



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 170015 Report

This analysis was run 07/09/24 on database version 566.

Pham number 170015 has 54 members, 12 are drafts.

Phages represented in each track:

- Track 1 : MrMiyagi\_120
- Track 2 : Indlulamithi\_110
- Track 3 : Cuke\_127
- Track 4 : Fowlmouth\_120
- Track 5 : Lambo\_96, Wojtek\_88
- Track 6 : ParvusTarda\_96
- Track 7 : Jamemuya19\_94, Genamy16\_95
- Track 8 : Lila22\_99, BirthdayBoy\_97
- Track 9 : Patos\_100, NorManre\_100
- Track 10 : GOATification\_95, Fulcrum\_95
- Track 11 : Jalebi\_95, Sampudon\_97
- Track 12 : Alephilan\_95
- Track 13 : Ranch\_99
- Track 14 : DoobyDoo\_93
- Track 15 : Yikes\_96
- Track 16 : MoiGyank\_100
- Track 17 : DumpTruck\_98
- Track 18 : OtterstedtS21\_96
- Track 19 : GretelLyn\_95, Sadboi\_95
- Track 20 : Apeppi\_92, LuckyLeo\_94
- Track 21 : Mima20\_97
- Track 22 : DaviePasture\_97
- Track 23 : Erutan\_94
- Track 24 : Tillicus\_92
- Track 25 : NovaSharks\_94, Rumi\_93
- Track 26 : Xenia2\_95
- Track 27 : Avian\_93
- Track 28 : Gibbin\_97
- Track 29 : Zany\_94
- Track 30 : Alyssamiracle\_95
- Track 31 : Damien\_2
- Track 32 : Thumb\_2, Beckerton\_2, Phreeze\_2, Oaker\_2, Megatron06\_2, Konstantine\_2
- Track 33 : Cborch11\_2
- Track 34 : Puissant\_1
- Track 35 : Predator\_3
- Track 36 : DrLupo\_2

- Track 37 : Barnyard\_2
- Track 38 : Madruga\_3, Labelle\_3, Patience\_3

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

The start number called the most often in the published annotations is 11, it was called in 24 of the 42 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alephilan\_95, Alyssamiracle\_95, Apeppi\_92, Avian\_93, BirthdayBoy\_97, DaviePasture\_97, DoobyDoo\_93, DumpTruck\_98, Erutan\_94, Fulcrum\_95, GOATification\_95, Genamy16\_95, Gibbin\_97, GretelLyn\_95, Jalebi\_95, Jamemuya19\_94, Lambo\_96, Lila22\_99, LuckyLeo\_94, Mima20\_97, MoiGyank\_100, NorManre\_100, NovaSharks\_94, OtterstedtS21\_96, ParvusTarda\_96, Patos\_100, Ranch\_99, Rumi\_93, Sadboi\_95, Sampudon\_97, Tillicus\_92, Wojtek\_88, Xenia2\_95, Yikes\_96, Zany\_94,

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

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

- Barnyard\_2, Beckerton\_2, Cborch11\_2, Cuke\_127, Damien\_2, DrLupo\_2, Fowlmouth\_120, Indlulamithi\_110, Konstantine\_2, Labelle\_3, Madruga\_3, Megatron06\_2, MrMiyagi\_120, Oaker\_2, Patience\_3, Phreeze\_2, Predator\_3, Puissant\_1, Thumb\_2,

**Summary by start number:**

Start 11:

- Found in 35 of 54 ( 64.8% ) of genes in pham
- Manual Annotations of this start: 24 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alephilan\_95 (DV), Alyssamiracle\_95 (DV), Apeppi\_92 (DV), Avian\_93 (DV), BirthdayBoy\_97 (DV), DaviePasture\_97 (DV), DoobyDoo\_93 (DV), DumpTruck\_98 (DV), Erutan\_94 (DV), Fulcrum\_95 (DV), GOATification\_95 (DV), Genamy16\_95 (DV), Gibbin\_97 (DV), GretelLyn\_95 (DV), Jalebi\_95 (DV), Jamemuya19\_94 (DV), Lambo\_96 (DV), Lila22\_99 (DV), LuckyLeo\_94 (DV), Mima20\_97 (DV), MoiGyank\_100 (DV), NorManre\_100 (DV), NovaSharks\_94 (DV), OtterstedtS21\_96 (DV), ParvusTarda\_96 (DV), Patos\_100 (DV), Ranch\_99 (DV), Rumi\_93 (DV), Sadboi\_95 (DV), Sampudon\_97 (DV), Tillicus\_92 (DV), Wojtek\_88 (DV), Xenia2\_95 (DV), Yikes\_96 (DV), Zany\_94 (DV),

Start 13:

- Found in 10 of 54 ( 18.5% ) of genes in pham
- Manual Annotations of this start: 9 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beckerton\_2 (H1), Cborch11\_2 (H1), Damien\_2 (H1), Konstantine\_2 (H1), Megatron06\_2 (H1), Oaker\_2 (H1), Phreeze\_2 (H1), Predator\_3 (H1), Puissant\_1 (H1), Thumb\_2 (H1),

Start 15:

- Found in 2 of 54 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 2 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Barnyard\_2 (H2), DrLupo\_2 (H2),

Start 17:

- Found in 3 of 54 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 3 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Labelle\_3 (U), Madruga\_3 (U), Patience\_3 (U),

Start 21:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MrMiyagi\_120 (AC),

Start 24:

- Found in 4 of 54 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 3 of 42
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Cuke\_127 (AC), Fowlmouth\_120 (AC), Indlulamithi\_110 (AC),

**Summary by clusters:**

There are 5 clusters represented in this pham: DV, H2, AC, H1, U,

Info for manual annotations of cluster AC:

- Start number 21 was manually annotated 1 time for cluster AC.
- Start number 24 was manually annotated 3 times for cluster AC.

Info for manual annotations of cluster DV:

- Start number 11 was manually annotated 24 times for cluster DV.

Info for manual annotations of cluster H1:

- Start number 13 was manually annotated 9 times for cluster H1.

Info for manual annotations of cluster H2:

- Start number 15 was manually annotated 2 times for cluster H2.

Info for manual annotations of cluster U:

- Start number 17 was manually annotated 3 times for cluster U.

**Gene Information:**

Gene: Alephilan\_95 Start: 65669, Stop: 66970, Start Num: 11

Candidate Starts for Alephilan\_95:

(Start: 11 @65669 has 24 MA's), (27, 65756), (35, 65855), (41, 65939), (49, 66014), (53, 66056), (56, 66089), (61, 66128), (62, 66140), (63, 66143), (64, 66152), (71, 66215), (77, 66302), (92, 66395), (98, 66443), (99, 66446), (103, 66497), (107, 66578), (114, 66617), (125, 66692), (142, 66866),

Gene: Alyssamiracle\_95 Start: 63627, Stop: 64913, Start Num: 11

Candidate Starts for Alyssamiracle\_95:

(Start: 11 @63627 has 24 MA's), (27, 63714), (35, 63813), (41, 63897), (49, 63972), (55, 64044), (56, 64047), (61, 64086), (62, 64098), (63, 64101), (64, 64110), (76, 64257), (92, 64353), (98, 64401), (99, 64404), (103, 64455), (107, 64536), (127, 64647), (142, 64809),

Gene: Apeppi\_92 Start: 65297, Stop: 66625, Start Num: 11

Candidate Starts for Apeppi\_92:

(Start: 11 @65297 has 24 MA's), (14, 65321), (27, 65390), (35, 65489), (36, 65498), (41, 65573), (49, 65648), (56, 65723), (62, 65771), (64, 65783), (71, 65846), (77, 65933), (98, 66074), (99, 66077), (106, 66185), (107, 66209), (112, 66227), (121, 66320), (129, 66389), (142, 66521), (148, 66566),

Gene: Avian\_93 Start: 63389, Stop: 64675, Start Num: 11

Candidate Starts for Avian\_93:

(Start: 11 @63389 has 24 MA's), (27, 63476), (35, 63575), (41, 63659), (49, 63734), (55, 63806), (56, 63809), (62, 63860), (63, 63863), (64, 63872), (71, 63935), (77, 64022), (92, 64115), (98, 64163), (99, 64166), (103, 64217), (107, 64298), (127, 64409), (142, 64571),

Gene: Barnyard\_2 Start: 356, Stop: 1642, Start Num: 15

Candidate Starts for Barnyard\_2:

(Start: 15 @356 has 2 MA's), (25, 389), (30, 470), (38, 527), (40, 575), (43, 614), (44, 617), (48, 665), (54, 725), (64, 779), (65, 788), (67, 800), (76, 920), (79, 935), (80, 944), (81, 956), (83, 962), (86, 977), (88, 986), (89, 989), (98, 1064), (100, 1076), (104, 1124), (113, 1226), (119, 1280), (141, 1493), (145, 1514), (146, 1532),

Gene: Beckerton\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Beckerton\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: BirthdayBoy\_97 Start: 65681, Stop: 67027, Start Num: 11

Candidate Starts for BirthdayBoy\_97:

(Start: 11 @65681 has 24 MA's), (27, 65768), (35, 65867), (41, 65951), (49, 66026), (55, 66098), (56, 66101), (61, 66140), (62, 66152), (63, 66155), (64, 66164), (71, 66227), (76, 66311), (92, 66407), (98, 66455), (99, 66458), (103, 66509), (107, 66590), (122, 66710), (142, 66923),

Gene: Cborch11\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Cborch11\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: Cuke\_127 Start: 67055, Stop: 68323, Start Num: 24

Candidate Starts for Cuke\_127:

(Start: 24 @67055 has 3 MA's), (33, 67160), (36, 67172), (39, 67211), (47, 67295), (51, 67337), (84, 67604), (90, 67640), (97, 67691), (103, 67757), (115, 67886), (118, 67919), (136, 68153), (139, 68180), (140, 68186), (150, 68264),

Gene: Damien\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Damien\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: DaviePasture\_97 Start: 65655, Stop: 67001, Start Num: 11

Candidate Starts for DaviePasture\_97:

(Start: 11 @65655 has 24 MA's), (27, 65742), (35, 65841), (41, 65925), (49, 66000), (56, 66075), (62, 66126), (63, 66129), (64, 66138), (71, 66201), (76, 66285), (77, 66288), (92, 66381), (98, 66429), (99, 66432), (103, 66483), (107, 66564), (122, 66684), (142, 66897),

Gene: DoobyDoo\_93 Start: 64434, Stop: 65735, Start Num: 11

Candidate Starts for DoobyDoo\_93:

(Start: 11 @64434 has 24 MA's), (27, 64521), (28, 64551), (34, 64617), (35, 64620), (41, 64704), (49, 64779), (56, 64854), (62, 64905), (63, 64908), (64, 64917), (77, 65067), (92, 65160), (98, 65208), (99, 65211), (103, 65262), (107, 65343), (108, 65346), (125, 65457), (142, 65631),

Gene: DrLupo\_2 Start: 334, Stop: 1617, Start Num: 15

Candidate Starts for DrLupo\_2:

(Start: 15 @334 has 2 MA's), (25, 367), (30, 448), (38, 505), (39, 532), (40, 553), (43, 592), (45, 601), (48, 643), (52, 682), (54, 703), (64, 757), (65, 766), (72, 820), (76, 898), (79, 913), (80, 922), (81, 934), (83, 940), (86, 955), (88, 964), (89, 967), (97, 1030), (99, 1045), (100, 1054), (110, 1183), (113, 1198), (120, 1258), (133, 1402), (144, 1513), (148, 1534),

Gene: DumpTruck\_98 Start: 65883, Stop: 67190, Start Num: 11

Candidate Starts for DumpTruck\_98:

(Start: 11 @65883 has 24 MA's), (14, 65907), (16, 65913), (19, 65922), (35, 66078), (36, 66087), (41, 66162), (49, 66237), (50, 66246), (56, 66312), (60, 66333), (64, 66372), (76, 66519), (98, 66663), (99, 66666), (107, 66798), (109, 66801), (111, 66807), (114, 66831), (126, 66918), (136, 67053), (139, 67077), (143, 67098), (147, 67125),

Gene: Erutan\_94 Start: 65045, Stop: 66346, Start Num: 11

Candidate Starts for Erutan\_94:

(Start: 11 @65045 has 24 MA's), (27, 65132), (35, 65231), (41, 65315), (49, 65390), (55, 65462), (56, 65465), (61, 65504), (63, 65519), (64, 65528), (71, 65591), (92, 65771), (98, 65819), (99, 65822), (103, 65873), (107, 65954), (108, 65957), (125, 66068), (142, 66242),

Gene: Fowlmouth\_120 Start: 67859, Stop: 69115, Start Num: 24

Candidate Starts for Fowlmouth\_120:

(5, 67763), (7, 67781), (8, 67784), (10, 67793), (18, 67844), (20, 67847), (Start: 24 @67859 has 3 MA's), (26, 67886), (33, 67964), (36, 67976), (39, 68015), (48, 68117), (51, 68141), (70, 68270), (84, 68408), (90, 68444), (94, 68477), (95, 68489), (97, 68495), (103, 68561), (136, 68945), (139, 68972), (143, 68996),

Gene: Fulcrum\_95 Start: 65648, Stop: 66994, Start Num: 11

Candidate Starts for Fulcrum\_95:

(Start: 11 @65648 has 24 MA's), (27, 65735), (35, 65834), (41, 65918), (49, 65993), (55, 66065), (56, 66068), (61, 66107), (62, 66119), (63, 66122), (64, 66131), (71, 66194), (76, 66278), (77, 66281), (98, 66422), (99, 66425), (103, 66476), (107, 66557), (122, 66677), (142, 66890),

Gene: GOATification\_95 Start: 65648, Stop: 66994, Start Num: 11

Candidate Starts for GOATification\_95:

(Start: 11 @65648 has 24 MA's), (27, 65735), (35, 65834), (41, 65918), (49, 65993), (55, 66065), (56, 66068), (61, 66107), (62, 66119), (63, 66122), (64, 66131), (71, 66194), (76, 66278), (77, 66281), (98, 66422), (99, 66425), (103, 66476), (107, 66557), (122, 66677), (142, 66890),

Gene: Genamy16\_95 Start: 63676, Stop: 64962, Start Num: 11

Candidate Starts for Genamy16\_95:

(Start: 11 @63676 has 24 MA's), (27, 63763), (35, 63862), (41, 63946), (49, 64021), (55, 64093), (56, 64096), (62, 64147), (63, 64150), (64, 64159), (76, 64306), (92, 64402), (98, 64450), (99, 64453), (103, 64504), (107, 64585), (127, 64696), (142, 64858),

Gene: Gibbin\_97 Start: 65825, Stop: 67171, Start Num: 11

Candidate Starts for Gibbin\_97:

(Start: 11 @65825 has 24 MA's), (27, 65912), (35, 66011), (41, 66095), (49, 66170), (55, 66242), (56, 66245), (61, 66284), (62, 66296), (63, 66299), (64, 66308), (71, 66371), (92, 66551), (98, 66599), (99, 66602), (103, 66653), (107, 66734), (122, 66854), (142, 67067),

Gene: Gretellyn\_95 Start: 65652, Stop: 66998, Start Num: 11

Candidate Starts for Gretellyn\_95:

(Start: 11 @65652 has 24 MA's), (27, 65739), (35, 65838), (41, 65922), (49, 65997), (55, 66069), (56, 66072), (62, 66123), (63, 66126), (64, 66135), (71, 66198), (77, 66285), (92, 66378), (98, 66426), (99, 66429), (103, 66480), (107, 66561), (122, 66681), (142, 66894),

