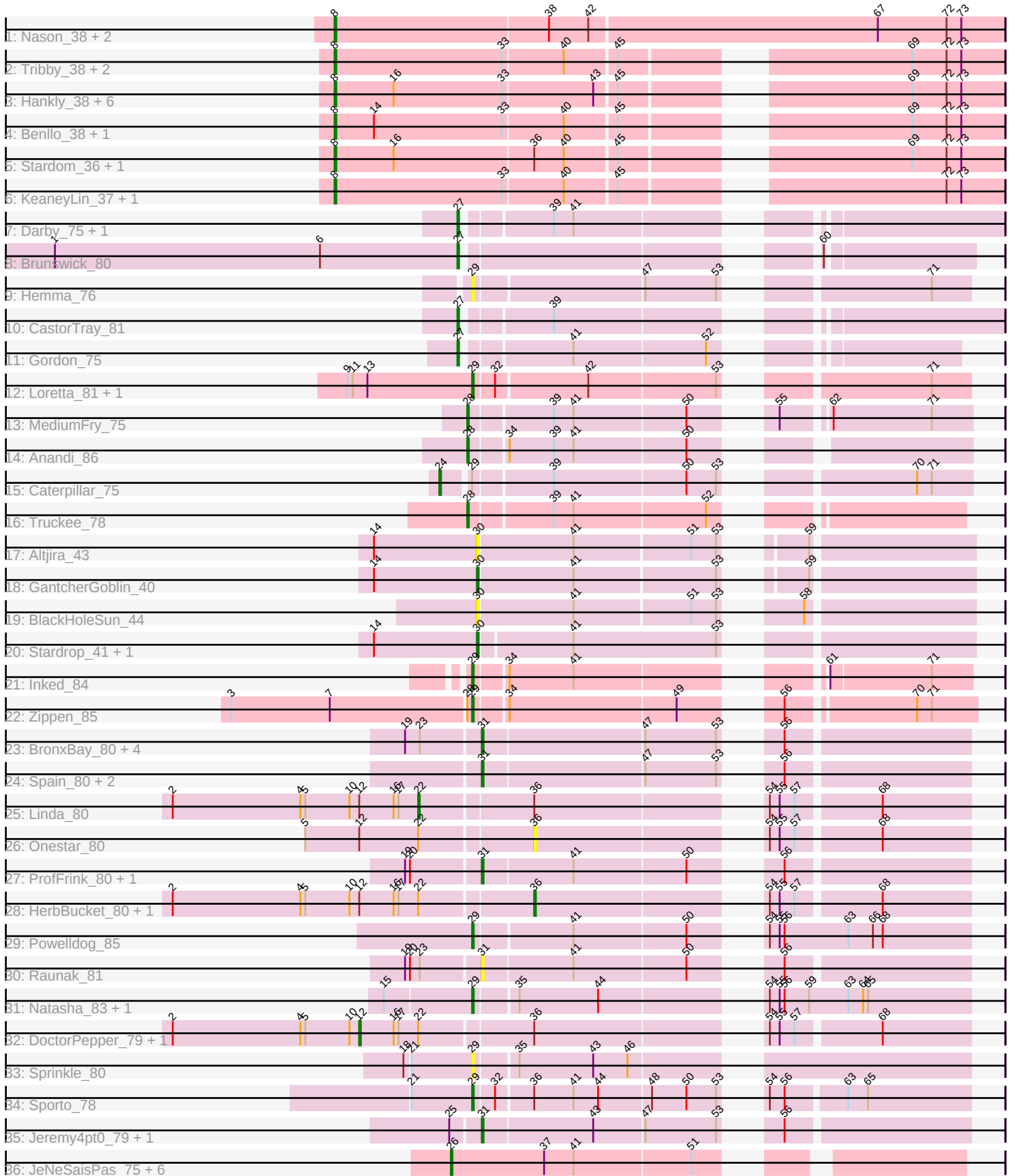


# Pham 323231



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 323231 Report

This analysis was run 09/05/26 on database version 662.

