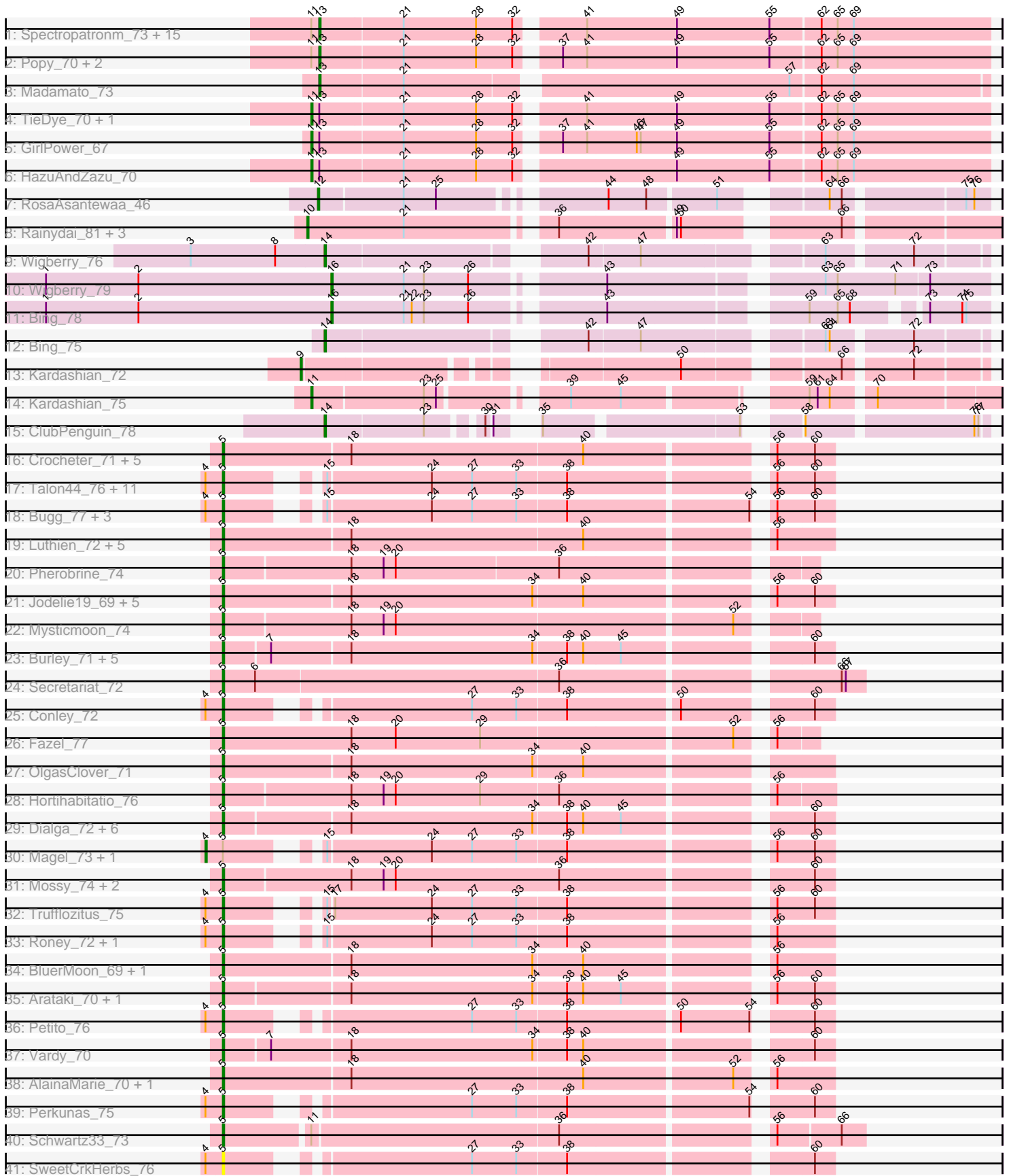


# Pham 304870



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 304870 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304870 has 109 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Spectropatronm\_73, Esketit\_70, CherryBlossom\_74, IceWarrior\_74, Soshi\_71, OlympicHelado\_76, Indigenous\_76, Rima\_75, TaidaOne\_75, Jaylociraptor\_74, Espio\_70, Hoshi\_75, TonyStarch\_73, FidgetOrca\_76, Maya\_74, Namu\_76
- Track 2 : Popy\_70, DrGrey\_68, FrodoSwaggins\_70
- Track 3 : Madamoto\_73
- Track 4 : TieDye\_70, Meibysrarus\_72
- Track 5 : GirlPower\_67
- Track 6 : HazuAndZazu\_70
- Track 7 : RosaAsantewaa\_46
- Track 8 : Rainydai\_81, CricKo\_84, Thiqqums\_84, Regigigas\_84
- Track 9 : Wigberry\_76
- Track 10 : Wigberry\_79
- Track 11 : Bing\_78
- Track 12 : Bing\_75
- Track 13 : Kardashian\_72
- Track 14 : Kardashian\_75
- Track 15 : ClubPenguin\_78
- Track 16 : Crocheter\_71, PestoPenguin\_76, BetterYeti\_71, Aloe25\_74, ShaggyRogers\_71, Gusicorn\_72
- Track 17 : Talon44\_76, ChickyNugget\_77, Kerry\_71, Avazak\_75, Captrips\_73, NoPickles\_73, JulesRay\_74, Tanis\_72, Capybara\_72, Gravy\_71, Football\_76, Tairn4Wing\_76
- Track 18 : Bugg\_77, Artorias\_74, Dancer\_74, FortCran\_74
- Track 19 : Luthien\_72, Glintora\_72, Nithya\_71, Chikenjars\_69, Rickmore\_68, Citrus\_70
- Track 20 : Pherobrine\_74
- Track 21 : Jodelie19\_69, Figliar\_69, Aflac\_70, MajinBuu\_71, Tonaltzin\_74, TenaciousP\_71
- Track 22 : Mysticmoon\_74
- Track 23 : Burley\_71, Eddiemania\_73, Runhaar\_71, Madvan\_71, Nadmeg\_72, Kenosha\_70
- Track 24 : Secretariat\_72
- Track 25 : Conley\_72
- Track 26 : Fazel\_77
- Track 27 : OlgasClover\_71
- Track 28 : Hortihabitatio\_76

