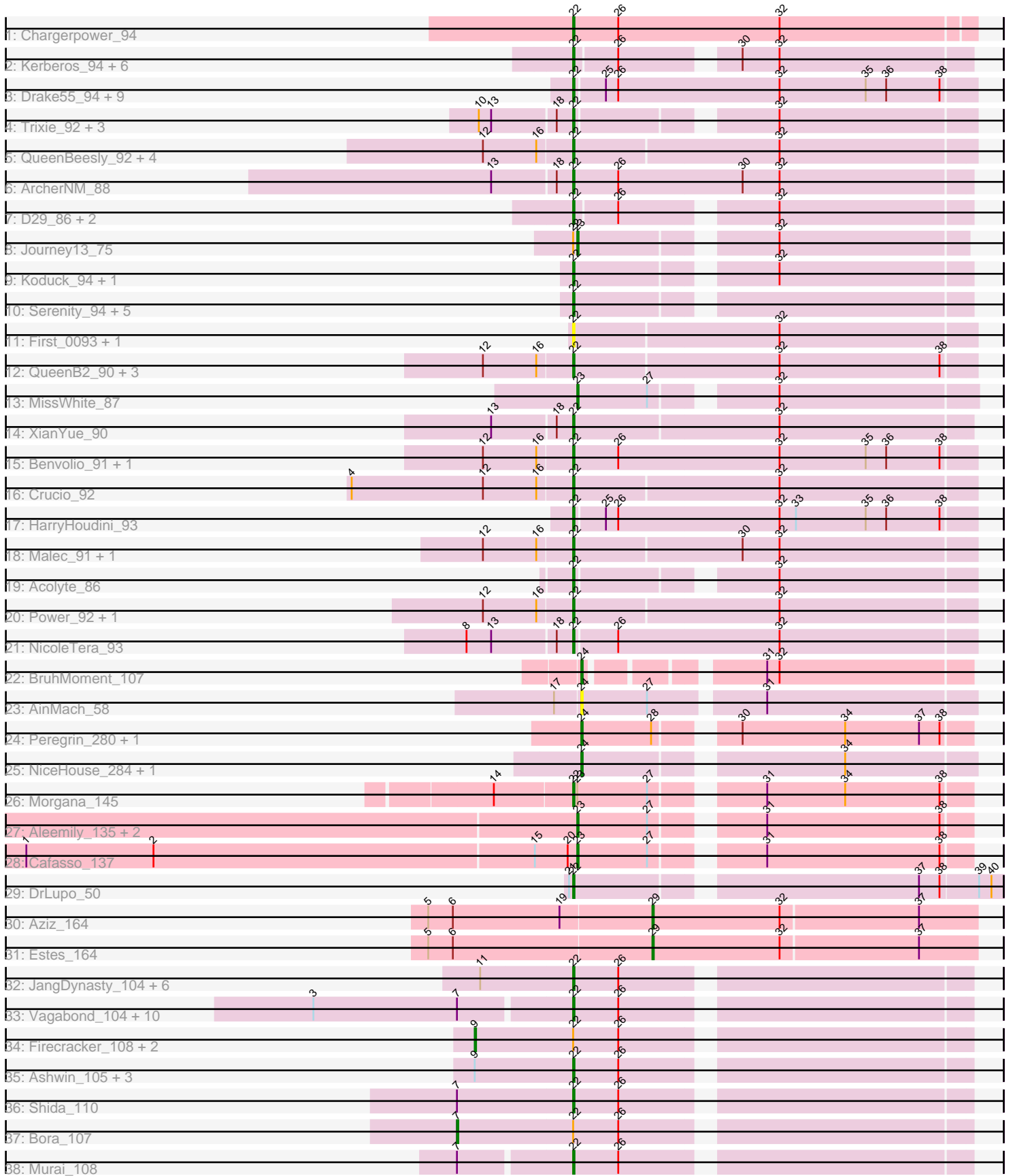


# Pham 196432



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 196432 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196432 has 100 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_94
- Track 2 : Kerberos\_94, Tomathan\_94, StarStuff\_94, Duplo\_95, Travvers\_94, Pomar16\_94, DBQu4n\_94
- Track 3 : Drake55\_94, Centaur\_94, MiculUcigas\_94, NaSiaTalie\_95, Baehexic\_93, Flare16\_94, Equemioh13\_94, WideWale\_95, Updawg\_95, Piro94\_92
- Track 4 : Trixie\_92, WeiHuaDA\_94, Kalpine\_95, Colin\_91
- Track 5 : QueenBeesly\_92, SnapTap\_92, Georgie2\_94, FiringLine\_92, SemperFi\_92
- Track 6 : ArcherNM\_88
- Track 7 : D29\_86, D32\_82, Naji\_83
- Track 8 : Journey13\_75
- Track 9 : Koduck\_94, L5\_86
- Track 10 : Serenity\_94, Quokka\_96, MajorMajor\_91, Bradman\_97, TipsytheTRex\_91, Jsquared\_98
- Track 11 : First\_0093, 20ES\_94
- Track 12 : QueenB2\_90, Anselm\_94, Retro23\_92, DudeLittle\_90
- Track 13 : MissWhite\_87
- Track 14 : XianYue\_90
- Track 15 : Benvolio\_91, Echild\_96
- Track 16 : Crucio\_92
- Track 17 : HarryHoudini\_93
- Track 18 : Malec\_91, Larenn\_91
- Track 19 : Acolyte\_86
- Track 20 : Power\_92, SweetiePie\_92
- Track 21 : NicoleTera\_93
- Track 22 : BruhMoment\_107
- Track 23 : AinMach\_58
- Track 24 : Peregrin\_280, Grayson\_283
- Track 25 : NiceHouse\_284, NiceHouse\_3
- Track 26 : Morgana\_145
- Track 27 : Aleemily\_135, ModicumRichard\_137, ObLaDi\_136
- Track 28 : Cafasso\_137
- Track 29 : DrLupo\_50
- Track 30 : Aziz\_164
- Track 31 : Estes\_164
- Track 32 : JangDynasty\_104, TelAviv\_105, Familton\_109, Idergollasper\_110, Ryadel\_112, Blessica\_106, SchoolBus\_107

- Track 33 : Vagabond\_104, Winget\_108, MadKillah\_111, Mori\_108, Schuy\_108, Vorrps\_108, Catdawg\_109, Alkhayr\_104, FoulBall\_107, Krili\_110, NiebruSaylor\_108
- Track 34 : Firecracker\_108, Wildflower\_105, Smooch\_107
- Track 35 : Ashwin\_105, YungJamal\_106, Corndog\_105, Zakhe101\_103
- Track 36 : Shida\_110
- Track 37 : Bora\_107
- Track 38 : Murai\_108

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

