



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 171365 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171365 has 96 members, 21 are drafts.

Phages represented in each track:

- Track 1 : Inked\_67
- Track 2 : MiniBagel\_61
- Track 3 : ScienceWizSam\_62
- Track 4 : ScienceWizSam\_67, Gordon\_63, Tatanka\_61, Breylor17\_65, Nightmare\_67, Nivinsha\_69, DevitoJr\_65, Synopsis\_64, AreFloNak\_69
- Track 5 : CapnMurica\_59, Tenno\_62, Issa\_62
- Track 6 : Trustiboi\_61, Breylor17\_61, Darby\_60, Nivinsha\_63, CastorTray\_65, DevitoJr\_61, Synopsis\_60, AreFloNak\_64
- Track 7 : Trustiboi\_65, Darby\_64
- Track 8 : Tenno\_66
- Track 9 : CastorTray\_69
- Track 10 : Brunswick\_67
- Track 11 : Tatanka\_58
- Track 12 : MiniBagel\_65
- Track 13 : Niktson\_66, ElephantMan\_66
- Track 14 : Teacup\_67
- Track 15 : Issa\_67
- Track 16 : CapnMurica\_63
- Track 17 : LilHuddy\_70
- Track 18 : LilHuddy\_66, Phaby\_66, Shepard\_67, Tokki\_70
- Track 19 : Giantsbane\_69
- Track 20 : Giantsbane\_65
- Track 21 : Phaby\_70
- Track 22 : Shepard\_71
- Track 23 : Tokki\_75
- Track 24 : Ingrid\_72, Loretta\_69
- Track 25 : Ingrid\_68, Loretta\_65
- Track 26 : MediumFry\_62
- Track 27 : MediumFry\_66
- Track 28 : Caterpillar\_61
- Track 29 : Caterpillar\_65
- Track 30 : Makai\_65, Nightmare\_63, Gordon\_59, Truckee\_63, Brunswick\_62, Niktson\_61, ElephantMan\_61, Teacup\_62
- Track 31 : Truckee\_68, Makai\_70
- Track 32 : Zeina\_70
- Track 33 : Renaldo\_76
- Track 34 : BarbieDoll\_72

- Track 35 : Leathea\_68
- Track 36 : Uzumaki\_65, GantcherGoblin\_66
- Track 37 : Lewando\_71
- Track 38 : Argan\_65
- Track 39 : Egad\_68, Salk\_68, Raunak\_69, BronxBay\_68, Shiba\_67, MrAaronian\_68, DoctorPepper\_68, Linda\_68, Sloopyjoe\_68, Michelle\_68, Djungelskog\_67, Stayer\_68, StarLord\_68, ProfFrink\_69
- Track 40 : Sunny4976\_68, Jazzy4900\_69
- Track 41 : Sunny4976\_64, Jazzy4900\_65
- Track 42 : Arzan\_71
- Track 43 : Paella\_181, Elver\_177, Qui\_181
- Track 44 : Paella\_164, Elver\_161, Qui\_164

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

The start number called the most often in the published annotations is 23, it was called in 75 of the 75 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AreFloNak\_64, AreFloNak\_69, Argan\_65, Arzan\_71, BarbieDoll\_72, Breylor17\_61, Breylor17\_65, BronxBay\_68, Brunswick\_62, Brunswick\_67, CapnMurica\_59, CapnMurica\_63, CastorTray\_65, CastorTray\_69, Caterpillar\_61, Caterpillar\_65, Darby\_60, Darby\_64, DevitoJr\_61, DevitoJr\_65, Djungelskog\_67, DoctorPepper\_68, Egad\_68, ElephantMan\_61, ElephantMan\_66, Elver\_161, Elver\_177, GantcherGoblin\_66, Giantsbane\_65, Giantsbane\_69, Gordon\_59, Gordon\_63, Ingrid\_68, Ingrid\_72, Inked\_67, Issa\_62, Issa\_67, Jazzy4900\_65, Jazzy4900\_69, Leathea\_68, Lewando\_71, LilHuddy\_66, LilHuddy\_70, Linda\_68, Loretta\_65, Loretta\_69, Makai\_65, Makai\_70, MediumFry\_62, MediumFry\_66, Michelle\_68, MiniBagel\_61, MiniBagel\_65, MrAaronian\_68, Nightmare\_63, Nightmare\_67, Niktson\_61, Niktson\_66, Nivinsha\_63, Nivinsha\_69, Paella\_164, Paella\_181, Phaby\_66, Phaby\_70, ProfFrink\_69, Qui\_164, Qui\_181, Raunak\_69, Renaldo\_76, Salk\_68, ScienceWizSam\_62, ScienceWizSam\_67, Shepard\_67, Shepard\_71, Shiba\_67, Sloopyjoe\_68, StarLord\_68, Stayer\_68, Sunny4976\_64, Sunny4976\_68, Synopsis\_60, Synopsis\_64, Tatanka\_58, Tatanka\_61, Teacup\_62, Teacup\_67, Tenno\_62, Tenno\_66, Tokki\_70, Tokki\_75, Truckee\_63, Truckee\_68, Trustiboi\_61, Trustiboi\_65, Uzumaki\_65, Zeina\_70,