- Track 29 : Dialga\_72, CWormy\_70, Untouchable\_73, Zeph\_73, ArtetaBall\_70, Phepper\_72, Hydrus\_73
- Track 30 : Magel\_73, Gill\_72
- Track 31 : Mossy\_74, Blanky\_71, OhMyWard\_70
- Track 32 : Trufflozitus\_75
- Track 33 : Roney\_72, Odesza\_71
- Track 34 : BluerMoon\_69, Duffington\_70
- Track 35 : Arataki\_70, Demure\_69
- Track 36 : Petite\_76
- Track 37 : Vardy\_70
- Track 38 : AlainaMarie\_70, EndAve\_72
- Track 39 : Perkunas\_75
- Track 40 : Schwartz33\_73
- Track 41 : SweetCrkHerbs\_76

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

The start number called the most often in the published annotations is 5, it was called in 56 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aflac\_70, AlainaMarie\_70, Aloe25\_74, Arataki\_70, ArtetaBall\_70, Artorias\_74, Avazak\_75, BetterYeti\_71, Blanky\_71, BluerMoon\_69, Bugg\_77, Burley\_71, CWormy\_70, Captrips\_73, Copybara\_72, ChickyNugget\_77, Chickenjars\_69, Citrus\_70, Conley\_72, Crocheter\_71, Dancer\_74, Demure\_69, Dialga\_72, Duffington\_70, Eddiemania\_73, EndAve\_72, Fazel\_77, Figliar\_69, Football\_76, FortCran\_74, Glintora\_72, Gravy\_71, Gusicorn\_72, Hortihabitatio\_76, Hydrus\_73, Jodelie19\_69, JulesRay\_74, Kenosha\_70, Kerry\_71, Luthien\_72, Madvan\_71, MajinBuu\_71, Mossy\_74, Mysticmoon\_74, Nadmeg\_72, Nithya\_71, NoPickles\_73, Odesza\_71, OhMyWard\_70, OlgasClover\_71, Perkunas\_75, PestoPenguin\_76, Petite\_76, Phepper\_72, Pherobrine\_74, Rickmore\_68, Roney\_72, Runhaar\_71, Schwartz33\_73, Secretariat\_72, ShaggyRogers\_71, SweetCrkHerbs\_76, Tairn4Wing\_76, Talon44\_76, Tanis\_72, TenaciousP\_71, Tonaltzin\_74, Trufflozitus\_75, Untouchable\_73, Vardy\_70, Zeph\_73,

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

- Gill\_72, Magel\_73,

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

- Bing\_75, Bing\_78, CherryBlossom\_74, ClubPenguin\_78, CricKo\_84, DrGrey\_68, Esketit\_70, Espio\_70, FidgetOrca\_76, FrodoSwaggins\_70, GirlPower\_67, HazuAndZazu\_70, Hoshi\_75, IceWarrior\_74, Indigenous\_76, Jaylociraptor\_74, Kardashian\_72, Kardashian\_75, Madamoto\_73, Maya\_74, Meibysrarus\_72, Namo\_76, OlympicHelado\_76, Popy\_70, Rainydai\_81, Regigigas\_84, Rima\_75, RosaAsantewaa\_46, Soshi\_71, Spectropatronm\_73, TaidaOne\_75, Thiqqums\_84, TieDye\_70, TonyStarch\_73, Wigberry\_76, Wigberry\_79,

**Summary by start number:**

Start 4:

- Found in 25 of 109 ( 22.9% ) of genes in pham
- Manual Annotations of this start: 2 of 93
- Called 8.0% of time when present
- Phage (with cluster) where this start called: Gill\_72 (DJ), Magel\_73 (DJ),

#### Start 5:

- Found in 73 of 109 ( 67.0% ) of genes in pham
- Manual Annotations of this start: 56 of 93
- Called 97.3% of time when present
- Phage (with cluster) where this start called: Aflac\_70 (DJ), AlainaMarie\_70 (DJ), Aloe25\_74 (DJ), Arataki\_70 (DJ), ArtetaBall\_70 (DJ), Artorias\_74 (DJ), Avazak\_75 (DJ), BetterYeti\_71 (DJ), Blanky\_71 (DJ), BluerMoon\_69 (DJ), Bugg\_77 (DJ), Burley\_71 (DJ), CWormy\_70 (DJ), Captrips\_73 (DJ), Capybara\_72 (DJ), ChickyNuggy\_77 (DJ), Chikenjars\_69 (DJ), Citrus\_70 (DJ), Conley\_72 (DJ), Crocheter\_71 (DJ), Dancer\_74 (DJ), Demure\_69 (DJ), Dialga\_72 (DJ), Duffington\_70 (DJ), Eddiemania\_73 (DJ), EndAve\_72 (DJ), Fazel\_77 (DJ), Figliar\_69 (DJ), Football\_76 (DJ), FortCran\_74 (DJ), Glintora\_72 (DJ), Gravy\_71 (DJ), Gusicorn\_72 (DJ), Hortihabitatio\_76 (DJ), Hydrus\_73 (DJ), Jodelie19\_69 (DJ), JulesRay\_74 (DJ), Kenosha\_70 (DJ), Kerry\_71 (DJ), Luthien\_72 (DJ), Madvan\_71 (DJ), MajinBuu\_71 (DJ), Mossy\_74 (DJ), Mysticmoon\_74 (DJ), Nadmeg\_72 (DJ), Nithya\_71 (DJ), NoPickles\_73 (DJ), Odesza\_71 (DJ), OhMyWard\_70 (DJ), OlgasClover\_71 (DJ), Perunas\_75 (DJ), PestoPenguin\_76 (DJ), Petite\_76 (DJ), Phepper\_72 (DJ), Pherobrine\_74 (DJ), Rickmore\_68 (DJ), Roney\_72 (DJ), Runhaar\_71 (DJ), Schwartz33\_73 (DJ), Secretariat\_72 (DJ), ShaggyRogers\_71 (DJ), SweetCrkHerbs\_76 (DJ), Tairn4Wing\_76 (DJ), Talon44\_76 (DJ), Tanis\_72 (DJ), TenaciousP\_71 (DJ), Tonaltzin\_74 (DJ), Trufflozitus\_75 (DJ), Untouchable\_73 (DJ), Vardy\_70 (DJ), Zeph\_73 (DJ),

