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Complete Structural Predictions of the Proteome of African Swine Fever Virus Strain Georgia 2007

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ABSTRACT Here, we announce the predicted structures of the 193 proteins encoded by African swine fever virus (ASFV) strain Georgia 2007 (ASFV-G). Previously, only the structures of 16 ASFV proteins were elucidated.

African swine fever (ASF) is a highly infectious and fatal disease of feral and domesticated swine that is the only member of the family Asfarviridae and genus Asfivirus. ASF has spread through several Eurasian countries and, more recently, has reappeared for the first time in over 40 years in the Western Hemisphere, with a positive identification in the Dominican Republic (1). Currently, only the structures of 16 of the nearly 200 predicted ASF virus (ASFV) proteins have been solved via X-ray diffraction, solution nuclear magnetic resonance (NMR), or electron microscopy and are hosted as 52 Protein Data Bank (PDB) files by the Research Collaboratory for Structural Bioinformatics (2–19). In the 14th Critical Assessment of Protein Structure, AlphaFold was determined to demonstrate protein structure accuracy comparable to experimentally resolved structures (20). Accordingly, the structures of all 193 proteins predicted to be encoded by the progenitor strain from the most recent outbreak, ASFV Georgia 2007 (ASFV-G) (GenBank accession number FR682468), were determined using AlphaFold (21). Utilizing the U.S. Department of Agriculture's (USDA) Agricultural Research Service (ARS) Scientific Computing Initiative (SCINet) Ceres high-performance computing (HPC) cluster or the SCINet/Mississippi State University (MSU) collaborative Atlas HPC cluster, structural predictions were performed for all proteins (except QP509L) by running AlphaFold v2.2.0 using the default databases and the following parameters: model_preset = monomer, db_preset = full_dbs, use_gpu_relax = True, max_template_date = 2020-05-14. Due to hardware limitations, QP509L was instead predicted using the AlphaFold v2.1.0 colab notebook without run relaxation or homologous structures and using a reduced Big Fantastic Database (BFD) (20). The unrelaxed model was then minimized and subjected to molecular dynamics for 1 ns using GROMACS (22–26). The per-residue estimate of confidence (pLDDT) generated using AlphaFold is included in each structure file. The predicted protein structures are essential for the *in silico* prediction of B-cell and T-cell epitopes and the development of antivirals.

Data availability. All PDB structure files can be found on the download page at the website for the Center of Excellence for African Swine Fever Genomics (https://asfvgenomics.com/) or in ModelArchive at https://modelarchive.org/doi/10.5452/ma-asfv-asfvg. Individual ASFV protein structural predictions can also be found in Table 1.

Editor Kenneth M. Stedman, Portland State University

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The authors declare no conflict of interest.

Received 30 August 2022
Accepted 6 October 2022
Published 21 November 2022

TABLE 1 Predicted structures of the 193 proteins encoded by ASFV strain Georgia 2007

