Amymech Annotation Notes

Gene 1

SSC: 71-571 CP: Yes SCS: Glimmer ST: SS BLAST-Start: [Kinbote, 1, NCBI-BLAST, 1:1,

95.8%, 0.0] Gap: 71 LO: No RBS: [Kibler6, Karlin Medium, 1.980, -4.964, no] F: terminase

small subunit SIF-BLAST: [terminase small subunit, NCBI-BLAST, Gancho 1, AYB69344.1, 95%,

9e-72] SIF-HHPred: [terminase small subunit, HHPred, HK97, 6Z6E\_B, 95.8%, 99.42]

SIF-Syn: [terminase small subunit, NKF, DeepSoil15 and HH92]

Gene 2

SSC: 800-630 CP:Yes SCS: Both ST: SS BLAST-Start: [Giles, 2, NCBI-BLAST, 1:1, 100%,

5.3e-34] Gap: 59 LO: Yes RBS: [Kibler6, Karlin Medium, 2.876, -3.189, yes] F: NKF

SIF-BLAST: [NKF] SIF-HHPred: [NKF] SIF-Syn: [NKF]

Gene 3

SSC: 1553-930 CP:Yes SCS: Both ST: SS BLAST-Start: [Giles, 3, NCBI-BLAST, 1:1, 100%,

0.0] Gap: 130 LO: Yes RBS: [Kibler6, Karlin Medium, 2.674, -3.571, yes] F:NKF SIF-BLAST:

[NKF] SIF-HHPred: [NKF] SIF-Syn: [NKF]

Gene 4

SSC: 1826-1617 CP: No, the coding potential extends a little after the stop site SCS: Both

ST:SS BLAST-Start: [Giles, 4, NCBI-BLAST, 1:1, 100%, 1.7e-42] Gap: 64 LO: Yes RBS:

[Kibler6, Karlin Medium, 1.855, -6.039, yes] F: NKF SIF-BLAST: [NKF] SIF-HHPred: [NKF]

SIF-Syn: [NKF]

Gene 5

SSC: 1855-3489 CP: Yes SCS: Glimmer ST: SS BLAST-Start: [Kinbote, 5, NCBI-BLAST, 1:1,

100%, 0.0] Gap: 29 LO: Yes RBS: [Kibler6, Karlin Medium, 2.167, -4.575, yes] F: terminase

large subunit SIF-BLAST: [terminase large subunit, NCBI-BLAST, Gancho 4, AYB69347.1,

99%, 0.0] SIF-HHPred: [terminase large subunit, HHPred, HK97, 6Z6D\_A, 94.31%, 100]

SIF-Syn: [terminase large subunit, NKF and portal protein, Deepsoil15 and Gancho]

Gene 6

SSC: 3506-4915 CP: Yes SCS: Both ST: SS BLAST-Start: [Giles, 6, NCBI-BLAST, 1:1, 100%,

0.0] Gap: 17 LO: Yes RBS: [Kibler6, Karlin Medium, 0.962, -6.978, yes] F: portal protein

SIF-BLAST: [portal protein, NCBI-BLAST, Gancho 5, AYB69348.1, 99%, 0.0] SIF-HHPred:

[portal protein, HHPred, P7426, 5NGD\_B, 88.72%, 100] SIF-Syn: [portal protein, terminase

large subunit and capsid maturation protease, DeepSoil15 and Gancho]

Gene 7

SSC: 4908-6098 CP: No, but the coding potential ends a little after the stop site SCS: Both ST:

SS BLAST-Start: [Giles, 7, NCBI-BLAST, 1:1, 100%, 0.0] Gap: -7 LO: No RBS: [Kibler6, Karlin

Medium, 2.955, -3.605, no] F: capsid maturation protease SIF-BLAST: [capsid maturation

protease, NCBI-BLAST, Giles 7, YP\_001552336.1, 99%, 0.0] SIF-HHPred: [ATP-dependent Clp

protease proteolytic subunit, HHPred, streptococcus pneumoniae, 1Y7O\_E, 54.91%, 99.77]

SIF-Syn: [capsid maturation protease, portal protein and scaffolding protein, DeepSoil15 and

Gancho]

Gene 8

SSC: 6100-6552 CP:Yes SCS: Both ST: SS BLAST-Start: [HH92, 8, NCBI-BLAST, 1:1, 100%,

0.0] Gap: 2 LO: Yes RBS: [Kibler6, Karlin Medium, 2.674, -4.161, yes] F: scaffolding protein

SIF-BLAST: [scaffolding protein, NCBI-BLAST, Gancho 7, AYB69350.1, 99%, 9e-98]

