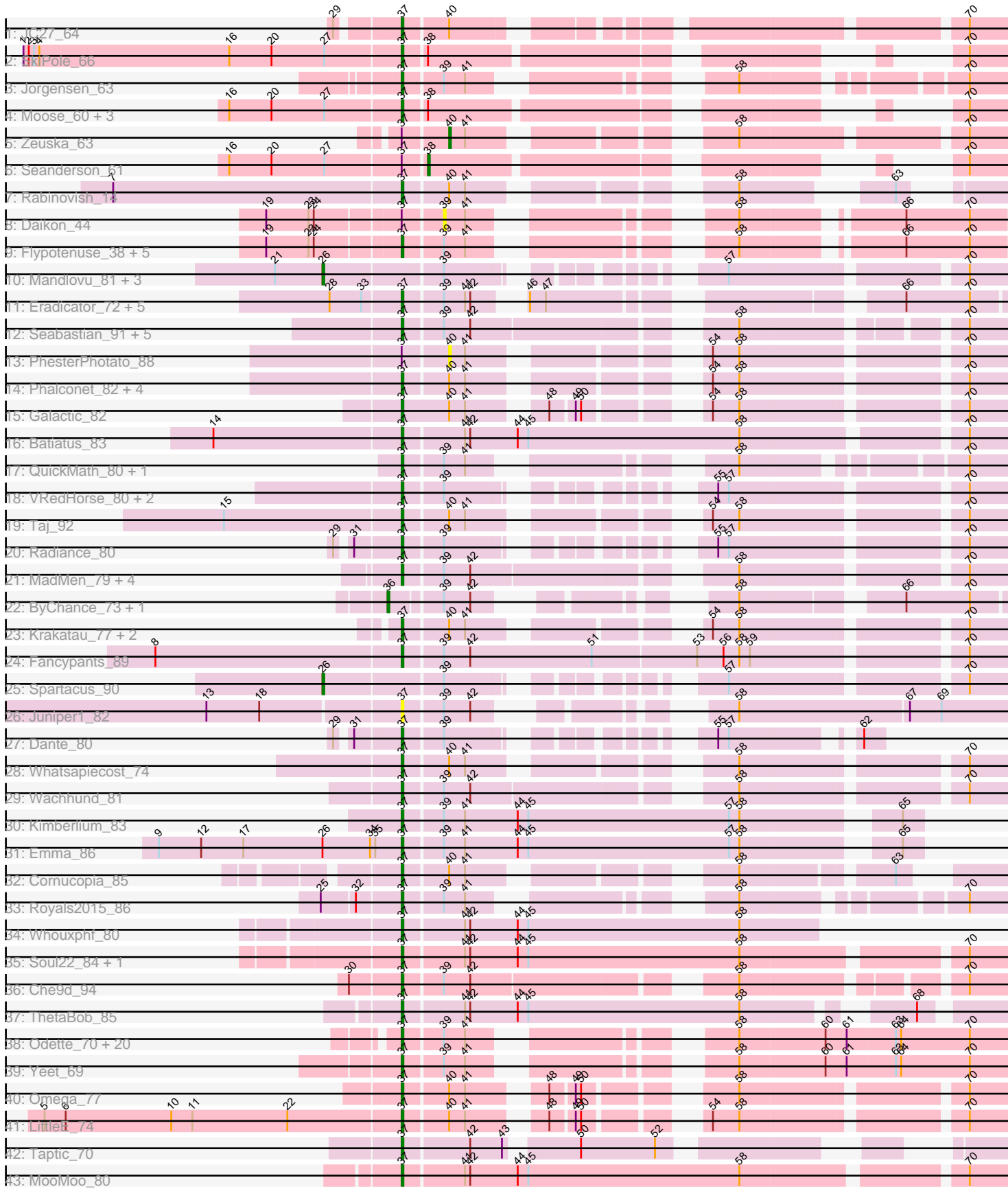


Pham 161768



Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. If this default region is judged to be packed too tightly with annotated starts, the track will be further scaled to only show that region of the ORF with annotated starts. This action will be indicated by adding "Zoomed" to the title. For starts, yellow indicates the location of called starts comprised solely of Glimmer/GeneMark auto-annotations, green indicates the location of called starts with at least 1 manual gene annotation.

## Pham 161768 Report

This analysis was run 04/28/24 on database version 559.

Pham number 161768 has 99 members, 7 are drafts.

Phages represented in each track:

- Track 1 : JC27\_64
- Track 2 : SkiPole\_66
- Track 3 : Jorgensen\_63
- Track 4 : Moose\_60, SwissCheese\_62, Forsytheast\_60, Bruns\_60
- Track 5 : Zeuska\_63
- Track 6 : Seanderson\_61
- Track 7 : Rabinovish\_14
- Track 8 : Daikon\_44
- Track 9 : Flypotenuse\_38, Glexan\_41, Traaww1\_40, Balomoji\_42, Gator\_41, Harella\_43
- Track 10 : Mandlovu\_81, Hlubikazi\_81, Hades\_81, Strokeseat\_81
- Track 11 : Eradicator\_72, KashFlow\_68, Cali\_17, Sprinklers\_16, BadAgartude\_17, SuperGrey\_82
- Track 12 : Seabastian\_91, OfUltron\_91, Ochi17\_89, Jinglebell\_88, Llama\_90, Modragons\_88
- Track 13 : PhesterPhotato\_88
- Track 14 : Phalconet\_82, Tweety\_86, Wee\_91, Eish\_88, DeadP\_86
- Track 15 : Galactic\_82
- Track 16 : Batiatus\_83
- Track 17 : QuickMath\_80, Juice456\_78
- Track 18 : VRedHorse\_80, Pacc40\_73, Cornucopia\_81
- Track 19 : Taj\_92
- Track 20 : Radiance\_80
- Track 21 : MadMen\_79, Sabbb\_83, Karhdo\_80, Renaud18\_93, Kersh\_83
- Track 22 : ByChance\_73, ShowerHandel\_80
- Track 23 : Krakatau\_77, Job42\_84, BuzzLyseyear\_92
- Track 24 : Fancypants\_89
- Track 25 : Spartacus\_90
- Track 26 : Juniper1\_82
- Track 27 : Dante\_80
- Track 28 : Whatsapiecost\_74
- Track 29 : Wachhund\_81
- Track 30 : Kimberlium\_83
- Track 31 : Emma\_86
- Track 32 : Cornucopia\_85
- Track 33 : Royals2015\_86
- Track 34 : Whouxphf\_80