#### Start 9:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kardashian\_72 (BI6),

#### Start 10:

- Found in 4 of 109 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CricKo\_84 (BI4), Rainydai\_81 (BI4), Regigigas\_84 (BI4), Thiqqums\_84 (BI4),

#### Start 11:

- Found in 25 of 109 ( 22.9% ) of genes in pham
- Manual Annotations of this start: 5 of 93
- Called 20.0% of time when present
- Phage (with cluster) where this start called: GirlPower\_67 (BI1), HazuAndZazu\_70 (BI1), Kardashian\_75 (BI6), Meibysrarus\_72 (BI1), TieDye\_70 (BI1),

#### Start 12:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RosaAsantewaa\_46 (BI2),

Start 13:

- Found in 24 of 109 ( 22.0% ) of genes in pham
- Manual Annotations of this start: 20 of 93
- Called 83.3% of time when present
- Phage (with cluster) where this start called: CherryBlossom\_74 (BI1), DrGrey\_68 (BI1), Esketit\_70 (BI1), Espio\_70 (BI1), FidgetOrca\_76 (BI1), FrodoSwaggins\_70 (BI1), Hoshi\_75 (BI1), IceWarrior\_74 (BI1), Indigenous\_76 (BI1), Jaylociraptor\_74 (BI1), Madamoto\_73 (BI1), Maya\_74 (BI1), Namu\_76 (BI1), OlympicHelado\_76 (BI1), Popy\_70 (BI1), Rima\_75 (BI1), Soshi\_71 (BI1), Spectropatronm\_73 (BI1), TaidaOne\_75 (BI1), TonyStarch\_73 (BI1),

Start 14:

- Found in 3 of 109 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bing\_75 (BI5), ClubPenguin\_78 (BI7), Wigberry\_76 (BI5),

Start 16:

- Found in 2 of 109 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bing\_78 (BI5), Wigberry\_79 (BI5),

**Summary by clusters:**

There are 7 clusters represented in this pham: DJ, BI6, BI7, BI4, BI5, BI2, BI1,

Info for manual annotations of cluster BI1:

- Start number 11 was manually annotated 4 times for cluster BI1.
- Start number 13 was manually annotated 20 times for cluster BI1.

Info for manual annotations of cluster BI2:

- Start number 12 was manually annotated 1 time for cluster BI2.

Info for manual annotations of cluster BI4:

- Start number 10 was manually annotated 3 times for cluster BI4.

Info for manual annotations of cluster BI5:

- Start number 14 was manually annotated 2 times for cluster BI5.
- Start number 16 was manually annotated 2 times for cluster BI5.

Info for manual annotations of cluster BI6:

- Start number 9 was manually annotated 1 time for cluster BI6.
- Start number 11 was manually annotated 1 time for cluster BI6.

Info for manual annotations of cluster BI7:

- Start number 14 was manually annotated 1 time for cluster BI7.

Info for manual annotations of cluster DJ:

- Start number 4 was manually annotated 2 times for cluster DJ.
- Start number 5 was manually annotated 56 times for cluster DJ.

**Gene Information:**

Gene: Aflac\_70 Start: 49866, Stop: 50294, Start Num: 5

Candidate Starts for Aflac\_70:

(Start: 5 @49866 has 56 MA's), (18, 49959), (34, 50094), (40, 50130), (56, 50253), (60, 50280),

Gene: AlainaMarie\_70 Start: 49907, Stop: 50335, Start Num: 5

Candidate Starts for AlainaMarie\_70:

(Start: 5 @49907 has 56 MA's), (18, 50000), (40, 50171), (52, 50276), (56, 50294),

Gene: Aloe25\_74 Start: 49709, Stop: 50137, Start Num: 5

Candidate Starts for Aloe25\_74:

(Start: 5 @49709 has 56 MA's), (18, 49802), (40, 49973), (56, 50096), (60, 50123),

Gene: Arataki\_70 Start: 49339, Stop: 49764, Start Num: 5

Candidate Starts for Arataki\_70:

(Start: 5 @49339 has 56 MA's), (18, 49429), (34, 49564), (38, 49588), (40, 49600), (45, 49627), (56, 49723), (60, 49750),

Gene: ArtetaBall\_70 Start: 49902, Stop: 50327, Start Num: 5

Candidate Starts for ArtetaBall\_70:

(Start: 5 @49902 has 56 MA's), (18, 49992), (34, 50127), (38, 50151), (40, 50163), (45, 50190), (60, 50313),

Gene: Artorias\_74 Start: 49927, Stop: 50325, Start Num: 5

Candidate Starts for Artorias\_74:

(Start: 4 @49915 has 2 MA's), (Start: 5 @49927 has 56 MA's), (15, 49975), (24, 50050), (27, 50080), (33, 50113), (38, 50149), (54, 50278), (56, 50284), (60, 50311),

Gene: Avazak\_75 Start: 50609, Stop: 51007, Start Num: 5

Candidate Starts for Avazak\_75:

(Start: 4 @50597 has 2 MA's), (Start: 5 @50609 has 56 MA's), (15, 50657), (24, 50732), (27, 50762), (33, 50795), (38, 50831), (56, 50966), (60, 50993),

Gene: BetterYeti\_71 Start: 49708, Stop: 50136, Start Num: 5

Candidate Starts for BetterYeti\_71:

(Start: 5 @49708 has 56 MA's), (18, 49801), (40, 49972), (56, 50095), (60, 50122),

Gene: Bing\_78 Start: 47851, Stop: 48282, Start Num: 16

Candidate Starts for Bing\_78:

(1, 47638), (2, 47707), (Start: 16 @47851 has 2 MA's), (21, 47905), (22, 47911), (23, 47920), (26, 47953), (43, 48037), (59, 48166), (65, 48187), (68, 48196), (73, 48238), (74, 48262), (75, 48265),

Gene: Bing\_75 Start: 46505, Stop: 46933, Start Num: 14

Candidate Starts for Bing\_75:

(Start: 14 @46505 has 3 MA's), (42, 46673), (47, 46709), (63, 46826), (64, 46829), (72, 46883),

Gene: Blanky\_71 Start: 51188, Stop: 51616, Start Num: 5

Candidate Starts for Blanky\_71:

(Start: 5 @51188 has 56 MA's), (18, 51281), (19, 51305), (20, 51314), (36, 51434), (60, 51602),

