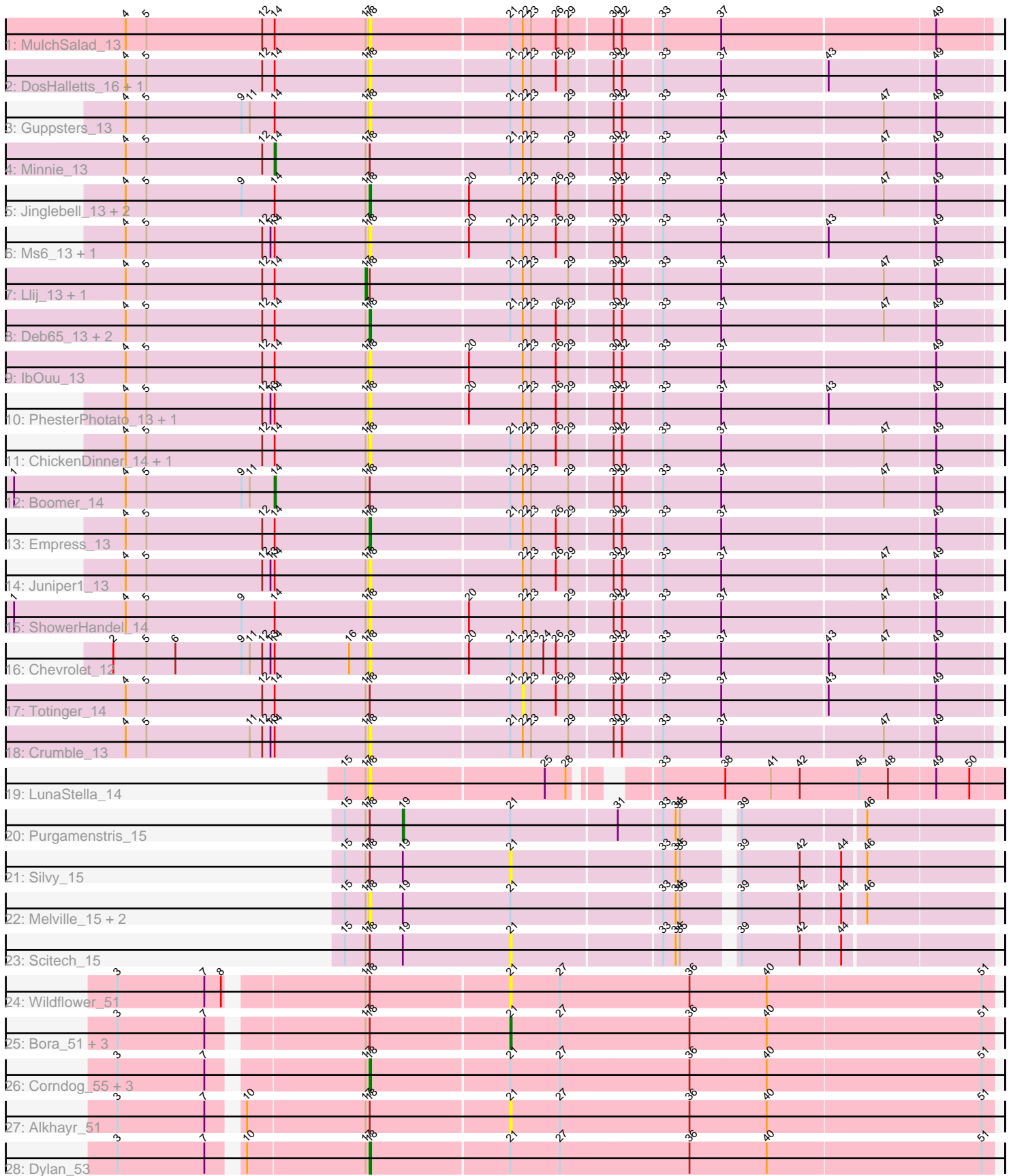


# Pham 139864



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 139864 Report

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

Pham number 139864 has 45 members, 32 are drafts.

