Research

Table 2: Quantitative Genomic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
12022DQ™	Shigella flexneri		Digestive System Disease Research
25931DQ™	Shigella sonnei	Feces	Digestive System Disease Research
BAA-611DQ™	Streptococcus agalacitae	Clinical specimen, Human	Digestive System Disease Research
PRA-310DQ™	Toxoplasma gondii	Derived from in vivo RH strain ATCC 50174	Digestive System Disease Research
39315DQ™	Vibrio cholerae	Stool from cholera patient, Bangladesh	Digestive System Disease Research
17802DQ™	Vibrio parahaemolyticus	Shirasu food poisoning	Digestive System Disease Research
27562DQ™	Vibrio vulnificus	Human blood, Florida	Digestive System Disease Research
9610DQ™	Yersinia enterocolitica subsp. enterocolitica	Tissue; glanders-like infection of the face	Digestive System Disease Research
23715DQ™	Yersinia enterocolitica subsp. enterocolitica	Blood, petechiae, from anterior chamber of eye	Digestive System Disease Researc
10231DQ™	Candida albicans	Man with bronchomycosis	Epidermal Disease Research
22019DQ™	Candida parapsilosis	Case of sprue, Puerto Rico	Epidermal Disease Research
6919DQ™	Cutibacterium acnes	Facial acne	Epidermal Disease Research
VR-1432DQ™	Human enterovirus 71	Vesicular fluid from an adult female with hand, foot, and mouth disease, Wuhan, China.	Epidermal Disease Research
VR-1467DQ™	Human herpesvirus 6B	Peripheral blood lymphocytes from a 36 year-old male AIDS patient, Zaire, Africa	Epidermal Disease Research
47085DQ™	Pseudomonas aeruginosa		Epidermal Disease Research
9027DQ™	Pseudomonas paraeruginosa	Outer ear infection	Epidermal Disease Research
/R-315DQ™	Rubella virus	Throat washings from Army recruit	Epidermal Disease Research
6538DQ™	Staphylococcus aureus	Human lesion	Epidermal Disease Research
25923DQ™	Staphylococcus aureus subsp.	Clinical Isolate	Epidermal Disease Research
29213DQ™	Staphylococcus aureus subsp. aureus	Wound	Epidermal Disease Research
43300DQ™	Staphylococcus aureus subsp. aureus	Clinical isolate, Kansas	Epidermal Disease Research
700699DQ™	Staphylococcus aureus subsp. aureus	Isolated from pus and debrided tissue at surgical incision in sternum of 4 month-old infant; Japan, 1996	Epidermal Disease Research
BAA-1556DQ™	Staphylococcus aureus subsp. aureus	Wrist abcess, 36-year-old HIV+ man with history of IV drug use	Epidermal Disease Research
BAA-1717DQ [™]	Staphylococcus aureus subsp. aureus	From adolescent patient with severe sepsis syndrome; Texas Children's Hospital	Epidermal Disease Research
BAA-1718DQ™	Staphylococcus aureus subsp. aureus	From a 12-year-old white female with a buttock abscess	Epidermal Disease Research
12228DQ™	Staphylococcus epidermidis		Epidermal Disease Research
<u>19615DQ</u> ™	Streptococcus pyogenes	Pharynx of child following episode of sore throat.	Epidermal Disease Research
700294DQ™	Streptococcus pyogenes	Infected wound	Epidermal Disease Research
VR-1932DQ™	Human adenovirus 8	Case of epidemic keratoconjunctivitis	Infectious Disease Research
VR-168DQ™	Human Coxsackievirus A 10	Stool from a child in New York	Infectious Disease Research
VR-1887DQ™	Parechovirus A, Type 3	Young child	Infectious Disease Research
4356DQ™	Lactobacillus acidophilus		Microbiome Research
10240DQ™	Micrococcus luteus	Air	Microbiome Research
47011T1-DQ™	Escherichia coli with ATCC 16S Tag 1		Metagenomics Research
BAA-2975T3-DQ™	Staphylococcus aureus with ATCC 16S Tag 3		Metagenomics Research
3624T2-DQ™	Clostridium perfringens with ATCC 16S Tag 2		Metagenomics Research
204508DQ™	Saccharomyces cerevisiae	Wild type strain	Molecular Research
MYA-4941DQ™	Saccharomyces cerevisiae	Parent strain used Saccharoymes <i>cerevisiae</i> BJ5465	Molecular Research
VR-1660DQ™	Human echovirus 30	Fecal sample of boy with headache, stiff neck, and fever	Neural Research
VR-1583DQ™	JC polyomavirus	Brain tumor of owl monkey	Neural Research
MYA-646DQ™	Candida dubliniensis	Oral cavity of HIV-infected patient, Dublin, Ireland	Oral Health Research