The start number called the most often in the published annotations is 22, it was called in 71 of the 87 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 20ES\_94, Acolyte\_86, Alkhayr\_104, Anselm\_94, ArcherNM\_88, Ashwin\_105, Baehexic\_93, Benvolio\_91, Blessica\_106, Bradman\_97, Catdawg\_109, Centaur\_94, Chargerpower\_94, Colin\_91, Corndog\_105, Crucio\_92, D29\_86, D32\_82, DBQu4n\_94, DrLupo\_50, Drake55\_94, DudeLittle\_90, Duplo\_95, Echild\_96, Equemioh13\_94, Familton\_109, FiringLine\_92, First\_0093, Flare16\_94, FoulBall\_107, Georgie2\_94, HarryHoudini\_93, Idergollasper\_110, JangDynasty\_104, Jsquared\_98, Kalpine\_95, Kerberos\_94, Koduck\_94, Krili\_110, L5\_86, Larenn\_91, MadKillah\_111, MajorMajor\_91, Malec\_91, MiculUcigas\_94, Morgana\_145, Mori\_108, Murai\_108, NaSiaTalie\_95, Naji\_83, NicoleTera\_93, NiebruSaylor\_108, Piro94\_92, Pomar16\_94, Power\_92, QueenB2\_90, QueenBeesly\_92, Quokka\_96, Retro23\_92, Ryadel\_112, SchoolBus\_107, Schuy\_108, SemperFi\_92, Serenity\_94, Shida\_110, SnapTap\_92, StarStuff\_94, SweetiePie\_92, TelAviv\_105, TipsytheTRex\_91, Tomathan\_94, Travvers\_94, Trixie\_92, Updawg\_95, Vagabond\_104, Vorrps\_108, WeiHuaDA\_94, WideWale\_95, Winget\_108, XianYue\_90, YungJamal\_106, Zakhe101\_103,

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

- Bora\_107, Firecracker\_108, Journey13\_75, Smooch\_107, Wildflower\_105,

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

- AinMach\_58, Aleemily\_135, Aziz\_164, BruhMoment\_107, Cafasso\_137, Estes\_164, Grayson\_283, MissWhite\_87, ModicumRichard\_137, NiceHouse\_284, NiceHouse\_3, ObLaDi\_136, Peregrin\_280,

**Summary by start number:**

Start 7:

- Found in 14 of 100 ( 14.0% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 7.1% of time when present
- Phage (with cluster) where this start called: Bora\_107 (O),

Start 9:

- Found in 7 of 100 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 3 of 87
- Called 42.9% of time when present

- Phage (with cluster) where this start called: Firecracker\_108 (O), Smooch\_107 (O), Wildflower\_105 (O),