Phages represented in each track:

- Track 1 : MulchSalad\_13
- Track 2 : DosHalletts\_16, LittleShirley\_14
- Track 3 : Guppsters\_13
- Track 4 : Minnie\_13
- Track 5 : Jinglebell\_13, Oksu\_14, AlpineSix\_13
- Track 6 : Ms6\_13, Marker\_14
- Track 7 : Lij\_13, PMC\_13
- Track 8 : Deb65\_13, DaddyRickover\_13, RedBird\_13
- Track 9 : IbOuu\_13
- Track 10 : PhesterPhotato\_13, Fastidio\_13
- Track 11 : ChickenDinner\_14, DocMcStuffins\_14
- Track 12 : Boomer\_14
- Track 13 : Empress\_13
- Track 14 : Juniper1\_13
- Track 15 : ShowerHandel\_14
- Track 16 : Chevrolet\_12
- Track 17 : Totinger\_14
- Track 18 : Crumble\_13
- Track 19 : LunaStella\_14
- Track 20 : Purgamenstris\_15
- Track 21 : Silvy\_15
- Track 22 : Melville\_15, Bosection6\_15, Journey\_16
- Track 23 : Scitech\_15
- Track 24 : Wildflower\_51
- Track 25 : Bora\_51, Schuy\_51, MadKillah\_54, FoulBall\_50
- Track 26 : Corndog\_55, Idergollasper\_53, Firecracker\_53, Ashwin\_52
- Track 27 : Alkhayr\_51
- Track 28 : Dylan\_53

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

The start number called the most often in the published annotations is 18, it was called in 7 of the 13 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AlpineSix\_13, Ashwin\_52, Bosection6\_15, Chevrolet\_12, ChickenDinner\_14, Corndog\_55, Crumble\_13, DaddyRickover\_13, Deb65\_13, DocMcStuffins\_14, DosHalletts\_16, Dylan\_53, Empress\_13, Fastidio\_13, Firecracker\_53, Guppsters\_13, IbOuu\_13, Idergollasper\_53, Jinglebell\_13, Journey\_16, Juniper1\_13, LittleShirley\_14, LunaStella\_14, Marker\_14, Melville\_15, Ms6\_13, MulchSalad\_13, Oksu\_14, PhesterPhotato\_13, RedBird\_13, ShowerHandel\_14,

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

- Alkhayr\_51, Boomer\_14, Bora\_51, FoulBall\_50, Llij\_13, MadKillah\_54, Minnie\_13, PMC\_13, Purgamenstris\_15, Schuy\_51, Scitech\_15, Silvy\_15, Totinger\_14, Wildflower\_51,

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

- 

### Summary by start number:

Start 14:

- Found in 27 of 45 ( 60.0% ) of genes in pham
- Manual Annotations of this start: 2 of 13
- Called 7.4% of time when present
- Phage (with cluster) where this start called: Boomer\_14 (F1), Minnie\_13 (F1),

Start 17:

- Found in 45 of 45 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 2 of 13
- Called 4.4% of time when present
- Phage (with cluster) where this start called: Llij\_13 (F1), PMC\_13 (F1),

Start 18:

- Found in 45 of 45 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 7 of 13
- Called 68.9% of time when present
- Phage (with cluster) where this start called: AlpineSix\_13 (F1), Ashwin\_52 (O), Bosection6\_15 (N), Chevrolet\_12 (F1), ChickenDinner\_14 (F1), Corndog\_55 (O), Crumble\_13 (F1), DaddyRickover\_13 (F1), Deb65\_13 (F1), DocMcStuffins\_14 (F1), DosHalletts\_16 (F1), Dylan\_53 (O), Empress\_13 (F1), Fastidio\_13 (F1), Firecracker\_53 (O), Guppsters\_13 (F1), IbOuu\_13 (F1), Idergollasper\_53 (O), Jinglebell\_13 (F1), Journey\_16 (N), Juniper1\_13 (F1), LittleShirley\_14 (F1), LunaStella\_14 (F4), Marker\_14 (F1), Melville\_15 (N), Ms6\_13 (F1), MulchSalad\_13 (F), Oksu\_14 (F1), PhesterPhotato\_13 (F1), RedBird\_13 (F1), ShowerHandel\_14 (F1),

