



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 193960 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193960 has 76 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Greely\_137
- Track 2 : Myrna\_134
- Track 3 : Phabba\_139
- Track 4 : NadineRae\_45
- Track 5 : Marietta\_47
- Track 6 : Poland\_34, Msay19\_34
- Track 7 : CinnamonToast\_34, Boneham\_33, Jellybones\_33, Butterball\_33, BirksAndSocks\_33
- Track 8 : Diabla\_32
- Track 9 : FelixAlejandro\_34
- Track 10 : John316\_33
- Track 11 : Beaver\_33
- Track 12 : Minos\_31, Bianmat\_30, Jams\_30, GalacticEye\_30, Lidong\_30, Shelley\_30, Teal\_30, Kaseim\_31, Newt\_31, Hello\_30, Berries\_30, MrWormie\_30, Charianelly\_30
- Track 13 : Harambe\_30, Jormungandr\_30, Damp\_30, Lahirium\_30, Sticker17\_30, Luker\_31
- Track 14 : Neoevie\_30, Anamika\_30, Nimi13\_30, Hail2Pitt\_30
- Track 15 : Guillaume\_30
- Track 16 : Woes\_30
- Track 17 : Skog\_188
- Track 18 : CherryTomatoes\_125, SCentae\_125
- Track 19 : Pupper\_126
- Track 20 : BirthdayBoy\_34
- Track 21 : Sampudon\_33, Jalebi\_32, GOATification\_34, Fulcrum\_34
- Track 22 : NovaSharks\_32, Alyssamiracle\_33
- Track 23 : MoiGyank\_35
- Track 24 : Yikes\_34
- Track 25 : ParvusTarda\_33
- Track 26 : NorManre\_34, Patos\_34
- Track 27 : Lambo\_33
- Track 28 : Rumi\_32
- Track 29 : OtterstedtS21\_33, Gretellyn\_33
- Track 30 : Mima20\_34
- Track 31 : Tillicus\_33
- Track 32 : DaviePasture\_33
- Track 33 : DoobyDoo\_32

- Track 34 : Erutan\_33
- Track 35 : Alephilan\_30
- Track 36 : Ranch\_33
- Track 37 : Apeppi\_30
- Track 38 : Wojtek\_32
- Track 39 : Gibbin\_34
- Track 40 : Avian\_31
- Track 41 : Lila22\_32
- Track 42 : LuckyLeo\_32
- Track 43 : Zany\_32
- Track 44 : Genamy16\_33

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

The start number called the most often in the published annotations is 8, it was called in 38 of the 69 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anamika\_30, Beaver\_33, Berries\_30, Bianmat\_30, BirksAndSocks\_33, Boneham\_33, Butterball\_33, Charianelly\_30, CherryTomatoes\_125, CinnamonToast\_34, Damp\_30, Diabla\_32, FelixAlejandro\_34, GalacticEye\_30, Guillaume\_30, Hail2Pitt\_30, Harambe\_30, Hello\_30, Jams\_30, Jellybones\_33, John316\_33, Jormungandr\_30, Kaseim\_31, Lahirium\_30, Lidong\_30, Luker\_31, Minos\_31, MrWormie\_30, Msay19\_34, Neoevie\_30, Newt\_31, Nimi13\_30, Poland\_34, Pupper\_126, SCentae\_125, Shelley\_30, Skog\_188, Sticker17\_30, Teal\_30, Woes\_30,

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

- 

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

- Alephilan\_30, Alyssamiracle\_33, Apeppi\_30, Avian\_31, BirthdayBoy\_34, DaviePasture\_33, DoobyDoo\_32, Erutan\_33, Fulcrum\_34, GOATification\_34, Genamy16\_33, Gibbin\_34, Greely\_137, GretelLyn\_33, Jalebi\_32, Lambo\_33, Lila22\_32, LuckyLeo\_32, Marietta\_47, Mima20\_34, MoiGyank\_35, Myrna\_134, NadineRae\_45, NorManre\_34, NovaSharks\_32, OtterstedtS21\_33, ParvusTarda\_33, Patos\_34, Phabba\_139, Ranch\_33, Rumi\_32, Sampudon\_33, Tillicus\_33, Wojtek\_32, Yikes\_34, Zany\_32,

**Summary by start number:**

Start 2:

- Found in 31 of 76 ( 40.8% ) of genes in pham
- Manual Annotations of this start: 26 of 69
- Called 93.5% of time when present
- Phage (with cluster) where this start called: Alephilan\_30 (DV), Alyssamiracle\_33 (DV), Apeppi\_30 (DV), Avian\_31 (DV), BirthdayBoy\_34 (DV), DaviePasture\_33 (DV), DoobyDoo\_32 (DV), Erutan\_33 (DV), Fulcrum\_34 (DV), GOATification\_34 (DV), Genamy16\_33 (DV), Gibbin\_34 (DV), GretelLyn\_33 (DV), Jalebi\_32 (DV), Lambo\_33 (DV), Lila22\_32 (DV), MoiGyank\_35 (DV), NorManre\_34 (DV), NovaSharks\_32 (DV),

OtterstedtS21\_33 (DV), ParvusTarda\_33 (DV), Patos\_34 (DV), Ranch\_33 (DV), Rumi\_32 (DV), Sampudon\_33 (DV), Tillicus\_33 (DV), Wojtek\_32 (DV), Yikes\_34 (DV), Zany\_32 (DV),

Start 3:

- Found in 3 of 76 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 33.3% of time when present
- Phage (with cluster) where this start called: LuckyLeo\_32 (DV),

Start 4:

- Found in 5 of 76 ( 6.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Mima20\_34 (DV),

Start 8:

- Found in 40 of 76 ( 52.6% ) of genes in pham
- Manual Annotations of this start: 38 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anamika\_30 (CS3), Beaver\_33 (CS2), Berries\_30 (CS3), Bianmat\_30 (CS3), BirksAndSocks\_33 (CS2), Boneham\_33 (CS2), Butterball\_33 (CS2), Charianelly\_30 (CS3), CherryTomatoes\_125 (DO), CinnamonToast\_34 (CS2), Damp\_30 (CS3), Diabla\_32 (CS2), FelixAlejandro\_34 (CS2), GalacticEye\_30 (CS3), Guillaume\_30 (CS3), Hail2Pitt\_30 (CS3), Harambe\_30 (CS3), Hello\_30 (CS3), Jams\_30 (CS3), Jellybones\_33 (CS2), John316\_33 (CS2), Jormungandr\_30 (CS3), Kaseim\_31 (CS3), Lahirium\_30 (CS3), Lidong\_30 (CS3), Luker\_31 (CS3), Minos\_31 (CS3), MrWormie\_30 (CS3), Msay19\_34 (CS2), Neevie\_30 (CS3), Newt\_31 (CS3), Nimi13\_30 (CS3), Poland\_34 (CS2), Pupper\_126 (DO), SCentae\_125 (DO), Shelley\_30 (CS3), Skog\_188 (DO), Sticker17\_30 (CS3), Teal\_30 (CS3), Woes\_30 (CS3),

Start 32:

- Found in 1 of 76 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NadineRae\_45 (CR4),

Start 47:

- Found in 3 of 76 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Greely\_137 (C2), Myrna\_134 (C2), Phabba\_139 (C2),

Start 50:

- Found in 51 of 76 ( 67.1% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 2.0% of time when present
- Phage (with cluster) where this start called: Marietta\_47 (CR4),

**Summary by clusters:**

There are 6 clusters represented in this pham: DO, CR4, DV, C2, CS3, CS2,

Info for manual annotations of cluster C2:

- Start number 47 was manually annotated 2 times for cluster C2.

Info for manual annotations of cluster CR4:

- Start number 32 was manually annotated 1 time for cluster CR4.
- Start number 50 was manually annotated 1 time for cluster CR4.

Info for manual annotations of cluster CS2:

- Start number 8 was manually annotated 10 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 8 was manually annotated 24 times for cluster CS3.

Info for manual annotations of cluster DO:

- Start number 8 was manually annotated 4 times for cluster DO.

Info for manual annotations of cluster DV:

- Start number 2 was manually annotated 26 times for cluster DV.
- Start number 3 was manually annotated 1 time for cluster DV.

### **Gene Information:**

Gene: Alephilan\_30 Start: 28717, Stop: 29766, Start Num: 2

Candidate Starts for Alephilan\_30:

(Start: 2 @28717 has 26 MA's), (5, 28831), (9, 28873), (12, 28894), (14, 28927), (16, 28942), (22, 29005), (25, 29023), (45, 29176), (48, 29206), (51, 29233), (65, 29416), (71, 29446), (86, 29620), (90, 29674),

Gene: Alyssamiracle\_33 Start: 27521, Stop: 28618, Start Num: 2

Candidate Starts for Alyssamiracle\_33:

(Start: 2 @27521 has 26 MA's), (5, 27635), (15, 27728), (17, 27761), (18, 27764), (19, 27767), (22, 27788), (24, 27800), (30, 27848), (38, 27911), (45, 27965), (53, 28061), (55, 28103), (74, 28337), (78, 28376), (84, 28463), (94, 28610),