- Track 35 : Soul22\_84, Llij\_80
- Track 36 : Che9d\_94
- Track 37 : ThetaBob\_85
- Track 38 : Odette\_70, Redno2\_68, Schatzie\_66, Zelink\_69, Kalah2\_66, Ejimix\_71, DmpstrDiver\_71, Superphikiman\_69, Beem\_71, JuicyJay\_70, NihilNomen\_72, ThreeRngTarjay\_69, Dallas\_70, Minerva\_77, HokkenD\_64, Lucky2013\_69, Pound\_75, Wanda\_75, Halley\_73, Klein\_71, Hughesyang\_70
- Track 39 : Yeet\_69
- Track 40 : Omega\_77
- Track 41 : LittleE\_74
- Track 42 : Taptic\_70
- Track 43 : MooMoo\_80

***Summary of Final Annotations (See graph section above for start numbers):***

The start number called the most often in the published annotations is 37, it was called in 84 of the 92 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- BadAgartude\_17, Balomoji\_42, Batiatus\_83, Beem\_71, Bruns\_60, BuzzLyseyear\_92, Cali\_17, Che9d\_94, Cornucopia\_81, Cornucopia\_85, Dallas\_70, Dante\_80, DeadP\_86, DmpstrDiver\_71, Eish\_88, Ejimix\_71, Emma\_86, Eradicator\_72, Fancypants\_89, Flypotenuse\_38, Forsytheast\_60, Galactic\_82, Gator\_41, Glexan\_41, Halley\_73, Harella\_43, HokkenD\_64, Hughesyang\_70, JC27\_64, Jinglebell\_88, Job42\_84, Jorgensen\_63, Juice456\_78, JuicyJay\_70, Juniper1\_82, Kalah2\_66, Karhdo\_80, KashFlow\_68, Kersh\_83, Kimberlium\_83, Klein\_71, Krakatau\_77, LittleE\_74, Llama\_90, Llij\_80, Lucky2013\_69, MadMen\_79, Minerva\_77, Modragons\_88, MooMoo\_80, Moose\_60, NihilNomen\_72, Ochi17\_89, Odette\_70, OfUltron\_91, Omega\_77, Pacc40\_73, Phalconet\_82, Pound\_75, QuickMath\_80, Rabinovish\_14, Radiance\_80, Redno2\_68, Renaud18\_93, Royals2015\_86, Sabbb\_83, Schatzie\_66, Sebastian\_91, SkiPole\_66, Soul22\_84, Sprinklers\_16, SuperGrey\_82, Superphikiman\_69, SwissCheese\_62, Taj\_92, Taptic\_70, ThetaBob\_85, ThreeRngTarjay\_69, Traaww1\_40, Tweety\_86, VRedHorse\_80, Wachhund\_81, Wanda\_75, Wee\_91, Whatsapiecost\_74, Whouxphf\_80, Yeet\_69, Zelink\_69,

Genes that have the "Most Annotated" start but do not call it:

- Daikon\_44, PhesterPotato\_88, Seanderson\_61, Zeuska\_63,

Genes that do not have the "Most Annotated" start:

- ByChance\_73, Hades\_81, Hlubikazi\_81, Mandlovu\_81, ShowerHandel\_80, Spartacus\_90, Strokeseat\_81,

**Summary by start number:**

Start 26:

- Found in 6 of 99 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 5 of 92
- Called 83.3% of time when present

- Phage (with cluster) where this start called: Hades\_81 (F1), Hlubikazi\_81 (F1), Mandlovu\_81 (F1), Spartacus\_90 (F1), Strokeseat\_81 (F1),

#### Start 36:

- Found in 2 of 99 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 92
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ByChance\_73 (F1), ShowerHandel\_80 (F1),

