

Twist Synthetic RNA Controls

Positive controls provide quality control measures for a wide range of applications from diagnostic assay development to day-to-day testing including the verification and validation of diagnostic tests of both next-generation sequencing (NGS) and reverse transcription polymerase chain reaction (RT-PCR) assays. Synthetic viral controls are a powerful alternative to “live virus” controls which are viral nucleic acids extracted from either an infected patient or from live virus propagated in cell culture. Synthetic controls created through gene synthesis broaden access across diverse strains while mitigating safety and security concerns.

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Twist Synthetic SARS-CoV-2 RNA Controls

The Twist Synthetic SARS-CoV-2 RNA controls consist of six non-overlapping 5 kb fragments generated from Twist Gene Fragments then transcribed into ssRNA. These provide coverage of greater than 99.9% of the bases of the viral genome.

All Standard Twist Synthetic SARS-CoV-2 RNA Controls are Biosafety Level 1. They are supplied frozen as 100 µL with a specification range of approximately 1x10⁶ copies/µL and should be stored at -70°C to -90°C.

PART NUMBER	CONTROL	VOI/VOC	GENBANK/GISAID ID	GISAID NAME
102019	Control 1		MT007544.1	Australia/VIC01/2020
102024	Control 2*		MN908947.3	Wuhan-Hu-1
102860	Control 3		LC528232.1	Japan/Hu_DP_Kng_19-020/2020
102862	Control 4		MT106054.1	USA/TX1/2020
102917	Control 5		MT188340	USA/MN2-MDH2/2020
102918	Control 6		MT118835	USA/CA9/2020
102916	Controls 1 – 6		N/A	N/A
103087	Control 7		EPI_ISL_418227	France/HF2393/2020
103086	Controls 1 – 7		N/A	N/A
103511	Control 8		MT066176	Taiwan/NTU02/2020
103512	Control 9		MT152824	USA/WA2/2020
103513	Control 10		EPI_ISL_414648	USA/CA-PC101P/2020
103514	Control 11		EPI_ISL_417739	Iceland/5/2020
103515	Control 12		EPI_ISL_420244	England/SHEF-C05B2/2020
103533	Control 13		EPI_ISL_421184	Belgium/ULG-10004/2020
103907	Control 14* (B.1.1.7)	Alpha	EPI_ISL_710528	England/205041766/2020
103909	Control 15* (B.1.1.7)	Alpha	EPI_ISL_601443	England/MILK-9E05B3/2020
104043	Control 16 (B.1.351)	Beta	EPI_ISL_678597	South Africa/KRISP-EC-K005299/2020
104044	Control 17 (P.1)	Gamma	EPI_ISL_792683	Japan (Brazil)/IC-0564/2021
104338	Control 18 (B.1.617.1)	Kappa	EPI_ISL_1662307	India/CT-ILSGS00361/2021
104529	Control 19 (B.1.526)	Iota	EPI_ISL_1300881	USA/NY-MSHSPSP-PV24650/2020
104530	Control 20 (B.1.427)		EPI_ISL_730092	USA/CA-ALSR-4704/2020
104531	Control 21 (B.1.429)	Epsilon	EPI_ISL_672365	USA/CA-CZB-12943/2020

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104532	Control 22 (B.1.1.519)		EPI_ISL_933685	Mexico/CMX-InDRE_208/2021
104533	Control 23 (B.1.617.2)	Delta	EPI_ISL_1544014	India/MH-NCCS-P1162000182735/2021
104534	Control 24 (B.1.617.3)		EPI_ISL_1939891	India/MH-SEQ-221_S66_R1_001/2021
104538	Control 28 (AY.1)	Delta	EPI_ISL_2695467	Portugal/PT9543/2021
104539	Control 29 (AY.2)	Delta	EPI_ISL_2693246	USA/WA-CDC-UW21061750277/2021
105204	Control 48 (B.1.1.529/BA.1)	Omicron	EPI_ISL_6841980	Hong Kong/HKU-211129-001/2021

**Indicates controls that are also available in the Assay Ready format*

Assay Ready Synthetic RNA Controls

Twist Bioscience Assay Ready Control products are provided in desiccated pellet format that includes a nucleic acid stabilizer which enables greater stability and ease of use during the shipping and protocol processes. Due to the enhanced stability, they can be shipped at room temperature, reducing cost and improving accessibility. The Assay Ready Controls are supplied at approximately two million copies per tube.

All Assay Ready Controls are Biosafety Level 1. They are supplied as a dried down pellet with a specification range of approximately 2×10^6 copies/tube and should be stored at -20°C .

PART NUMBER	CONTROL	GENBANK ID	GISAID NAME
103925	Assay Ready Control 2	MN908947.3	Wuhan-Hu-1
103926	Assay Ready Control 14 (B.1.1.7)	EPI_ISL_710528	England/205041766/2020
103927	Assay Ready Control 15 (B.1.1.7)	EPI_ISL_601443	England/MILK-9E05B3/2020

Twist Respiratory Virus Controls

The Twist Synthetic Respiratory Virus Controls cover a broad range of RNA and DNA viruses relevant to respiratory disease research. These controls are aligned with the content of the Twist Respiratory Virus Research Panel (PN 103067) and are suitable for use with Twist Fixed Panel NGS workflows or for use with RT-PCR or qPCR experiments of your own design.

All Twist Respiratory Virus Controls are Biosafety Level 1. They are supplied frozen as 100 µL with a specification range of approximately 1×10^6 copies/µL and should be stored at -70°C to -90°C.

PART NUMBER	NAME	ACCESSION NUMBER	VIRUS TYPE	LENGTH (BASES)
103001	Twist Synthetic Influenza H1N1 (2009) RNA Control	NC_026438, NC_026435, NC_026437, NC_026433, NC_026436, NC_026434, NC_026431, NC_026432	ssRNA (- sense)	13158
103002	Twist Synthetic Influenza H3N2 RNA Control	NC_007373, NC_007372, NC_007371, NC_007366, NC_007369, NC_007368, NC_007367, NC_007370	ssRNA (- sense)	13627
103003	Twist Synthetic Influenza B RNA Control	NC_002204, NC_002205, NC_002206, NC_002207, NC_002208, NC_002209, NC_002210, NC_002211	ssRNA (- sense)	14452
103004	Twist Synthetic Human bocavirus 1 DNA Control	MG953830.1	ssDNA	5164
103005	Twist Synthetic Human enterovirus 68 RNA Control	NC_038308.1	ssRNA (+ sense)	7367
103006	Twist Synthetic Human rhinovirus 89 RNA Control	NC_001617.1	ssRNA (+ sense)	7152
103007	Twist Synthetic Mumps virus RNA Control	NC_002200.1	ssRNA (- sense)	15384
103008	Twist Synthetic Human parainfluenza virus 1 RNA Control	NC_003461.1	ssRNA (- sense)	15600
103009	Twist Synthetic measles virus RNA Control	NC_001498.1	ssRNA (- sense)	15894
103010	Twist Synthetic Human parainfluenza virus 4 RNA Control	NC_021928.1	ssRNA (- sense)	17052
103011	Twist Synthetic Human coronavirus 229E RNA Control	NC_002645.1	ssRNA (+ sense)	27317
103012	Twist Synthetic Human coronavirus NL63 RNA Control	NC_005831.2	ssRNA (+ sense)	27553
103013	Twist Synthetic Human coronavirus OC43 RNA Control	NC_006213.1	ssRNA (+ sense)	30741
103730	Twist Respiratory Virus Controls (13 Count)	N/A	N/A	N/A