Gene: Anamika\_30 Start: 38386, Stop: 39288, Start Num: 8

Candidate Starts for Anamika\_30:

(Start: 8 @38386 has 38 MA's), (23, 38524), (31, 38593), (37, 38641), (46, 38704), (Start: 50 @38740 has 1 MA's), (52, 38749), (62, 38908), (85, 39142), (88, 39160), (92, 39265),

Gene: Apeppi\_30 Start: 28862, Stop: 29908, Start Num: 2

Candidate Starts for Apeppi\_30:

(Start: 2 @28862 has 26 MA's), (Start: 3 @28919 has 1 MA's), (7, 29009), (9, 29018), (10, 29024), (11, 29033), (16, 29087), (40, 29285), (48, 29351), (49, 29363), (54, 29432), (68, 29573), (77, 29681),

Gene: Avian\_31 Start: 27503, Stop: 28600, Start Num: 2

Candidate Starts for Avian\_31:

(Start: 2 @27503 has 26 MA's), (5, 27617), (15, 27710), (17, 27743), (18, 27746), (19, 27749), (21, 27767), (22, 27770), (30, 27830), (36, 27881), (38, 27893), (39, 27905), (45, 27947), (53, 28043), (55, 28085), (74, 28319), (78, 28358), (84, 28445), (94, 28592),

Gene: Beaver\_33 Start: 37866, Stop: 38768, Start Num: 8

Candidate Starts for Beaver\_33:

(Start: 8 @37866 has 38 MA's), (23, 38001), (27, 38031), (29, 38043), (33, 38076), (41, 38127), (46, 38175), (Start: 50 @38211 has 1 MA's), (57, 38292), (58, 38343), (59, 38346), (71, 38436), (79, 38583), (93, 38751),

Gene: Berries\_30 Start: 38356, Stop: 39258, Start Num: 8

Candidate Starts for Berries\_30:

(Start: 8 @38356 has 38 MA's), (23, 38494), (31, 38563), (37, 38611), (46, 38674), (Start: 50 @38710 has 1 MA's), (62, 38878), (88, 39130), (92, 39235),

Gene: Bianmat\_30 Start: 38396, Stop: 39298, Start Num: 8

Candidate Starts for Bianmat\_30:

(Start: 8 @38396 has 38 MA's), (23, 38534), (31, 38603), (37, 38651), (46, 38714), (Start: 50 @38750 has 1 MA's), (62, 38918), (88, 39170), (92, 39275),

Gene: BirksAndSocks\_33 Start: 37840, Stop: 38742, Start Num: 8

Candidate Starts for BirksAndSocks\_33:

(Start: 8 @37840 has 38 MA's), (28, 38008), (31, 38044), (34, 38059), (35, 38074), (37, 38086), (Start: 50 @38185 has 1 MA's), (57, 38266), (59, 38320), (79, 38557), (91, 38683), (93, 38725),

Gene: BirthdayBoy\_34 Start: 29543, Stop: 30589, Start Num: 2

Candidate Starts for BirthdayBoy\_34:

(Start: 2 @29543 has 26 MA's), (5, 29657), (6, 29678), (9, 29699), (14, 29753), (16, 29768), (40, 29966), (48, 30032), (49, 30044), (54, 30113), (68, 30254),

Gene: Boneham\_33 Start: 37839, Stop: 38741, Start Num: 8

Candidate Starts for Boneham\_33:

(Start: 8 @37839 has 38 MA's), (28, 38007), (31, 38043), (34, 38058), (35, 38073), (37, 38085), (Start: 50 @38184 has 1 MA's), (57, 38265), (59, 38319), (79, 38556), (91, 38682), (93, 38724),

Gene: Butterball\_33 Start: 37839, Stop: 38741, Start Num: 8

Candidate Starts for Butterball\_33:

(Start: 8 @37839 has 38 MA's), (28, 38007), (31, 38043), (34, 38058), (35, 38073), (37, 38085), (Start: 50 @38184 has 1 MA's), (57, 38265), (59, 38319), (79, 38556), (91, 38682), (93, 38724),

Gene: Charianelly\_30 Start: 38106, Stop: 39008, Start Num: 8

Candidate Starts for Charianelly\_30:

(Start: 8 @38106 has 38 MA's), (23, 38244), (31, 38313), (37, 38361), (46, 38424), (Start: 50 @38460 has 1 MA's), (62, 38628), (88, 38880), (92, 38985),

Gene: CherryTomatoes\_125 Start: 82351, Stop: 83241, Start Num: 8

Candidate Starts for CherryTomatoes\_125:

(Start: 8 @82351 has 38 MA's), (81, 83086),

Gene: CinnamonToast\_34 Start: 37893, Stop: 38795, Start Num: 8

Candidate Starts for CinnamonToast\_34:

(Start: 8 @37893 has 38 MA's), (28, 38061), (31, 38097), (34, 38112), (35, 38127), (37, 38139), (Start: 50 @38238 has 1 MA's), (57, 38319), (59, 38373), (79, 38610), (91, 38736), (93, 38778),

Gene: Damp\_30 Start: 37270, Stop: 38172, Start Num: 8

Candidate Starts for Damp\_30:

(Start: 8 @37270 has 38 MA's), (23, 37408), (31, 37477), (37, 37525), (46, 37588), (Start: 50 @37624 has 1 MA's), (62, 37792), (85, 38026), (88, 38044), (92, 38149),

Gene: DaviePasture\_33 Start: 29342, Stop: 30391, Start Num: 2

Candidate Starts for DaviePasture\_33:

(Start: 2 @29342 has 26 MA's), (5, 29456), (6, 29477), (14, 29552), (16, 29567), (22, 29630), (48, 29831), (Start: 50 @29855 has 1 MA's), (63, 30026), (83, 30239), (87, 30254), (90, 30299),

Gene: Diabla\_32 Start: 37690, Stop: 38598, Start Num: 8

Candidate Starts for Diabla\_32:

(Start: 8 @37690 has 38 MA's), (23, 37825), (37, 37942), (46, 38005), (Start: 50 @38041 has 1 MA's), (62, 38209), (92, 38575), (93, 38581),

Gene: DoobyDoo\_32 Start: 28492, Stop: 29541, Start Num: 2

Candidate Starts for DoobyDoo\_32:

(Start: 2 @28492 has 26 MA's), (4, 28567), (5, 28606), (6, 28627), (14, 28702), (16, 28717), (22, 28780), (30, 28840), (44, 28942), (63, 29176), (87, 29404),

Gene: Erutan\_33 Start: 29002, Stop: 30048, Start Num: 2

Candidate Starts for Erutan\_33:

(Start: 2 @29002 has 26 MA's), (5, 29116), (6, 29137), (14, 29212), (16, 29227), (22, 29290), (Start: 50 @29515 has 1 MA's), (63, 29686), (71, 29731), (87, 29914),

Gene: FelixAlejandro\_34 Start: 38037, Stop: 38939, Start Num: 8

Candidate Starts for FelixAlejandro\_34:

(Start: 8 @38037 has 38 MA's), (23, 38172), (28, 38205), (34, 38256), (37, 38283), (Start: 50 @38382 has 1 MA's), (57, 38463), (59, 38517), (79, 38754), (91, 38880), (93, 38922),

Gene: Fulcrum\_34 Start: 29520, Stop: 30569, Start Num: 2

Candidate Starts for Fulcrum\_34:

(Start: 2 @29520 has 26 MA's), (5, 29634), (6, 29655), (14, 29730), (16, 29745), (22, 29808), (30, 29868), (44, 29970), (Start: 50 @30033 has 1 MA's), (63, 30204), (87, 30432),

Gene: GOATification\_34 Start: 29520, Stop: 30569, Start Num: 2

Candidate Starts for GOATification\_34:

(Start: 2 @29520 has 26 MA's), (5, 29634), (6, 29655), (14, 29730), (16, 29745), (22, 29808), (30, 29868), (44, 29970), (Start: 50 @30033 has 1 MA's), (63, 30204), (87, 30432),

Gene: GalacticEye\_30 Start: 38068, Stop: 38970, Start Num: 8

Candidate Starts for GalacticEye\_30:

(Start: 8 @38068 has 38 MA's), (23, 38206), (31, 38275), (37, 38323), (46, 38386), (Start: 50 @38422 has 1 MA's), (62, 38590), (88, 38842), (92, 38947),

Gene: Genamy16\_33 Start: 27521, Stop: 28618, Start Num: 2

Candidate Starts for Genamy16\_33:

(Start: 2 @27521 has 26 MA's), (5, 27635), (15, 27728), (17, 27761), (18, 27764), (19, 27767), (21, 27785), (22, 27788), (24, 27800), (30, 27848), (38, 27911), (45, 27965), (53, 28061), (55, 28103), (74, 28337), (78, 28376), (84, 28463), (94, 28610),

Gene: Gibbin\_34 Start: 29619, Stop: 30668, Start Num: 2

Candidate Starts for Gibbin\_34:

(Start: 2 @29619 has 26 MA's), (5, 29733), (9, 29775), (14, 29829), (16, 29844), (22, 29907), (63, 30303), (71, 30348), (77, 30438), (87, 30531),

Gene: Greely\_137 Start: 80266, Stop: 80874, Start Num: 47

Candidate Starts for Greely\_137:

(Start: 47 @80266 has 2 MA's), (56, 80377), (57, 80380), (64, 80479), (72, 80527), (75, 80608), (82, 80707), (93, 80857),

Gene: GretellLyn\_33 Start: 29878, Stop: 30933, Start Num: 2

Candidate Starts for GretellLyn\_33:

(Start: 2 @29878 has 26 MA's), (5, 29992), (9, 30034), (14, 30088), (16, 30103), (22, 30166), (30, 30226), (44, 30328), (Start: 50 @30391 has 1 MA's), (63, 30562), (87, 30796),

Gene: Guillaume\_30 Start: 38118, Stop: 39020, Start Num: 8

Candidate Starts for Guillaume\_30:

(Start: 8 @38118 has 38 MA's), (23, 38256), (26, 38274), (31, 38325), (37, 38373), (46, 38436), (Start: 50 @38472 has 1 MA's), (62, 38640), (85, 38874), (88, 38892), (92, 38997),

Gene: Hail2Pitt\_30 Start: 38595, Stop: 39497, Start Num: 8

Candidate Starts for Hail2Pitt\_30:

(Start: 8 @38595 has 38 MA's), (23, 38733), (31, 38802), (37, 38850), (46, 38913), (Start: 50 @38949 has 1 MA's), (52, 38958), (62, 39117), (85, 39351), (88, 39369), (92, 39474),

Gene: Harambe\_30 Start: 38385, Stop: 39287, Start Num: 8

Candidate Starts for Harambe\_30:

(Start: 8 @38385 has 38 MA's), (23, 38523), (31, 38592), (37, 38640), (46, 38703), (Start: 50 @38739 has 1 MA's), (62, 38907), (85, 39141), (88, 39159), (92, 39264),

Gene: Hello\_30 Start: 38347, Stop: 39249, Start Num: 8

Candidate Starts for Hello\_30:

(Start: 8 @38347 has 38 MA's), (23, 38485), (31, 38554), (37, 38602), (46, 38665), (Start: 50 @38701 has 1 MA's), (62, 38869), (88, 39121), (92, 39226),

Gene: Jalebi\_32 Start: 30054, Stop: 31103, Start Num: 2

Candidate Starts for Jalebi\_32:

(Start: 2 @30054 has 26 MA's), (5, 30168), (6, 30189), (14, 30264), (16, 30279), (22, 30342), (30, 30402), (44, 30504), (Start: 50 @30567 has 1 MA's), (63, 30738), (87, 30966),

Gene: Jams\_30 Start: 37556, Stop: 38458, Start Num: 8

Candidate Starts for Jams\_30:

(Start: 8 @37556 has 38 MA's), (23, 37694), (31, 37763), (37, 37811), (46, 37874), (Start: 50 @37910 has 1 MA's), (62, 38078), (88, 38330), (92, 38435),

Gene: Jellybones\_33 Start: 37898, Stop: 38800, Start Num: 8

Candidate Starts for Jellybones\_33:

(Start: 8 @37898 has 38 MA's), (28, 38066), (31, 38102), (34, 38117), (35, 38132), (37, 38144), (Start: 50 @38243 has 1 MA's), (57, 38324), (59, 38378), (79, 38615), (91, 38741), (93, 38783),

Gene: John316\_33 Start: 37851, Stop: 38753, Start Num: 8

Candidate Starts for John316\_33:

(Start: 8 @37851 has 38 MA's), (23, 37986), (28, 38019), (31, 38055), (34, 38070), (35, 38085), (37, 38097), (Start: 50 @38196 has 1 MA's), (57, 38277), (59, 38331), (79, 38568), (91, 38694), (93, 38736),

Gene: Jormungandr\_30 Start: 38100, Stop: 39002, Start Num: 8



Candidate Starts for Jormungandr\_30:

(Start: 8 @38100 has 38 MA's), (23, 38238), (31, 38307), (37, 38355), (46, 38418), (Start: 50 @38454 has 1 MA's), (62, 38622), (85, 38856), (88, 38874), (92, 38979),

Gene: Kaseim\_31 Start: 37541, Stop: 38443, Start Num: 8

Candidate Starts for Kaseim\_31:

(Start: 8 @37541 has 38 MA's), (23, 37679), (31, 37748), (37, 37796), (46, 37859), (Start: 50 @37895 has 1 MA's), (62, 38063), (88, 38315), (92, 38420),