Gene: BluerMoon\_69 Start: 49818, Stop: 50246, Start Num: 5

Candidate Starts for BluerMoon\_69:

(Start: 5 @49818 has 56 MA's), (18, 49911), (34, 50046), (40, 50082), (56, 50205),

Gene: Bugg\_77 Start: 49972, Stop: 50370, Start Num: 5

Candidate Starts for Bugg\_77:

(Start: 4 @49960 has 2 MA's), (Start: 5 @49972 has 56 MA's), (15, 50020), (24, 50095), (27, 50125), (33, 50158), (38, 50194), (54, 50323), (56, 50329), (60, 50356),

Gene: Burley\_71 Start: 49358, Stop: 49783, Start Num: 5

Candidate Starts for Burley\_71:

(Start: 5 @49358 has 56 MA's), (7, 49391), (18, 49448), (34, 49583), (38, 49607), (40, 49619), (45, 49646), (60, 49769),

Gene: CWormy\_70 Start: 49316, Stop: 49741, Start Num: 5

Candidate Starts for CWormy\_70:

(Start: 5 @49316 has 56 MA's), (18, 49406), (34, 49541), (38, 49565), (40, 49577), (45, 49604), (60, 49727),

Gene: Captrips\_73 Start: 49757, Stop: 50155, Start Num: 5

Candidate Starts for Captrips\_73:

(Start: 4 @49745 has 2 MA's), (Start: 5 @49757 has 56 MA's), (15, 49805), (24, 49880), (27, 49910), (33, 49943), (38, 49979), (56, 50114), (60, 50141),

Gene: Capybara\_72 Start: 49596, Stop: 49994, Start Num: 5

Candidate Starts for Capybara\_72:

(Start: 4 @49584 has 2 MA's), (Start: 5 @49596 has 56 MA's), (15, 49644), (24, 49719), (27, 49749), (33, 49782), (38, 49818), (56, 49953), (60, 49980),

Gene: CherryBlossom\_74 Start: 45929, Stop: 46408, Start Num: 13

Candidate Starts for CherryBlossom\_74:

(Start: 11 @45923 has 5 MA's), (Start: 13 @45929 has 20 MA's), (21, 45989), (28, 46043), (32, 46070), (41, 46112), (49, 46178), (55, 46247), (62, 46283), (65, 46295), (69, 46307),

Gene: ChickyNuggy\_77 Start: 50351, Stop: 50749, Start Num: 5

Candidate Starts for ChickyNuggy\_77:

(Start: 4 @50339 has 2 MA's), (Start: 5 @50351 has 56 MA's), (15, 50399), (24, 50474), (27, 50504), (33, 50537), (38, 50573), (56, 50708), (60, 50735),

Gene: Chikenjars\_69 Start: 49939, Stop: 50367, Start Num: 5

Candidate Starts for Chikenjars\_69:

(Start: 5 @49939 has 56 MA's), (18, 50032), (40, 50203), (56, 50326),

Gene: Citrus\_70 Start: 50200, Stop: 50628, Start Num: 5

Candidate Starts for Citrus\_70:

(Start: 5 @50200 has 56 MA's), (18, 50293), (40, 50464), (56, 50587),

Gene: ClubPenguin\_78 Start: 46389, Stop: 46793, Start Num: 14

Candidate Starts for ClubPenguin\_78:

(Start: 14 @46389 has 3 MA's), (23, 46461), (30, 46494), (31, 46497), (35, 46509), (53, 46644), (58, 46668), (76, 46785), (77, 46788),

Gene: Conley\_72 Start: 50234, Stop: 50632, Start Num: 5  
Candidate Starts for Conley\_72:  
(Start: 4 @50222 has 2 MA's), (Start: 5 @50234 has 56 MA's), (27, 50387), (33, 50420), (38, 50456),  
(50, 50534), (60, 50618),

Gene: CricKo\_84 Start: 49056, Stop: 49514, Start Num: 10  
Candidate Starts for CricKo\_84:  
(Start: 10 @49056 has 3 MA's), (21, 49128), (36, 49224), (49, 49305), (50, 49308), (66, 49407),

Gene: Crocheter\_71 Start: 49802, Stop: 50230, Start Num: 5  
Candidate Starts for Crocheter\_71:  
(Start: 5 @49802 has 56 MA's), (18, 49895), (40, 50066), (56, 50189), (60, 50216),

Gene: Dancer\_74 Start: 49664, Stop: 50062, Start Num: 5  
Candidate Starts for Dancer\_74:  
(Start: 4 @49652 has 2 MA's), (Start: 5 @49664 has 56 MA's), (15, 49712), (24, 49787), (27, 49817),  
(33, 49850), (38, 49886), (54, 50015), (56, 50021), (60, 50048),

Gene: Demure\_69 Start: 49339, Stop: 49764, Start Num: 5  
Candidate Starts for Demure\_69:  
(Start: 5 @49339 has 56 MA's), (18, 49429), (34, 49564), (38, 49588), (40, 49600), (45, 49627), (56,  
49723), (60, 49750),

Gene: Dialga\_72 Start: 49921, Stop: 50346, Start Num: 5  
Candidate Starts for Dialga\_72:  
(Start: 5 @49921 has 56 MA's), (18, 50011), (34, 50146), (38, 50170), (40, 50182), (45, 50209), (60,  
50332),

Gene: DrGrey\_68 Start: 45889, Stop: 46368, Start Num: 13  
Candidate Starts for DrGrey\_68:  
(Start: 11 @45883 has 5 MA's), (Start: 13 @45889 has 20 MA's), (21, 45949), (28, 46003), (32, 46030),  
(37, 46054), (41, 46072), (49, 46138), (55, 46207), (62, 46243), (65, 46255), (69, 46267),

Gene: Duffington\_70 Start: 49872, Stop: 50300, Start Num: 5  
Candidate Starts for Duffington\_70:  
(Start: 5 @49872 has 56 MA's), (18, 49965), (34, 50100), (40, 50136), (56, 50259),

Gene: Eddiemania\_73 Start: 50547, Stop: 50972, Start Num: 5  
Candidate Starts for Eddiemania\_73:  
(Start: 5 @50547 has 56 MA's), (7, 50580), (18, 50637), (34, 50772), (38, 50796), (40, 50808), (45,  
50835), (60, 50958),