Table 2: Quantitative Genomic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
43037DQ™	Eubacterium nodatum	Subgingival region of mouth	Oral Health Research
25586DQ™	Fusobacterium nucleatum subsp. nucleatum	Cervico-facial lesion	Oral Health Research
13419DQ™	Streptococcus salivarius subsp. salivarius		Oral Health Research
<u>43037DQ</u> ™	Tannerella forsythia	Human periodontal pocket, Massachusetts, US	Oral Health Research
35405DQ™	Treponema denticola	Human periodontal pocket, Montreal, Canada	Oral Health Research
<u> 17978DQ</u> ™	Acinetobacter baumannii	Fatal meningitis of a 4-month old infant	Opportunistic Pathogen Researc
<u> 19606DQ</u> ™	Acinetobacter baumannii	Urine	Opportunistic Pathogen Researc
9643DQ™	Aspergillus flavus	Shoe sole, New Guinea	Opportunistic Pathogen Researc
√R-837DQ [™]	BK polyomavirus	Urine of a kidney transplant patient	Opportunistic Pathogen Researc
<u> 19146DQ</u> ™	Brevundimonas diminuta	Contaminant in culture of Bacillus cereus	Opportunistic Pathogen Researc
MYA-2876DQ™	Candida albicans	Human clinical specimen	Opportunistic Pathogen Researc
2001DQ™	Candida glabrata	Feces	Opportunistic Pathogen Researc
32196DQ™	Candida krusei	Cabbage frass, Japan	Opportunistic Pathogen Researc
34449DQ™	Candida lusitaniae	Pig, Portugal	Opportunistic Pathogen Researc
<u>13047DQ</u> ™	Enterobacter cloacae subsp. cloacae	Spinal fluid	Opportunistic Pathogen Researc
29905DQ™	Proteus vulgaris		Opportunistic Pathogen Researc
29914DQ™	Providencia stuartii		Opportunistic Pathogen Researc
.5442DQ™	Pseudomonas aeruginosa		Opportunistic Pathogen Researc
27853DQ™	Pseudomonas aeruginosa	Blood culture	Opportunistic Pathogen Researc
3AA-2793DQ™	Pseudomonas aeruginosa	Urine from a 26-year-old female, Chile, 2014	Opportunistic Pathogen Researc
.3880DQ™	Serratia marcescens subsp. marcescens	Pond water	Opportunistic Pathogen Research
/R-302DQ™	Cowpox virus	Lesions on hands of milker, England	Pox Disease Research
7830DQ™	Lactobacillus delbrueckii subsp. lactis		Probiotic Research
<u>8014DQ</u> ™	Lactiplantibacillus plantarum		Probiotic Research
9372DQ™	Bacillus atrophaeus		Quality Control
6633DQ™	Bacillus spizizenii		Quality Control
1437DQ™	Clostridium sporogenes	Cotton plant	Quality Control
_9404DQ™	Clostridium sporogenes	Human with an acute case of gas gangrene	Quality Control
.0541DQ™	Enterococcus hiraei		Quality Control
.022DQ™	Aspergillus fumigatus	Lung of chicken, Connecticut	Respiratory Disease Research
20542DQ™	Aspergillus terreus		Respiratory Disease Research
/R-1558DQ™	Betacoronavirus 1	Man with cold-like illness	Respiratory Disease Research
<u>+617DQ</u> ™	Bordetella bronchiseptica		Respiratory Disease Research
51541DQ™	Bordetella holmesii	Animal blood, Buffalo, New York, USA	Respiratory Disease Research
<u>15311DQ</u> ™	Bordetella parapertussis	Whooping cough	Respiratory Disease Research
9797DQ™	Bordetella pertussis		Respiratory Disease Research
3AA-589DQ [™]	Bordetella pertussis	Human clinical specimen	Respiratory Disease Research
25416DQ™	Burkholderia cepacia	Plant-derived foodstuff - onion, <i>Allium cepa</i>	Respiratory Disease Research
53592DQ™	Chlamydophila pneumoniae	Throat of student with acute pharyngitis, Seattle, WA, 1983	Respiratory Disease Research
/R-1360DQ™	Chlamydophila pneumoniae	Sputum of pneumonia patient, Georgia	Respiratory Disease Research
/R-2282DQ™	Chlamydophila pneumoniae	Conjunctiva of a child	Respiratory Disease Research
L3812DQ™	Corynebacterium diphtheriae		Respiratory Disease Research
/R-1823DQ™	Enterovirus D68	Nasopharyngeal swab from patient with respiratory illness.	Respiratory Disease Research
<u>VR-1826DQ</u> ™	Enterovirus D68	Nasal-pharyngeal swab of hospitalized 10-month-old female with pneumonia, California, 1962	Respiratory Disease Research
51907DQ™	Haemophilus influenaze		Respiratory Disease Research