Start 19:

- Found in 6 of 45 ( 13.3% ) of genes in pham
- Manual Annotations of this start: 1 of 13
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Purgamenstris\_15 (N),

Start 21:

- Found in 36 of 45 ( 80.0% ) of genes in pham
- Manual Annotations of this start: 1 of 13

- Called 22.2% of time when present
- Phage (with cluster) where this start called: Alkhayr\_51 (O), Bora\_51 (O), FoulBall\_50 (O), MadKillah\_54 (O), Schuy\_51 (O), Scitech\_15 (N), Silvy\_15 (N), Wildflower\_51 (O),

Start 22:

- Found in 27 of 45 ( 60.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.7% of time when present
- Phage (with cluster) where this start called: Totinger\_14 (F1),

### **Summary by clusters:**

There are 5 clusters represented in this pham: F1, N, F4, O, F,

Info for manual annotations of cluster F1:

- Start number 14 was manually annotated 2 times for cluster F1.
- Start number 17 was manually annotated 2 times for cluster F1.
- Start number 18 was manually annotated 3 times for cluster F1.

Info for manual annotations of cluster N:

- Start number 19 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster O:

- Start number 18 was manually annotated 4 times for cluster O.
- Start number 21 was manually annotated 1 time for cluster O.

### **Gene Information:**

Gene: Alkhayr\_51 Start: 26266, Stop: 26610, Start Num: 21

Candidate Starts for Alkhayr\_51:

(3, 25999), (7, 26062), (10, 26080), (Start: 17 @26164 has 2 MA's), (Start: 18 @26167 has 7 MA's), (Start: 21 @26266 has 1 MA's), (27, 26302), (36, 26395), (40, 26449), (51, 26602),

Gene: AlpineSix\_13 Start: 9037, Stop: 9471, Start Num: 18

Candidate Starts for AlpineSix\_13:

(4, 8860), (5, 8875), (9, 8944), (Start: 14 @8968 has 2 MA's), (Start: 17 @9034 has 2 MA's), (Start: 18 @9037 has 7 MA's), (20, 9106), (22, 9145), (23, 9151), (26, 9169), (29, 9178), (30, 9208), (32, 9214), (33, 9241), (37, 9283), (47, 9397), (49, 9433),

Gene: Ashwin\_52 Start: 26165, Stop: 26608, Start Num: 18

Candidate Starts for Ashwin\_52:

(3, 25997), (7, 26060), (Start: 17 @26162 has 2 MA's), (Start: 18 @26165 has 7 MA's), (Start: 21 @26264 has 1 MA's), (27, 26300), (36, 26393), (40, 26447), (51, 26600),

Gene: Boomer\_14 Start: 8822, Stop: 9325, Start Num: 14

Candidate Starts for Boomer\_14:

(1, 8633), (4, 8714), (5, 8729), (9, 8798), (11, 8804), (Start: 14 @8822 has 2 MA's), (Start: 17 @8888 has 2 MA's), (Start: 18 @8891 has 7 MA's), (Start: 21 @8990 has 1 MA's), (22, 8999), (23, 9005), (29,

9032), (30, 9062), (32, 9068), (33, 9095), (37, 9137), (47, 9251), (49, 9287),

Gene: Bora\_51 Start: 26228, Stop: 26572, Start Num: 21

Candidate Starts for Bora\_51:

(3, 25961), (7, 26024), (Start: 17 @26126 has 2 MA's), (Start: 18 @26129 has 7 MA's), (Start: 21 @26228 has 1 MA's), (27, 26264), (36, 26357), (40, 26411), (51, 26564),

Gene: Bosection6\_15 Start: 9517, Stop: 9942, Start Num: 18

Candidate Starts for Bosection6\_15:

(15, 9499), (Start: 17 @9514 has 2 MA's), (Start: 18 @9517 has 7 MA's), (Start: 19 @9541 has 1 MA's), (Start: 21 @9619 has 1 MA's), (33, 9724), (34, 9733), (35, 9736), (39, 9769), (42, 9811), (44, 9838), (46, 9853),

Gene: Chevrolet\_12 Start: 9069, Stop: 9503, Start Num: 18

Candidate Starts for Chevrolet\_12:

(2, 8883), (5, 8907), (6, 8928), (9, 8976), (11, 8982), (12, 8991), (13, 8997), (Start: 14 @9000 has 2 MA's), (16, 9054), (Start: 17 @9066 has 2 MA's), (Start: 18 @9069 has 7 MA's), (20, 9138), (Start: 21 @9168 has 1 MA's), (22, 9177), (23, 9183), (24, 9192), (26, 9201), (29, 9210), (30, 9240), (32, 9246), (33, 9273), (37, 9315), (43, 9390), (47, 9429), (49, 9465),

Gene: ChickenDinner\_14 Start: 8901, Stop: 9335, Start Num: 18

Candidate Starts for ChickenDinner\_14:

(4, 8724), (5, 8739), (12, 8823), (Start: 14 @8832 has 2 MA's), (Start: 17 @8898 has 2 MA's), (Start: 18 @8901 has 7 MA's), (Start: 21 @9000 has 1 MA's), (22, 9009), (23, 9015), (26, 9033), (29, 9042), (30, 9072), (32, 9078), (33, 9105), (37, 9147), (47, 9261), (49, 9297),

Gene: Corndog\_55 Start: 26715, Stop: 27158, Start Num: 18

Candidate Starts for Corndog\_55:

(3, 26547), (7, 26610), (Start: 17 @26712 has 2 MA's), (Start: 18 @26715 has 7 MA's), (Start: 21 @26814 has 1 MA's), (27, 26850), (36, 26943), (40, 26997), (51, 27150),

Gene: Crumble\_13 Start: 9039, Stop: 9473, Start Num: 18

Candidate Starts for Crumble\_13:

(4, 8862), (5, 8877), (11, 8952), (12, 8961), (13, 8967), (Start: 14 @8970 has 2 MA's), (Start: 17 @9036 has 2 MA's), (Start: 18 @9039 has 7 MA's), (Start: 21 @9138 has 1 MA's), (22, 9147), (23, 9153), (29, 9180), (30, 9210), (32, 9216), (33, 9243), (37, 9285), (47, 9399), (49, 9435),

Gene: DaddyRickover\_13 Start: 9034, Stop: 9468, Start Num: 18

Candidate Starts for DaddyRickover\_13:

(4, 8857), (5, 8872), (12, 8956), (Start: 14 @8965 has 2 MA's), (Start: 17 @9031 has 2 MA's), (Start: 18 @9034 has 7 MA's), (Start: 21 @9133 has 1 MA's), (22, 9142), (23, 9148), (26, 9166), (29, 9175), (30, 9205), (32, 9211), (33, 9238), (37, 9280), (47, 9394), (49, 9430),

Gene: Deb65\_13 Start: 9034, Stop: 9468, Start Num: 18

Candidate Starts for Deb65\_13:

(4, 8857), (5, 8872), (12, 8956), (Start: 14 @8965 has 2 MA's), (Start: 17 @9031 has 2 MA's), (Start: 18 @9034 has 7 MA's), (Start: 21 @9133 has 1 MA's), (22, 9142), (23, 9148), (26, 9166), (29, 9175), (30, 9205), (32, 9211), (33, 9238), (37, 9280), (47, 9394), (49, 9430),

Gene: DocMcStuffins\_14 Start: 8901, Stop: 9335, Start Num: 18

Candidate Starts for DocMcStuffins\_14:

(4, 8724), (5, 8739), (12, 8823), (Start: 14 @8832 has 2 MA's), (Start: 17 @8898 has 2 MA's), (Start: 18 @8901 has 7 MA's), (Start: 21 @9000 has 1 MA's), (22, 9009), (23, 9015), (26, 9033), (29, 9042),

