**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/CO-CDC-LC0441987/2021 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), and ORF3a protein (ORF3a) genes, complete cds; envelope protein (E) and membra...**

GenBank: OM121015.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM121015.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM121015.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM121015.1" \l "goto2172512411_0)

LOCUS OM121015 29448 bp RNA linear VRL 04-JAN-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/CO-CDC-LC0441987/2021 ORF1ab polyprotein

(ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), and

ORF3a protein (ORF3a) genes, complete cds; envelope protein (E) and

membrane glycoprotein (M) genes, partial cds; ORF6 protein (ORF6),

ORF7a protein (ORF7a), ORF7b (ORF7b), ORF8 protein (ORF8), and

nucleocapsid phosphoprotein (N) genes, complete cds; and ORF10

protein (ORF10) gene, partial cds.

ACCESSION OM121015

VERSION OM121015.1

DBLINK BioProject: [PRJNA716984](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA716984)

BioSample: [SAMN24600038](https://www.ncbi.nlm.nih.gov/biosample/SAMN24600038)

KEYWORDS purposeofsampling:baselinesurveillance.

SOURCE Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

ORGANISM [Severe acute respiratory syndrome coronavirus 2](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=2697049)

Viruses; Riboviria; Orthornavirae; Pisuviricota; Pisoniviricetes;

Nidovirales; Cornidovirineae; Coronaviridae; Orthocoronavirinae;

Betacoronavirus; Sarbecovirus.

REFERENCE 1 (bases 1 to 29448)

AUTHORS Howard,D., Batra,D., Cook,P.W., Caravas,J., Rambo-Martin,B.,

Sammons,S., Unoarumhi,Y., Schmerer,M., Lacek,K.A., Kendall,T.,

Caban Figueroa,V., Morrison,S., Gulvick,C., Agarwal,M., Almasri,E.,

Boles,D., Burns,A., Charoensri,N., Cohen,O., Countryman,S.,

Cristobal,M.A., Croy,B., Dale,S., Deshmukh,H., Douglas,A.,

Drouillon,V., Eisenberg,M., Engler,H., Ghatti,R., Gupta,P.,

Hicks,S., Humphrey,J., Iyer,L., Pfefferle,L., Jain,M., Robinson,M.,

Kolli,M., Krueger,B., Kuphal,T., Letovsky,S., Levandoski,M.,

Lukasik,C., Meltzer,J., Norvell,B., Nye,M., Parker,S.,

Petropoulos,C., Pruitt,J., Ragan,S., Ryan,S., Sapeta,M.,

Schroth,J., Selvaraju,S.B., Stevovic,G., Suchanek,A., Throop,A.,

Tilson,L., Urban,T., Voshell,J., Wagner,K., Williams,J.,

Williamson,M., Zeng,Q., Zwiefelhofer,T., Paden,C.R. and

MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29448)

AUTHORS Howard,D., Batra,D., Cook,P.W., Caravas,J., Rambo-Martin,B.,

Sammons,S., Unoarumhi,Y., Schmerer,M., Lacek,K.A., Kendall,T.,

Caban Figueroa,V., Morrison,S., Gulvick,C., Sula,E., Agarwal,M.,

Almasri,E., Boles,D., Burns,A., Charoensri,N., Cohen,O.,

Countryman,S., Cristobal,M.A., Croy,B., Dale,S., Deshmukh,H.,

Douglas,A., Drouillon,V., Eisenberg,M., Engler,H., Ghatti,R.,

Gupta,P., Hicks,S., Humphrey,J., Iyer,L., Pfefferle,L., Jain,M.,

Robinson,M., Kolli,M., Krueger,B., Kuphal,T., Letovsky,S.,

Levandoski,M., Lukasik,C., Meltzer,J., Norvell,B., Nye,M.,

Parker,S., Petropoulos,C., Pruitt,J., Ragan,S., Ryan,S., Sapeta,M.,

Schroth,J., Selvaraju,S.B., Stevovic,G., Suchanek,A., Throop,A.,

Tilson,L., Urban,T., Voshell,J., Wagner,K., Williams,J.,

Williamson,M., Zeng,Q., Zwiefelhofer,T., Paden,C.R. and

MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (04-JAN-2022) Respiratory Viruses Branch, Division of

Viral Diseases, Centers for Disease Control and Prevention, 1600

Clifton Rd, Atlanta, GA 30329, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: CLC Genomics

Sequencing Technology :: PacBio Sequel II

##Assembly-Data-END##

FEATURES Location/Qualifiers

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