Gene: Indlulamithi\_110 Start: 69658, Stop: 70902, Start Num: 24

Candidate Starts for Indlulamithi\_110:

(1, 69475), (2, 69529), (4, 69550), (6, 69574), (Start: 24 @69658 has 3 MA's), (27, 69700), (37, 69790), (39, 69823), (75, 70141), (89, 70222), (90, 70234), (93, 70261), (102, 70324), (128, 70612), (130, 70645), (131, 70648), (133, 70675), (136, 70735),

Gene: Jalebi\_95 Start: 66593, Stop: 67894, Start Num: 11

Candidate Starts for Jalebi\_95:

(Start: 11 @66593 has 24 MA's), (27, 66680), (35, 66779), (41, 66863), (49, 66938), (55, 67010), (56, 67013), (61, 67052), (62, 67064), (63, 67067), (64, 67076), (71, 67139), (77, 67226), (92, 67319), (98, 67367), (99, 67370), (103, 67421), (107, 67502), (125, 67616), (142, 67790),

Gene: Jamemuya19\_94 Start: 63301, Stop: 64587, Start Num: 11

Candidate Starts for Jamemuya19\_94:

(Start: 11 @63301 has 24 MA's), (27, 63388), (35, 63487), (41, 63571), (49, 63646), (55, 63718), (56, 63721), (62, 63772), (63, 63775), (64, 63784), (76, 63931), (92, 64027), (98, 64075), (99, 64078), (103, 64129), (107, 64210), (127, 64321), (142, 64483),

Gene: Konstantine\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Konstantine\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: Labelle\_3 Start: 668, Stop: 2029, Start Num: 17

Candidate Starts for Labelle\_3:

(12, 650), (Start: 17 @668 has 3 MA's), (23, 677), (31, 800), (34, 827), (38, 851), (41, 920), (43, 938), (48, 992), (54, 1052), (57, 1076), (65, 1109), (67, 1121), (74, 1196), (80, 1265), (81, 1277), (82, 1280), (87, 1301), (89, 1310), (91, 1334), (92, 1337), (94, 1355), (96, 1370), (99, 1388), (101, 1406), (116, 1592), (117, 1604), (120, 1616), (124, 1673), (141, 1853), (146, 1904), (149, 1943), (151, 1952), (152, 1997),

Gene: Lambo\_96 Start: 65885, Stop: 67201, Start Num: 11

Candidate Starts for Lambo\_96:

(Start: 11 @65885 has 24 MA's), (14, 65909), (27, 65978), (35, 66077), (36, 66086), (41, 66161), (49, 66236), (54, 66290), (56, 66311), (62, 66359), (64, 66371), (76, 66518), (77, 66521), (85, 66566), (98, 66662), (99, 66665), (107, 66797), (109, 66809), (114, 66839), (126, 66926), (142, 67097),

Gene: Lila22\_99 Start: 65625, Stop: 66971, Start Num: 11

Candidate Starts for Lila22\_99:

(Start: 11 @65625 has 24 MA's), (27, 65712), (35, 65811), (41, 65895), (49, 65970), (55, 66042), (56, 66045), (61, 66084), (62, 66096), (63, 66099), (64, 66108), (71, 66171), (76, 66255), (92, 66351), (98, 66399), (99, 66402), (103, 66453), (107, 66534), (122, 66654), (142, 66867),

Gene: LuckyLeo\_94 Start: 65297, Stop: 66625, Start Num: 11

Candidate Starts for LuckyLeo\_94:

(Start: 11 @65297 has 24 MA's), (14, 65321), (27, 65390), (35, 65489), (36, 65498), (41, 65573), (49, 65648), (56, 65723), (62, 65771), (64, 65783), (71, 65846), (77, 65933), (98, 66074), (99, 66077), (106, 66185), (107, 66209), (112, 66227), (121, 66320), (129, 66389), (142, 66521), (148, 66566),

Gene: Madruga\_3 Start: 668, Stop: 2029, Start Num: 17

Candidate Starts for Madruga\_3:

(12, 650), (Start: 17 @668 has 3 MA's), (23, 677), (31, 800), (34, 827), (38, 851), (41, 920), (43, 938), (48, 992), (54, 1052), (57, 1076), (65, 1109), (67, 1121), (74, 1196), (80, 1265), (81, 1277), (82, 1280), (87, 1301), (89, 1310), (91, 1334), (92, 1337), (94, 1355), (96, 1370), (99, 1388), (101, 1406), (116, 1592), (117, 1604), (120, 1616), (124, 1673), (141, 1853), (146, 1904), (149, 1943), (151, 1952), (152, 1997),

Gene: Megatron06\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Megatron06\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: Mima20\_97 Start: 65382, Stop: 66728, Start Num: 11

Candidate Starts for Mima20\_97:

(3, 65325), (Start: 11 @65382 has 24 MA's), (27, 65469), (35, 65568), (41, 65652), (49, 65727), (56, 65802), (62, 65853), (63, 65856), (64, 65865), (71, 65928), (76, 66012), (92, 66108), (98, 66156), (99, 66159), (103, 66210), (107, 66291), (122, 66411), (142, 66624),

Gene: MoiGyank\_100 Start: 65906, Stop: 67207, Start Num: 11

Candidate Starts for MoiGyank\_100:

(3, 65849), (Start: 11 @65906 has 24 MA's), (27, 65993), (35, 66092), (41, 66176), (49, 66251), (55, 66323), (56, 66326), (62, 66377), (63, 66380), (64, 66389), (71, 66452), (92, 66632), (98, 66680), (99, 66683), (103, 66734), (107, 66815), (108, 66818), (125, 66929), (142, 67103),

Gene: MrMiyagi\_120 Start: 68238, Stop: 69503, Start Num: 21

Candidate Starts for MrMiyagi\_120:

(Start: 21 @68238 has 1 MA's), (22, 68241), (Start: 24 @68247 has 3 MA's), (36, 68364), (39, 68403), (47, 68487), (48, 68505), (51, 68529), (70, 68658), (84, 68796), (90, 68832), (94, 68865), (95, 68877), (97, 68883), (103, 68949), (136, 69333), (139, 69360), (143, 69384),

Gene: NorManre\_100 Start: 66924, Stop: 68237, Start Num: 11

Candidate Starts for NorManre\_100:



(Start: 11 @66924 has 24 MA's), (27, 67011), (35, 67110), (41, 67194), (49, 67269), (56, 67344), (62, 67395), (63, 67398), (64, 67407), (71, 67470), (77, 67557), (92, 67650), (98, 67698), (99, 67701), (103, 67752), (107, 67833), (109, 67845), (114, 67875), (126, 67962), (129, 68001), (142, 68133),

Gene: NovaSharks\_94 Start: 63376, Stop: 64662, Start Num: 11

Candidate Starts for NovaSharks\_94:

(Start: 11 @63376 has 24 MA's), (27, 63463), (35, 63562), (41, 63646), (49, 63721), (55, 63793), (56, 63796), (62, 63847), (63, 63850), (64, 63859), (76, 64006), (92, 64102), (98, 64150), (99, 64153), (103, 64204), (107, 64285), (142, 64558),

Gene: Oaker\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Oaker\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: OtterstedtS21\_96 Start: 65736, Stop: 67082, Start Num: 11

Candidate Starts for OtterstedtS21\_96:

(Start: 11 @65736 has 24 MA's), (27, 65823), (35, 65922), (41, 66006), (49, 66081), (56, 66156), (62, 66207), (63, 66210), (64, 66219), (71, 66282), (77, 66369), (92, 66462), (98, 66510), (99, 66513), (103, 66564), (107, 66645), (122, 66765), (142, 66978),

Gene: ParvusTarda\_96 Start: 65318, Stop: 66667, Start Num: 11

Candidate Starts for ParvusTarda\_96:

(Start: 11 @65318 has 24 MA's), (14, 65342), (27, 65411), (35, 65510), (36, 65519), (41, 65594), (49, 65669), (54, 65723), (56, 65744), (62, 65792), (64, 65804), (76, 65951), (77, 65954), (85, 65999), (98, 66095), (99, 66098), (107, 66230), (123, 66350), (142, 66563),

Gene: Patience\_3 Start: 668, Stop: 2029, Start Num: 17

Candidate Starts for Patience\_3:

(12, 650), (Start: 17 @668 has 3 MA's), (23, 677), (31, 800), (34, 827), (38, 851), (41, 920), (43, 938), (48, 992), (54, 1052), (57, 1076), (65, 1109), (67, 1121), (74, 1196), (80, 1265), (81, 1277), (82, 1280), (87, 1301), (89, 1310), (91, 1334), (92, 1337), (94, 1355), (96, 1370), (99, 1388), (101, 1406), (116, 1592), (117, 1604), (120, 1616), (124, 1673), (141, 1853), (146, 1904), (149, 1943), (151, 1952), (152, 1997),

Gene: Patos\_100 Start: 66923, Stop: 68236, Start Num: 11

Candidate Starts for Patos\_100:

(Start: 11 @66923 has 24 MA's), (27, 67010), (35, 67109), (41, 67193), (49, 67268), (56, 67343), (62, 67394), (63, 67397), (64, 67406), (71, 67469), (77, 67556), (92, 67649), (98, 67697), (99, 67700), (103, 67751), (107, 67832), (109, 67844), (114, 67874), (126, 67961), (129, 68000), (142, 68132),

Gene: Phreeze\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Phreeze\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: Predator\_3 Start: 690, Stop: 2009, Start Num: 13

Candidate Starts for Predator\_3:

(Start: 13 @690 has 9 MA's), (29, 804), (30, 822), (34, 858), (42, 954), (46, 987), (51, 1032), (54, 1068), (67, 1140), (68, 1143), (69, 1158), (73, 1191), (76, 1260), (78, 1272), (79, 1275), (81, 1296), (86, 1317), (87, 1320), (91, 1353), (97, 1392), (132, 1764), (134, 1800), (135, 1836), (137, 1845), (139,

1863), (141, 1872), (153, 1998),

Gene: Puissant\_1 Start: 356, Stop: 1669, Start Num: 13

Candidate Starts for Puissant\_1:

(Start: 13 @356 has 9 MA's), (36, 536), (37, 542), (38, 548), (51, 698), (57, 758), (66, 803), (67, 806), (73, 857), (76, 926), (77, 929), (78, 938), (79, 941), (81, 962), (86, 983), (88, 992), (95, 1052), (97, 1058), (105, 1178), (134, 1460), (139, 1523), (153, 1658),

Gene: Ranch\_99 Start: 64973, Stop: 66283, Start Num: 11

Candidate Starts for Ranch\_99:

(Start: 11 @64973 has 24 MA's), (27, 65060), (35, 65159), (41, 65243), (49, 65318), (56, 65393), (62, 65444), (63, 65447), (64, 65456), (71, 65519), (77, 65606), (92, 65699), (98, 65747), (99, 65750), (103, 65801), (107, 65882), (114, 65921), (126, 66008), (129, 66047), (142, 66179),

Gene: Rumi\_93 Start: 62971, Stop: 64257, Start Num: 11

Candidate Starts for Rumi\_93:

(Start: 11 @62971 has 24 MA's), (27, 63058), (35, 63157), (41, 63241), (49, 63316), (55, 63388), (56, 63391), (62, 63442), (63, 63445), (64, 63454), (76, 63601), (92, 63697), (98, 63745), (99, 63748), (103, 63799), (107, 63880), (142, 64153),

Gene: Sadboi\_95 Start: 65532, Stop: 66878, Start Num: 11

Candidate Starts for Sadboi\_95:

(Start: 11 @65532 has 24 MA's), (27, 65619), (35, 65718), (41, 65802), (49, 65877), (55, 65949), (56, 65952), (62, 66003), (63, 66006), (64, 66015), (71, 66078), (77, 66165), (92, 66258), (98, 66306), (99, 66309), (103, 66360), (107, 66441), (122, 66561), (142, 66774),

Gene: Sampudon\_97 Start: 66592, Stop: 67893, Start Num: 11

Candidate Starts for Sampudon\_97:

(Start: 11 @66592 has 24 MA's), (27, 66679), (35, 66778), (41, 66862), (49, 66937), (55, 67009), (56, 67012), (61, 67051), (62, 67063), (63, 67066), (64, 67075), (71, 67138), (77, 67225), (92, 67318), (98, 67366), (99, 67369), (103, 67420), (107, 67501), (125, 67615), (142, 67789),

Gene: Thumb\_2 Start: 355, Stop: 1668, Start Num: 13

Candidate Starts for Thumb\_2:

(Start: 13 @355 has 9 MA's), (32, 505), (36, 535), (38, 547), (40, 589), (54, 733), (57, 757), (58, 766), (59, 769), (66, 802), (67, 805), (68, 808), (73, 856), (76, 925), (77, 928), (78, 937), (79, 940), (81, 961), (86, 982), (88, 991), (95, 1051), (97, 1057), (105, 1177), (134, 1459), (141, 1531), (153, 1657),

Gene: Tillicus\_92 Start: 64659, Stop: 65981, Start Num: 11

Candidate Starts for Tillicus\_92:

(9, 64641), (Start: 11 @64659 has 24 MA's), (14, 64683), (27, 64752), (35, 64851), (36, 64860), (41, 64935), (49, 65010), (56, 65085), (62, 65133), (64, 65145), (71, 65208), (76, 65292), (77, 65295), (98, 65436), (99, 65439), (106, 65547), (107, 65571), (112, 65589), (121, 65682), (138, 65856), (142, 65877),

Gene: Wojtek\_88 Start: 65823, Stop: 67139, Start Num: 11

Candidate Starts for Wojtek\_88:

(Start: 11 @65823 has 24 MA's), (14, 65847), (27, 65916), (35, 66015), (36, 66024), (41, 66099), (49, 66174), (54, 66228), (56, 66249), (62, 66297), (64, 66309), (76, 66456), (77, 66459), (85, 66504), (98, 66600), (99, 66603), (107, 66735), (109, 66747), (114, 66777), (126, 66864), (142, 67035),

Gene: Xenia2\_95 Start: 66264, Stop: 67571, Start Num: 11

Candidate Starts for Xenia2\_95:

(Start: 11 @66264 has 24 MA's), (14, 66288), (16, 66294), (19, 66303), (35, 66459), (36, 66468), (41, 66543), (49, 66618), (50, 66627), (52, 66651), (56, 66693), (60, 66714), (64, 66753), (76, 66900), (98, 67044), (99, 67047), (107, 67179), (109, 67182), (111, 67188), (114, 67212), (126, 67299), (136, 67434), (139, 67458), (143, 67479), (147, 67506),

Gene: Yikes\_96 Start: 66196, Stop: 67542, Start Num: 11

Candidate Starts for Yikes\_96:

(Start: 11 @66196 has 24 MA's), (27, 66283), (35, 66382), (41, 66466), (49, 66541), (55, 66613), (56, 66616), (62, 66667), (63, 66670), (64, 66679), (66, 66697), (71, 66742), (77, 66829), (92, 66922), (98, 66970), (99, 66973), (103, 67024), (107, 67105), (122, 67225), (142, 67438),

Gene: Zany\_94 Start: 66336, Stop: 67637, Start Num: 11

Candidate Starts for Zany\_94:

(3, 66279), (Start: 11 @66336 has 24 MA's), (27, 66423), (35, 66522), (41, 66606), (49, 66681), (55, 66753), (56, 66756), (62, 66807), (63, 66810), (64, 66819), (71, 66882), (92, 67062), (98, 67110), (99, 67113), (103, 67164), (107, 67245), (125, 67359), (142, 67533),