(30, 9072), (32, 9078), (33, 9105), (37, 9147), (47, 9261), (49, 9297),

Gene: DosHalletts\_16 Start: 8887, Stop: 9321, Start Num: 18

Candidate Starts for DosHalletts\_16:

(4, 8710), (5, 8725), (12, 8809), (Start: 14 @8818 has 2 MA's), (Start: 17 @8884 has 2 MA's), (Start: 18 @8887 has 7 MA's), (Start: 21 @8986 has 1 MA's), (22, 8995), (23, 9001), (26, 9019), (29, 9028), (30, 9058), (32, 9064), (33, 9091), (37, 9133), (43, 9208), (49, 9283),

Gene: Dylan\_53 Start: 26379, Stop: 26822, Start Num: 18

Candidate Starts for Dylan\_53:

(3, 26211), (7, 26274), (10, 26292), (Start: 17 @26376 has 2 MA's), (Start: 18 @26379 has 7 MA's), (Start: 21 @26478 has 1 MA's), (27, 26514), (36, 26607), (40, 26661), (51, 26814),

Gene: Empress\_13 Start: 9055, Stop: 9489, Start Num: 18

Candidate Starts for Empress\_13:

(4, 8878), (5, 8893), (12, 8977), (Start: 14 @8986 has 2 MA's), (Start: 17 @9052 has 2 MA's), (Start: 18 @9055 has 7 MA's), (Start: 21 @9154 has 1 MA's), (22, 9163), (23, 9169), (26, 9187), (29, 9196), (30, 9226), (32, 9232), (33, 9259), (37, 9301), (49, 9451),

Gene: Fastidio\_13 Start: 9048, Stop: 9482, Start Num: 18

Candidate Starts for Fastidio\_13:

(4, 8871), (5, 8886), (12, 8970), (13, 8976), (Start: 14 @8979 has 2 MA's), (Start: 17 @9045 has 2 MA's), (Start: 18 @9048 has 7 MA's), (20, 9117), (22, 9156), (23, 9162), (26, 9180), (29, 9189), (30, 9219), (32, 9225), (33, 9252), (37, 9294), (43, 9369), (49, 9444),

Gene: Firecracker\_53 Start: 25868, Stop: 26311, Start Num: 18

Candidate Starts for Firecracker\_53:

(3, 25700), (7, 25763), (Start: 17 @25865 has 2 MA's), (Start: 18 @25868 has 7 MA's), (Start: 21 @25967 has 1 MA's), (27, 26003), (36, 26096), (40, 26150), (51, 26303),

Gene: FoulBall\_50 Start: 26354, Stop: 26698, Start Num: 21

Candidate Starts for FoulBall\_50:

(3, 26087), (7, 26150), (Start: 17 @26252 has 2 MA's), (Start: 18 @26255 has 7 MA's), (Start: 21 @26354 has 1 MA's), (27, 26390), (36, 26483), (40, 26537), (51, 26690),

Gene: Guppsters\_13 Start: 9079, Stop: 9513, Start Num: 18

Candidate Starts for Guppsters\_13:

(4, 8902), (5, 8917), (9, 8986), (11, 8992), (Start: 14 @9010 has 2 MA's), (Start: 17 @9076 has 2 MA's), (Start: 18 @9079 has 7 MA's), (Start: 21 @9178 has 1 MA's), (22, 9187), (23, 9193), (29, 9220), (30, 9250), (32, 9256), (33, 9283), (37, 9325), (47, 9439), (49, 9475),

Gene: IbOuu\_13 Start: 9033, Stop: 9467, Start Num: 18

Candidate Starts for IbOuu\_13:

(4, 8856), (5, 8871), (12, 8955), (Start: 14 @8964 has 2 MA's), (Start: 17 @9030 has 2 MA's), (Start: 18 @9033 has 7 MA's), (20, 9102), (22, 9141), (23, 9147), (26, 9165), (29, 9174), (30, 9204), (32, 9210), (33, 9237), (37, 9279), (49, 9429),