SIF-HHPred: [capsid fiber protein, HHPred, phi29, 6QYY\_E, 78.81%, 99.57] SIF-Syn:

[scaffolding protein, capsid maturation protease and major capsid protein, DeepSoil15 and

Gancho]

Gene 9

SSC: 6586-7542, CP: Yes, SCS: Both, ST: No, BLAST-Start: [Giles,9,NCBI-BLAST, 1:1, 100%,

0.0], Gap: 34 , LO: Yes, RBS: [Kibler6, Karlin Medium, 3.379, -2.765, Yes], F: Major Capsid

Protein, SIF-BLAST: [Major Capsid Protein, NCBI-Blast, Gancho 8, AYB69353.1, 99.37%, 0.0],

SIF-HHPred: [Major Capsid Protein, PDB, gp27, 6WKK, 79.3%, 99.87], SIF-Syn: [Major Capsid

Protein, Scaffolding Protein, head-to-tail adaptor protein, Gancho and Amochick]

Gene 10

SSC: 7539-7979, CP: Yes, SCS: Both, ST: No, BLAST-Start: [Giles,10,NCBI-BLAST, 1:1, 100%,

0.0], Gap: -3 , LO: Yes, RBS: [Kibler6, Karlin Medium, 2.258, -4.985, No],

F: NKF, SIF-BLAST: NKF, SIF-HHPred:NKF, SIF-Syn: NKF

Gene 11

SSC: 7983-8435, CP: Yes, SCS: Both, ST: No , BLAST-Start: [Giles,11,NCBI-BLAST, 1:1, 100%,

0.0], Gap: 4 , LO: Yes, RBS: [Kibler6, Karlin Medium, 2.004, -5.664, No], F: Head-to-tail adaptor,

SIF-BLAST: [head-to-tail adaptor, NCBI-Blast, Gancho 10, AYB69353.1, 96.67%, 4e-87],

SIF-HHPred: [head-to-tail interface, PDB, SSP1, 5A21, 62.3%, 97.46], SIF-Syn: NKF

Gene 12

SSC: 8435-9118, CP: Yes, SCS: Both, ST: Yes , BLAST-Start: [Giles,12,NCBI-BLAST, 1:1,

100%, 0.0], Gap: 0 , LO: Yes, RBS: [Kibler6, Karlin Medium, 2.149, -5.456, No], F: Head-to-tail

stopper, SIF-BLAST: [head-to-tail connector complex protein, NCBI-Blast, Gancho 11,

AYB69354.1, 99.56%, 2e-159], SIF-HHPred: NKF, SIF-Syn: NKF

Gene 13

Original Glimmer call @bp 9121 has strength 12.21; GeneMark calls start at 9172

SSC: 9121-9528, CP: Yes, SCS: Glimmer, ST: Yes , BLAST-Start: [Giles,13,NCBI-BLAST, 1:1,

100%, 0.0], Gap: 3 , LO: Yes, RBS: [Kibler6, Karlin Medium, 1.980, -4.884, No], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 14

Original Glimmer call @bp 9536 has strength 14.39; GeneMark calls start at 9521

SSC: 9536-9922, CP: Yes, SCS: Glimmer, ST: No, BLAST-Start: [Giles,14,NCBI-BLAST, 1:1,

100%, 0.0], Gap: 8, LO: No, RBS: [Kibler6, Karlin Medium, 1.325, -7.008, No], F: hypothetical protein, SIF-BLAST: [head-to-tail connector complex protein, NCBI-Blast, Gancho 13,

AYB69353.1, 98.44%, 8e-84], SIF-HHPred: [head-to-tail interface, PDB, SPP1, 5A21, 87.6%,

98.81], SIF-Syn: NKF

Notes: other phages called tail terminator but this gene did not qualify according to the HHPRed results

Gene 15
SSC: 9938-10477, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [Giles,15,NCBI-BLAST, 1:1,

100%, 0.0], Gap: 16, LO: Yes, RBS: [Kibler6, Karlin Medium, 3.212, -2.443, No],

F: Major Tail Protein, SIF-BLAST: [Major tail Protein, NCBI-Blast, Gancho 14, AYB69353.1,

99.44%, 2e-128], SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 16

SSC: 10511-10915, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [Giles,16,NCBI-BLAST, 1:1,

99.13%, 0.0], Gap: 34, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.674, -3.649, Yes],

F: NKF, SIF-BLAST: [Tail Assembly Chaperone, NCBI-Blast, Amochick 16,

AXQ51448.1, 95.69%, 8e-58], SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 17

Original Glimmer call @bp 10899 has strength 13.73; GeneMark calls start at 11079