Gene: Lahirium\_30 Start: 38622, Stop: 39524, Start Num: 8

Candidate Starts for Lahirium\_30:

(Start: 8 @38622 has 38 MA's), (23, 38760), (31, 38829), (37, 38877), (46, 38940), (Start: 50 @38976 has 1 MA's), (62, 39144), (85, 39378), (88, 39396), (92, 39501),

Gene: Lambo\_33 Start: 29541, Stop: 30587, Start Num: 2

Candidate Starts for Lambo\_33:

(Start: 2 @29541 has 26 MA's), (5, 29655), (6, 29676), (14, 29751), (16, 29766), (40, 29964), (48, 30030), (49, 30042), (54, 30111), (68, 30252),

Gene: Lidong\_30 Start: 38356, Stop: 39258, Start Num: 8

Candidate Starts for Lidong\_30:

(Start: 8 @38356 has 38 MA's), (23, 38494), (31, 38563), (37, 38611), (46, 38674), (Start: 50 @38710 has 1 MA's), (62, 38878), (88, 39130), (92, 39235),

Gene: Lila22\_32 Start: 29496, Stop: 30542, Start Num: 2

Candidate Starts for Lila22\_32:

(Start: 2 @29496 has 26 MA's), (5, 29610), (6, 29631), (14, 29706), (16, 29721), (22, 29784), (44, 29946), (68, 30207),

Gene: LuckyLeo\_32 Start: 28919, Stop: 29908, Start Num: 3

Candidate Starts for LuckyLeo\_32:

(Start: 2 @28862 has 26 MA's), (Start: 3 @28919 has 1 MA's), (7, 29009), (9, 29018), (10, 29024), (11, 29033), (16, 29087), (40, 29285), (48, 29351), (49, 29363), (54, 29432), (68, 29573), (77, 29681),

Gene: Luker\_31 Start: 38575, Stop: 39477, Start Num: 8

Candidate Starts for Luker\_31:

(Start: 8 @38575 has 38 MA's), (23, 38713), (31, 38782), (37, 38830), (46, 38893), (Start: 50 @38929 has 1 MA's), (62, 39097), (85, 39331), (88, 39349), (92, 39454),

Gene: Marietta\_47 Start: 33564, Stop: 34148, Start Num: 50

Candidate Starts for Marietta\_47:

(Start: 50 @33564 has 1 MA's), (52, 33573), (56, 33642), (57, 33645), (61, 33729), (69, 33780), (76, 33882), (80, 33966), (81, 33975), (82, 33978),

Gene: Mima20\_34 Start: 29318, Stop: 30292, Start Num: 4

Candidate Starts for Mima20\_34:

(Start: 2 @29243 has 26 MA's), (4, 29318), (5, 29357), (6, 29378), (14, 29453), (16, 29468), (22, 29531), (30, 29591), (44, 29693), (63, 29927), (77, 30062), (87, 30155),

Gene: Minos\_31 Start: 38098, Stop: 39000, Start Num: 8

Candidate Starts for Minos\_31:

(Start: 8 @38098 has 38 MA's), (23, 38236), (31, 38305), (37, 38353), (46, 38416), (Start: 50 @38452 has 1 MA's), (62, 38620), (88, 38872), (92, 38977),

Gene: MoiGyank\_35 Start: 29924, Stop: 30973, Start Num: 2

Candidate Starts for MoiGyank\_35:

(Start: 2 @29924 has 26 MA's), (4, 29999), (5, 30038), (6, 30059), (14, 30134), (16, 30149), (22, 30212), (30, 30272), (44, 30374), (Start: 50 @30437 has 1 MA's), (63, 30608), (87, 30836),

Gene: MrWormie\_30 Start: 37259, Stop: 38161, Start Num: 8

Candidate Starts for MrWormie\_30:

(Start: 8 @37259 has 38 MA's), (23, 37397), (31, 37466), (37, 37514), (46, 37577), (Start: 50 @37613 has 1 MA's), (62, 37781), (88, 38033), (92, 38138),

Gene: Msay19\_34 Start: 38032, Stop: 38934, Start Num: 8

Candidate Starts for Msay19\_34:

(Start: 8 @38032 has 38 MA's), (17, 38137), (23, 38167), (27, 38197), (29, 38209), (41, 38293), (46, 38341), (Start: 50 @38377 has 1 MA's), (57, 38458), (59, 38512), (71, 38602), (79, 38749), (93, 38917),

Gene: Myrna\_134 Start: 80964, Stop: 81575, Start Num: 47

Candidate Starts for Myrna\_134:

(1, 80451), (Start: 47 @80964 has 2 MA's), (57, 81078), (60, 81147), (75, 81306), (76, 81309), (82, 81408), (89, 81474), (91, 81516), (93, 81558),

Gene: NadineRae\_45 Start: 32686, Stop: 33396, Start Num: 32

Candidate Starts for NadineRae\_45:

(Start: 32 @32686 has 1 MA's), (Start: 50 @32824 has 1 MA's), (67, 33025),

Gene: Neoevie\_30 Start: 38362, Stop: 39264, Start Num: 8

Candidate Starts for Neoevie\_30:

(Start: 8 @38362 has 38 MA's), (23, 38500), (31, 38569), (37, 38617), (46, 38680), (Start: 50 @38716 has 1 MA's), (52, 38725), (62, 38884), (85, 39118), (88, 39136), (92, 39241),

Gene: Newt\_31 Start: 38589, Stop: 39491, Start Num: 8

Candidate Starts for Newt\_31:

(Start: 8 @38589 has 38 MA's), (23, 38727), (31, 38796), (37, 38844), (46, 38907), (Start: 50 @38943 has 1 MA's), (62, 39111), (88, 39363), (92, 39468),

Gene: Nimi13\_30 Start: 38107, Stop: 39009, Start Num: 8

Candidate Starts for Nimi13\_30:

(Start: 8 @38107 has 38 MA's), (23, 38245), (31, 38314), (37, 38362), (46, 38425), (Start: 50 @38461 has 1 MA's), (52, 38470), (62, 38629), (85, 38863), (88, 38881), (92, 38986),

Gene: NorManre\_34 Start: 29125, Stop: 30174, Start Num: 2

Candidate Starts for NorManre\_34:

(Start: 2 @29125 has 26 MA's), (4, 29200), (5, 29239), (6, 29260), (14, 29335), (16, 29350), (22, 29413), (Start: 50 @29638 has 1 MA's), (63, 29809), (87, 30037), (90, 30082),

Gene: NovaSharks\_32 Start: 27111, Stop: 28208, Start Num: 2

Candidate Starts for NovaSharks\_32:

(Start: 2 @27111 has 26 MA's), (5, 27225), (15, 27318), (17, 27351), (18, 27354), (19, 27357), (22, 27378), (24, 27390), (30, 27438), (38, 27501), (45, 27555), (53, 27651), (55, 27693), (74, 27927), (78, 27966), (84, 28053), (94, 28200),

Gene: OtterstedtS21\_33 Start: 29200, Stop: 30249, Start Num: 2

Candidate Starts for OtterstedtS21\_33:

(Start: 2 @29200 has 26 MA's), (5, 29314), (9, 29356), (14, 29410), (16, 29425), (22, 29488), (30, 29548), (44, 29650), (Start: 50 @29713 has 1 MA's), (63, 29884), (87, 30112),

Gene: ParvusTarda\_33 Start: 28670, Stop: 29716, Start Num: 2

Candidate Starts for ParvusTarda\_33:

(Start: 2 @28670 has 26 MA's), (5, 28784), (6, 28805), (14, 28880), (16, 28895), (22, 28958), (44, 29120), (63, 29354),

Gene: Patos\_34 Start: 29125, Stop: 30174, Start Num: 2

Candidate Starts for Patos\_34:

(Start: 2 @29125 has 26 MA's), (4, 29200), (5, 29239), (6, 29260), (14, 29335), (16, 29350), (22, 29413), (Start: 50 @29638 has 1 MA's), (63, 29809), (87, 30037), (90, 30082),

Gene: Phabba\_139 Start: 79960, Stop: 80571, Start Num: 47

Candidate Starts for Phabba\_139:

(1, 79447), (Start: 47 @79960 has 2 MA's), (57, 80074), (70, 80215), (72, 80221), (73, 80281), (75, 80302), (76, 80305), (93, 80554),

Gene: Poland\_34 Start: 38011, Stop: 38913, Start Num: 8

Candidate Starts for Poland\_34:

(Start: 8 @38011 has 38 MA's), (17, 38116), (23, 38146), (27, 38176), (29, 38188), (41, 38272), (46, 38320), (Start: 50 @38356 has 1 MA's), (57, 38437), (59, 38491), (71, 38581), (79, 38728), (93, 38896),

Gene: Pupper\_126 Start: 83200, Stop: 84090, Start Num: 8

Candidate Starts for Pupper\_126:

(Start: 8 @83200 has 38 MA's), (42, 83473), (72, 83770), (75, 83839), (81, 83935),