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

- 

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

- 

**Summary by start number:**

Start 23:

- Found in 96 of 96 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 75 of 75
- Called 100.0% of time when present

- Phage (with cluster) where this start called: AreFloNak\_64 (AU1), AreFloNak\_69 (AU1), Argan\_65 (AU6), Arzan\_71 (FI), BarbieDoll\_72 (AU6), Breylor17\_61 (AU1), Breylor17\_65 (AU1), BronxBay\_68 (AW), Brunswick\_62 (AU1), Brunswick\_67 (AU1), CapnMurica\_59 (AU1), CapnMurica\_63 (AU1), CastorTray\_65 (AU1), CastorTray\_69 (AU1), Caterpillar\_61 (AU4), Caterpillar\_65 (AU4), Darby\_60 (AU1), Darby\_64 (AU1), DevitoJr\_61 (AU1), DevitoJr\_65 (AU1), Djungelskog\_67 (AW), DoctorPepper\_68 (AW), Egad\_68 (AW), ElephantMan\_61 (AU1), ElephantMan\_66 (AU1), Elver\_161 (FK), Elver\_177 (FK), GantcherGoblin\_66 (AU6), Giantsbane\_65 (AU2), Giantsbane\_69 (AU2), Gordon\_59 (AU1), Gordon\_63 (AU1), Ingrid\_68 (AU3), Ingrid\_72 (AU3), Inked\_67 (AU), Issa\_62 (AU1), Issa\_67 (AU1), Jazzy4900\_65 (FI), Jazzy4900\_69 (FI), Leathea\_68 (AU6), Lewando\_71 (AU6), LilHuddy\_66 (AU2), LilHuddy\_70 (AU2), Linda\_68 (AW), Loretta\_65 (AU3), Loretta\_69 (AU3), Makai\_65 (AU5), Makai\_70 (AU5), MediumFry\_62 (AU4), MediumFry\_66 (AU4), Michelle\_68 (AW), MiniBagel\_61 (AU1), MiniBagel\_65 (AU1), MrAaronian\_68 (AW), Nightmare\_63 (AU1), Nightmare\_67 (AU1), Niktson\_61 (AU1), Niktson\_66 (AU1), Nivinsha\_63 (AU1), Nivinsha\_69 (AU1), Paella\_164 (FK), Paella\_181 (FK), Phaby\_66 (AU2), Phaby\_70 (AU2), ProfFrink\_69 (AW), Qui\_164 (FK), Qui\_181 (FK), Raunak\_69 (AW), Renaldo\_76 (AU6), Salk\_68 (AW), ScienceWizSam\_62 (AU1), ScienceWizSam\_67 (AU1), Shepard\_67 (AU2), Shepard\_71 (AU2), Shiba\_67 (AW), Sloopyjoe\_68 (AW), StarLord\_68 (AW), Stayer\_68 (AW), Sunny4976\_64 (FI), Sunny4976\_68 (FI), Synopsis\_60 (AU1), Synopsis\_64 (AU1), Tatanka\_58 (AU1), Tatanka\_61 (AU1), Teacup\_62 (AU1), Teacup\_67 (AU1), Tenno\_62 (AU1), Tenno\_66 (AU1), Tokki\_70 (AU2), Tokki\_75 (AU2), Truckee\_63 (AU5), Truckee\_68 (AU5), Trustiboi\_61 (AU1), Trustiboi\_65 (AU1), Uzumaki\_65 (AU6), Zeina\_70 (AU6),