#### Start 22:

- Found in 87 of 100 ( 87.0% ) of genes in pham
- Manual Annotations of this start: 71 of 87
- Called 94.3% of time when present
- Phage (with cluster) where this start called: 20ES\_94 (A2), Acolyte\_86 (A2), Alkhayr\_104 (O), Anselm\_94 (A2), ArcherNM\_88 (A2), Ashwin\_105 (O), Baehexic\_93 (A2), Benvolio\_91 (A2), Blessica\_106 (O), Bradman\_97 (A2), Catdawg\_109 (O), Centaur\_94 (A2), Chargerpower\_94 (A), Colin\_91 (A2), Corndog\_105 (O), Crucio\_92 (A2), D29\_86 (A2), D32\_82 (A2), DBQu4n\_94 (A2), DrLupo\_50 (H2), Drake55\_94 (A2), DudeLittle\_90 (A2), Duplo\_95 (A2), Echild\_96 (A2), Equemioh13\_94 (A2), Familton\_109 (O), FiringLine\_92 (A2), First\_0093 (A2), Flare16\_94 (A2), FoulBall\_107 (O), Georgie2\_94 (A2), HarryHoudini\_93 (A2), Idergollasper\_110 (O), JangDynasty\_104 (O), Jsquared\_98 (A2), Kalpine\_95 (A2), Kerberos\_94 (A2), Koduck\_94 (A2), Krili\_110 (O), L5\_86 (A2), Larenn\_91 (A2), MadKillah\_111 (O), MajorMajor\_91 (A2), Malec\_91 (A2), MiculUcigas\_94 (A2), Morgana\_145 (DZ), Mori\_108 (O), Murai\_108 (O), NaSiaTalie\_95 (A2), Naji\_83 (A2), NicoleTera\_93 (A2), NiebruSaylor\_108 (O), Piro94\_92 (A2), Pomar16\_94 (A2), Power\_92 (A2), QueenB2\_90 (A2), QueenBeesly\_92 (A2), Quokka\_96 (A2), Retro23\_92 (A2), Ryadel\_112 (O), SchoolBus\_107 (O), Schuy\_108 (O), SemperFi\_92 (A2), Serenity\_94 (A2), Shida\_110 (O), SnapTap\_92 (A2), StarStuff\_94 (A2), SweetiePie\_92 (A2), TelAviv\_105 (O), TipsytheTRex\_91 (A2), Tomathan\_94 (A2), Travvers\_94 (A2), Trixie\_92 (A2), Updawg\_95 (A2), Vagabond\_104 (O), Vorrrps\_108 (O), WeiHuaDA\_94 (A2), WideWale\_95 (A2), Winget\_108 (O), XianYue\_90 (A2), YungJamal\_106 (O), Zakhe101\_103 (O),

#### Start 23:

- Found in 7 of 100 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 5 of 87
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Aleemily\_135 (DZ), Cafasso\_137 (DZ), Journey13\_75 (A2), MissWhite\_87 (A2), ModicumRichard\_137 (DZ), ObLaDi\_136 (DZ),

#### Start 24:

- Found in 6 of 100 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 5 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AinMach\_58 (AZ), BruhMoment\_107 (AP3), Grayson\_283 (CB), NiceHouse\_284 (CE), NiceHouse\_3 (CE), Peregrin\_280 (CB),

#### Start 29:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aziz\_164 (M2), Estes\_164 (M2),

### Summary by clusters:

There are 10 clusters represented in this pham: A, AP3, H2, CB, O, A2, DZ, CE, M2, AZ,

Info for manual annotations of cluster A:

- Start number 22 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A2:

- Start number 22 was manually annotated 46 times for cluster A2.
- Start number 23 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster AP3:

- Start number 24 was manually annotated 1 time for cluster AP3.

Info for manual annotations of cluster CB:

- Start number 24 was manually annotated 2 times for cluster CB.

Info for manual annotations of cluster CE:

- Start number 24 was manually annotated 2 times for cluster CE.

Info for manual annotations of cluster DZ:

- Start number 22 was manually annotated 1 time for cluster DZ.
- Start number 23 was manually annotated 3 times for cluster DZ.

Info for manual annotations of cluster H2:

- Start number 22 was manually annotated 1 time for cluster H2.

Info for manual annotations of cluster M2:

- Start number 29 was manually annotated 2 times for cluster M2.

Info for manual annotations of cluster O:

- Start number 7 was manually annotated 1 time for cluster O.
- Start number 9 was manually annotated 3 times for cluster O.
- Start number 22 was manually annotated 22 times for cluster O.