Protein	ASFV Genomics link	ModelArchive link(s)
285L	https://asfvgenomics.com/ASFV/285L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-001
A104R	https://asfvgenomics.com/ASFV/A104R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-002
A118R	https://asfvgenomics.com/ASFV/A118R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-003
A137R	https://asfvgenomics.com/ASFV/A137R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-004
A151R	https://asfvgenomics.com/ASFV/A151R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-005
A179L	https://asfvgenomics.com/ASFV/A179L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-006
A224L	https://asfvgenomics.com/ASFV/A224L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-007
A238L	https://asfvgenomics.com/ASFV/A238L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-008
A240L	https://asfvgenomics.com/ASFV/A240L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-009
A859L	https://asfvgenomics.com/ASFV/A859L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-010
ASFV G ACD 00090	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000090.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-011
ASFV G ACD 00120	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000120.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-012
ASFV G ACD 00160	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000160.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-013
ASFV G ACD 00190	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000190.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-014
ASFV G ACD 00210	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000210.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-015
ASFV G ACD 00240	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000240.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-016
ASFV G ACD 00270	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000270.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-017
ASFV G ACD 00300	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000300.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-018
ASFV G ACD 00320	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000320.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-019
ASFV G ACD 00330	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000330.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-020
ASFV G ACD 00350	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000350.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-021
ASFV G ACD 00360	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000360.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-022
ASFV G ACD 00520	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000520.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-023
ASFV G ACD 00600	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2000600.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-024
ASFV G ACD 01020	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001020.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-025
ASFV G ACD 01870	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001870.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-026
ASFV G ACD 01940	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001940.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-027
ASFV G ACD 01960	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001960.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-028
ASFV G ACD 01980	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001980.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-029
ASFV G ACD 01990	https://asfvgenomics.com/ASFV/ASFV%20G%20ACD%2001990.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-030
B117L	https://asfvgenomics.com/ASFV/B117L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-031
B119L	https://asfvgenomics.com/ASFV/B119L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-032
B125R	https://asfvgenomics.com/ASFV/B125R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-033
B169L	https://asfvgenomics.com/ASFV/B169L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-034
B175L	https://asfvgenomics.com/ASFV/B175L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-035
B263R	https://asfvgenomics.com/ASFV/B263R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-036
B318L	https://asfvgenomics.com/ASFV/B318L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-037
B354L	https://asfvgenomics.com/ASFV/B354L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-038
B385R	https://asfvgenomics.com/ASFV/B385R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-039
B407L	https://asfvgenomics.com/ASFV/B407L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-040
B438L	https://asfvgenomics.com/ASFV/B438L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-041
B475L	https://asfvgenomics.com/ASFV/B475L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-042
B602L	https://asfvgenomics.com/ASFV/B602L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-043
B646L	https://asfvgenomics.com/ASFV/B646L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-044
B66L	https://asfvgenomics.com/ASFV/B66L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-045
B962L	https://asfvgenomics.com/ASFV/B962L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-046
C122R	https://asfvgenomics.com/ASFV/C122R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-047
C129R	https://asfvgenomics.com/ASFV/C129R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-048
C147L	https://asfvgenomics.com/ASFV/C147L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-049
C257L	https://asfvgenomics.com/ASFV/C257L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-050
C315R	https://asfvgenomics.com/ASFV/C315R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-051
C475L	https://asfvgenomics.com/ASFV/C475L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-052
C62L	https://asfvgenomics.com/ASFV/C62L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-053
C717R	https://asfvgenomics.com/ASFV/C717R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-054
C84L	https://asfvgenomics.com/ASFV/C84L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-055
C962R	https://asfvgenomics.com/ASFV/C962R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-056
CP123L	https://asfvgenomics.com/ASFV/CP123L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-057
CP204L	https://asfvgenomics.com/ASFV/CP204L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-058