### Summary by clusters:

There are 10 clusters represented in this pham: AU5, AU1, AU3, AU2, AU, AU4, AW, AU6, FI, FK,

Info for manual annotations of cluster AU:

- Start number 23 was manually annotated 1 time for cluster AU.

Info for manual annotations of cluster AU1:

- Start number 23 was manually annotated 34 times for cluster AU1.

Info for manual annotations of cluster AU2:

- Start number 23 was manually annotated 8 times for cluster AU2.

Info for manual annotations of cluster AU3:

- Start number 23 was manually annotated 4 times for cluster AU3.

Info for manual annotations of cluster AU4:

- Start number 23 was manually annotated 4 times for cluster AU4.

Info for manual annotations of cluster AU5:

- Start number 23 was manually annotated 4 times for cluster AU5.

Info for manual annotations of cluster AU6:

- Start number 23 was manually annotated 5 times for cluster AU6.

Info for manual annotations of cluster AW:

- Start number 23 was manually annotated 11 times for cluster AW.

Info for manual annotations of cluster FK:

•Start number 23 was manually annotated 4 times for cluster FK.

**Gene Information:**

Gene: AreFloNak\_64 Start: 44018, Stop: 44311, Start Num: 23

Candidate Starts for AreFloNak\_64:

(Start: 23 @44018 has 75 MA's), (36, 44156),

Gene: AreFloNak\_69 Start: 45830, Stop: 46093, Start Num: 23

Candidate Starts for AreFloNak\_69:

(Start: 23 @45830 has 75 MA's), (29, 45908), (55, 46067),

Gene: Argan\_65 Start: 42966, Stop: 43247, Start Num: 23

Candidate Starts for Argan\_65:

(Start: 23 @42966 has 75 MA's), (25, 42993), (28, 43038), (31, 43074), (47, 43158), (53, 43203),

Gene: Arzan\_71 Start: 45586, Stop: 45873, Start Num: 23

Candidate Starts for Arzan\_71:

(22, 45568), (Start: 23 @45586 has 75 MA's), (49, 45802),

Gene: BarbieDoll\_72 Start: 44655, Stop: 44960, Start Num: 23

Candidate Starts for BarbieDoll\_72:

(Start: 23 @44655 has 75 MA's), (25, 44685), (27, 44727), (43, 44853), (54, 44931),

Gene: Breylor17\_61 Start: 44593, Stop: 44886, Start Num: 23

Candidate Starts for Breylor17\_61:

(Start: 23 @44593 has 75 MA's), (36, 44731),

Gene: Breylor17\_65 Start: 46223, Stop: 46486, Start Num: 23

Candidate Starts for Breylor17\_65:

(Start: 23 @46223 has 75 MA's), (29, 46301), (55, 46460),

Gene: BronxBay\_68 Start: 43961, Stop: 44290, Start Num: 23

Candidate Starts for BronxBay\_68:

(Start: 23 @43961 has 75 MA's), (35, 44105), (38, 44126), (53, 44249),

Gene: Brunswick\_62 Start: 43890, Stop: 44189, Start Num: 23

Candidate Starts for Brunswick\_62:

(Start: 23 @43890 has 75 MA's), (35, 44022), (36, 44025), (50, 44124),

Gene: Brunswick\_67 Start: 45626, Stop: 45928, Start Num: 23

Candidate Starts for Brunswick\_67:

(1, 45431), (2, 45440), (3, 45455), (11, 45488), (15, 45533), (17, 45557), (18, 45560), (Start: 23 @45626 has 75 MA's), (33, 45755),

Gene: CapnMurica\_59 Start: 44782, Stop: 45072, Start Num: 23

Candidate Starts for CapnMurica\_59:

(Start: 23 @44782 has 75 MA's), (35, 44914), (36, 44917),

Gene: CapnMurica\_63 Start: 46364, Stop: 46666, Start Num: 23  
Candidate Starts for CapnMurica\_63:  
(1, 46172), (8, 46217), (9, 46220), (11, 46229), (17, 46298), (Start: 23 @46364 has 75 MA's), (33, 46493),

Gene: CastorTray\_69 Start: 46412, Stop: 46675, Start Num: 23  
Candidate Starts for CastorTray\_69:  
(4, 46238), (6, 46244), (7, 46247), (17, 46334), (19, 46349), (Start: 23 @46412 has 75 MA's), (29, 46490), (55, 46649),

Gene: CastorTray\_65 Start: 44782, Stop: 45075, Start Num: 23  
Candidate Starts for CastorTray\_65:  
(Start: 23 @44782 has 75 MA's), (36, 44920),

Gene: Caterpillar\_61 Start: 43710, Stop: 44000, Start Num: 23  
Candidate Starts for Caterpillar\_61:  
(Start: 23 @43710 has 75 MA's), (32, 43827), (35, 43842), (36, 43845),

Gene: Caterpillar\_65 Start: 45261, Stop: 45530, Start Num: 23  
Candidate Starts for Caterpillar\_65:  
(1, 45066), (3, 45090), (15, 45165), (16, 45183), (17, 45189), (21, 45216), (Start: 23 @45261 has 75 MA's), (29, 45345), (34, 45375),

Gene: Darby\_60 Start: 43828, Stop: 44121, Start Num: 23  
Candidate Starts for Darby\_60:  
(Start: 23 @43828 has 75 MA's), (36, 43966),

Gene: Darby\_64 Start: 45407, Stop: 45670, Start Num: 23  
Candidate Starts for Darby\_64:  
(Start: 23 @45407 has 75 MA's), (29, 45485), (41, 45545), (55, 45644),

Gene: DevitoJr\_61 Start: 44214, Stop: 44507, Start Num: 23  
Candidate Starts for DevitoJr\_61:  
(Start: 23 @44214 has 75 MA's), (36, 44352),

Gene: DevitoJr\_65 Start: 45793, Stop: 46056, Start Num: 23  
Candidate Starts for DevitoJr\_65:  
(Start: 23 @45793 has 75 MA's), (29, 45871), (55, 46030),

Gene: Djungelskog\_67 Start: 43963, Stop: 44292, Start Num: 23  
Candidate Starts for Djungelskog\_67:  
(Start: 23 @43963 has 75 MA's), (35, 44107), (38, 44128), (53, 44251),

Gene: DoctorPepper\_68 Start: 43665, Stop: 43994, Start Num: 23  
Candidate Starts for DoctorPepper\_68:  
(Start: 23 @43665 has 75 MA's), (35, 43809), (38, 43830), (53, 43953),

Gene: Egad\_68 Start: 43939, Stop: 44268, Start Num: 23  
Candidate Starts for Egad\_68:  
(Start: 23 @43939 has 75 MA's), (35, 44083), (38, 44104), (53, 44227),

Gene: ElephantMan\_66 Start: 46256, Stop: 46558, Start Num: 23

Candidate Starts for ElephantMan\_66:

(1, 46061), (8, 46106), (9, 46109), (11, 46118), (12, 46136), (13, 46157), (14, 46160), (15, 46163), (17, 46187), (Start: 23 @46256 has 75 MA's), (33, 46385),

Gene: ElephantMan\_61 Start: 44520, Stop: 44819, Start Num: 23

Candidate Starts for ElephantMan\_61:

(Start: 23 @44520 has 75 MA's), (35, 44652), (36, 44655), (50, 44754),

Gene: Elver\_177 Start: 88404, Stop: 88703, Start Num: 23

Candidate Starts for Elver\_177:

(Start: 23 @88404 has 75 MA's), (44, 88590), (56, 88686),

Gene: Elver\_161 Start: 81584, Stop: 81901, Start Num: 23

Candidate Starts for Elver\_161:

(16, 81500), (20, 81524), (Start: 23 @81584 has 75 MA's), (29, 81671), (37, 81743), (49, 81830), (52, 81857),