### ***Gene Information:***

Gene: 20ES\_94 Start: 50719, Stop: 50432, Start Num: 22

Candidate Starts for 20ES\_94:

(Start: 22 @50719 has 71 MA's), (32, 50572),

Gene: Acolyte\_86 Start: 49770, Stop: 49504, Start Num: 22

Candidate Starts for Acolyte\_86:

(Start: 22 @49770 has 71 MA's), (32, 49644),

Gene: AinMach\_58 Start: 38731, Stop: 39003, Start Num: 24

Candidate Starts for AinMach\_58:

(17, 38713), (Start: 24 @38731 has 5 MA's), (27, 38779), (31, 38854),

Gene: Aleemily\_135 Start: 73689, Stop: 73426, Start Num: 23

Candidate Starts for Aleemily\_135:

(Start: 23 @73689 has 5 MA's), (27, 73638), (31, 73572), (38, 73446),

Gene: Alkhayr\_104 Start: 64367, Stop: 64098, Start Num: 22

Candidate Starts for Alkhayr\_104:

(3, 64550), (Start: 7 @64445 has 1 MA's), (Start: 22 @64367 has 71 MA's), (26, 64334),

Gene: Anselm\_94 Start: 50832, Stop: 50545, Start Num: 22

Candidate Starts for Anselm\_94:

(12, 50895), (16, 50856), (Start: 22 @50832 has 71 MA's), (32, 50685), (38, 50568),

Gene: ArcherNM\_88 Start: 50174, Stop: 49887, Start Num: 22

Candidate Starts for ArcherNM\_88:

(13, 50231), (18, 50186), (Start: 22 @50174 has 71 MA's), (26, 50141), (30, 50051), (32, 50024),

Gene: Ashwin\_105 Start: 63604, Stop: 63335, Start Num: 22

Candidate Starts for Ashwin\_105:

(Start: 9 @63676 has 3 MA's), (Start: 22 @63604 has 71 MA's), (26, 63571),

Gene: Aziz\_164 Start: 78729, Stop: 78496, Start Num: 29

Candidate Starts for Aziz\_164:

(5, 78891), (6, 78873), (19, 78795), (Start: 29 @78729 has 2 MA's), (32, 78636), (37, 78537),

Gene: Baehexic\_93 Start: 50619, Stop: 50329, Start Num: 22

Candidate Starts for Baehexic\_93:

(Start: 22 @50619 has 71 MA's), (25, 50595), (26, 50586), (32, 50469), (35, 50406), (36, 50391), (38, 50352),

Gene: Benvolio\_91 Start: 50451, Stop: 50161, Start Num: 22

Candidate Starts for Benvolio\_91:

(12, 50514), (16, 50475), (Start: 22 @50451 has 71 MA's), (26, 50418), (32, 50301), (35, 50238), (36, 50223), (38, 50184),

Gene: Blessica\_106 Start: 64576, Stop: 64307, Start Num: 22

Candidate Starts for Blessica\_106:

(11, 64642), (Start: 22 @64576 has 71 MA's), (26, 64543),

Gene: Bora\_107 Start: 65502, Stop: 65149, Start Num: 7

Candidate Starts for Bora\_107:

(Start: 7 @65502 has 1 MA's), (Start: 22 @65418 has 71 MA's), (26, 65385),

Gene: Bradman\_97 Start: 50166, Stop: 49897, Start Num: 22

Candidate Starts for Bradman\_97:

(Start: 22 @50166 has 71 MA's),

Gene: BruhMoment\_107 Start: 64057, Stop: 63803, Start Num: 24

Candidate Starts for BruhMoment\_107:

(Start: 24 @64057 has 5 MA's), (31, 63949), (32, 63940),

Gene: Cafasso\_137 Start: 74296, Stop: 74033, Start Num: 23

Candidate Starts for Cafasso\_137:

(1, 74695), (2, 74602), (15, 74326), (20, 74302), (Start: 23 @74296 has 5 MA's), (27, 74245), (31, 74179), (38, 74053),

Gene: Catdawg\_109 Start: 65687, Stop: 65418, Start Num: 22  
Candidate Starts for Catdawg\_109:  
(3, 65870), (Start: 7 @65765 has 1 MA's), (Start: 22 @65687 has 71 MA's), (26, 65654),

Gene: Centaur\_94 Start: 50486, Stop: 50196, Start Num: 22  
Candidate Starts for Centaur\_94:  
(Start: 22 @50486 has 71 MA's), (25, 50462), (26, 50453), (32, 50336), (35, 50273), (36, 50258), (38, 50219),

Gene: Chargerpower\_94 Start: 49384, Stop: 49097, Start Num: 22  
Candidate Starts for Chargerpower\_94:  
(Start: 22 @49384 has 71 MA's), (26, 49351), (32, 49234),

Gene: Colin\_91 Start: 51144, Stop: 50878, Start Num: 22  
Candidate Starts for Colin\_91:  
(10, 51210), (13, 51201), (18, 51156), (Start: 22 @51144 has 71 MA's), (32, 51018),

Gene: Corndog\_105 Start: 63515, Stop: 63246, Start Num: 22  
Candidate Starts for Corndog\_105:  
(Start: 9 @63587 has 3 MA's), (Start: 22 @63515 has 71 MA's), (26, 63482),

Gene: Crucio\_92 Start: 50677, Stop: 50390, Start Num: 22  
Candidate Starts for Crucio\_92:  
(4, 50836), (12, 50740), (16, 50701), (Start: 22 @50677 has 71 MA's), (32, 50530),