Gene: EndAve\_72 Start: 50094, Stop: 50522, Start Num: 5  
Candidate Starts for EndAve\_72:  
(Start: 5 @50094 has 56 MA's), (18, 50187), (40, 50358), (52, 50463), (56, 50481),

Gene: Esketit\_70 Start: 45030, Stop: 45509, Start Num: 13  
Candidate Starts for Esketit\_70:  
(Start: 11 @45024 has 5 MA's), (Start: 13 @45030 has 20 MA's), (21, 45090), (28, 45144), (32, 45171),  
(41, 45213), (49, 45279), (55, 45348), (62, 45384), (65, 45396), (69, 45408),

Gene: Espio\_70 Start: 46284, Stop: 46763, Start Num: 13  
Candidate Starts for Espio\_70:

(Start: 11 @46278 has 5 MA's), (Start: 13 @46284 has 20 MA's), (21, 46344), (28, 46398), (32, 46425), (41, 46467), (49, 46533), (55, 46602), (62, 46638), (65, 46650), (69, 46662),

Gene: Fazel\_77 Start: 50881, Stop: 51300, Start Num: 5

Candidate Starts for Fazel\_77:

(Start: 5 @50881 has 56 MA's), (18, 50977), (20, 51010), (29, 51073), (52, 51253), (56, 51271),

Gene: FidgetOrca\_76 Start: 46480, Stop: 46959, Start Num: 13

Candidate Starts for FidgetOrca\_76:

(Start: 11 @46474 has 5 MA's), (Start: 13 @46480 has 20 MA's), (21, 46540), (28, 46594), (32, 46621), (41, 46663), (49, 46729), (55, 46798), (62, 46834), (65, 46846), (69, 46858),

Gene: Figliar\_69 Start: 49935, Stop: 50363, Start Num: 5

Candidate Starts for Figliar\_69:

(Start: 5 @49935 has 56 MA's), (18, 50028), (34, 50163), (40, 50199), (56, 50322), (60, 50349),

Gene: Football\_76 Start: 49555, Stop: 49953, Start Num: 5

Candidate Starts for Football\_76:

(Start: 4 @49543 has 2 MA's), (Start: 5 @49555 has 56 MA's), (15, 49603), (24, 49678), (27, 49708), (33, 49741), (38, 49777), (56, 49912), (60, 49939),

Gene: FortCran\_74 Start: 49927, Stop: 50325, Start Num: 5

Candidate Starts for FortCran\_74:

(Start: 4 @49915 has 2 MA's), (Start: 5 @49927 has 56 MA's), (15, 49975), (24, 50050), (27, 50080), (33, 50113), (38, 50149), (54, 50278), (56, 50284), (60, 50311),

Gene: FrodoSwaggins\_70 Start: 46283, Stop: 46762, Start Num: 13

Candidate Starts for FrodoSwaggins\_70:

(Start: 11 @46277 has 5 MA's), (Start: 13 @46283 has 20 MA's), (21, 46343), (28, 46397), (32, 46424), (37, 46448), (41, 46466), (49, 46532), (55, 46601), (62, 46637), (65, 46649), (69, 46661),

Gene: Gill\_72 Start: 49596, Stop: 50006, Start Num: 4

Candidate Starts for Gill\_72:

(Start: 4 @49596 has 2 MA's), (Start: 5 @49608 has 56 MA's), (15, 49656), (24, 49731), (27, 49761), (33, 49794), (38, 49830), (56, 49965), (60, 49992),

Gene: GirlPower\_67 Start: 45827, Stop: 46312, Start Num: 11

Candidate Starts for GirlPower\_67:

(Start: 11 @45827 has 5 MA's), (Start: 13 @45833 has 20 MA's), (21, 45893), (28, 45947), (32, 45974), (37, 45998), (41, 46016), (46, 46052), (47, 46055), (49, 46082), (55, 46151), (62, 46187), (65, 46199), (69, 46211),

Gene: Glintora\_72 Start: 50527, Stop: 50955, Start Num: 5

Candidate Starts for Glintora\_72:

(Start: 5 @50527 has 56 MA's), (18, 50620), (40, 50791), (56, 50914),

Gene: Gravy\_71 Start: 49286, Stop: 49684, Start Num: 5

Candidate Starts for Gravy\_71:

(Start: 4 @49274 has 2 MA's), (Start: 5 @49286 has 56 MA's), (15, 49334), (24, 49409), (27, 49439), (33, 49472), (38, 49508), (56, 49643), (60, 49670),

Gene: Gusicorn\_72 Start: 49709, Stop: 50137, Start Num: 5

Candidate Starts for Gusicorn\_72:

(Start: 5 @49709 has 56 MA's), (18, 49802), (40, 49973), (56, 50096), (60, 50123),

Gene: HazuAndZazu\_70 Start: 45945, Stop: 46430, Start Num: 11

Candidate Starts for HazuAndZazu\_70:

(Start: 11 @45945 has 5 MA's), (Start: 13 @45951 has 20 MA's), (21, 46011), (28, 46065), (32, 46092), (49, 46200), (55, 46269), (62, 46305), (65, 46317), (69, 46329),

Gene: Hortihabitatio\_76 Start: 51089, Stop: 51517, Start Num: 5

Candidate Starts for Hortihabitatio\_76:

(Start: 5 @51089 has 56 MA's), (18, 51182), (19, 51206), (20, 51215), (29, 51278), (36, 51335), (56, 51476),

Gene: Hoshi\_75 Start: 46093, Stop: 46572, Start Num: 13

Candidate Starts for Hoshi\_75:

(Start: 11 @46087 has 5 MA's), (Start: 13 @46093 has 20 MA's), (21, 46153), (28, 46207), (32, 46234), (41, 46276), (49, 46342), (55, 46411), (62, 46447), (65, 46459), (69, 46471),

Gene: Hydrus\_73 Start: 50523, Stop: 50948, Start Num: 5

Candidate Starts for Hydrus\_73:

(Start: 5 @50523 has 56 MA's), (18, 50613), (34, 50748), (38, 50772), (40, 50784), (45, 50811), (60, 50934),

Gene: IceWarrior\_74 Start: 45781, Stop: 46260, Start Num: 13

Candidate Starts for IceWarrior\_74:

(Start: 11 @45775 has 5 MA's), (Start: 13 @45781 has 20 MA's), (21, 45841), (28, 45895), (32, 45922), (41, 45964), (49, 46030), (55, 46099), (62, 46135), (65, 46147), (69, 46159),

Gene: Indigenous\_76 Start: 46484, Stop: 46963, Start Num: 13

Candidate Starts for Indigenous\_76:

(Start: 11 @46478 has 5 MA's), (Start: 13 @46484 has 20 MA's), (21, 46544), (28, 46598), (32, 46625), (41, 46667), (49, 46733), (55, 46802), (62, 46838), (65, 46850), (69, 46862),

Gene: Jaylociraptor\_74 Start: 46065, Stop: 46544, Start Num: 13

Candidate Starts for Jaylociraptor\_74:

(Start: 11 @46059 has 5 MA's), (Start: 13 @46065 has 20 MA's), (21, 46125), (28, 46179), (32, 46206), (41, 46248), (49, 46314), (55, 46383), (62, 46419), (65, 46431), (69, 46443),

Gene: Jodelie19\_69 Start: 51102, Stop: 51530, Start Num: 5

Candidate Starts for Jodelie19\_69:

(Start: 5 @51102 has 56 MA's), (18, 51195), (34, 51330), (40, 51366), (56, 51489), (60, 51516),

Gene: JulesRay\_74 Start: 50276, Stop: 50674, Start Num: 5

Candidate Starts for JulesRay\_74:

(Start: 4 @50264 has 2 MA's), (Start: 5 @50276 has 56 MA's), (15, 50324), (24, 50399), (27, 50429), (33, 50462), (38, 50498), (56, 50633), (60, 50660),

Gene: Kardashian\_72 Start: 46780, Stop: 47208, Start Num: 9

Candidate Starts for Kardashian\_72:

(Start: 9 @46780 has 1 MA's), (50, 47014), (66, 47113), (72, 47158),

Gene: Kardashian\_75 Start: 48276, Stop: 48716, Start Num: 11

Candidate Starts for Kardashian\_75:

(Start: 11 @48276 has 5 MA's), (23, 48357), (25, 48366), (39, 48441), (45, 48477), (59, 48588), (61, 48594), (64, 48603), (70, 48630),

Gene: Kenosha\_70 Start: 49949, Stop: 50374, Start Num: 5

Candidate Starts for Kenosha\_70:

(Start: 5 @49949 has 56 MA's), (7, 49982), (18, 50039), (34, 50174), (38, 50198), (40, 50210), (45, 50237), (60, 50360),

Gene: Kerry\_71 Start: 49349, Stop: 49747, Start Num: 5

Candidate Starts for Kerry\_71:

(Start: 4 @49337 has 2 MA's), (Start: 5 @49349 has 56 MA's), (15, 49397), (24, 49472), (27, 49502), (33, 49535), (38, 49571), (56, 49706), (60, 49733),

Gene: Luthien\_72 Start: 50089, Stop: 50517, Start Num: 5

Candidate Starts for Luthien\_72:

(Start: 5 @50089 has 56 MA's), (18, 50182), (40, 50353), (56, 50476),

Gene: Madamoto\_73 Start: 45668, Stop: 46138, Start Num: 13

Candidate Starts for Madamoto\_73:

(Start: 13 @45668 has 20 MA's), (21, 45728), (57, 45995), (62, 46016), (69, 46040),

Gene: Madvan\_71 Start: 49411, Stop: 49836, Start Num: 5

Candidate Starts for Madvan\_71:

(Start: 5 @49411 has 56 MA's), (7, 49444), (18, 49501), (34, 49636), (38, 49660), (40, 49672), (45, 49699), (60, 49822),

Gene: Magel\_73 Start: 49511, Stop: 49921, Start Num: 4

Candidate Starts for Magel\_73:

(Start: 4 @49511 has 2 MA's), (Start: 5 @49523 has 56 MA's), (15, 49571), (24, 49646), (27, 49676), (33, 49709), (38, 49745), (56, 49880), (60, 49907),

Gene: MajinBuu\_71 Start: 50317, Stop: 50745, Start Num: 5

Candidate Starts for MajinBuu\_71:

(Start: 5 @50317 has 56 MA's), (18, 50410), (34, 50545), (40, 50581), (56, 50704), (60, 50731),

Gene: Maya\_74 Start: 46079, Stop: 46558, Start Num: 13

Candidate Starts for Maya\_74:

(Start: 11 @46073 has 5 MA's), (Start: 13 @46079 has 20 MA's), (21, 46139), (28, 46193), (32, 46220), (41, 46262), (49, 46328), (55, 46397), (62, 46433), (65, 46445), (69, 46457),

Gene: Meibysrarus\_72 Start: 45457, Stop: 45942, Start Num: 11

Candidate Starts for Meibysrarus\_72:

(Start: 11 @45457 has 5 MA's), (Start: 13 @45463 has 20 MA's), (21, 45523), (28, 45577), (32, 45604), (41, 45646), (49, 45712), (55, 45781), (62, 45817), (65, 45829), (69, 45841),

Gene: Mossy\_74 Start: 51400, Stop: 51828, Start Num: 5

Candidate Starts for Mossy\_74:

(Start: 5 @51400 has 56 MA's), (18, 51493), (19, 51517), (20, 51526), (36, 51646), (60, 51814),

Gene: Mysticmoon\_74 Start: 51102, Stop: 51518, Start Num: 5

Candidate Starts for Mysticmoon\_74:

(Start: 5 @51102 has 56 MA's), (18, 51195), (19, 51219), (20, 51228), (52, 51471),

Gene: Nadmeg\_72 Start: 50640, Stop: 51065, Start Num: 5

Candidate Starts for Nadmeg\_72:

(Start: 5 @50640 has 56 MA's), (7, 50673), (18, 50730), (34, 50865), (38, 50889), (40, 50901), (45, 50928), (60, 51051),

Gene: Namo\_76 Start: 46443, Stop: 46922, Start Num: 13

Candidate Starts for Namo\_76:

(Start: 11 @46437 has 5 MA's), (Start: 13 @46443 has 20 MA's), (21, 46503), (28, 46557), (32, 46584), (41, 46626), (49, 46692), (55, 46761), (62, 46797), (65, 46809), (69, 46821),

Gene: Nithya\_71 Start: 49795, Stop: 50223, Start Num: 5

Candidate Starts for Nithya\_71:

(Start: 5 @49795 has 56 MA's), (18, 49888), (40, 50059), (56, 50182),

Gene: NoPickles\_73 Start: 49443, Stop: 49841, Start Num: 5

Candidate Starts for NoPickles\_73:

(Start: 4 @49431 has 2 MA's), (Start: 5 @49443 has 56 MA's), (15, 49491), (24, 49566), (27, 49596), (33, 49629), (38, 49665), (56, 49800), (60, 49827),

Gene: Odesza\_71 Start: 49467, Stop: 49865, Start Num: 5

Candidate Starts for Odesza\_71:

(Start: 4 @49455 has 2 MA's), (Start: 5 @49467 has 56 MA's), (15, 49515), (24, 49590), (27, 49620), (33, 49653), (38, 49689), (56, 49824),

Gene: OhMyWard\_70 Start: 51159, Stop: 51587, Start Num: 5

Candidate Starts for OhMyWard\_70:

(Start: 5 @51159 has 56 MA's), (18, 51252), (19, 51276), (20, 51285), (36, 51405), (60, 51573),

Gene: OlgasClover\_71 Start: 50444, Stop: 50872, Start Num: 5

Candidate Starts for OlgasClover\_71:

(Start: 5 @50444 has 56 MA's), (18, 50537), (34, 50672), (40, 50708),

Gene: OlympicHelado\_76 Start: 46555, Stop: 47034, Start Num: 13

Candidate Starts for OlympicHelado\_76:

(Start: 11 @46549 has 5 MA's), (Start: 13 @46555 has 20 MA's), (21, 46615), (28, 46669), (32, 46696), (41, 46738), (49, 46804), (55, 46873), (62, 46909), (65, 46921), (69, 46933),

Gene: Perkunas\_75 Start: 49660, Stop: 50058, Start Num: 5

Candidate Starts for Perkunas\_75:

(Start: 4 @49648 has 2 MA's), (Start: 5 @49660 has 56 MA's), (27, 49813), (33, 49846), (38, 49882), (54, 50011), (60, 50044),

Gene: PestoPenguin\_76 Start: 49709, Stop: 50137, Start Num: 5

Candidate Starts for PestoPenguin\_76:

(Start: 5 @49709 has 56 MA's), (18, 49802), (40, 49973), (56, 50096), (60, 50123),

Gene: Petito\_76 Start: 51180, Stop: 51578, Start Num: 5

Candidate Starts for Petito\_76:

(Start: 4 @51168 has 2 MA's), (Start: 5 @51180 has 56 MA's), (27, 51333), (33, 51366), (38, 51402), (50, 51480), (54, 51531), (60, 51564),

Gene: Phepper\_72 Start: 49653, Stop: 50078, Start Num: 5

Candidate Starts for Phepper\_72:

(Start: 5 @49653 has 56 MA's), (18, 49743), (34, 49878), (38, 49902), (40, 49914), (45, 49941), (60, 50064),

Gene: Pherobrine\_74 Start: 51157, Stop: 51573, Start Num: 5

Candidate Starts for Pherobrine\_74:

(Start: 5 @51157 has 56 MA's), (18, 51250), (19, 51274), (20, 51283), (36, 51403),

Gene: Popy\_70 Start: 46283, Stop: 46762, Start Num: 13

Candidate Starts for Popy\_70:

(Start: 11 @46277 has 5 MA's), (Start: 13 @46283 has 20 MA's), (21, 46343), (28, 46397), (32, 46424), (37, 46448), (41, 46466), (49, 46532), (55, 46601), (62, 46637), (65, 46649), (69, 46661),

Gene: Rainydai\_81 Start: 49056, Stop: 49514, Start Num: 10

Candidate Starts for Rainydai\_81:

(Start: 10 @49056 has 3 MA's), (21, 49128), (36, 49224), (49, 49305), (50, 49308), (66, 49407),

Gene: Regigigas\_84 Start: 48668, Stop: 49126, Start Num: 10

Candidate Starts for Regigigas\_84:

(Start: 10 @48668 has 3 MA's), (21, 48740), (36, 48836), (49, 48917), (50, 48920), (66, 49019),

Gene: Rickmore\_68 Start: 48311, Stop: 48739, Start Num: 5

Candidate Starts for Rickmore\_68:

(Start: 5 @48311 has 56 MA's), (18, 48404), (40, 48575), (56, 48698),

Gene: Rima\_75 Start: 46443, Stop: 46922, Start Num: 13

Candidate Starts for Rima\_75:

(Start: 11 @46437 has 5 MA's), (Start: 13 @46443 has 20 MA's), (21, 46503), (28, 46557), (32, 46584), (41, 46626), (49, 46692), (55, 46761), (62, 46797), (65, 46809), (69, 46821),

Gene: Roney\_72 Start: 49633, Stop: 50031, Start Num: 5

Candidate Starts for Roney\_72:

(Start: 4 @49621 has 2 MA's), (Start: 5 @49633 has 56 MA's), (15, 49681), (24, 49756), (27, 49786), (33, 49819), (38, 49855), (56, 49990),

Gene: RosaAsantewaa\_46 Start: 35392, Stop: 35820, Start Num: 12

Candidate Starts for RosaAsantewaa\_46:

(Start: 12 @35392 has 1 MA's), (21, 35452), (25, 35476), (44, 35578), (48, 35605), (51, 35653), (64, 35713), (66, 35722), (75, 35803), (76, 35809),

Gene: Runhaar\_71 Start: 49462, Stop: 49887, Start Num: 5

Candidate Starts for Runhaar\_71:

(Start: 5 @49462 has 56 MA's), (7, 49495), (18, 49552), (34, 49687), (38, 49711), (40, 49723), (45, 49750), (60, 49873),

Gene: Schwartz33\_73 Start: 49999, Stop: 50442, Start Num: 5

Candidate Starts for Schwartz33\_73:

(Start: 5 @49999 has 56 MA's), (Start: 11 @50059 has 5 MA's), (36, 50239), (56, 50380), (66, 50425),

Gene: Secretariat\_72 Start: 49337, Stop: 49789, Start Num: 5

Candidate Starts for Secretariat\_72:

(Start: 5 @49337 has 56 MA's), (6, 49361), (36, 49583), (66, 49772), (67, 49775),