Gene: GantcherGoblin\_66 Start: 43022, Stop: 43303, Start Num: 23

Candidate Starts for GantcherGoblin\_66:

(Start: 23 @43022 has 75 MA's), (24, 43028), (25, 43049), (28, 43094), (31, 43130), (53, 43259),

Gene: Giantsbane\_69 Start: 44963, Stop: 45232, Start Num: 23

Candidate Starts for Giantsbane\_69:

(Start: 23 @44963 has 75 MA's), (30, 45056), (46, 45140), (55, 45206),

Gene: Giantsbane\_65 Start: 43403, Stop: 43696, Start Num: 23

Candidate Starts for Giantsbane\_65:

(Start: 23 @43403 has 75 MA's), (25, 43433),

Gene: Gordon\_63 Start: 46285, Stop: 46548, Start Num: 23

Candidate Starts for Gordon\_63:

(Start: 23 @46285 has 75 MA's), (29, 46363), (55, 46522),

Gene: Gordon\_59 Start: 44700, Stop: 44999, Start Num: 23

Candidate Starts for Gordon\_59:

(Start: 23 @44700 has 75 MA's), (35, 44832), (36, 44835), (50, 44934),

Gene: Ingrid\_72 Start: 46231, Stop: 46503, Start Num: 23

Candidate Starts for Ingrid\_72:

(Start: 23 @46231 has 75 MA's), (28, 46303), (46, 46411), (55, 46477),

Gene: Ingrid\_68 Start: 44584, Stop: 44877, Start Num: 23

Candidate Starts for Ingrid\_68:

(Start: 23 @44584 has 75 MA's), (35, 44719), (40, 44746),

Gene: Inked\_67 Start: 45260, Stop: 45550, Start Num: 23

Candidate Starts for Inked\_67:

(Start: 23 @45260 has 75 MA's), (32, 45377), (35, 45392), (36, 45395), (45, 45452), (51, 45488),

Gene: Issa\_67 Start: 45459, Stop: 45722, Start Num: 23

Candidate Starts for Issa\_67:

(1, 45267), (8, 45312), (9, 45315), (11, 45324), (17, 45393), (Start: 23 @45459 has 75 MA's), (52, 45681), (55, 45696),

Gene: Issa\_62 Start: 43876, Stop: 44166, Start Num: 23

Candidate Starts for Issa\_62:

(Start: 23 @43876 has 75 MA's), (35, 44008), (36, 44011),

Gene: Jazzy4900\_69 Start: 46463, Stop: 46738, Start Num: 23

Candidate Starts for Jazzy4900\_69:

(Start: 23 @46463 has 75 MA's), (41, 46610), (43, 46631), (44, 46634), (46, 46643), (47, 46652), (49, 46667), (52, 46694),

Gene: Jazzy4900\_65 Start: 44572, Stop: 44859, Start Num: 23

Candidate Starts for Jazzy4900\_65:

(Start: 23 @44572 has 75 MA's), (44, 44758), (48, 44788), (49, 44791),

Gene: Leathea\_68 Start: 42920, Stop: 43210, Start Num: 23

Candidate Starts for Leathea\_68:

(Start: 23 @42920 has 75 MA's), (26, 42989), (49, 43139),

Gene: Lewando\_71 Start: 44727, Stop: 45032, Start Num: 23

Candidate Starts for Lewando\_71:

(Start: 23 @44727 has 75 MA's), (27, 44799), (43, 44925), (54, 45003),

Gene: LilHuddy\_70 Start: 46088, Stop: 46360, Start Num: 23

Candidate Starts for LilHuddy\_70:

(Start: 23 @46088 has 75 MA's), (46, 46268),

Gene: LilHuddy\_66 Start: 44510, Stop: 44803, Start Num: 23

Candidate Starts for LilHuddy\_66:

(Start: 23 @44510 has 75 MA's),

Gene: Linda\_68 Start: 43958, Stop: 44287, Start Num: 23

Candidate Starts for Linda\_68:

(Start: 23 @43958 has 75 MA's), (35, 44102), (38, 44123), (53, 44246),

Gene: Loretta\_69 Start: 46231, Stop: 46503, Start Num: 23

Candidate Starts for Loretta\_69:

(Start: 23 @46231 has 75 MA's), (28, 46303), (46, 46411), (55, 46477),

Gene: Loretta\_65 Start: 44584, Stop: 44877, Start Num: 23

Candidate Starts for Loretta\_65:

(Start: 23 @44584 has 75 MA's), (35, 44719), (40, 44746),

Gene: Makai\_65 Start: 44655, Stop: 44951, Start Num: 23

Candidate Starts for Makai\_65:

(Start: 23 @44655 has 75 MA's), (35, 44787), (36, 44790), (50, 44886),

Gene: Makai\_70 Start: 46375, Stop: 46647, Start Num: 23

Candidate Starts for Makai\_70:

(Start: 23 @46375 has 75 MA's), (46, 46555), (52, 46606),

Gene: MediumFry\_62 Start: 44006, Stop: 44296, Start Num: 23

Candidate Starts for MediumFry\_62:

(Start: 23 @44006 has 75 MA's), (32, 44123), (35, 44138), (36, 44141),



Gene: MediumFry\_66 Start: 45539, Stop: 45841, Start Num: 23  
Candidate Starts for MediumFry\_66:  
(1, 45362), (2, 45371), (8, 45404), (14, 45458), (16, 45479), (Start: 23 @45539 has 75 MA's),

Gene: Michelle\_68 Start: 43960, Stop: 44289, Start Num: 23  
Candidate Starts for Michelle\_68:  
(Start: 23 @43960 has 75 MA's), (35, 44104), (38, 44125), (53, 44248),

Gene: MiniBagel\_61 Start: 44764, Stop: 45063, Start Num: 23  
Candidate Starts for MiniBagel\_61:  
(Start: 23 @44764 has 75 MA's), (35, 44896), (50, 44998),

Gene: MiniBagel\_65 Start: 46355, Stop: 46624, Start Num: 23  
Candidate Starts for MiniBagel\_65:  
(1, 46163), (2, 46172), (5, 46196), (8, 46208), (9, 46211), (10, 46217), (11, 46220), (17, 46289), (Start: 23 @46355 has 75 MA's), (46, 46532),

Gene: MrAaronian\_68 Start: 43960, Stop: 44289, Start Num: 23  
Candidate Starts for MrAaronian\_68:  
(Start: 23 @43960 has 75 MA's), (35, 44104), (38, 44125), (53, 44248),

Gene: Nightmare\_63 Start: 45062, Stop: 45361, Start Num: 23  
Candidate Starts for Nightmare\_63:  
(Start: 23 @45062 has 75 MA's), (35, 45194), (36, 45197), (50, 45296),

Gene: Nightmare\_67 Start: 46698, Stop: 46961, Start Num: 23  
Candidate Starts for Nightmare\_67:  
(Start: 23 @46698 has 75 MA's), (29, 46776), (55, 46935),

Gene: Niktson\_61 Start: 44520, Stop: 44819, Start Num: 23  
Candidate Starts for Niktson\_61:  
(Start: 23 @44520 has 75 MA's), (35, 44652), (36, 44655), (50, 44754),

Gene: Niktson\_66 Start: 46256, Stop: 46558, Start Num: 23  
Candidate Starts for Niktson\_66:  
(1, 46061), (8, 46106), (9, 46109), (11, 46118), (12, 46136), (13, 46157), (14, 46160), (15, 46163), (17, 46187), (Start: 23 @46256 has 75 MA's), (33, 46385),

Gene: Nivinsha\_63 Start: 44018, Stop: 44311, Start Num: 23  
Candidate Starts for Nivinsha\_63:  
(Start: 23 @44018 has 75 MA's), (36, 44156),

Gene: Nivinsha\_69 Start: 45830, Stop: 46093, Start Num: 23  
Candidate Starts for Nivinsha\_69:  
(Start: 23 @45830 has 75 MA's), (29, 45908), (55, 46067),

Gene: Paella\_181 Start: 89280, Stop: 89579, Start Num: 23  
Candidate Starts for Paella\_181:  
(Start: 23 @89280 has 75 MA's), (44, 89466), (56, 89562),