Gene: D29\_86 Start: 46586, Stop: 46320, Start Num: 22  
Candidate Starts for D29\_86:  
(Start: 22 @46586 has 71 MA's), (26, 46556), (32, 46457),

Gene: D32\_82 Start: 46586, Stop: 46320, Start Num: 22  
Candidate Starts for D32\_82:  
(Start: 22 @46586 has 71 MA's), (26, 46556), (32, 46457),

Gene: DBQu4n\_94 Start: 50201, Stop: 49935, Start Num: 22  
Candidate Starts for DBQu4n\_94:  
(Start: 22 @50201 has 71 MA's), (26, 50171), (30, 50099), (32, 50072),

Gene: DrLupo\_50 Start: 38314, Stop: 38604, Start Num: 22  
Candidate Starts for DrLupo\_50:  
(21, 38311), (Start: 22 @38314 has 71 MA's), (37, 38545), (38, 38560), (39, 38587), (40, 38596),

Gene: Drake55\_94 Start: 50395, Stop: 50108, Start Num: 22  
Candidate Starts for Drake55\_94:  
(Start: 22 @50395 has 71 MA's), (25, 50374), (26, 50365), (32, 50248), (35, 50185), (36, 50170), (38, 50131),

Gene: DudeLittle\_90 Start: 50199, Stop: 49912, Start Num: 22  
Candidate Starts for DudeLittle\_90:  
(12, 50262), (16, 50223), (Start: 22 @50199 has 71 MA's), (32, 50052), (38, 49935),

Gene: Duplo\_95 Start: 50258, Stop: 49992, Start Num: 22  
Candidate Starts for Duplo\_95:  
(Start: 22 @50258 has 71 MA's), (26, 50228), (30, 50156), (32, 50129),

Gene: Echild\_96 Start: 50475, Stop: 50185, Start Num: 22

Candidate Starts for Echild\_96:

(12, 50538), (16, 50499), (Start: 22 @50475 has 71 MA's), (26, 50442), (32, 50325), (35, 50262), (36, 50247), (38, 50208),

Gene: Equemioh13\_94 Start: 50718, Stop: 50431, Start Num: 22

Candidate Starts for Equemioh13\_94:

(Start: 22 @50718 has 71 MA's), (25, 50697), (26, 50688), (32, 50571), (35, 50508), (36, 50493), (38, 50454),

Gene: Estes\_164 Start: 78934, Stop: 78701, Start Num: 29

Candidate Starts for Estes\_164:

(5, 79096), (6, 79078), (Start: 29 @78934 has 2 MA's), (32, 78841), (37, 78742),

Gene: Familton\_109 Start: 65103, Stop: 64834, Start Num: 22

Candidate Starts for Familton\_109:

(11, 65169), (Start: 22 @65103 has 71 MA's), (26, 65070),

Gene: Firecracker\_108 Start: 65044, Stop: 64703, Start Num: 9

Candidate Starts for Firecracker\_108:

(Start: 9 @65044 has 3 MA's), (Start: 22 @64972 has 71 MA's), (26, 64939),

Gene: FiringLine\_92 Start: 50773, Stop: 50486, Start Num: 22

Candidate Starts for FiringLine\_92:

(12, 50836), (16, 50797), (Start: 22 @50773 has 71 MA's), (32, 50626),

Gene: First\_0093 Start: 50622, Stop: 50335, Start Num: 22

Candidate Starts for First\_0093:

(Start: 22 @50622 has 71 MA's), (32, 50475),

Gene: Flare16\_94 Start: 50533, Stop: 50246, Start Num: 22

Candidate Starts for Flare16\_94:

(Start: 22 @50533 has 71 MA's), (25, 50512), (26, 50503), (32, 50386), (35, 50323), (36, 50308), (38, 50269),

Gene: FoulBall\_107 Start: 64650, Stop: 64381, Start Num: 22

Candidate Starts for FoulBall\_107:

(3, 64833), (Start: 7 @64728 has 1 MA's), (Start: 22 @64650 has 71 MA's), (26, 64617),

Gene: Georgie2\_94 Start: 50821, Stop: 50534, Start Num: 22

Candidate Starts for Georgie2\_94:

(12, 50884), (16, 50845), (Start: 22 @50821 has 71 MA's), (32, 50674),

Gene: Grayson\_283 Start: 128232, Stop: 127972, Start Num: 24

Candidate Starts for Grayson\_283:

(Start: 24 @128232 has 5 MA's), (28, 128181), (30, 128136), (34, 128061), (37, 128007), (38, 127992),

Gene: HarryHoudini\_93 Start: 50399, Stop: 50112, Start Num: 22

Candidate Starts for HarryHoudini\_93:

(Start: 22 @50399 has 71 MA's), (25, 50378), (26, 50369), (32, 50252), (33, 50240), (35, 50189), (36, 50174), (38, 50135),



Gene: Idergollasper\_110 Start: 65651, Stop: 65382, Start Num: 22

Candidate Starts for Idergollasper\_110:

(11, 65717), (Start: 22 @65651 has 71 MA's), (26, 65618),

Gene: JangDynasty\_104 Start: 64001, Stop: 63732, Start Num: 22

Candidate Starts for JangDynasty\_104:

(11, 64067), (Start: 22 @64001 has 71 MA's), (26, 63968),

Gene: Journey13\_75 Start: 45698, Stop: 45438, Start Num: 23

Candidate Starts for Journey13\_75:

(Start: 22 @45701 has 71 MA's), (Start: 23 @45698 has 5 MA's), (32, 45572),

Gene: Jsquared\_98 Start: 50409, Stop: 50143, Start Num: 22

Candidate Starts for Jsquared\_98:

(Start: 22 @50409 has 71 MA's),

Gene: Kalpine\_95 Start: 50991, Stop: 50725, Start Num: 22

Candidate Starts for Kalpine\_95:

(10, 51057), (13, 51048), (18, 51003), (Start: 22 @50991 has 71 MA's), (32, 50865),

Gene: Kerberos\_94 Start: 50221, Stop: 49955, Start Num: 22

Candidate Starts for Kerberos\_94:

(Start: 22 @50221 has 71 MA's), (26, 50191), (30, 50119), (32, 50092),

Gene: Koduck\_94 Start: 49779, Stop: 49513, Start Num: 22

Candidate Starts for Koduck\_94:

(Start: 22 @49779 has 71 MA's), (32, 49650),

Gene: Krili\_110 Start: 65245, Stop: 64973, Start Num: 22

Candidate Starts for Krili\_110:

(3, 65428), (Start: 7 @65323 has 1 MA's), (Start: 22 @65245 has 71 MA's), (26, 65212),

Gene: L5\_86 Start: 49483, Stop: 49217, Start Num: 22

Candidate Starts for L5\_86:

(Start: 22 @49483 has 71 MA's), (32, 49354),

Gene: Larenn\_91 Start: 50396, Stop: 50109, Start Num: 22

Candidate Starts for Larenn\_91:

(12, 50459), (16, 50420), (Start: 22 @50396 has 71 MA's), (30, 50276), (32, 50249),

Gene: MadKillah\_111 Start: 64722, Stop: 64453, Start Num: 22

Candidate Starts for MadKillah\_111:

(3, 64905), (Start: 7 @64800 has 1 MA's), (Start: 22 @64722 has 71 MA's), (26, 64689),

Gene: MajorMajor\_91 Start: 48458, Stop: 48189, Start Num: 22

Candidate Starts for MajorMajor\_91:

(Start: 22 @48458 has 71 MA's),

Gene: Malec\_91 Start: 50804, Stop: 50517, Start Num: 22

Candidate Starts for Malec\_91:

(12, 50867), (16, 50828), (Start: 22 @50804 has 71 MA's), (30, 50684), (32, 50657),

Gene: MiculUcigas\_94 Start: 50436, Stop: 50149, Start Num: 22  
Candidate Starts for MiculUcigas\_94:  
(Start: 22 @50436 has 71 MA's), (25, 50415), (26, 50406), (32, 50289), (35, 50226), (36, 50211), (38, 50172),

Gene: MissWhite\_87 Start: 47180, Stop: 46914, Start Num: 23  
Candidate Starts for MissWhite\_87:  
(Start: 23 @47180 has 5 MA's), (27, 47129), (32, 47054),

Gene: ModicumRichard\_137 Start: 74584, Stop: 74321, Start Num: 23  
Candidate Starts for ModicumRichard\_137:  
(Start: 23 @74584 has 5 MA's), (27, 74533), (31, 74467), (38, 74341),

Gene: Morgana\_145 Start: 76093, Stop: 75827, Start Num: 22  
Candidate Starts for Morgana\_145:  
(14, 76147), (Start: 22 @76093 has 71 MA's), (Start: 23 @76090 has 5 MA's), (27, 76039), (31, 75973), (34, 75916), (38, 75847),

Gene: Mori\_108 Start: 65270, Stop: 64998, Start Num: 22  
Candidate Starts for Mori\_108:  
(3, 65453), (Start: 7 @65348 has 1 MA's), (Start: 22 @65270 has 71 MA's), (26, 65237),

Gene: Murai\_108 Start: 65073, Stop: 64804, Start Num: 22  
Candidate Starts for Murai\_108:  
(Start: 7 @65151 has 1 MA's), (Start: 22 @65073 has 71 MA's), (26, 65040),

Gene: NaSiaTalie\_95 Start: 50597, Stop: 50310, Start Num: 22  
Candidate Starts for NaSiaTalie\_95:  
(Start: 22 @50597 has 71 MA's), (25, 50576), (26, 50567), (32, 50450), (35, 50387), (36, 50372), (38, 50333),