CP2475L	https://asfvgenomics.com/ASFV/CP2475L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-059, https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-060, https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-061,

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TABLE 1 (Continued)

Protein	ASFV Genomics link	ModelArchive link(s)
		https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-062, https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-063
CP312R	https://asfvgenomics.com/ASFV/CP312R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-064
CP530R	https://asfvgenomics.com/ASFV/CP530R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-065
CP80R	https://asfvgenomics.com/ASFV/CP80R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-066
D1133L	https://asfvgenomics.com/ASFV/D1133L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-067
D117L	https://asfvgenomics.com/ASFV/D117L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-068
D129L	https://asfvgenomics.com/ASFV/D129L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-069
D205R	https://asfvgenomics.com/ASFV/D205R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-070
D250R	https://asfvgenomics.com/ASFV/D250R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-071
D339L	https://asfvgenomics.com/ASFV/D339L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-072
D345L	https://asfvgenomics.com/ASFV/D345L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-073
DP238L	https://asfvgenomics.com/ASFV/DP238L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-074
DP60R	https://asfvgenomics.com/ASFV/DP60R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-075
DP71L	https://asfvgenomics.com/ASFV/DP71L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-076
DP79L	https://asfvgenomics.com/ASFV/DP79L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-077
DP96R	https://asfvgenomics.com/ASFV/DP96R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-078
E111R	https://asfvgenomics.com/ASFV/E111R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-079
E120R	https://asfvgenomics.com/ASFV/E120R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-080
E146L	https://asfvgenomics.com/ASFV/E146L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-081
E165R	https://asfvgenomics.com/ASFV/E165R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-082
E183L	https://asfvgenomics.com/ASFV/E183L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-083
E184L	https://asfvgenomics.com/ASFV/E184L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-084
E199L	https://asfvgenomics.com/ASFV/E199L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-085
E248R	https://asfvgenomics.com/ASFV/E248R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-086
E301R	https://asfvgenomics.com/ASFV/E301R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-087
E423R	https://asfvgenomics.com/ASFV/E423R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-088
E66L	https://asfvgenomics.com/ASFV/E66L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-089
EP1242L	https://asfvgenomics.com/ASFV/EP1242L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-090
EP152R	https://asfvgenomics.com/ASFV/EP152R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-091
EP153R	https://asfvgenomics.com/ASFV/EP153R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-092
EP296R	https://asfvgenomics.com/ASFV/EP296R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-093
EP364R	https://asfvgenomics.com/ASFV/EP364R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-094
EP402R	https://asfvgenomics.com/ASFV/EP402R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-095
EP424R	https://asfvgenomics.com/ASFV/EP424R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-096
EP84R	https://asfvgenomics.com/ASFV/EP84R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-097
F1055L	https://asfvgenomics.com/ASFV/F1055L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-098
F165R	https://asfvgenomics.com/ASFV/F165R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-099
F317L	https://asfvgenomics.com/ASFV/F317L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-100
F334L	https://asfvgenomics.com/ASFV/F334L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-101
F778R	https://asfvgenomics.com/ASFV/F778R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-102
G1211R	https://asfvgenomics.com/ASFV/G1211R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-103
G1340L	https://asfvgenomics.com/ASFV/G1340L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-104
H108R	https://asfvgenomics.com/ASFV/H108R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-105
H124R	https://asfvgenomics.com/ASFV/H124R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-106
H171R	https://asfvgenomics.com/ASFV/H171R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-107
H233R	https://asfvgenomics.com/ASFV/H233R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-108
H240R	https://asfvgenomics.com/ASFV/H240R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-109
H339R	https://asfvgenomics.com/ASFV/H339R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-110
H359L	https://asfvgenomics.com/ASFV/H359L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-111
hypothetical_01	https://asfvgenomics.com/ASFV/hypothetical_01.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-112
hypothetical_02	https://asfvgenomics.com/ASFV/hypothetical_02.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-113
hypothetical_03	https://asfvgenomics.com/ASFV/hypothetical_03.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-114
I10L	https://asfvgenomics.com/ASFV/I10L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-115
I177L	https://asfvgenomics.com/ASFV/I177L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-116
I196L	https://asfvgenomics.com/ASFV/I196L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-117
I215L	https://asfvgenomics.com/ASFV/I215L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-118
I226R	https://asfvgenomics.com/ASFV/I226R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-119
I243L	https://asfvgenomics.com/ASFV/I243L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-120
I267L	https://asfvgenomics.com/ASFV/I267L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-121
I329L	https://asfvgenomics.com/ASFV/I329L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-122
I73R	https://asfvgenomics.com/ASFV/I73R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-123
I7L	https://asfvgenomics.com/ASFV/I7L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-124