Pham number 323231 has 69 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Nason\_38, Elsa\_38, Arcadia\_38
- Track 2 : Tribby\_38, BenitoAntonio\_39, Correa\_36
- Track 3 : Hankly\_38, Cheesy\_38, JEGGS\_38, Circum\_40, Kardesai\_40, Heisenberger\_38, Mooshroom\_41
- Track 4 : Benllo\_38, YoshiYama\_38
- Track 5 : Stardom\_36, Xenomorph\_35
- Track 6 : KeaneyLin\_37, GoCrazy\_37
- Track 7 : Darby\_75, Trustiboi\_77
- Track 8 : Brunswick\_80
- Track 9 : Hemma\_76
- Track 10 : CastorTray\_81
- Track 11 : Gordon\_75
- Track 12 : Loretta\_81, Ingrid\_85
- Track 13 : MediumFry\_75
- Track 14 : Anandi\_86
- Track 15 : Caterpillar\_75
- Track 16 : Truckee\_78
- Track 17 : Altjira\_43
- Track 18 : GantcherGoblin\_40
- Track 19 : BlackHoleSun\_44
- Track 20 : Stardrop\_41, Navi1117\_42
- Track 21 : Inked\_84
- Track 22 : Zippen\_85
- Track 23 : BronxBay\_80, Stayer\_80, Michelle\_80, StarLord\_80, Sloopyjoe\_80
- Track 24 : Spain\_80, Djungelskog\_79, MrAaronian\_80
- Track 25 : Linda\_80
- Track 26 : Onestar\_80
- Track 27 : ProfFrink\_80, Salk\_80
- Track 28 : HerbBucket\_80, Egad\_81
- Track 29 : PowellDog\_85
- Track 30 : Raunak\_81
- Track 31 : Natasha\_83, RustyBoy\_84
- Track 32 : DoctorPepper\_79, Boog\_79
- Track 33 : Sprinkle\_80
- Track 34 : Sporto\_78
- Track 35 : Jeremy4pt0\_79, Shiba\_79

- Track 36 : JeNeSaisPas\_75, Kureo\_78, Gandionco\_76, Qui\_79, Paella\_79, Marianna39\_78, Elver\_77

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

The start number called the most often in the published annotations is 8, it was called in 17 of the 56 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arcadia\_38, BenitoAntonio\_39, Benllo\_38, Cheesy\_38, Circum\_40, Correa\_36, Elsa\_38, GoCrazy\_37, Hankly\_38, Heisenberger\_38, JEGGS\_38, Kardesai\_40, KeaneyLin\_37, Mooshroom\_41, Nason\_38, Stardom\_36, Tribby\_38, Xenomorph\_35, YoshiYama\_38,

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

- 

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

- Altjira\_43, Anandi\_86, BlackHoleSun\_44, Boog\_79, BronxBay\_80, Brunswick\_80, CastorTray\_81, Caterpillar\_75, Darby\_75, Djungelskog\_79, DoctorPepper\_79, Egad\_81, Elver\_77, Gandionco\_76, GantcherGoblin\_40, Gordon\_75, Hemma\_76, HerbBucket\_80, Ingrid\_85, Inked\_84, JeNeSaisPas\_75, Jeremy4pt0\_79, Kureo\_78, Linda\_80, Loretta\_81, Marianna39\_78, MediumFry\_75, Michelle\_80, MrAaronian\_80, Natasha\_83, Navi1117\_42, Onestar\_80, Paella\_79, Powellldog\_85, ProffFrink\_80, Qui\_79, Raunak\_81, RustyBoy\_84, Salk\_80, Shiba\_79, Sloopyjoe\_80, Spain\_80, Sporto\_78, Sprinkle\_80, StarLord\_80, Stardrop\_41, Stayer\_80, Truckee\_78, Trustiboi\_77, Zippen\_85,

### **Summary by start number:**

Start 8:

- Found in 19 of 69 ( 27.5% ) of genes in pham
- Manual Annotations of this start: 17 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arcadia\_38 (AM), BenitoAntonio\_39 (AM), Benllo\_38 (AM), Cheesy\_38 (AM), Circum\_40 (AM), Correa\_36 (AM), Elsa\_38 (AM), GoCrazy\_37 (AM), Hankly\_38 (AM), Heisenberger\_38 (AM), JEGGS\_38 (AM), Kardesai\_40 (AM), KeaneyLin\_37 (AM), Mooshroom\_41 (AM), Nason\_38 (AM), Stardom\_36 (AM), Tribby\_38 (AM), Xenomorph\_35 (AM), YoshiYama\_38 (AM),