SSC: 10899-11789, CP: Yes, SCS: Glimmer, ST: Yes, BLAST-Start: [Giles,17,NCBI-BLAST, 1:1,

99.13%, 0.0], Gap: -16, LO: No, RBS: [Kibler6, Karlin Medium, 1.673, -6.541, No], F: Tail

Assembly Chaperone, SIF-BLAST: [Tail Assembly Chaperone, NCBI-Blast, HH92 17,

AHY84202.1, 100%, 0.0], SIF-HHPred: NKF, SIF-Syn: NKF

Gene 18

SSC: 11827-12069, CP: Yes, SCS: Glimmer, ST: SS, BLAST-start: [Giles, 18, NCBI-BLAST,

1:1, 100.0%, 2e-38], Gap: 0, LO: No, RBS: [Kibler6, Karlin Medium, 2,549, -4.107, no], F: NKF, SIF-

BLAST: NKF, SIF-HHPred: NKF

Gene 19

SSC:12071-12229 CP: Yes SCS: Both ST: SS Blast-Start: [ DAEGAL, 20, QBlast, 1:1,

100%, 0.32] Gap: 2 LO: Yes RBS: [Kibler6, Karlin Medium, 2.466, -4.572, Yes] F: NKF

SIF-Blast: NKF SIF-HHPred: NKF SIF-Syn: NKF

Gene 20

SSC: 12222-16301 CP: Yes SCS: Both ST: SS Blast-Start: [Giles, 20, QBlast, 1:1,

100%, 0.0] Gap: -7 LO: Yes RBS: [Kibler6, Karlin Medium, 2.142, -4.624, Yes] F: Tape

Measure Protein SIF-Blast: [Tape Measure Protein, NCBI-Blast, Giles 20,

YP\_001552349.1, 99%, 0.0] SIF-HHPred: NKF SIF-Syn: NKF

Gene 21

SSC: 16315-17409 CP: Yes SCS: Both ST: SS Blast-Start: [Gancho, QBlast, 1:1, 100%,

0] Gap: 14 LO: Yes RBS: [Kibler6, Karlin Medium, 2.216, -4.557, Yes] F: Minor Tail

Protein SIF-Blast: [Minor Tail Protein, NCBI-Blast, Gancho, AYB69363.1, 99%, 0]

SIF-HHPred: [Distal Tail Protein, HHPred, gp58, 6V8I\_BD, 67.03%, 99.8] SIF-Syn: NKF

Gene 22

SSC: 17406-19148 CP: Yes SCS: Both ST: NA Blast-Start: [Gancho, QBlast, 1:1, 100%,

0.0] Gap: -3 LO: Yes RBS: [Kibler6, Karlin Medium, 1.143, -6.541, Yes] F: Minor Tail

Protein SIF-Blast: [Minor Tail Protein, NCBI-Blast, Gancho, AYB69363.1, 99%, 0.0]

SIF-HHPred: [Prophage Tail Protein, HHPred, Protein gp18, 3GS9\_A, 56.7% 99.04]

SIF-Syn: NKF

Gene 23

SSC: 19148-19753 CP: Yes SCS: Both ST: SS Blast-Start: [Giles, 23, QBlast, 1:1,

100%, 0] Gap: 0 LO: Yes RBS: [Kibler6, Karlin Medium, 2.613, -4.281, Yes] F: Minor tail protein

SIF-Blast: [minor tail protein, NCBI-Blast, Amochick, AYB69365.1, 99%, 1e-95]

SIF-HHPred: NKF SIF-Syn: NKF

Gene 24

SSC: 19750-20853 CP: Yes SCS: Both ST: NA Blast-Start: [Amochick, QBlast, 1:1,

100%, 0.0] Gap: -3 LO: No RBS: [Kibler 6, Karlin Medium, 3.049, -2.906, No] F: Minor

Tail Protein SIF-Blast: [Minor Tail Protein, NCBI-Blast, Amochick, AXQ51456.1, 99%,

0.0] SIF-HHPred: NKF SIF-Syn: NKF SIF-Mem: NKF

Gene 25

 SSC: 20853-23117 CP: Yes SCS:Both ST: SS Blast-Start: [Giles, 25, QBlast, 1:1, 100%,

0] Gap: 0 LO: Yes RBS: [Kibler6, Karlin Medium, 2.092, -4.741, Yes] F: Minor Tail

Protein SIF-Blast: [Minor Tail Protein, NCBI-Blast, Amochick, AXQ51457.1, 99%,0]

SIF-HHPred: [Hyaluronate Lyase, HHPred, PL8, 4D0Q\_A, 18.82%, 98.72] SIF-Syn:

NKF SIF-Mem: NKF

Gene 26

SSC: 23114-23365, CP: yes, SCS: both, ST: SS, Blast-Start: [HH92, 26, NCBI-BLAST, 1:1,

100%, 0.0], Gap: -3, LO: yes, RBS: [Kibler6, Karlin Medium, 2.932, -4.047, no], F: minor tail protein,SIF-BLAST: [minor tail protein, NCBI-BLAST, Juliette, 29, QTF81636.1, 90%, 1e-10], SIF-HHpred: [NKF], SIF-Syn: [NKF]

Gene 27

SSC: 23371-24609, CP: yes, SCS: both, ST: SS, BLAST-Start: [Gancho, 26, NCBI-BLAST, 1:1,

27.7%, 0.0], Gap: 6, LO: no, RBS: [Kibler6, Karlin Medium, 2.54, -3.915, yes], F: minor tail

protein, SIF-BLAST: [minor tail protein, NCBI-BLAST, Gancho 26, AYB69369.1, 57%, 2e-54],

SIF-HHPred: [NKF], SIF-Syn: [minor tail protein, minor tail proteins, Amochick, DeepSoil, and

LilHazelnut]

Gene 28

SSC: 24633-24989, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 28, NCBI-BLAST, 1:1,

100%, 0.0], Gap: 24, LO: Yes, RBS: [Kibler6, Karlin Medium, 3.142, -2.645, yes], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 29

SSC: 26478-25285, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 29, NCBI-BLAST, 1:1,

100%, 0.0], Gap: 144, LO: No, RBS: [Kibler6, Karlin Medium, 2.787, -3.285, yes], F: Tyrosine

Integrase, SIF-BLAST: [Integrase, NCBI-BLAST, Giles, 29, YP\_001552358.1, 100%, 0.0],

SIF-HHPred: [Integrase, HHPred, 1Z1B\_B, 90.7%, 100], SIF-Syn: [tyrosine integrase, excise,

DeepSoil15]

Gene 30

SSC: 26622-26822, CP: yes, SCS: both, ST: SS, BLAST-Start: [Giles, 30, NCBI-BLAST, 1:1,

100%, 3.6e-38], Gap: 144, LO: no, RBS: [Kibler6, Karlin Medium, 0.657, -7.566, no], F: excise,

SIF-BLAST: [excise, NCBI-BLAST, OBUpride 30, ALA06674.1, 98%, 4e-38], SIF-HHPred: [NKF],

SIF-Syn: [excise, integrase, lysin A, Amochick and Evanesce]

Gene 31

SSC: 26849-26962, CP: No, SCS: Neither, ST: NI , BLAST-Start: [OBUpride, 31, NCBI-BLAST,

1:1, 100%, 3.6e-18-13], Gap: -3, LO: No, RBS: [Kibler6, Karlin Medium, 2.062, -4.025, yes], F:

NKF, SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 32

SSC: 26981-28339, CP: yes, SCS: Glimmer, ST: SS, BLAST-Start: [LilHazelnut, 32,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: 19, LO: yes, RBS: [Kibler6, Karlin Medium, 0.887, -7.127,

no], F: Lysin A, SIF-BLAST: [Lysin A, NCBI-BLAST, LilHazelnut, 32, ATN90385.1, 100%, 0.0],

SIF-HHPred: [NKF], SIF-Syn: [Lysin A, Lysin B, Holin, Evanesce and Forge]

Gene 33

SSC: 28339-29574, CP: yes, SCS: both, ST: SS, BLAST-Start: [Giles, 32, NCBI-BLAST, 1:1, 100%, 0.0], Gap:

0, LO: yes, RBS: [Kibler6, Karlin Medium, 1.357, -6.196, no], F: lysin B, SIF-BLAST: [lysin B, NCBI-BLAST, Giles 32, YP\_001552361.1, 99%, 0.0], SIF-HHPred: [NKF], SIF-Syn: [lysin B, lysin A, holin, DeepSoil, LilHazelnut]

Gene 34

SSC: 29596-30006, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 33, NCBI-BLAST, 21:21,

85.3%, 0.0], Gap: 22, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.674, -3.649, yes], F: Holin,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [Holin, Lysin B, Hypothetical Protein,

LilHazelnut and OBUpride], SIF-Mem: [Holin, 3, 3]

Gene 35

SSC: 30016-30336, CP: yes, SCS: Glimmer, ST: SS, BLAST-Start: [Giles, 34, NCBI-BLAST, 1:1,

85.8%, 2.0E-44], Gap: 10, LO: yes, RBS: [Kibler6, Karlin Medium, 2.004, -5.187, no], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 36