#### Start 37:

- Found in 92 of 99 ( 92.9% ) of genes in pham
- Manual Annotations of this start: 84 of 92
- Called 95.7% of time when present
- Phage (with cluster) where this start called: BadAgartude\_17 (C1), Balomoji\_42 (E), Batiatus\_83 (F1), Beem\_71 (J), Bruns\_60 (A1), BuzzLyseyear\_92 (F1), Cali\_17 (C1), Che9d\_94 (F2), Cornucopia\_81 (F1), Cornucopia\_85 (F1), Dallas\_70 (J), Dante\_80 (F1), DeadP\_86 (F1), DmpstrDiver\_71 (J), Eish\_88 (F1), Ejimix\_71 (J), Emma\_86 (F1), Eradicator\_72 (F1), Fancypants\_89 (F1), Flypotenuse\_38 (E), Forsytheast\_60 (A1), Galactic\_82 (F1), Gator\_41 (E), Glexan\_41 (E), Halley\_73 (J), Harella\_43 (E), HokkenD\_64 (J), Hughesyang\_70 (J), JC27\_64 (A1), Jinglebell\_88 (F1), Job42\_84 (F1), Jorgensen\_63 (A1), Juice456\_78 (F1), JuicyJay\_70 (J), Juniper1\_82 (F1), Kalah2\_66 (J), Karhdo\_80 (F1), KashFlow\_68 (J), Kersh\_83 (F1), Kimberlium\_83 (F1), Klein\_71 (J), Krakatau\_77 (F1), LittleE\_74 (J), Llama\_90 (F1), Llij\_80 (F1), Lucky2013\_69 (J), MadMen\_79 (F1), Minerva\_77 (J), Modragons\_88 (F1), MooMoo\_80 (singleton), Moose\_60 (A1), NihilNomen\_72 (J), Ochi17\_89 (F1), Odette\_70 (J), OfUltron\_91 (F1), Omega\_77 (J), Pacc40\_73 (F1), Phalconet\_82 (F1), Pound\_75 (J), QuickMath\_80 (F1), Rabinovish\_14 (C1), Radiance\_80 (F1), Redno2\_68 (J), Renaud18\_93 (F4), Royals2015\_86 (F1), Sabbb\_83 (F1), Schatzie\_66 (J), Seabastian\_91 (F1), SkiPole\_66 (A1), Soul22\_84 (F2), Sprinklers\_16 (C1), SuperGrey\_82 (F1), Superphikiman\_69 (J), SwissCheese\_62 (A1), Taj\_92 (F1), Taptic\_70 (W), ThetaBob\_85 (F4), ThreeRngTarjay\_69 (J), Traaww1\_40 (E), Tweety\_86 (F1), VRedHorse\_80 (F1), Wachhund\_81 (F1), Wanda\_75 (J), Wee\_91 (F1), Whatsapiecost\_74 (F1), Whouxphf\_80 (F1), Yeet\_69 (J), Zelink\_69 (J),

#### Start 38:

- Found in 6 of 99 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 1 of 92
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Seanderson\_61 (A1),

#### Start 39:

- Found in 68 of 99 ( 68.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.5% of time when present
- Phage (with cluster) where this start called: Daikon\_44 (E),

#### Start 40:

- Found in 18 of 99 ( 18.2% ) of genes in pham
- Manual Annotations of this start: 1 of 92
- Called 11.1% of time when present

- Phage (with cluster) where this start called: PhesterPhotato\_88 (F1), Zeuska\_63 (A1),

### **Summary by clusters:**

There are 9 clusters represented in this pham: F1, F2, F4, J, singleton, A1, W, E, C1,

Info for manual annotations of cluster A1:

- Start number 37 was manually annotated 7 times for cluster A1.
- Start number 38 was manually annotated 1 time for cluster A1.
- Start number 40 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster C1:

- Start number 37 was manually annotated 4 times for cluster C1.

Info for manual annotations of cluster E:

- Start number 37 was manually annotated 5 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 26 was manually annotated 5 times for cluster F1.
- Start number 36 was manually annotated 1 time for cluster F1.
- Start number 37 was manually annotated 38 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 37 was manually annotated 2 times for cluster F2.

Info for manual annotations of cluster F4:

- Start number 37 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster J:

- Start number 37 was manually annotated 24 times for cluster J.

Info for manual annotations of cluster W:

- Start number 37 was manually annotated 1 time for cluster W.

### **Gene Information:**

Gene: BadAgartude\_17 Start: 5514, Stop: 5792, Start Num: 37

Candidate Starts for BadAgartude\_17:

(28, 5475), (33, 5493), (Start: 37 @5514 has 84 MA's), (39, 5535), (41, 5547), (42, 5550), (46, 5565), (47, 5574), (66, 5736), (70, 5772),

Gene: Balomoji\_42 Start: 35703, Stop: 35428, Start Num: 37

Candidate Starts for Balomoji\_42:

(19, 35775), (23, 35751), (24, 35748), (Start: 37 @35703 has 84 MA's), (39, 35682), (41, 35670), (58, 35562), (66, 35484), (70, 35448),

Gene: Batiatus\_83 Start: 49708, Stop: 50034, Start Num: 37

Candidate Starts for Batiatus\_83:

(14, 49603), (Start: 37 @49708 has 84 MA's), (41, 49741), (42, 49744), (44, 49771), (45, 49777), (58, 49897), (70, 50011),

Gene: Beem\_71 Start: 50213, Stop: 49920, Start Num: 37

Candidate Starts for Beem\_71:

(Start: 37 @50213 has 84 MA's), (39, 50192), (41, 50180), (58, 50072), (60, 50024), (61, 50012), (63, 49985), (64, 49982), (70, 49943),

Gene: Bruns\_60 Start: 39755, Stop: 39507, Start Num: 37

Candidate Starts for Bruns\_60:

(16, 39851), (20, 39827), (27, 39797), (Start: 37 @39755 has 84 MA's), (Start: 38 @39743 has 1 MA's), (70, 39530),

Gene: BuzzLyseyear\_92 Start: 52666, Stop: 52950, Start Num: 37

Candidate Starts for BuzzLyseyear\_92:

(Start: 37 @52666 has 84 MA's), (Start: 40 @52690 has 1 MA's), (41, 52699), (54, 52798), (58, 52813), (70, 52927),

Gene: ByChance\_73 Start: 44779, Stop: 45045, Start Num: 36

Candidate Starts for ByChance\_73:

(Start: 36 @44779 has 1 MA's), (39, 44806), (42, 44821), (58, 44911), (66, 44989), (70, 45025),

Gene: Cali\_17 Start: 6490, Stop: 6768, Start Num: 37

Candidate Starts for Cali\_17:

(28, 6451), (33, 6469), (Start: 37 @6490 has 84 MA's), (39, 6511), (41, 6523), (42, 6526), (46, 6541), (47, 6550), (66, 6712), (70, 6748),

Gene: Che9d\_94 Start: 49583, Stop: 49876, Start Num: 37

Candidate Starts for Che9d\_94:

(30, 49556), (Start: 37 @49583 has 84 MA's), (39, 49604), (42, 49619), (58, 49745), (70, 49853),

Gene: Cornucopia\_81 Start: 47550, Stop: 47819, Start Num: 37

Candidate Starts for Cornucopia\_81:

(Start: 37 @47550 has 84 MA's), (39, 47571), (55, 47670), (57, 47676), (70, 47796),

Gene: Cornucopia\_85 Start: 48642, Stop: 48905, Start Num: 37

Candidate Starts for Cornucopia\_85:

(Start: 37 @48642 has 84 MA's), (Start: 40 @48666 has 1 MA's), (41, 48675), (58, 48789), (63, 48864),

Gene: Daikon\_44 Start: 35703, Stop: 35449, Start Num: 39

Candidate Starts for Daikon\_44:

(19, 35796), (23, 35772), (24, 35769), (Start: 37 @35724 has 84 MA's), (39, 35703), (41, 35691), (58, 35583), (66, 35505), (70, 35469),

Gene: Dallas\_70 Start: 49134, Stop: 48841, Start Num: 37

Candidate Starts for Dallas\_70:

(Start: 37 @49134 has 84 MA's), (39, 49113), (41, 49101), (58, 48993), (60, 48945), (61, 48933), (63, 48906), (64, 48903), (70, 48864),

Gene: Dante\_80 Start: 50620, Stop: 50814, Start Num: 37

Candidate Starts for Dante\_80:

(29, 50590), (31, 50596), (Start: 37 @50620 has 84 MA's), (39, 50641), (55, 50740), (57, 50746), (62, 50803),

Gene: DeadP\_86 Start: 49174, Stop: 49458, Start Num: 37

Candidate Starts for DeadP\_86:

(Start: 37 @49174 has 84 MA's), (Start: 40 @49198 has 1 MA's), (41, 49207), (54, 49306), (58, 49321), (70, 49435),

Gene: DmpstrDiver\_71 Start: 49561, Stop: 49268, Start Num: 37

Candidate Starts for DmpstrDiver\_71:

(Start: 37 @49561 has 84 MA's), (39, 49540), (41, 49528), (58, 49420), (60, 49372), (61, 49360), (63, 49333), (64, 49330), (70, 49291),

Gene: Eish\_88 Start: 51057, Stop: 51341, Start Num: 37

Candidate Starts for Eish\_88:

(Start: 37 @51057 has 84 MA's), (Start: 40 @51081 has 1 MA's), (41, 51090), (54, 51189), (58, 51204), (70, 51318),

Gene: Ejimix\_71 Start: 50999, Stop: 50706, Start Num: 37

Candidate Starts for Ejimix\_71:

(Start: 37 @50999 has 84 MA's), (39, 50978), (41, 50966), (58, 50858), (60, 50810), (61, 50798), (63, 50771), (64, 50768), (70, 50729),

Gene: Emma\_86 Start: 48537, Stop: 48812, Start Num: 37

Candidate Starts for Emma\_86:

(9, 48399), (12, 48423), (17, 48447), (Start: 26 @48492 has 5 MA's), (34, 48519), (35, 48522), (Start: 37 @48537 has 84 MA's), (39, 48558), (41, 48570), (44, 48600), (45, 48606), (57, 48720), (58, 48726), (65, 48801),

Gene: Eradicator\_72 Start: 46896, Stop: 47174, Start Num: 37

Candidate Starts for Eradicator\_72:

(28, 46857), (33, 46875), (Start: 37 @46896 has 84 MA's), (39, 46917), (41, 46929), (42, 46932), (46, 46947), (47, 46956), (66, 47118), (70, 47154),

Gene: Fancypants\_89 Start: 51307, Stop: 51630, Start Num: 37

Candidate Starts for Fancypants\_89:

(8, 51169), (Start: 37 @51307 has 84 MA's), (39, 51328), (42, 51343), (51, 51412), (53, 51469), (56, 51484), (58, 51493), (59, 51499), (70, 51607),

Gene: Flypotenuse\_38 Start: 34455, Stop: 34180, Start Num: 37

Candidate Starts for Flypotenuse\_38:

(19, 34527), (23, 34503), (24, 34500), (Start: 37 @34455 has 84 MA's), (39, 34434), (41, 34422), (58, 34314), (66, 34236), (70, 34200),

Gene: Forsytheast\_60 Start: 39923, Stop: 39675, Start Num: 37

Candidate Starts for Forsytheast\_60:

(16, 40019), (20, 39995), (27, 39965), (Start: 37 @39923 has 84 MA's), (Start: 38 @39911 has 1 MA's), (70, 39698),

Gene: Galactic\_82 Start: 48872, Stop: 49156, Start Num: 37

Candidate Starts for Galactic\_82:

(Start: 37 @48872 has 84 MA's), (Start: 40 @48899 has 1 MA's), (41, 48908), (48, 48941), (49, 48953), (50, 48956), (54, 49004), (58, 49019), (70, 49133),