Gene: Naji\_83 Start: 46586, Stop: 46320, Start Num: 22  
Candidate Starts for Naji\_83:  
(Start: 22 @46586 has 71 MA's), (26, 46556), (32, 46457),

Gene: NiceHouse\_284 Start: 139323, Stop: 139586, Start Num: 24  
Candidate Starts for NiceHouse\_284:  
(Start: 24 @139323 has 5 MA's), (34, 139494),

Gene: NiceHouse\_3 Start: 2028, Stop: 2291, Start Num: 24  
Candidate Starts for NiceHouse\_3:  
(Start: 24 @2028 has 5 MA's), (34, 2199),

Gene: NicoleTera\_93 Start: 50593, Stop: 50306, Start Num: 22  
Candidate Starts for NicoleTera\_93:  
(8, 50668), (13, 50650), (18, 50605), (Start: 22 @50593 has 71 MA's), (26, 50563), (32, 50446),

Gene: NiebruSaylor\_108 Start: 64386, Stop: 64114, Start Num: 22  
Candidate Starts for NiebruSaylor\_108:  
(3, 64569), (Start: 7 @64464 has 1 MA's), (Start: 22 @64386 has 71 MA's), (26, 64353),

Gene: ObLaDi\_136 Start: 73986, Stop: 73723, Start Num: 23  
Candidate Starts for ObLaDi\_136:

(Start: 23 @73986 has 5 MA's), (27, 73935), (31, 73869), (38, 73743),

Gene: Peregrin\_280 Start: 129450, Stop: 129190, Start Num: 24

Candidate Starts for Peregrin\_280:

(Start: 24 @129450 has 5 MA's), (28, 129399), (30, 129354), (34, 129279), (37, 129225), (38, 129210),

Gene: Piro94\_92 Start: 50324, Stop: 50037, Start Num: 22

Candidate Starts for Piro94\_92:

(Start: 22 @50324 has 71 MA's), (25, 50303), (26, 50294), (32, 50177), (35, 50114), (36, 50099), (38, 50060),

Gene: Pomar16\_94 Start: 50294, Stop: 50028, Start Num: 22

Candidate Starts for Pomar16\_94:

(Start: 22 @50294 has 71 MA's), (26, 50264), (30, 50192), (32, 50165),

Gene: Power\_92 Start: 50820, Stop: 50533, Start Num: 22

Candidate Starts for Power\_92:

(12, 50883), (16, 50844), (Start: 22 @50820 has 71 MA's), (32, 50673),

Gene: QueenB2\_90 Start: 50025, Stop: 49738, Start Num: 22

Candidate Starts for QueenB2\_90:

(12, 50088), (16, 50049), (Start: 22 @50025 has 71 MA's), (32, 49878), (38, 49761),

Gene: QueenBeesly\_92 Start: 50773, Stop: 50486, Start Num: 22

Candidate Starts for QueenBeesly\_92:

(12, 50836), (16, 50797), (Start: 22 @50773 has 71 MA's), (32, 50626),

Gene: Quokka\_96 Start: 50167, Stop: 49898, Start Num: 22

Candidate Starts for Quokka\_96:

(Start: 22 @50167 has 71 MA's),

Gene: Retro23\_92 Start: 50323, Stop: 50036, Start Num: 22

Candidate Starts for Retro23\_92:

(12, 50386), (16, 50347), (Start: 22 @50323 has 71 MA's), (32, 50176), (38, 50059),

Gene: Ryadel\_112 Start: 66062, Stop: 65793, Start Num: 22

Candidate Starts for Ryadel\_112:

(11, 66128), (Start: 22 @66062 has 71 MA's), (26, 66029),

Gene: SchoolBus\_107 Start: 64816, Stop: 64547, Start Num: 22

Candidate Starts for SchoolBus\_107:

(11, 64882), (Start: 22 @64816 has 71 MA's), (26, 64783),

Gene: Schuy\_108 Start: 64435, Stop: 64166, Start Num: 22

Candidate Starts for Schuy\_108:

(3, 64618), (Start: 7 @64513 has 1 MA's), (Start: 22 @64435 has 71 MA's), (26, 64402),

Gene: SemperFi\_92 Start: 50661, Stop: 50374, Start Num: 22

Candidate Starts for SemperFi\_92:

(12, 50724), (16, 50685), (Start: 22 @50661 has 71 MA's), (32, 50514),

Gene: Serenity\_94 Start: 49582, Stop: 49316, Start Num: 22

Candidate Starts for Serenity\_94:  
(Start: 22 @49582 has 71 MA's),

Gene: Shida\_110 Start: 65327, Stop: 65058, Start Num: 22  
Candidate Starts for Shida\_110:  
(Start: 7 @65411 has 1 MA's), (Start: 22 @65327 has 71 MA's), (26, 65294),