SSC: 30329-30949, CP: yes, SCS: both, ST: SS, BLAST-Start: [Giles, 35, NCBI-BLAST, 1:1,

100%, 0.0], Gap: -7, LO: no, RBS: [Kibler6, Karlin Medium, 2.113, -4.619, no], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 37

SSC: 30952-31740, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 36, NCBI-BLAST, 1:1,

100%, 0.0], Gap: 3, LO: No, RBS: [Kibler6, Karlin Medium, 2.323, -4.266, yes], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 38

SSC: 31769-31894, CP: yes, SCS: Glimmer, ST: SS, BLAST-Start: [Daegal, 39, NCBI-BLAST,

1:1, 100%, 2.7e-20], Gap: 29, LO: No, RBS: [Kibler6, Karlin Medium, 1.653, -6.359, no], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 39

SSC: 32046-31891, CP: yes, SCS: both, ST: SS, BLAST-Start: [Giles, 38, NCBI-BLAST, 1:1,

100%, 1.6e-29], Gap: -3, LO: yes, RBS: [Kibler6, Karlin Medium, 2.227, -4.744, yes], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 40

SSC: 32336-32112 , CP: yes, SCS: Glimmer, ST: SS, BLAST-Start: [Giles, 39, NCBI- BLAST,

1:1, 100%, 1.8e-44], Gap: 66, LO: No, RBS: [Kibler6, Karlin Medium, 2.124, -4.659, yes], F:

NKF, SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 41

SSC: 32707-32333, CP: yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 40, NCBI-Blast, 1:1, 100%, 0.0], Gap: -3, LO: yes, RBS: [Kibler6, Karlin Medium, 2.870, -3.262, yes], F: NKF, SIF-BLAST: [NKF], HHPred: [NKF], SIF-Syn: [NKF]

Gene 42

SSC: 32877-32704, CP: yes, SCS: Both, ST: SS, BLAST-Start: [HH92, 41, NCBI-BLAST, 1:1,

100%, 2.5e-33], Gap: 14, LO: yes, RBS: [Kibler6, Karlin Medium, 2.815, -3.292, yes], F: NKF,

SIF-BLAST: [NKF], SIF-HHPred: [NKF], SIF-Syn: [NKF]

Gene 43

SSC: 33316-32891, CP: Yes, SCS: Neither, ST:NI BLAST-Start: [LilHazelnut, 43, NCBI-BLAST,

1:9, 94.3%, 0.0], Gap: 0, LO: no, RBS: [Kibler6, Karlin Medium, 2.870, -3.183, yes],

F:hypothetical protein, SIF-BLAST: [hypothetical protein, NCBI-Blast, LilHazelnut 43,

ATN90419.1, 99%, 4e-72], SIF-HHPred:[NKF]

Note: start changed due to starterator, BLAST 1:1 line up and coding potential

Gene 44

SSC: 34126-33425, CP: Yes, SCS: Both, ST:NI, BLAST-Start: [Giles, 42, NCBI-BLAST, 1:1,

100%, 0.0], Gap: 0, LO: no, RBS: [Kibler6, Karlin Medium, 1.944, -5.016, yes], F:hypothetical

protein, SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles 42, YP\_001552371.1, 99%, 3e-

140], SIF-HHPred:[NKF]

Gene 45

SSC: 34422-34195, CP: Yes, SCS: Both, ST:SS BLAST-Start: [Giles, 43, NCBI-BLAST, 1:1,

100%, 7.0E-45], Gap: 0, LO: no, RBS: [Kibler6, Karlin Medium, 2.101, -4.642, yes], F:minor tail

protein, SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles 43, YP\_001552372.1, 100%, 7e-

45], SIF-HHPred:[NKF]

Gene 46

SSC: 34724-34419, CP: Yes, SCS: Glimmer, ST:SS, BLAST-Start: [Giles, 44, NCBI-BLAST,

1:1, 100%, 0.0], Gap: 0, LO: yes, RBS: [Kibler6, Karlin Medium, 2.508, -3.142, no],

F:hypothetical protein , SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles, YP\_001552373.1,

99%, 3e-66], SIF-HHPred:[NKF]

Gene 47

SSC: 35041-34736, CP: Yes, SCS: Glimmer, ST:SS, BLAST-Start: [OBUPride, 47, NCBI-

BLAST, 1:1, 100%, 1.4e-45], Gap: 12, LO: yes, RBS: [Kibler6, Karlin Medium, 2.870, -3.183,

yes], F:hypothetical protein , SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles,

YP\_001552374.1, 99%, 2e-45], SIF-HHPred:[NKF]