Table 2: Quantitative Genomic Nucleic Acids

ATCC® No.	Organism	Source Information	Research Applications
VR-1DQ™	Human adenovirus 1	Adenoid tissue from five-year-old child with hypertrophied tonsils and adenoids, Maryland, 1953	Respiratory Disease Research
VR-846DQ [™]	Human adenovirus 2	Spontaneously degenerating tissue culture of adenoid tissue from 7-year-old girl with hypertrophied tonsils and adenoids,	Respiratory Disease Research
VR-3DQ™	Human adenovirus 3	Nasal washings from an adult with a common cold, 1953, Maryland	Respiratory Disease Research
VR-1572DQ™	Human adenovirus 4	Throat washings of patient, Fort Leonard Wood, Missouri, 1952-1953	Respiratory Disease Research
VR-5DQ [™]	Human adenovirus 5	Spontaneously degenerating tissue culture of adenoid tissue from a 4-year-old girl with chronically infected tonsils	Respiratory Disease Research
VR-6DQ [™]	Human adenovirus 6	Spontaneously degenerating tissue culture of tonsil tissue from a 7-year-old girl with chronically infected tonsils	Respiratory Disease Research
VR-7DQ™	Human adenovirus 7	Throat washing from military recruit with pharyngitis, California, 1954	Respiratory Disease Research
<u>VR-863DQ</u> ™	Human adenovirus 12	Stool from case of suspected poliomyelitis Massachusetts	Respiratory Disease Research
VR-740DQ™	Human coronavirus 229E	Nasal and throat swabs from man with upper respiratory illness	Respiratory Disease Research
VR-94DQ™	Human parainfluenza virus 1	Throat swab of 3-year-old boy with acute laryngitis, 1957	Respiratory Disease Research
VR-92DQ [™]	Human parainfluenza virus 2	11-month-old female with acute laryngotracheobronchitis, Ohio, 1955	Respiratory Disease Research
VR-93DQ™	Human parainfluenza virus 3	One-year-old female with pneumonia, Washington, DC, 1957	Respiratory Disease Research
<u>VR-3350DQ</u> ™	Human parainfluenza virus 4a	Throat swab of patient with mild respiratory tract illness	Respiratory Disease Research
VR-26DQ™	Human respiratory syncytial virus	17-month-old male with pneumonia, Maryland, 1956	Respiratory Disease Research
VR-955DQ™	Human respiratory syncytial virus	Throat swab from 23-month-old girl with diffuse interstitial pneumonia, Massachusetts, 1977	Respiratory Disease Research
<u>VR-1400DQ</u> ™	Human respiratory syncytial virus	Secretion from endotracheal tube of human infant with pneumonia.	Respiratory Disease Research