Gene: ShaggyRogers\_71 Start: 49443, Stop: 49871, Start Num: 5

Candidate Starts for ShaggyRogers\_71:

(Start: 5 @49443 has 56 MA's), (18, 49536), (40, 49707), (56, 49830), (60, 49857),

Gene: Soshi\_71 Start: 46148, Stop: 46627, Start Num: 13

Candidate Starts for Soshi\_71:

(Start: 11 @46142 has 5 MA's), (Start: 13 @46148 has 20 MA's), (21, 46208), (28, 46262), (32, 46289), (41, 46331), (49, 46397), (55, 46466), (62, 46502), (65, 46514), (69, 46526),

Gene: Spectropatronm\_73 Start: 46072, Stop: 46551, Start Num: 13

Candidate Starts for Spectropatronm\_73:

(Start: 11 @46066 has 5 MA's), (Start: 13 @46072 has 20 MA's), (21, 46132), (28, 46186), (32, 46213), (41, 46255), (49, 46321), (55, 46390), (62, 46426), (65, 46438), (69, 46450),

Gene: SweetCrkHerbs\_76 Start: 49672, Stop: 50070, Start Num: 5

Candidate Starts for SweetCrkHerbs\_76:

(Start: 4 @49660 has 2 MA's), (Start: 5 @49672 has 56 MA's), (27, 49825), (33, 49858), (38, 49894), (60, 50056),

Gene: TaidaOne\_75 Start: 46968, Stop: 47447, Start Num: 13

Candidate Starts for TaidaOne\_75:

(Start: 11 @46962 has 5 MA's), (Start: 13 @46968 has 20 MA's), (21, 47028), (28, 47082), (32, 47109), (41, 47151), (49, 47217), (55, 47286), (62, 47322), (65, 47334), (69, 47346),

Gene: Tairn4Wing\_76 Start: 49765, Stop: 50163, Start Num: 5

Candidate Starts for Tairn4Wing\_76:

(Start: 4 @49753 has 2 MA's), (Start: 5 @49765 has 56 MA's), (15, 49813), (24, 49888), (27, 49918), (33, 49951), (38, 49987), (56, 50122), (60, 50149),

Gene: Talon44\_76 Start: 50395, Stop: 50793, Start Num: 5

Candidate Starts for Talon44\_76:

(Start: 4 @50383 has 2 MA's), (Start: 5 @50395 has 56 MA's), (15, 50443), (24, 50518), (27, 50548), (33, 50581), (38, 50617), (56, 50752), (60, 50779),

Gene: Tanis\_72 Start: 49453, Stop: 49851, Start Num: 5

Candidate Starts for Tanis\_72:

(Start: 4 @49441 has 2 MA's), (Start: 5 @49453 has 56 MA's), (15, 49501), (24, 49576), (27, 49606), (33, 49639), (38, 49675), (56, 49810), (60, 49837),

Gene: TenaciousP\_71 Start: 51064, Stop: 51492, Start Num: 5

Candidate Starts for TenaciousP\_71:

(Start: 5 @51064 has 56 MA's), (18, 51157), (34, 51292), (40, 51328), (56, 51451), (60, 51478),

Gene: Thiqqums\_84 Start: 49056, Stop: 49514, Start Num: 10

Candidate Starts for Thiqqums\_84:

(Start: 10 @49056 has 3 MA's), (21, 49128), (36, 49224), (49, 49305), (50, 49308), (66, 49407),

Gene: TieDye\_70 Start: 45387, Stop: 45872, Start Num: 11

Candidate Starts for TieDye\_70:

(Start: 11 @45387 has 5 MA's), (Start: 13 @45393 has 20 MA's), (21, 45453), (28, 45507), (32, 45534), (41, 45576), (49, 45642), (55, 45711), (62, 45747), (65, 45759), (69, 45771),

Gene: Tonaltzin\_74 Start: 49634, Stop: 50062, Start Num: 5

Candidate Starts for Tonaltzin\_74:

(Start: 5 @49634 has 56 MA's), (18, 49727), (34, 49862), (40, 49898), (56, 50021), (60, 50048),

Gene: TonyStarch\_73 Start: 45835, Stop: 46314, Start Num: 13

Candidate Starts for TonyStarch\_73:

(Start: 11 @45829 has 5 MA's), (Start: 13 @45835 has 20 MA's), (21, 45895), (28, 45949), (32, 45976), (41, 46018), (49, 46084), (55, 46153), (62, 46189), (65, 46201), (69, 46213),

Gene: Trufflozitus\_75 Start: 50280, Stop: 50678, Start Num: 5

Candidate Starts for Trufflozitus\_75:

(Start: 4 @50268 has 2 MA's), (Start: 5 @50280 has 56 MA's), (15, 50328), (17, 50331), (24, 50403), (27, 50433), (33, 50466), (38, 50502), (56, 50637), (60, 50664),

Gene: Untouchable\_73 Start: 50650, Stop: 51075, Start Num: 5

Candidate Starts for Untouchable\_73:

(Start: 5 @50650 has 56 MA's), (18, 50740), (34, 50875), (38, 50899), (40, 50911), (45, 50938), (60, 51061),

Gene: Vardy\_70 Start: 49352, Stop: 49777, Start Num: 5

Candidate Starts for Vardy\_70:

(Start: 5 @49352 has 56 MA's), (7, 49385), (18, 49442), (34, 49577), (38, 49601), (40, 49613), (60, 49763),

Gene: Wigberry\_76 Start: 46367, Stop: 46795, Start Num: 14

Candidate Starts for Wigberry\_76:

(3, 46268), (8, 46331), (Start: 14 @46367 has 3 MA's), (42, 46535), (47, 46571), (63, 46688), (72, 46745),

Gene: Wigberry\_79 Start: 47806, Stop: 48252, Start Num: 16

Candidate Starts for Wigberry\_79:

(1, 47593), (2, 47662), (Start: 16 @47806 has 2 MA's), (21, 47860), (23, 47875), (26, 47908), (43, 47992), (63, 48133), (65, 48142), (71, 48184), (73, 48208),

Gene: Zeph\_73 Start: 50490, Stop: 50915, Start Num: 5

Candidate Starts for Zeph\_73:

(Start: 5 @50490 has 56 MA's), (18, 50580), (34, 50715), (38, 50739), (40, 50751), (45, 50778), (60, 50901),