Gene 48

SSC: 36063-35107, CP: Yes, SCS: Glimmer, ST:SS, BLAST-Start: [Webster2, 48, NCBI-

BLAST, 1:1, 100%, 0.0], Gap: 66, LO: yes, RBS: [Kibler6, Karlin Medium, 2.145, -5.861, no],

F:hypothetical protein , SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles, YP\_001552375.1,

99%, 0.0], SIF-HHPred:[NKF]

Gene 49

SSC: 36553-36188, CP: Yes, SCS: Glimmer, ST:SS, BLAST-Start: [Webster2, 49, NCBI-

BLAST, 1:18, 100%, 0.0], Gap: 125, LO: yes, RBS: [Kibler6, Karlin Medium, 1.957, -5.070, no],

F: hypothetical protein , SIF-BLAST: [hypothetical protein, NCBI-Blast, Giles, YP\_001552376.1,

99%, 1e-56], SIF-HHPred:[NKF]

Gene 50

SSC: 36949-37146, CP: Yes, SCS: Glimmer, ST:SS, BLAST-Start: [Webster2, 50, NCBI-

BLAST, 1:1, 100%, 1.4e-38], Gap: 63, LO: yes, RBS: [Kibler6, Karlin Medium, 1.921, -5.000,

yes], F: helix-turn-helix DNA binding domain MerR-like , SIF-BLAST: [MerR-like helix-turn-helix DNA binding domain protein, NCBI-Blast, Ein37, AKQ07826, 100%, 1.384e-38], SIF-HHPred:[NKF]

Note: did not find immunity repressor so did not call CRO protein

Gene 51

SSC: 37149-37457 CP: Yes SCS: Neither ST: SS Blast-Start: [Amochick, 51, QBlast,

1:23, 78.8%, 1.3e-44] Gap:3 LO:No RBS: [Kibler 6, Karlin Medium, 1.403, -6.106, No] F:

NKF SIF-Blast: [NKF, NCBI-Blast, Amochick, AXQ51482.1, 98%, 1e-44] SIF-HHPred:

NKF SIF-Syn: NKF

Note: start changed to close gap and include coding potential, staterator data supported, 1:1 BLAST result

Gene 52

 SSC: 37454-37819 CP: Yes SCS: Both ST: SS Blast-Start: [Giles, 50, QBlast, 1:1,

100%, 2.9e-39] Gap: -3 LO: Yes RBS: [Kibler6, Karlin Medium, 1.713, -5.492, Yes] F:

NKF SIF-Blast: [Hypothetical Protein, NCBI-Blast, Giles, 50, YP\_001552379.1, 99%,

3e-39] SIF-HHPred: NKF SIF-Syn: NKF

Gene 53

SSC: 37891-38754 CP: Yes SCS: Glimmer ST: NA Blast-Start: [Giles, 51, QBlast,

1:1, 100.0%, 0.0] Gap:138 LO: No RBS: [Kibler 6, Karlin Medium, 2.372, -4.170, No] F:

NKF SIF-Blast: [Hypothetical Protein, NCBI-Blast, Giles, 51, YP\_001552379.1, 99%,

2e-139] SIF-HHPred: [Endothelial differentiation-related factor, HHPred, 6ZVH\_i, 35.9%,

97.95] SIF-Syn: NKF

Note: start changed 1:1 BLAST match with Giles

Gene 54

SSC: 38751-38903 CP: Yes SCS: Both ST: SS Blast-Start: [PBI\_HH92, 53, QBlast, 1:1,

100%, 3.3e-27] Gap: -3 LO: Yes RBS: [Kibler6, Karlin Medium, 2.446, -4.827, Yes] F:

NKF SIF-Blast: [Hypothetical Protein, NCBI-Blast, PBI\_HH93, 54, AHY84238.1, 98%,

3e-27] SIF-HHPred: NKF SIF-Syn: NKF

Gene 55

SSC: 38900-39871, CP: Yes, SCS: Glimmer, ST: NA, BLAST-start: [HH92, 54, NCBI-BLAST,

1:1, 100.0%, 0.0], Gap: 0, LO: No, RBS: [Kibler6, Karlin Medium, 2.776, -3.447, no], F: RecE-

like exonuclease, SIF-BLAST: [RecE-like protein, SIF-BLAST, HH92 54, AHY84239.1, 99%,

0.0], SIF-HHPred: [Exonuclease, HHPred, Escherichia virus Lambda, 3SM4\_B, 82%, 99.93],

SIF-Syn: NKF

Gene 56

SSC: 39868-41316, CP: Yes, SCS: Glimmer, ST: NA, BLAST-start: [Giles, 53, NCBI-BLAST,