<u>VR-1540DQ</u> ™	Human respiratory syncytial virus	Lower respiratory tract of infant with bronchiolitis and bronchopneumonia, Melborne, Australia, 1961	Respiratory Disease Research
VR-1580DQ™	Human respiratory syncytial virus	Respiratory secretions from child with acute respiratory disease seen at Children's Hospital of the District of Columbia, Washington, DC, 1962.	Respiratory Disease Research
VR-1559DQ™	Human rhinovirus 1A	Naso-pharyngeal washings from patient with mild respiratory illness, Ohio.	Respiratory Disease Research
<u>VR-1645DQ</u> ™	Human rhinovirus 1B	Presumed from human throat washings	Respiratory Disease Research
/R-482DQ™	Human rhinovirus 2	Nasal washing from patient with cold	Respiratory Disease Research
/R-284DQ™	Human rhinovirus 14	Throat swab from young adult with upper respiratory illness.	Respiratory Disease Research
<u>√R-283DQ</u> ™	Human rhinovirus 16	Throat swab from healthy 2-year-old female, Washington, DC, 1960	Respiratory Disease Research
<u>VR-1663DQ</u> ™	Human rhinovirus 17	Presumed from throat swab from adult with upper respiratory illness, North Carolina, 1959	Respiratory Disease Research
/R-1187DQ™	Human rhinovirus 77		Respiratory Disease Research
/R-95DQ [™]	Influenza A virus (H1N1)	Patient in Puerto Rico, 1934	Respiratory Disease Research
/R-1469DQ™	Influenza A virus (H1N1)	Patient in Puerto Rico, 1934	Respiratory Disease Research
<u>/R-1736DQ</u> ™	Influenza A virus (H1N1)	Nasopharyngeal specimen from a patient positive for Flu A in Virginia, 2009	Respiratory Disease Research
VR-1884DQ™	Influenza A virus (H1N1)	Classical reassortant virus derived from A/ California/07/2009 (H1N1)pdm09 and A/Puerto Rico/8/1934 (H1N1)	Respiratory Disease Research
/R-1893DQ [™]	Influenza A virus (H1N1)	Human in Florida, USA on October 31, 2006	Respiratory Disease Research
/R-1894DQ™	Influenza A virus (H1N1)	Human in California, USA on April 9, 2009	Respiratory Disease Research
/R-1881DQ™	Influenza A virus (H3N2)	Isolated from a human in August 31, 2005	Respiratory Disease Research
VR-1882DQ™	Influenza A virus (H3N2)	Human in Wisconsin, USA, on June 7, 2009	Respiratory Disease Research
VR-101DQ™	Influenza B virus	Patient in New York, 1940	Respiratory Disease Research
VR-823DQ™	Influenza B virus	Not known	Respiratory Disease Research