Gene: Gator\_41 Start: 35594, Stop: 35319, Start Num: 37

Candidate Starts for Gator\_41:

(19, 35666), (23, 35642), (24, 35639), (Start: 37 @35594 has 84 MA's), (39, 35573), (41, 35561), (58, 35453), (66, 35375), (70, 35339),

Gene: Glexan\_41 Start: 35582, Stop: 35307, Start Num: 37

Candidate Starts for Glexan\_41:

(19, 35654), (23, 35630), (24, 35627), (Start: 37 @35582 has 84 MA's), (39, 35561), (41, 35549), (58, 35441), (66, 35363), (70, 35327),

Gene: Hades\_81 Start: 47173, Stop: 47484, Start Num: 26

Candidate Starts for Hades\_81:

(21, 47146), (Start: 26 @47173 has 5 MA's), (39, 47236), (57, 47341), (70, 47461),

Gene: Halley\_73 Start: 50213, Stop: 49920, Start Num: 37

Candidate Starts for Halley\_73:

(Start: 37 @50213 has 84 MA's), (39, 50192), (41, 50180), (58, 50072), (60, 50024), (61, 50012), (63, 49985), (64, 49982), (70, 49943),

Gene: Harella\_43 Start: 36098, Stop: 35823, Start Num: 37

Candidate Starts for Harella\_43:

(19, 36170), (23, 36146), (24, 36143), (Start: 37 @36098 has 84 MA's), (39, 36077), (41, 36065), (58, 35957), (66, 35879), (70, 35843),

Gene: Hlubikazi\_81 Start: 47588, Stop: 47899, Start Num: 26

Candidate Starts for Hlubikazi\_81:

(21, 47561), (Start: 26 @47588 has 5 MA's), (39, 47651), (57, 47756), (70, 47876),

Gene: HokkenD\_64 Start: 48482, Stop: 48189, Start Num: 37

Candidate Starts for HokkenD\_64:

(Start: 37 @48482 has 84 MA's), (39, 48461), (41, 48449), (58, 48341), (60, 48293), (61, 48281), (63, 48254), (64, 48251), (70, 48212),

Gene: Hughesyang\_70 Start: 50142, Stop: 49849, Start Num: 37

Candidate Starts for Hughesyang\_70:

(Start: 37 @50142 has 84 MA's), (39, 50121), (41, 50109), (58, 50001), (60, 49953), (61, 49941), (63, 49914), (64, 49911), (70, 49872),

Gene: JC27\_64 Start: 41329, Stop: 41042, Start Num: 37

Candidate Starts for JC27\_64:

(29, 41359), (Start: 37 @41329 has 84 MA's), (Start: 40 @41305 has 1 MA's), (70, 41065),

Gene: Jinglebell\_88 Start: 50298, Stop: 50591, Start Num: 37

Candidate Starts for Jinglebell\_88:

(Start: 37 @50298 has 84 MA's), (39, 50319), (42, 50334), (58, 50460), (70, 50568),

Gene: Job42\_84 Start: 52418, Stop: 52702, Start Num: 37

Candidate Starts for Job42\_84:

(Start: 37 @52418 has 84 MA's), (Start: 40 @52442 has 1 MA's), (41, 52451), (54, 52550), (58, 52565), (70, 52679),

Gene: Jorgensen\_63 Start: 40720, Stop: 40448, Start Num: 37

Candidate Starts for Jorgensen\_63:

(Start: 37 @40720 has 84 MA's), (39, 40699), (41, 40687), (58, 40579), (70, 40471),



Gene: Juice456\_78 Start: 48213, Stop: 48485, Start Num: 37

Candidate Starts for Juice456\_78:

(Start: 37 @48213 has 84 MA's), (39, 48234), (41, 48246), (58, 48354), (70, 48462),

Gene: JuicyJay\_70 Start: 51347, Stop: 51054, Start Num: 37

Candidate Starts for JuicyJay\_70:

(Start: 37 @51347 has 84 MA's), (39, 51326), (41, 51314), (58, 51206), (60, 51158), (61, 51146), (63, 51119), (64, 51116), (70, 51077),

Gene: Juniper1\_82 Start: 48708, Stop: 48983, Start Num: 37

Candidate Starts for Juniper1\_82:

(13, 48603), (18, 48633), (Start: 37 @48708 has 84 MA's), (39, 48729), (42, 48744), (58, 48834), (67, 48927), (69, 48945),

Gene: Kalah2\_66 Start: 49506, Stop: 49213, Start Num: 37

Candidate Starts for Kalah2\_66:

(Start: 37 @49506 has 84 MA's), (39, 49485), (41, 49473), (58, 49365), (60, 49317), (61, 49305), (63, 49278), (64, 49275), (70, 49236),

Gene: Karhdo\_80 Start: 47607, Stop: 47906, Start Num: 37

Candidate Starts for Karhdo\_80:

(Start: 37 @47607 has 84 MA's), (39, 47628), (42, 47643), (58, 47769), (70, 47883),

Gene: KashFlow\_68 Start: 45901, Stop: 45623, Start Num: 37

Candidate Starts for KashFlow\_68:

(28, 45940), (33, 45922), (Start: 37 @45901 has 84 MA's), (39, 45880), (41, 45868), (42, 45865), (46, 45850), (47, 45841), (66, 45679), (70, 45643),

Gene: Kersh\_83 Start: 50793, Stop: 51092, Start Num: 37

Candidate Starts for Kersh\_83:

(Start: 37 @50793 has 84 MA's), (39, 50814), (42, 50829), (58, 50955), (70, 51069),