Gene: Idergollasper\_53 Start: 26255, Stop: 26698, Start Num: 18

Candidate Starts for Idergollasper\_53:

(3, 26087), (7, 26150), (Start: 17 @26252 has 2 MA's), (Start: 18 @26255 has 7 MA's), (Start: 21 @26354 has 1 MA's), (27, 26390), (36, 26483), (40, 26537), (51, 26690),

Gene: Jinglebell\_13 Start: 9037, Stop: 9471, Start Num: 18

Candidate Starts for Jinglebell\_13:

(4, 8860), (5, 8875), (9, 8944), (Start: 14 @8968 has 2 MA's), (Start: 17 @9034 has 2 MA's), (Start: 18 @9037 has 7 MA's), (20, 9106), (22, 9145), (23, 9151), (26, 9169), (29, 9178), (30, 9208), (32, 9214), (33, 9241), (37, 9283), (47, 9397), (49, 9433),

Gene: Journey\_16 Start: 9517, Stop: 9942, Start Num: 18

Candidate Starts for Journey\_16:

(15, 9499), (Start: 17 @9514 has 2 MA's), (Start: 18 @9517 has 7 MA's), (Start: 19 @9541 has 1 MA's), (Start: 21 @9619 has 1 MA's), (33, 9724), (34, 9733), (35, 9736), (39, 9769), (42, 9811), (44, 9838), (46, 9853),

Gene: Juniper1\_13 Start: 9031, Stop: 9465, Start Num: 18

Candidate Starts for Juniper1\_13:

(4, 8854), (5, 8869), (12, 8953), (13, 8959), (Start: 14 @8962 has 2 MA's), (Start: 17 @9028 has 2 MA's), (Start: 18 @9031 has 7 MA's), (22, 9139), (23, 9145), (26, 9163), (29, 9172), (30, 9202), (32, 9208), (33, 9235), (37, 9277), (47, 9391), (49, 9427),

Gene: LittleShirley\_14 Start: 8888, Stop: 9322, Start Num: 18

Candidate Starts for LittleShirley\_14:

(4, 8711), (5, 8726), (12, 8810), (Start: 14 @8819 has 2 MA's), (Start: 17 @8885 has 2 MA's), (Start: 18 @8888 has 7 MA's), (Start: 21 @8987 has 1 MA's), (22, 8996), (23, 9002), (26, 9020), (29, 9029), (30, 9059), (32, 9065), (33, 9092), (37, 9134), (43, 9209), (49, 9284),

Gene: Llij\_13 Start: 9048, Stop: 9485, Start Num: 17

Candidate Starts for Llij\_13:

(4, 8874), (5, 8889), (12, 8973), (Start: 14 @8982 has 2 MA's), (Start: 17 @9048 has 2 MA's), (Start: 18 @9051 has 7 MA's), (Start: 21 @9150 has 1 MA's), (22, 9159), (23, 9165), (29, 9192), (30, 9222), (32, 9228), (33, 9255), (37, 9297), (47, 9411), (49, 9447),

Gene: LunaStella\_14 Start: 9502, Stop: 9921, Start Num: 18

Candidate Starts for LunaStella\_14:

(15, 9484), (Start: 17 @9499 has 2 MA's), (Start: 18 @9502 has 7 MA's), (25, 9625), (28, 9640), (33, 9679), (38, 9724), (41, 9757), (42, 9778), (45, 9820), (48, 9841), (49, 9874), (50, 9898),

Gene: MadKillah\_54 Start: 26293, Stop: 26637, Start Num: 21

Candidate Starts for MadKillah\_54:

(3, 26026), (7, 26089), (Start: 17 @26191 has 2 MA's), (Start: 18 @26194 has 7 MA's), (Start: 21 @26293 has 1 MA's), (27, 26329), (36, 26422), (40, 26476), (51, 26629),

Gene: Marker\_14 Start: 8899, Stop: 9333, Start Num: 18

Candidate Starts for Marker\_14:

(4, 8722), (5, 8737), (12, 8821), (13, 8827), (Start: 14 @8830 has 2 MA's), (Start: 17 @8896 has 2 MA's), (Start: 18 @8899 has 7 MA's), (20, 8968), (Start: 21 @8998 has 1 MA's), (22, 9007), (23, 9013), (26, 9031), (29, 9040), (30, 9070), (32, 9076), (33, 9103), (37, 9145), (43, 9220), (49, 9295),

Gene: Melville\_15 Start: 9517, Stop: 9942, Start Num: 18

Candidate Starts for Melville\_15:

(15, 9499), (Start: 17 @9514 has 2 MA's), (Start: 18 @9517 has 7 MA's), (Start: 19 @9541 has 1 MA's), (Start: 21 @9619 has 1 MA's), (33, 9724), (34, 9733), (35, 9736), (39, 9769), (42, 9811), (44, 9838), (46, 9853),

Gene: Minnie\_13 Start: 8982, Stop: 9485, Start Num: 14

Candidate Starts for Minnie\_13:

(4, 8874), (5, 8889), (12, 8973), (Start: 14 @8982 has 2 MA's), (Start: 17 @9048 has 2 MA's), (Start: 18 @9051 has 7 MA's), (Start: 21 @9150 has 1 MA's), (22, 9159), (23, 9165), (29, 9192), (30, 9222), (32, 9228), (33, 9255), (37, 9297), (47, 9411), (49, 9447),

Gene: Ms6\_13 Start: 9079, Stop: 9513, Start Num: 18

Candidate Starts for Ms6\_13:

(4, 8902), (5, 8917), (12, 9001), (13, 9007), (Start: 14 @9010 has 2 MA's), (Start: 17 @9076 has 2 MA's), (Start: 18 @9079 has 7 MA's), (20, 9148), (Start: 21 @9178 has 1 MA's), (22, 9187), (23, 9193), (26, 9211), (29, 9220), (30, 9250), (32, 9256), (33, 9283), (37, 9325), (43, 9400), (49, 9475),

Gene: MulchSalad\_13 Start: 9051, Stop: 9485, Start Num: 18

Candidate Starts for MulchSalad\_13:

(4, 8874), (5, 8889), (12, 8973), (Start: 14 @8982 has 2 MA's), (Start: 17 @9048 has 2 MA's), (Start: 18 @9051 has 7 MA's), (Start: 21 @9150 has 1 MA's), (22, 9159), (23, 9165), (26, 9183), (29, 9192), (30, 9222), (32, 9228), (33, 9255), (37, 9297), (49, 9447),

Gene: Oksu\_14 Start: 8900, Stop: 9334, Start Num: 18

Candidate Starts for Oksu\_14:

(4, 8723), (5, 8738), (9, 8807), (Start: 14 @8831 has 2 MA's), (Start: 17 @8897 has 2 MA's), (Start: 18 @8900 has 7 MA's), (20, 8969), (22, 9008), (23, 9014), (26, 9032), (29, 9041), (30, 9071), (32, 9077), (33, 9104), (37, 9146), (47, 9260), (49, 9296),

Gene: PMC\_13 Start: 9048, Stop: 9485, Start Num: 17

Candidate Starts for PMC\_13:

(4, 8874), (5, 8889), (12, 8973), (Start: 14 @8982 has 2 MA's), (Start: 17 @9048 has 2 MA's), (Start: 18 @9051 has 7 MA's), (Start: 21 @9150 has 1 MA's), (22, 9159), (23, 9165), (29, 9192), (30, 9222), (32, 9228), (33, 9255), (37, 9297), (47, 9411), (49, 9447),

Gene: PhesterPhotato\_13 Start: 9080, Stop: 9514, Start Num: 18

Candidate Starts for PhesterPhotato\_13:

(4, 8903), (5, 8918), (12, 9002), (13, 9008), (Start: 14 @9011 has 2 MA's), (Start: 17 @9077 has 2 MA's), (Start: 18 @9080 has 7 MA's), (20, 9149), (22, 9188), (23, 9194), (26, 9212), (29, 9221), (30, 9251), (32, 9257), (33, 9284), (37, 9326), (43, 9401), (49, 9476),

Gene: Purgamenstris\_15 Start: 9586, Stop: 9987, Start Num: 19

Candidate Starts for Purgamenstris\_15:

(15, 9544), (Start: 17 @9559 has 2 MA's), (Start: 18 @9562 has 7 MA's), (Start: 19 @9586 has 1 MA's), (Start: 21 @9664 has 1 MA's), (31, 9739), (33, 9769), (34, 9778), (35, 9781), (39, 9814), (46, 9898),

Gene: RedBird\_13 Start: 9034, Stop: 9468, Start Num: 18

Candidate Starts for RedBird\_13:

(4, 8857), (5, 8872), (12, 8956), (Start: 14 @8965 has 2 MA's), (Start: 17 @9031 has 2 MA's), (Start: 18 @9034 has 7 MA's), (Start: 21 @9133 has 1 MA's), (22, 9142), (23, 9148), (26, 9166), (29, 9175), (30, 9205), (32, 9211), (33, 9238), (37, 9280), (47, 9394), (49, 9430),

Gene: Schuy\_51 Start: 26290, Stop: 26634, Start Num: 21

Candidate Starts for Schuy\_51:

(3, 26023), (7, 26086), (Start: 17 @26188 has 2 MA's), (Start: 18 @26191 has 7 MA's), (Start: 21 @26290 has 1 MA's), (27, 26326), (36, 26419), (40, 26473), (51, 26626),

Gene: Scitech\_15 Start: 9619, Stop: 9942, Start Num: 21

Candidate Starts for Scitech\_15:



(15, 9499), (Start: 17 @9514 has 2 MA's), (Start: 18 @9517 has 7 MA's), (Start: 19 @9541 has 1 MA's), (Start: 21 @9619 has 1 MA's), (33, 9724), (34, 9733), (35, 9736), (39, 9769), (42, 9811), (44, 9838),

Gene: ShowerHandel\_14 Start: 9040, Stop: 9474, Start Num: 18

Candidate Starts for ShowerHandel\_14:

(1, 8782), (4, 8863), (5, 8878), (9, 8947), (Start: 14 @8971 has 2 MA's), (Start: 17 @9037 has 2 MA's), (Start: 18 @9040 has 7 MA's), (20, 9109), (22, 9148), (23, 9154), (29, 9181), (30, 9211), (32, 9217), (33, 9244), (37, 9286), (47, 9400), (49, 9436),

Gene: Silvy\_15 Start: 9620, Stop: 9943, Start Num: 21

Candidate Starts for Silvy\_15:

(15, 9500), (Start: 17 @9515 has 2 MA's), (Start: 18 @9518 has 7 MA's), (Start: 19 @9542 has 1 MA's), (Start: 21 @9620 has 1 MA's), (33, 9725), (34, 9734), (35, 9737), (39, 9770), (42, 9812), (44, 9839), (46, 9854),

Gene: Totinger\_14 Start: 8996, Stop: 9322, Start Num: 22

Candidate Starts for Totinger\_14:

(4, 8711), (5, 8726), (12, 8810), (Start: 14 @8819 has 2 MA's), (Start: 17 @8885 has 2 MA's), (Start: 18 @8888 has 7 MA's), (Start: 21 @8987 has 1 MA's), (22, 8996), (23, 9002), (26, 9020), (29, 9029), (30, 9059), (32, 9065), (33, 9092), (37, 9134), (43, 9209), (49, 9284),

Gene: Wildflower\_51 Start: 25929, Stop: 26273, Start Num: 21

Candidate Starts for Wildflower\_51:

(3, 25662), (7, 25725), (8, 25737), (Start: 17 @25827 has 2 MA's), (Start: 18 @25830 has 7 MA's), (Start: 21 @25929 has 1 MA's), (27, 25965), (36, 26058), (40, 26112), (51, 26265),