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TABLE 1 (Continued)

Protein	ASFV Genomics link	ModelArchive link(s)
I8L	https://asfvgenomics.com/ASFV/I8L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-125
I9R	https://asfvgenomics.com/ASFV/I9R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-126
K145R	https://asfvgenomics.com/ASFV/K145R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-127
K196R	https://asfvgenomics.com/ASFV/K196R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-128
K205R	https://asfvgenomics.com/ASFV/K205R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-129
K421R	https://asfvgenomics.com/ASFV/K421R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-130
K78R	https://asfvgenomics.com/ASFV/K78R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-131
KP177R	https://asfvgenomics.com/ASFV/KP177R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-132
L11L	https://asfvgenomics.com/ASFV/L11L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-133
L60L	https://asfvgenomics.com/ASFV/L60L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-134
L83L	https://asfvgenomics.com/ASFV/L83L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-135
M1249L	https://asfvgenomics.com/ASFV/M1249L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-136
M448R	https://asfvgenomics.com/ASFV/M448R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-137
MGF 100-1L	https://asfvgenomics.com/ASFV/MGF%20100-1L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-138
MGF 100-1R	https://asfvgenomics.com/ASFV/MGF%20100-1R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-139
MGF 100-3L	https://asfvgenomics.com/ASFV/MGF%20100-3L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-140
MGF 110-10L–MGF110-14L fusion	https://asfvgenomics.com/ASFV/MGF%20110-10-L%20-%20MGF110-14L%20fusion.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-141
MGF 110-12L	https://asfvgenomics.com/ASFV/MGF%20110-12L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-142
MGF 110-13La	https://asfvgenomics.com/ASFV/MGF%20110-13La.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-143
MGF 110-13Lb	https://asfvgenomics.com/ASFV/MGF%20110-13Lb.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-144
MGF 110-1L	https://asfvgenomics.com/ASFV/MGF%20110-1L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-145
MGF 110-2L	https://asfvgenomics.com/ASFV/MGF%20110-2L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-146
MGF 110-3L	https://asfvgenomics.com/ASFV/MGF%20110-3L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-147
MGF 110-4L	https://asfvgenomics.com/ASFV/MGF%20110-4L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-148
MGF 110-5L-6L	https://asfvgenomics.com/ASFV/MGF%20110-5L-6L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-149
MGF 110-7L	https://asfvgenomics.com/ASFV/MGF%20110-7L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-150
MGF 110-8L	https://asfvgenomics.com/ASFV/MGF%20110-8L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-151
MGF 110-9L	https://asfvgenomics.com/ASFV/MGF%20110-9L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-152
MGF 300-1L	https://asfvgenomics.com/ASFV/MGF%20300-1L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-153
MGF 300-2R	https://asfvgenomics.com/ASFV/MGF%20300-2R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-154
MGF 300-4L	https://asfvgenomics.com/ASFV/MGF%20300-4L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-155
MGF 360-10L	https://asfvgenomics.com/ASFV/MGF%20360-10L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-156
MGF 360-11L	https://asfvgenomics.com/ASFV/MGF%20360-11L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-157
MGF 360-12L	https://asfvgenomics.com/ASFV/MGF%20360-12L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-158
MGF 360-13L	https://asfvgenomics.com/ASFV/MGF%20360-13L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-159
MGF 360-14L	https://asfvgenomics.com/ASFV/MGF%20360-14L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-160
MGF 360-15R	https://asfvgenomics.com/ASFV/MGF%20360-15R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-161
MGF 360-16R	https://asfvgenomics.com/ASFV/MGF%20360-16R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-162
MGF 360-18R	https://asfvgenomics.com/ASFV/MGF%20360-18R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-163
MGF 360-19Ra	https://asfvgenomics.com/ASFV/MGF%20360-19Ra.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-164
MGF 360-19Rb	https://asfvgenomics.com/ASFV/MGF%20360-19Rb.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-165
MGF 360-1La	https://asfvgenomics.com/ASFV/MGF%20360-1La.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-166
MGF 360-1Lb	https://asfvgenomics.com/ASFV/MGF%20360-1Lb.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-167
MGF 360-21R	https://asfvgenomics.com/ASFV/MGF%20360-21R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-168
MGF 360-2L	https://asfvgenomics.com/ASFV/MGF%20360-2L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-169
MGF 360-3L	https://asfvgenomics.com/ASFV/MGF%20360-3L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-170
MGF 360-4L	https://asfvgenomics.com/ASFV/MGF%20360-4L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-171
MGF 360-6L	https://asfvgenomics.com/ASFV/MGF%20360-6L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-172
MGF 360-8L	https://asfvgenomics.com/ASFV/MGF%20360-8L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-173
MGF 360-9L	https://asfvgenomics.com/ASFV/MGF%20360-9L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-174
MGF 505-10R	https://asfvgenomics.com/ASFV/MGF%20505-10R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-175
MGF 505-11L	https://asfvgenomics.com/ASFV/MGF%20505-11L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-176
MGF 505-1R	https://asfvgenomics.com/ASFV/MGF%20505-1R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-177
MGF 505-2R	https://asfvgenomics.com/ASFV/MGF%20505-2R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-178
MGF 505-3R	https://asfvgenomics.com/ASFV/MGF%20505-3R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-179
MGF 505-4R	https://asfvgenomics.com/ASFV/MGF%20505-4R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-180
MGF 505-5R	https://asfvgenomics.com/ASFV/MGF%20505-5R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-181
MGF 505-6R	https://asfvgenomics.com/ASFV/MGF%20505-6R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-182
MGF 505-7R	https://asfvgenomics.com/ASFV/MGF%20505-7R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-183
MGF 505-9R	https://asfvgenomics.com/ASFV/MGF%20505-9R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-184
NP1450L	https://asfvgenomics.com/ASFV/NP1450L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-185

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TABLE 1 (Continued)

Protein	ASFV Genomics link	ModelArchive link(s)
NP419L	https://asfvgenomics.com/ASFV/NP419L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-186
NP868R	https://asfvgenomics.com/ASFV/NP868R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-187
O174L	https://asfvgenomics.com/ASFV/O174L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-188
O61R	https://asfvgenomics.com/ASFV/O61R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-189
P1192R	https://asfvgenomics.com/ASFV/P1192R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-190
Q706L	https://asfvgenomics.com/ASFV/Q706L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-191
QP383R	https://asfvgenomics.com/ASFV/QP383R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-192
QP509L	https://asfvgenomics.com/ASFV/QP509L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-193
R298L	https://asfvgenomics.com/ASFV/R298L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-194
S183L	https://asfvgenomics.com/ASFV/S183L.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-195
S273R	https://asfvgenomics.com/ASFV/S273R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-196
X69R	https://asfvgenomics.com/ASFV/X69R.html	https://modelarchive.org/doi/10.5452/ma-asfv-asfvg-197

ACKNOWLEDGMENTS

This work was supported by research funded by the U.S. Department of Agriculture, Agricultural Research Service (ARS)-CRIS project 1940-32000-063-00D. This research used resources provided by the SCINet project and the AI Center of Excellence of the USDA Agricultural Research Service (ARS project number 0500-00093-001-00-D). We thank the SCINet Virtual Research Support Core (VRSC) in Ames, IA, for hosting the Ceres HPC cluster and the collaboration between MSU and the U.S. Department of Agriculture's Agricultural Research Service for hosting the Atlas HPC cluster.

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