1:1, 100.0%, 0.0], Gap: 0, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.755, -4.000, no], F: RecT-

like ssDNA binding protein, SIF-BLAST: [RecT-like protein, SIF-BLAST, Giles 53,

YP\_001552382.1, 99%, 0.0], SIF-HHPred: NKF, SIF-Syn: NKF

Gene 57

SSC: 41313-41453, CP: Yes, SCS: Glimmer, ST: SS, BLAST-start: [OBUpride, 57, NCBI-

BLAST, 1:1, 45.7%, 1.4e-4], Gap: 0, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.030, -4.924, no],

F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 58

SSC: 41450-41767, CP: Yes, SCS: GeneMark, ST: SS, BLAST-start: [HH92, 57, NCBI-BLAST,

1:1, 100.0%, 0.0], Gap: 0, LO: No, RBS: [Kibler6, Karlin Medium, 2.113, -4.681, no], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Note: start changed to make 1:1 BLAST match with Giles

Gene 59

SSC: 41760-42338, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [Giles, 56, NCBI-BLAST, 1:1,

100%, 0.0], Gap: -7, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.674, -7.392, No],

F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 60

SSC: 42335-42907, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [AmoChick,60,NCBI-BLAST,

1:1, 99.47%, 0.0], Gap: -3, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.269, -4.661, Yes], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 61

Original Glimmer call @bp 42904 has strength 16.33

SSC: 42904-43215, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [OBUpride,61,NCBI-BLAST,

1:1, 98.06%, 7.91E-41], Gap: -3, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.725, -4.316, Yes], F:

NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 62

SSC: 43212-43631, CP: Yes, SCS: Both, ST: Yes, BLAST-Start: [OBUpride,62,NCBI-BLAST,

1:1, 97.84%, 0.0], Gap: -3, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.694, -4.377, Yes], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 63

SSC: 43624-43962, CP: No, SCS: Both, ST: Yes, BLAST-Start: [OBUpride,63,NCBI-BLAST, 1:1,

99.11%, 0.0], Gap: -7, LO: No, RBS: [Kibler6, Karlin Medium, 2.895, -3.071, Yes], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 64

SSC: 43962-44513, CP: No, SCS: Both, ST: No, BLAST-Start: [Luke,64,NCBI-BLAST, 1:1,

100%, 0.0], Gap: 0, LO: No, RBS: [Kibler6, Karlin Medium, 2.372, -4.107, Yes],

F: DNAQ-like (DNA polymerase III subunit), SIF-BLAST: [DNA polymerase III subunit, NCBI-Blast, Luke 63,

QOC58804.1, 100%, 2e-116], SIF-HHPred: [DNA polymerase III subunit epsilon, PDB, 5M1S,

89.7%, 99.88], SIF-Syn: NKF

44662-44919 – deleted

44904-45578 – deleted

These genes were deleted, because they are not present in Giles (though the sequence is similar), they are only found in some Q cluster phages, are hypothetical proteins, and may be regions of ncRNA.

Gene 65

SSC: 45560-45763, CP: Yes, SCS: Glimmer, ST: NI, BLAST-Start: [HH92, 67, NCBI-BLAST,

1:1, 100%, 1.4E-40], Gap: -18, LO: No, RBS: [Kibler6, Karlin Medium, 2.021, -5.152, No], F:

NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 66

SSC: 45763-46746, CP: Yes, SCS: Both-GL, ST: NI, BLAST-Start: [HH92, 68, NCBI-BLAST,

1:1, 100%, 0.0], Gap: 0, LO: No, RBS: [Kibler6, Karlin Medium, 2.787, -3.426, Yes], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF, SIF-Mem: [NKF, 0, 1]

Gene 67

SSC: 46743-47240, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 64, NCBI-BLAST, 1:1,

100%, 0.0], Gap: -3, LO: No, RBS: [Kibler6, Karlin Medium, 2.142, -4.702, No], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 68

SSC: 47237-47650, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 65, NCBI-BLAST, 1:1,

100%, 0.0], Gap: -3, LO: No, RBS: [Kibler6, Karlin Medium, 2.549, -3.756, Yes], F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 69

SSC: 47650-48102, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 66,

NCBI-BLAST, 1:2, 99%, 0.0], Gap: 0, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.251, -5.254,

No], F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, Syn: [NKF]

Gene 70

SSC: 48102-48248, CP: No, SCS: Glimmer, ST: SS, BLAST-Start: [Gancho, 72,

NCBI-BLAST, 1:1, 97%, 9E-27], Gap: 0, LO: Yes, RBS: [Kibler6, Karlin Medium, 1.692,