Gene: Paella\_164 Start: 82455, Stop: 82772, Start Num: 23  
Candidate Starts for Paella\_164:

(16, 82371), (20, 82395), (Start: 23 @82455 has 75 MA's), (29, 82542), (37, 82614), (49, 82701), (52, 82728),

Gene: Phaby\_66 Start: 45074, Stop: 45367, Start Num: 23  
Candidate Starts for Phaby\_66:  
(Start: 23 @45074 has 75 MA's),

Gene: Phaby\_70 Start: 46619, Stop: 46891, Start Num: 23  
Candidate Starts for Phaby\_70:  
(Start: 23 @46619 has 75 MA's), (46, 46799), (55, 46865),

Gene: ProfFrink\_69 Start: 43938, Stop: 44267, Start Num: 23  
Candidate Starts for ProfFrink\_69:  
(Start: 23 @43938 has 75 MA's), (35, 44082), (38, 44103), (53, 44226),

Gene: Qui\_181 Start: 89277, Stop: 89576, Start Num: 23  
Candidate Starts for Qui\_181:  
(Start: 23 @89277 has 75 MA's), (44, 89463), (56, 89559),

Gene: Qui\_164 Start: 82455, Stop: 82772, Start Num: 23  
Candidate Starts for Qui\_164:  
(16, 82371), (20, 82395), (Start: 23 @82455 has 75 MA's), (29, 82542), (37, 82614), (49, 82701), (52, 82728),

Gene: Raunak\_69 Start: 43600, Stop: 43929, Start Num: 23  
Candidate Starts for Raunak\_69:  
(Start: 23 @43600 has 75 MA's), (35, 43744), (38, 43765), (53, 43888),

Gene: Renaldo\_76 Start: 45093, Stop: 45398, Start Num: 23  
Candidate Starts for Renaldo\_76:  
(Start: 23 @45093 has 75 MA's), (27, 45165), (43, 45291), (54, 45369),

Gene: Salk\_68 Start: 43958, Stop: 44287, Start Num: 23  
Candidate Starts for Salk\_68:  
(Start: 23 @43958 has 75 MA's), (35, 44102), (38, 44123), (53, 44246),

Gene: ScienceWizSam\_62 Start: 44180, Stop: 44473, Start Num: 23  
Candidate Starts for ScienceWizSam\_62:  
(Start: 23 @44180 has 75 MA's), (36, 44318),

Gene: ScienceWizSam\_67 Start: 45992, Stop: 46255, Start Num: 23  
Candidate Starts for ScienceWizSam\_67:  
(Start: 23 @45992 has 75 MA's), (29, 46070), (55, 46229),

Gene: Shepard\_71 Start: 45944, Stop: 46213, Start Num: 23  
Candidate Starts for Shepard\_71:  
(Start: 23 @45944 has 75 MA's), (46, 46121),

Gene: Shepard\_67 Start: 44369, Stop: 44662, Start Num: 23  
Candidate Starts for Shepard\_67:  
(Start: 23 @44369 has 75 MA's),

Gene: Shiba\_67 Start: 43616, Stop: 43945, Start Num: 23

Candidate Starts for Shiba\_67:

(Start: 23 @43616 has 75 MA's), (35, 43760), (38, 43781), (53, 43904),

Gene: Sloopyjoe\_68 Start: 43962, Stop: 44291, Start Num: 23

Candidate Starts for Sloopyjoe\_68:

(Start: 23 @43962 has 75 MA's), (35, 44106), (38, 44127), (53, 44250),

Gene: StarLord\_68 Start: 43955, Stop: 44284, Start Num: 23

Candidate Starts for StarLord\_68:

(Start: 23 @43955 has 75 MA's), (35, 44099), (38, 44120), (53, 44243),

Gene: Stayer\_68 Start: 43958, Stop: 44287, Start Num: 23

Candidate Starts for Stayer\_68:

(Start: 23 @43958 has 75 MA's), (35, 44102), (38, 44123), (53, 44246),

Gene: Sunny4976\_68 Start: 46463, Stop: 46738, Start Num: 23

Candidate Starts for Sunny4976\_68:

(Start: 23 @46463 has 75 MA's), (41, 46610), (43, 46631), (44, 46634), (46, 46643), (47, 46652), (49, 46667), (52, 46694),