Gene: Smooch\_107 Start: 65282, Stop: 64941, Start Num: 9  
Candidate Starts for Smooch\_107:  
(Start: 9 @65282 has 3 MA's), (Start: 22 @65210 has 71 MA's), (26, 65177),

Gene: SnapTap\_92 Start: 50476, Stop: 50189, Start Num: 22  
Candidate Starts for SnapTap\_92:  
(12, 50539), (16, 50500), (Start: 22 @50476 has 71 MA's), (32, 50329),

Gene: StarStuff\_94 Start: 50256, Stop: 49990, Start Num: 22  
Candidate Starts for StarStuff\_94:  
(Start: 22 @50256 has 71 MA's), (26, 50226), (30, 50154), (32, 50127),

Gene: SweetiePie\_92 Start: 50609, Stop: 50322, Start Num: 22  
Candidate Starts for SweetiePie\_92:  
(12, 50672), (16, 50633), (Start: 22 @50609 has 71 MA's), (32, 50462),

Gene: TelAviv\_105 Start: 65052, Stop: 64783, Start Num: 22  
Candidate Starts for TelAviv\_105:  
(11, 65118), (Start: 22 @65052 has 71 MA's), (26, 65019),

Gene: TipsytheTRex\_91 Start: 49799, Stop: 49533, Start Num: 22  
Candidate Starts for TipsytheTRex\_91:  
(Start: 22 @49799 has 71 MA's),

Gene: Tomathan\_94 Start: 50335, Stop: 50069, Start Num: 22  
Candidate Starts for Tomathan\_94:  
(Start: 22 @50335 has 71 MA's), (26, 50305), (30, 50233), (32, 50206),

Gene: Travvers\_94 Start: 50252, Stop: 49986, Start Num: 22  
Candidate Starts for Travvers\_94:  
(Start: 22 @50252 has 71 MA's), (26, 50222), (30, 50150), (32, 50123),

Gene: Trixie\_92 Start: 51189, Stop: 50923, Start Num: 22  
Candidate Starts for Trixie\_92:  
(10, 51255), (13, 51246), (18, 51201), (Start: 22 @51189 has 71 MA's), (32, 51063),

Gene: Updawg\_95 Start: 50718, Stop: 50431, Start Num: 22  
Candidate Starts for Updawg\_95:  
(Start: 22 @50718 has 71 MA's), (25, 50697), (26, 50688), (32, 50571), (35, 50508), (36, 50493), (38, 50454),

Gene: Vagabond\_104 Start: 64483, Stop: 64214, Start Num: 22  
Candidate Starts for Vagabond\_104:  
(3, 64666), (Start: 7 @64561 has 1 MA's), (Start: 22 @64483 has 71 MA's), (26, 64450),

Gene: Vorrps\_108 Start: 65271, Stop: 64999, Start Num: 22

Candidate Starts for Vorpps\_108:

(3, 65454), (Start: 7 @65349 has 1 MA's), (Start: 22 @65271 has 71 MA's), (26, 65238),

Gene: WeiHuaDA\_94 Start: 51209, Stop: 50943, Start Num: 22

Candidate Starts for WeiHuaDA\_94:

(10, 51275), (13, 51266), (18, 51221), (Start: 22 @51209 has 71 MA's), (32, 51083),

Gene: WideWale\_95 Start: 50718, Stop: 50431, Start Num: 22

Candidate Starts for WideWale\_95:

(Start: 22 @50718 has 71 MA's), (25, 50697), (26, 50688), (32, 50571), (35, 50508), (36, 50493), (38, 50454),

Gene: Wildflower\_105 Start: 63308, Stop: 62967, Start Num: 9

Candidate Starts for Wildflower\_105:

(Start: 9 @63308 has 3 MA's), (Start: 22 @63236 has 71 MA's), (26, 63203),

Gene: Winget\_108 Start: 65120, Stop: 64851, Start Num: 22

Candidate Starts for Winget\_108:

(3, 65303), (Start: 7 @65198 has 1 MA's), (Start: 22 @65120 has 71 MA's), (26, 65087),

Gene: XianYue\_90 Start: 50548, Stop: 50264, Start Num: 22

Candidate Starts for XianYue\_90:

(13, 50605), (18, 50560), (Start: 22 @50548 has 71 MA's), (32, 50401),

Gene: YungJamal\_106 Start: 63999, Stop: 63727, Start Num: 22

Candidate Starts for YungJamal\_106:

(Start: 9 @64071 has 3 MA's), (Start: 22 @63999 has 71 MA's), (26, 63966),

Gene: Zakhe101\_103 Start: 63342, Stop: 63073, Start Num: 22

Candidate Starts for Zakhe101\_103:

(Start: 9 @63414 has 3 MA's), (Start: 22 @63342 has 71 MA's), (26, 63309),