Gene: Kimberlium\_83 Start: 48559, Stop: 48834, Start Num: 37

Candidate Starts for Kimberlium\_83:

(Start: 37 @48559 has 84 MA's), (39, 48580), (41, 48592), (44, 48622), (45, 48628), (57, 48742), (58, 48748), (65, 48823),

Gene: Klein\_71 Start: 49529, Stop: 49236, Start Num: 37

Candidate Starts for Klein\_71:

(Start: 37 @49529 has 84 MA's), (39, 49508), (41, 49496), (58, 49388), (60, 49340), (61, 49328), (63, 49301), (64, 49298), (70, 49259),

Gene: Krakatau\_77 Start: 45727, Stop: 46011, Start Num: 37

Candidate Starts for Krakatau\_77:

(Start: 37 @45727 has 84 MA's), (Start: 40 @45751 has 1 MA's), (41, 45760), (54, 45859), (58, 45874), (70, 45988),

Gene: LittleE\_74 Start: 49484, Stop: 49203, Start Num: 37

Candidate Starts for LittleE\_74:

(5, 49685), (6, 49673), (10, 49613), (11, 49601), (22, 49547), (Start: 37 @49484 has 84 MA's), (Start: 40 @49460 has 1 MA's), (41, 49451), (48, 49418), (49, 49406), (50, 49403), (54, 49355), (58, 49340), (70, 49226),

Gene: Llama\_90 Start: 50154, Stop: 50447, Start Num: 37  
Candidate Starts for Llama\_90:  
(Start: 37 @50154 has 84 MA's), (39, 50175), (42, 50190), (58, 50316), (70, 50424),

Gene: Llij\_80 Start: 47508, Stop: 47834, Start Num: 37  
Candidate Starts for Llij\_80:  
(Start: 37 @47508 has 84 MA's), (41, 47541), (42, 47544), (44, 47571), (45, 47577), (58, 47697), (70, 47811),

Gene: Lucky2013\_69 Start: 45952, Stop: 45659, Start Num: 37  
Candidate Starts for Lucky2013\_69:  
(Start: 37 @45952 has 84 MA's), (39, 45931), (41, 45919), (58, 45811), (60, 45763), (61, 45751), (63, 45724), (64, 45721), (70, 45682),

Gene: MadMen\_79 Start: 47451, Stop: 47750, Start Num: 37  
Candidate Starts for MadMen\_79:  
(Start: 37 @47451 has 84 MA's), (39, 47472), (42, 47487), (58, 47613), (70, 47727),

Gene: Mandlovu\_81 Start: 47530, Stop: 47841, Start Num: 26  
Candidate Starts for Mandlovu\_81:  
(21, 47503), (Start: 26 @47530 has 5 MA's), (39, 47593), (57, 47698), (70, 47818),

Gene: Minerva\_77 Start: 51629, Stop: 51336, Start Num: 37  
Candidate Starts for Minerva\_77:  
(Start: 37 @51629 has 84 MA's), (39, 51608), (41, 51596), (58, 51488), (60, 51440), (61, 51428), (63, 51401), (64, 51398), (70, 51359),

Gene: Modragons\_88 Start: 50142, Stop: 50435, Start Num: 37  
Candidate Starts for Modragons\_88:  
(Start: 37 @50142 has 84 MA's), (39, 50163), (42, 50178), (58, 50304), (70, 50412),

Gene: MooMoo\_80 Start: 48107, Stop: 48433, Start Num: 37  
Candidate Starts for MooMoo\_80:  
(Start: 37 @48107 has 84 MA's), (41, 48140), (42, 48143), (44, 48170), (45, 48176), (58, 48296), (70, 48410),

Gene: Moose\_60 Start: 39923, Stop: 39675, Start Num: 37  
Candidate Starts for Moose\_60:  
(16, 40019), (20, 39995), (27, 39965), (Start: 37 @39923 has 84 MA's), (Start: 38 @39911 has 1 MA's), (70, 39698),

Gene: NihilNomen\_72 Start: 50300, Stop: 50007, Start Num: 37  
Candidate Starts for NihilNomen\_72:  
(Start: 37 @50300 has 84 MA's), (39, 50279), (41, 50267), (58, 50159), (60, 50111), (61, 50099), (63, 50072), (64, 50069), (70, 50030),

Gene: Ochi17\_89 Start: 49749, Stop: 50042, Start Num: 37  
Candidate Starts for Ochi17\_89:  
(Start: 37 @49749 has 84 MA's), (39, 49770), (42, 49785), (58, 49911), (70, 50019),

Gene: Odette\_70 Start: 49343, Stop: 49050, Start Num: 37  
Candidate Starts for Odette\_70:

(Start: 37 @49343 has 84 MA's), (39, 49322), (41, 49310), (58, 49202), (60, 49154), (61, 49142), (63, 49115), (64, 49112), (70, 49073),

Gene: OfUltron\_91 Start: 50298, Stop: 50591, Start Num: 37

Candidate Starts for OfUltron\_91:

(Start: 37 @50298 has 84 MA's), (39, 50319), (42, 50334), (58, 50460), (70, 50568),

Gene: Omega\_77 Start: 51219, Stop: 50938, Start Num: 37

Candidate Starts for Omega\_77:

(Start: 37 @51219 has 84 MA's), (Start: 40 @51195 has 1 MA's), (41, 51186), (48, 51153), (49, 51141), (50, 51138), (58, 51075), (70, 50961),

Gene: Pacc40\_73 Start: 48569, Stop: 48838, Start Num: 37

Candidate Starts for Pacc40\_73:

(Start: 37 @48569 has 84 MA's), (39, 48590), (55, 48689), (57, 48695), (70, 48815),

Gene: Phalconet\_82 Start: 49094, Stop: 49378, Start Num: 37

Candidate Starts for Phalconet\_82:

(Start: 37 @49094 has 84 MA's), (Start: 40 @49118 has 1 MA's), (41, 49127), (54, 49226), (58, 49241), (70, 49355),

Gene: PhesterPhotato\_88 Start: 50286, Stop: 50546, Start Num: 40

Candidate Starts for PhesterPhotato\_88:

(Start: 37 @50262 has 84 MA's), (Start: 40 @50286 has 1 MA's), (41, 50295), (54, 50394), (58, 50409), (70, 50523),

Gene: Pound\_75 Start: 52901, Stop: 52608, Start Num: 37

Candidate Starts for Pound\_75:

(Start: 37 @52901 has 84 MA's), (39, 52880), (41, 52868), (58, 52760), (60, 52712), (61, 52700), (63, 52673), (64, 52670), (70, 52631),

Gene: QuickMath\_80 Start: 48565, Stop: 48837, Start Num: 37

Candidate Starts for QuickMath\_80:

(Start: 37 @48565 has 84 MA's), (39, 48586), (41, 48598), (58, 48706), (70, 48814),

Gene: Rabinovish\_14 Start: 5789, Stop: 6034, Start Num: 37

Candidate Starts for Rabinovish\_14:

(7, 5627), (Start: 37 @5789 has 84 MA's), (Start: 40 @5813 has 1 MA's), (41, 5822), (58, 5936), (63, 5996),

Gene: Radiance\_80 Start: 49352, Stop: 49621, Start Num: 37

Candidate Starts for Radiance\_80:

(29, 49322), (31, 49328), (Start: 37 @49352 has 84 MA's), (39, 49373), (55, 49472), (57, 49478), (70, 49598),

Gene: Redno2\_68 Start: 47096, Stop: 46803, Start Num: 37

Candidate Starts for Redno2\_68:

(Start: 37 @47096 has 84 MA's), (39, 47075), (41, 47063), (58, 46955), (60, 46907), (61, 46895), (63, 46868), (64, 46865), (70, 46826),

Gene: Renaud18\_93 Start: 50655, Stop: 50924, Start Num: 37

Candidate Starts for Renaud18\_93:

(Start: 37 @50655 has 84 MA's), (39, 50676), (42, 50691), (58, 50787), (70, 50901),

Gene: Royals2015\_86 Start: 48664, Stop: 48936, Start Num: 37  
Candidate Starts for Royals2015\_86:  
(25, 48622), (32, 48640), (Start: 37 @48664 has 84 MA's), (39, 48685), (41, 48697), (58, 48805), (70, 48913),

Gene: Sabbb\_83 Start: 46768, Stop: 47067, Start Num: 37  
Candidate Starts for Sabbb\_83:  
(Start: 37 @46768 has 84 MA's), (39, 46789), (42, 46804), (58, 46930), (70, 47044),

Gene: Schatzie\_66 Start: 49090, Stop: 48797, Start Num: 37  
Candidate Starts for Schatzie\_66:  
(Start: 37 @49090 has 84 MA's), (39, 49069), (41, 49057), (58, 48949), (60, 48901), (61, 48889), (63, 48862), (64, 48859), (70, 48820),

Gene: Seabastian\_91 Start: 50299, Stop: 50592, Start Num: 37  
Candidate Starts for Seabastian\_91:  
(Start: 37 @50299 has 84 MA's), (39, 50320), (42, 50335), (58, 50461), (70, 50569),

Gene: Seanderson\_61 Start: 42123, Stop: 41887, Start Num: 38  
Candidate Starts for Seanderson\_61:  
(16, 42231), (20, 42207), (27, 42177), (Start: 37 @42135 has 84 MA's), (Start: 38 @42123 has 1 MA's), (70, 41910),

Gene: ShowerHandel\_80 Start: 48717, Stop: 48983, Start Num: 36  
Candidate Starts for ShowerHandel\_80:  
(Start: 36 @48717 has 1 MA's), (39, 48744), (42, 48759), (58, 48849), (66, 48927), (70, 48963),

Gene: SkiPole\_66 Start: 41398, Stop: 41150, Start Num: 37  
Candidate Starts for SkiPole\_66:  
(1, 41611), (2, 41608), (3, 41605), (4, 41602), (16, 41494), (20, 41470), (27, 41440), (Start: 37 @41398 has 84 MA's), (Start: 38 @41386 has 1 MA's), (70, 41173),

Gene: Soul22\_84 Start: 47805, Stop: 48131, Start Num: 37  
Candidate Starts for Soul22\_84:  
(Start: 37 @47805 has 84 MA's), (41, 47838), (42, 47841), (44, 47868), (45, 47874), (58, 47994), (70, 48108),

Gene: Spartacus\_90 Start: 52535, Stop: 52846, Start Num: 26  
Candidate Starts for Spartacus\_90:  
(Start: 26 @52535 has 5 MA's), (39, 52598), (57, 52703), (70, 52823),

Gene: Sprinklers\_16 Start: 4916, Stop: 5194, Start Num: 37  
Candidate Starts for Sprinklers\_16:  
(28, 4877), (33, 4895), (Start: 37 @4916 has 84 MA's), (39, 4937), (41, 4949), (42, 4952), (46, 4967), (47, 4976), (66, 5138), (70, 5174),

Gene: Strokeseat\_81 Start: 47587, Stop: 47898, Start Num: 26  
Candidate Starts for Strokeseat\_81:  
(21, 47560), (Start: 26 @47587 has 5 MA's), (39, 47650), (57, 47755), (70, 47875),