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ATCC® No.	Organism	Source Information	Research Applications
VR-1804DQ™	Influenza B virus	Human, Florida, 2006	Respiratory Disease Research
<u>VR-1813DQ</u> ™	Influenza B virus	Human in Massachusetts, USA, 2012	Respiratory Disease Research
VR-1883DQ™	Influenza B virus	Human in Wisconsin, USA on February 20, 2010.	Respiratory Disease Research
VR-1885DQ [™]	Influenza B virus	Classical reassortant virus derived from B/ Wisconsin/1/2010 (Yamagata Lineage) and B/Lee/1940	Respiratory Disease Research
<u>VR-1931DQ</u> ™	Influenza B virus	Isolated from a human in Florida on November 09, 2015	Respiratory Disease Research
<u>13048DQ</u> ™	Klebsiella aerogenes	Sputum	Respiratory Disease Research
BAA-1705DQ™	Klebsiella pneumoniae	Urine from a 42-year-old human male; 2007 CAP Survey	Respiratory Disease Research
BAA-2782DQ™	Klebsiella pneumoniae	Peritoneal fluid	Respiratory Disease Research
13883DQ™	Klebsiella pneumoniae subsp. pneumoniae		Respiratory Disease Research
700721DQ [™]	Klebsiella pneumoniae subsp. pneumoniae	Sputum from a 66 year-old man, 1994	Respiratory Disease Research
700603DQ™	Klebsiella quasipneumoniae	Urine from a hospitalized patient, Virginia	Respiratory Disease Research
33462DQ™	Legionella longbeachae	Human lung	Respiratory Disease Research
33152DQ™	Legionella pneumophila subsp. pneumophila	Human lung	Respiratory Disease Research
VR-24DQ™	Measles virus	Blood from patient in acute phase of typical measles	Respiratory Disease Research
25238DQ™	Moraxella catarrhalis		Respiratory Disease Research
VR-106DQ™	Mumps virus	Pooled saliva from patients, Massachusetts	Respiratory Disease Research
25420DQ™	Mycobacterium africanum	Expectorate; senegalese with pulmonary TB	Respiratory Disease Research
35734D™	Mycobacterium bovis	Bovine milk	Respiratory Disease Research
BAA-1052DQ™	Mycobacterium talmoniae	Clinical human specimen, July 31, 2000	Respiratory Disease Research
19422DQ™	Mycobacterium microti		Respiratory Disease Research
BAA-688DQ™	Mycobacterium pinnipedii	Clinical animal specimen, Australia, 1986	Respiratory Disease Research
<u>29342DQ</u> ™	Mycoplasma pneumoniae	Patient with pneumonia	Respiratory Disease Researc
25177DQ™	Mycobacterium tuberculosis		Respiratory Disease Research
<u>25618DQ</u> ™	Mycobacterium tuberculosis	Derived from existing strain; New York, 1934	Respiratory Disease Researc
<u>VR-907DQ</u> ™	Sendai virus	Early history of this Helsinki laboratory strain is not clear	Respiratory Disease Research
49619DQ™	Streptococcus pneumoniae	Sputum, Phoenix, Arizona	Respiratory Disease Research
700669DQ™	Streptococcus pneumoniae	Hospital, Barcelona, Spain, 1984	Respiratory Disease Research
BAA-55DQ™	Fannyhessea vaginae	Vaginal flora from a healthy woman, Sweden, 1998	Reproductive Health Research
VR-879DQ™	Chlamydia trachomatis	Human cervix, cervicitis	Reproductive Health Research
VR-880DQ™	Chlamydia trachomatis Serovar I	Male urethra with non-gonococcal urethritis	Reproductive Health Research
VR-885DQ™	Chlamydia trachomatis Serovar D	Human cervix, asymptomatic	Reproductive Health Research
VR-901BD™	Chlamydia trachomatis LGV I	Lymph node from human with LGV	Reproductive Health Research
VR-903D™	Chlamydia trachomatis LGV III	Lymph node from human with LGV	Reproductive Health Research
VR-902BD™	Chlamydia trachomatis LGV II	Bubo from human with LGV	Reproductive Health Research
14019DQ™	Gardnerella vaginalis	Vaginal secretions	Reproductive Health Research
<u>49145DQ</u> ™	Gardnerella vaginalis	Clinical isolate	Reproductive Health Research
33940DQ™	Haemophilus ducreyi		Reproductive Health Research
<u>√R-539DQ</u> ™	Human Herpesvirus 1	Brain, human, encephalitis	Reproductive Health Research
<u>√R-1493DQ</u> ™	Human Herpesvirus 1	Lip lesion of human with cold sore	Reproductive Health Research
<u>√R-540DQ</u> ™	Human Herpesvirus 2	Brain of a 50 year old female with multiple sclerosis; Iceland	Reproductive Health Research
<u>VR-734DQ</u> ™	Human Herpesvirus 2	Human genital infection	Reproductive Health Research
33820DQ™	Lactobacillus crispatus		Reproductive Health Research
22222DOIM	Lactobacillus gasseri		Reproductive Health Research
<u>33323DQ</u> ™			
<u>33323DQ</u> <u>55195DQ</u> ™	Lactobacillus iners	Patient with bacterial vaginosis	Reproductive Health Researc