-5.454, No], F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 71

SSC: 48245-48856, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [PBI\_HH-92, 73,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: -3, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.796, -3.408,

Yes], F: RuvC-like resolvase, SIF-BLAST: [RuvC-like resolvase, Weirdo19, YP\_001552396.1,

76.6%, 2.2E-35], SIF-HHPred: [RuvC resolvase, HHPred, Thermus thermophilus, d4ep4a\_,

81.8%, 99.93], SIF-Syn: [NKF]

Gene 72

SSC: 48876-49157, CP: Yes, SCS: Both-GL, ST: NI, BLAST-Start: [Forge, 68, NCBI-BLAST,

1:1, 100%, 0.0], Gap: 20, LO: No, RBS: [Kibler6, Karlin Medium, 2.142, -4.912, Yes], F: WhiB

family transcription factor, SIF-BLAST: [WhiB family transcription factor, NCBI-Blast, Forge

68, QZD99119.1, 98%, 3e-46], SIF-HHPred: [Transcriptional regulator WhiB1, HHPred,

6ONU\_A, 78.7%, 99.82], SIF-Syn: [NKF]

Gene 73

SSC: 49185-49526, CP: Yes, SCS: Glimmer, ST: SS, BLAST-Start: [Giles, 69, NCBI-BLAST,

1:1, 90.3%, 0.0], Gap: 28, LO: Yes, RBS: [Kibler6, Karlin Medium, 1.938, -5.348, No],

F: Helix-turn-helix DNA binding domain, SIF-BLAST: [MerR-like HTH DNA-binding

domain protein, Giles69, YP\_001552398.1, 100%, 9e-68], SIF-HHPred: [HTH marR-type

domain-containing protein, HHPred, 7DVR\_A, 65.8%, 98.95], SIF-Syn: [MerR-like HTH

DNA-binding domain protein, WhiB family transcription factor, NKF, Giles and Kinbote]

Gene 74

SSC: 49523-49936, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 70,

NCBI-BLAST, 1:1, 89%, 5E-85], Gap: -3, LO: No, RBS: [Kibler 6, Karlin Medium, 2.289,

-4.271, Yes], F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 75

SSC: 49933-50319, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 71,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: -3, LO: No, RBS: [Kibler6, karlin Medium, 2.011, -4.884,

Yes], F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 76

SSC: 50316-50672, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [Giles, 72,

NCBI-BLAST, 1:1, 99%, 5E-68], Gap: 3, LO: No, RBS: [Kibler6, Karlin Medium, 1.661,

-5.594, No], F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: [NKF]

Gene 77

SSC: 50669-51157, CP: Yes, SCS: Both-GL, ST: SS, BLAST-Start: [Giles, 73,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: 3, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.720, -3.876,

yes] F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 78

SSC: 51154-51564, CP: No, SCS: Both, ST: SS, BLAST-Start: [Giles, 74, NCBI-BLAST,

1:1, 100%, 0.0], Gap: 3, LO: Yes, RBS: [Kibler6, Karlin Medium, 1.436, -6.369, no] F: NKF,

SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

Gene 79

SSC: 51765-52598, CP: Yes, SCS: Both, ST: SS, BLAST-Start: [HH92, 81,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: 201, LO: Yes, RBS: [Kibler6, Karlin Medium, 2.440,

-4.374, yes] F: NKF, SIF-BLAST: NKF, SIF-HHPred: NKF, SIF-Syn: NKF

52603-52992 – deleted

Not found in Giles, potential ncRNA

Gene 80

Gene 83: SSC: 52989-53147, CP: No , SCS: Glimmer, ST: SS , BLAST-Start: [Giles, 77,

NCBI-BLAST, 1:1, 100%, 6.7e-29], Gap:-3 , LO: Yes, RBS: [Kibler6, Karlin Medium, 4.283,-5.815, no], F: NKF, SIF-BLAST: [NKF, NCBI-BLAST, Giles, 77, YP\_001552406.1, 98%, 7e-29],SIF-HHPred: NKF, SIF-Syn: NKF

53144-53299 deleted

No coding potential, not found in Giles, found only in 11 of 20 Q cluster phages and some of those are drafts

Gene 81

SSC: 53296-53613, CP: Yes, SCS: Both-GL, ST: SS, BLAST-Start: [HH92, 84,

NCBI-BLAST, 1:1, 100%, 0.0], Gap: -3, LO: Yes, RBS: [Kibler6, Karlin Medium, 0.073, -8.658,no], F: NKF, SIF-BLAST: [hypothetical protein, NCBI-BLAST, HH92, 84, AHY84269.1, 99%,6e-69], SIF-HHPred: NKF, SIF-Syn: NKF