Gene: SuperGrey\_82 Start: 51027, Stop: 51305, Start Num: 37  
Candidate Starts for SuperGrey\_82:

(28, 50988), (33, 51006), (Start: 37 @51027 has 84 MA's), (39, 51048), (41, 51060), (42, 51063), (46, 51078), (47, 51087), (66, 51249), (70, 51285),

Gene: Superphikiman\_69 Start: 45818, Stop: 45525, Start Num: 37

Candidate Starts for Superphikiman\_69:

(Start: 37 @45818 has 84 MA's), (39, 45797), (41, 45785), (58, 45677), (60, 45629), (61, 45617), (63, 45590), (64, 45587), (70, 45548),

Gene: SwissCheese\_62 Start: 40423, Stop: 40175, Start Num: 37

Candidate Starts for SwissCheese\_62:

(16, 40519), (20, 40495), (27, 40465), (Start: 37 @40423 has 84 MA's), (Start: 38 @40411 has 1 MA's), (70, 40198),

Gene: Taj\_92 Start: 52011, Stop: 52295, Start Num: 37

Candidate Starts for Taj\_92:

(15, 51912), (Start: 37 @52011 has 84 MA's), (Start: 40 @52035 has 1 MA's), (41, 52044), (54, 52143), (58, 52158), (70, 52272),

Gene: Taptic\_70 Start: 50486, Stop: 50746, Start Num: 37

Candidate Starts for Taptic\_70:

(Start: 37 @50486 has 84 MA's), (42, 50522), (43, 50540), (50, 50573), (52, 50615),

Gene: ThetaBob\_85 Start: 48938, Stop: 49243, Start Num: 37

Candidate Starts for ThetaBob\_85:

(Start: 37 @48938 has 84 MA's), (41, 48971), (42, 48974), (44, 49001), (45, 49007), (58, 49127), (68, 49202),

Gene: ThreeRngTarjay\_69 Start: 50376, Stop: 50083, Start Num: 37

Candidate Starts for ThreeRngTarjay\_69:

(Start: 37 @50376 has 84 MA's), (39, 50355), (41, 50343), (58, 50235), (60, 50187), (61, 50175), (63, 50148), (64, 50145), (70, 50106),

Gene: Traaww1\_40 Start: 34923, Stop: 34648, Start Num: 37

Candidate Starts for Traaww1\_40:

(19, 34995), (23, 34971), (24, 34968), (Start: 37 @34923 has 84 MA's), (39, 34902), (41, 34890), (58, 34782), (66, 34704), (70, 34668),

Gene: Tweety\_86 Start: 51088, Stop: 51372, Start Num: 37

Candidate Starts for Tweety\_86:

(Start: 37 @51088 has 84 MA's), (Start: 40 @51112 has 1 MA's), (41, 51121), (54, 51220), (58, 51235), (70, 51349),

Gene: VRedHorse\_80 Start: 46368, Stop: 46637, Start Num: 37

Candidate Starts for VRedHorse\_80:

(Start: 37 @46368 has 84 MA's), (39, 46389), (55, 46488), (57, 46494), (70, 46614),

Gene: Wachhund\_81 Start: 46941, Stop: 47240, Start Num: 37

Candidate Starts for Wachhund\_81:

(Start: 37 @46941 has 84 MA's), (39, 46962), (42, 46977), (58, 47103), (70, 47217),

Gene: Wanda\_75 Start: 49838, Stop: 49545, Start Num: 37

Candidate Starts for Wanda\_75:

(Start: 37 @49838 has 84 MA's), (39, 49817), (41, 49805), (58, 49697), (60, 49649), (61, 49637), (63, 49610), (64, 49607), (70, 49568),

Gene: Wee\_91 Start: 52087, Stop: 52371, Start Num: 37

Candidate Starts for Wee\_91:

(Start: 37 @52087 has 84 MA's), (Start: 40 @52111 has 1 MA's), (41, 52120), (54, 52219), (58, 52234), (70, 52348),

Gene: Whatsapiecost\_74 Start: 44329, Stop: 44613, Start Num: 37

Candidate Starts for Whatsapiecost\_74:

(Start: 37 @44329 has 84 MA's), (Start: 40 @44353 has 1 MA's), (41, 44362), (58, 44476), (70, 44590),

Gene: Whouxphf\_80 Start: 49279, Stop: 49512, Start Num: 37

Candidate Starts for Whouxphf\_80:

(Start: 37 @49279 has 84 MA's), (41, 49312), (42, 49315), (44, 49342), (45, 49348), (58, 49468),

Gene: Yeet\_69 Start: 49362, Stop: 49069, Start Num: 37

Candidate Starts for Yeet\_69:

(Start: 37 @49362 has 84 MA's), (39, 49341), (41, 49329), (58, 49221), (60, 49173), (61, 49161), (63, 49134), (64, 49131), (70, 49092),

Gene: Zelink\_69 Start: 50689, Stop: 50396, Start Num: 37

Candidate Starts for Zelink\_69:

(Start: 37 @50689 has 84 MA's), (39, 50668), (41, 50656), (58, 50548), (60, 50500), (61, 50488), (63, 50461), (64, 50458), (70, 50419),

Gene: Zeuska\_63 Start: 42656, Stop: 42396, Start Num: 40

Candidate Starts for Zeuska\_63:

(Start: 37 @42680 has 84 MA's), (Start: 40 @42656 has 1 MA's), (41, 42647), (58, 42533), (70, 42419),