Gene: Ranch\_33 Start: 28024, Stop: 29073, Start Num: 2

Candidate Starts for Ranch\_33:

(Start: 2 @28024 has 26 MA's), (5, 28138), (9, 28180), (14, 28234), (16, 28249), (22, 28312), (Start: 50 @28537 has 1 MA's), (63, 28708), (87, 28936), (90, 28981),

Gene: Rumi\_32 Start: 27114, Stop: 28211, Start Num: 2

Candidate Starts for Rumi\_32:

(Start: 2 @27114 has 26 MA's), (5, 27228), (15, 27321), (17, 27354), (18, 27357), (19, 27360), (22, 27381), (24, 27393), (30, 27441), (38, 27504), (45, 27558), (53, 27654), (55, 27696), (66, 27822), (74, 27930), (78, 27969), (84, 28056), (94, 28203),

Gene: SCentae\_125 Start: 83353, Stop: 84243, Start Num: 8

Candidate Starts for SCentae\_125:

(Start: 8 @83353 has 38 MA's), (81, 84088),

Gene: Sampudon\_33 Start: 30054, Stop: 31103, Start Num: 2

Candidate Starts for Sampudon\_33:

(Start: 2 @30054 has 26 MA's), (5, 30168), (6, 30189), (14, 30264), (16, 30279), (22, 30342), (30, 30402), (44, 30504), (Start: 50 @30567 has 1 MA's), (63, 30738), (87, 30966),

Gene: Shelley\_30 Start: 37583, Stop: 38485, Start Num: 8

Candidate Starts for Shelley\_30:

(Start: 8 @37583 has 38 MA's), (23, 37721), (31, 37790), (37, 37838), (46, 37901), (Start: 50 @37937 has 1 MA's), (62, 38105), (88, 38357), (92, 38462),

Gene: Skog\_188 Start: 113083, Stop: 113973, Start Num: 8  
Candidate Starts for Skog\_188:  
(Start: 8 @113083 has 38 MA's), (13, 113122), (20, 113194), (42, 113356), (75, 113722), (81, 113818),

Gene: Sticker17\_30 Start: 38098, Stop: 39000, Start Num: 8  
Candidate Starts for Sticker17\_30:  
(Start: 8 @38098 has 38 MA's), (23, 38236), (31, 38305), (37, 38353), (46, 38416), (Start: 50 @38452 has 1 MA's), (62, 38620), (85, 38854), (88, 38872), (92, 38977),

Gene: Teal\_30 Start: 38566, Stop: 39468, Start Num: 8  
Candidate Starts for Teal\_30:  
(Start: 8 @38566 has 38 MA's), (23, 38704), (31, 38773), (37, 38821), (46, 38884), (Start: 50 @38920 has 1 MA's), (62, 39088), (88, 39340), (92, 39445),

Gene: Tillicus\_33 Start: 28456, Stop: 29502, Start Num: 2  
Candidate Starts for Tillicus\_33:  
(Start: 2 @28456 has 26 MA's), (Start: 3 @28513 has 1 MA's), (7, 28603), (9, 28612), (10, 28618), (11, 28627), (16, 28681), (43, 28897), (44, 28906), (48, 28945), (49, 28957), (54, 29026), (63, 29140), (68, 29167), (77, 29275),

Gene: Woes\_30 Start: 38617, Stop: 39519, Start Num: 8  
Candidate Starts for Woes\_30:  
(Start: 8 @38617 has 38 MA's), (23, 38755), (31, 38824), (37, 38872), (46, 38935), (Start: 50 @38971 has 1 MA's), (88, 39391), (92, 39496),

Gene: Wojtek\_32 Start: 28749, Stop: 29798, Start Num: 2  
Candidate Starts for Wojtek\_32:  
(Start: 2 @28749 has 26 MA's), (5, 28863), (9, 28905), (14, 28959), (16, 28974), (22, 29037), (Start: 50 @29262 has 1 MA's), (63, 29433), (87, 29661), (90, 29706),

Gene: Yikes\_34 Start: 30133, Stop: 31182, Start Num: 2  
Candidate Starts for Yikes\_34:  
(Start: 2 @30133 has 26 MA's), (5, 30247), (9, 30289), (14, 30343), (16, 30358), (22, 30421), (63, 30817), (77, 30952), (87, 31045),

Gene: Zany\_32 Start: 29660, Stop: 30706, Start Num: 2  
Candidate Starts for Zany\_32:  
(Start: 2 @29660 has 26 MA's), (5, 29774), (6, 29795), (14, 29870), (16, 29885), (22, 29948), (30, 30008), (44, 30110), (63, 30344),