Gene: Sunny4976\_64 Start: 44572, Stop: 44859, Start Num: 23

Candidate Starts for Sunny4976\_64:

(Start: 23 @44572 has 75 MA's), (44, 44758), (48, 44788), (49, 44791),

Gene: Synopsis\_64 Start: 45760, Stop: 46023, Start Num: 23

Candidate Starts for Synopsis\_64:

(Start: 23 @45760 has 75 MA's), (29, 45838), (55, 45997),

Gene: Synopsis\_60 Start: 44184, Stop: 44477, Start Num: 23

Candidate Starts for Synopsis\_60:

(Start: 23 @44184 has 75 MA's), (36, 44322),

Gene: Tatanka\_61 Start: 45896, Stop: 46159, Start Num: 23

Candidate Starts for Tatanka\_61:

(Start: 23 @45896 has 75 MA's), (29, 45974), (55, 46133),

Gene: Tatanka\_58 Start: 44317, Stop: 44610, Start Num: 23

Candidate Starts for Tatanka\_58:

(Start: 23 @44317 has 75 MA's), (36, 44455), (39, 44467),

Gene: Teacup\_62 Start: 44599, Stop: 44898, Start Num: 23

Candidate Starts for Teacup\_62:

(Start: 23 @44599 has 75 MA's), (35, 44731), (36, 44734), (50, 44833),

Gene: Teacup\_67 Start: 46335, Stop: 46598, Start Num: 23

Candidate Starts for Teacup\_67:

(1, 46140), (8, 46185), (9, 46188), (11, 46197), (12, 46215), (13, 46236), (14, 46239), (17, 46266),  
(Start: 23 @46335 has 75 MA's), (52, 46557), (55, 46572),

Gene: Tenno\_66 Start: 46419, Stop: 46703, Start Num: 23

Candidate Starts for Tenno\_66:

(1, 46227), (2, 46236), (8, 46272), (9, 46275), (11, 46284), (12, 46302), (14, 46326), (Start: 23 @46419 has 75 MA's), (53, 46662),

Gene: Tenno\_62 Start: 44837, Stop: 45127, Start Num: 23  
Candidate Starts for Tenno\_62:  
(Start: 23 @44837 has 75 MA's), (35, 44969), (36, 44972),

Gene: Tokki\_70 Start: 44723, Stop: 45016, Start Num: 23  
Candidate Starts for Tokki\_70:  
(Start: 23 @44723 has 75 MA's),

Gene: Tokki\_75 Start: 46487, Stop: 46759, Start Num: 23  
Candidate Starts for Tokki\_75:  
(Start: 23 @46487 has 75 MA's), (46, 46667),

Gene: Truckee\_63 Start: 44439, Stop: 44735, Start Num: 23  
Candidate Starts for Truckee\_63:  
(Start: 23 @44439 has 75 MA's), (35, 44571), (36, 44574), (50, 44670),

Gene: Truckee\_68 Start: 46153, Stop: 46425, Start Num: 23  
Candidate Starts for Truckee\_68:  
(Start: 23 @46153 has 75 MA's), (46, 46333), (52, 46384),

Gene: Trustiboi\_61 Start: 44439, Stop: 44732, Start Num: 23  
Candidate Starts for Trustiboi\_61:  
(Start: 23 @44439 has 75 MA's), (36, 44577),

Gene: Trustiboi\_65 Start: 46015, Stop: 46278, Start Num: 23  
Candidate Starts for Trustiboi\_65:  
(Start: 23 @46015 has 75 MA's), (29, 46093), (41, 46153), (55, 46252),

Gene: Uzumaki\_65 Start: 43123, Stop: 43404, Start Num: 23  
Candidate Starts for Uzumaki\_65:  
(Start: 23 @43123 has 75 MA's), (24, 43129), (25, 43150), (28, 43195), (31, 43231), (53, 43360),

Gene: Zeina\_70 Start: 43817, Stop: 44101, Start Num: 23  
Candidate Starts for Zeina\_70:  
(Start: 23 @43817 has 75 MA's), (25, 43844), (42, 43982),