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5243DQ™	Mobiluncus mulieris	Human vagina	Reproductive Health Research
3530DQ™	Mycoplasma genitalium	Urethra of male with non-gonococcal urethritis	Reproductive Health Research
<u>23114DQ</u> ™	Mycoplasma hominis	Rectal swab	Reproductive Health Research
<u>19424DQ</u> ™	Neisseria gonorrhoeae		Reproductive Health Research
<u>49226DQ</u> ™	Neisseria gonorrhoeae		Reproductive Health Research
<u>700825DQ</u> ™	Neisseria gonorrhoeae	Male patient with disseminated gonococcal infection; 1983	Reproductive Health Research
<u>27337DQ</u> ™	Peptostreptococcus anaerobius		Reproductive Health Research
<u>29303DQ</u> ™	Prevotella bivia	Endometrium	Reproductive Health Research
<u>15305DQ</u> ™	Staphylococcus saprophyticus subsp. saprophyticus	Urine	Reproductive Health Research
<u>13813DQ</u> ™	Streptococcus agalactiae		Reproductive Health Research
30001DQ [™]	Trichomonas vaginalis	Vaginal exudate from human with acute vaginitis, 1956	Reproductive Health Research
<u>50143DQ</u> ™	Trichomonas vaginalis	Human, Columbus, Ohio, 1980	Reproductive Health Research
PRA-302DQ™	Babesia duncani	Human blood, Washington state, 1991	Vector-borne Disease Research
PRA-398DQ™	Babesia microti	Blood, human babesiosis, Nantucket, MA, 1983	Vector-borne Disease Research
<u>35210DQ</u> ™	Borrelia burgdorferi	Tick, Ixodes dammini; New York	Vector-borne Disease Research
30012DQ [™]	Leishmania major	Human, Teheran, Iran, 1949	Vector-borne Disease Research
PRA-405DQ [™]	Plasmodium falciparum		Vector-borne Disease Research
<u>30266DQ</u> ™	Trypanosoma cruzi	Triatoma infestans, Chile, 1945	Vector-borne Disease Research
<u>VR-1838DQ</u> ™	Zika virus	Blood of a rhesus monkey that became infected while stationed as a sentinel in forest near Entebbe, Uganda, 1947	Vector-borne Disease Research
VR-1843DQ™	Zika virus	Human serum specimen, Puerto Rico, December 2015	Vector-borne Disease Research
<u>15597-B1DQ</u> ™	Escherichia coli phage MS2		Water Contamination
30174D™	Naegleria fowleri	Human spinal fluid; Orlando, FL, 1968	Water Contamination

CERTIFIED REFERENCE MATERIALS

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Establishing assay specificity and sensitivity

Testing and calibration in ISO/IEC 17025 accredited labs

Validating or comparing test methods

CRMs offer the highest level of quality assurance, accuracy, and traceability, providing you with complete confidence that your results are reliable and reproducible.

ATCC® No.	Organism	Source Information
<u>qCRM-15531D</u> ™	Mycoplasma pneumoniae	Isolated by Hayflick from monkey kidney tissue-culture fluids of the FH strain (Eaton Agent Virus) supplied by C. Liu, who recovered this strain in embryonated eggs from a student with atypical pneumonia
<u>qCRM-17981D</u> ™	Mycoplasma hyorhinis	Nasal cavity of pig
<u>qCRM-19610D</u> ™	Mycoplasma gallisepticum	Suspension of tracheal and airsac tissues of chickens with chronic respiratory disease
<u>qCRM-19989D</u> ™	Mycoplasma fermentans	Ulcerative balanitis
<u>qCRM-23064D</u> ™	Mycoplasma salivarium	Saliva
<u>qCRM-23206D</u> ™	Acholeplasma laidlawii	Sewage
<u>qCRM-23714D</u> ™	Mycoplasma orale	Oropharynx of child, Washington, DC
<u>qCRM-23838D</u> ™	Mycoplasma arginine	Mouse brain experimentally infected with scrapies
<u>qCRM-25204D</u> ™	Mycoplasma synoviae	Hock joint of chicken
<u>qCRM-27545D</u> ™	Mycoplasma hominis	Human blood culture