Start 12:

- Found in 6 of 69 ( 8.7% ) of genes in pham
- Manual Annotations of this start: 2 of 56
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Boog\_79 (AW), DoctorPepper\_79 (AW),

Start 22:

- Found in 6 of 69 ( 8.7% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 16.7% of time when present

- Phage (with cluster) where this start called: Linda\_80 (AW),

#### Start 24:

- Found in 1 of 69 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Caterpillar\_75 (AU4),

#### Start 26:

- Found in 7 of 69 ( 10.1% ) of genes in pham
- Manual Annotations of this start: 4 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elver\_77 (FK), Gandionco\_76 (FK), JeNeSaisPas\_75 (FK), Kureo\_78 (FK), Marianna39\_78 (FK), Paella\_79 (FK), Qui\_79 (FK),

#### Start 27:

- Found in 5 of 69 ( 7.2% ) of genes in pham
- Manual Annotations of this start: 5 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Brunswick\_80 (AU1), CastorTray\_81 (AU1), Darby\_75 (AU1), Gordon\_75 (AU1), Trustiboi\_77 (AU1),

#### Start 28:

- Found in 4 of 69 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 3 of 56
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Anandi\_86 (AU4), MediumFry\_75 (AU4), Truckee\_78 (AU5),

#### Start 29:

- Found in 11 of 69 ( 15.9% ) of genes in pham
- Manual Annotations of this start: 8 of 56
- Called 90.9% of time when present
- Phage (with cluster) where this start called: Hemma\_76 (AU1), Ingrid\_85 (AU3), Inked\_84 (AU7), Loretta\_81 (AU3), Natasha\_83 (AW), Powellldog\_85 (AW), RustyBoy\_84 (AW), Sporto\_78 (AW), Sprinkle\_80 (AW), Zippen\_85 (AU7),

#### Start 30:

- Found in 5 of 69 ( 7.2% ) of genes in pham
- Manual Annotations of this start: 3 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altjira\_43 (AU6), BlackHoleSun\_44 (AU6), GantcherGoblin\_40 (AU6), Navi1117\_42 (AU6), Stardrop\_41 (AU6),

#### Start 31:

- Found in 13 of 69 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 11 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BronxBay\_80 (AW), Djungelskog\_79 (AW), Jeremy4pt0\_79 (AW), Michelle\_80 (AW), MrAaronian\_80 (AW), ProfFrink\_80 (AW), Raunak\_81 (AW), Salk\_80 (AW), Shiba\_79 (AW), Sloopyjoe\_80 (AW), Spain\_80 (AW), StarLord\_80 (AW), Stayer\_80 (AW),

Start 36:

- Found in 9 of 69 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Egad\_81 (AW), HerbBucket\_80 (AW), Onestar\_80 (AW),

### **Summary by clusters:**

There are 9 clusters represented in this pham: AU7, AM, AU1, AU3, AU5, AU4, AW, AU6, FK,

Info for manual annotations of cluster AM:

- Start number 8 was manually annotated 17 times for cluster AM.

Info for manual annotations of cluster AU1:

- Start number 27 was manually annotated 5 times for cluster AU1.

Info for manual annotations of cluster AU3:

- Start number 29 was manually annotated 2 times for cluster AU3.

Info for manual annotations of cluster AU4:

- Start number 24 was manually annotated 1 time for cluster AU4.
- Start number 28 was manually annotated 2 times for cluster AU4.

Info for manual annotations of cluster AU5:

- Start number 28 was manually annotated 1 time for cluster AU5.

Info for manual annotations of cluster AU6:

- Start number 30 was manually annotated 3 times for cluster AU6.

Info for manual annotations of cluster AU7:

- Start number 29 was manually annotated 2 times for cluster AU7.

Info for manual annotations of cluster AW:

- Start number 12 was manually annotated 2 times for cluster AW.
- Start number 22 was manually annotated 1 time for cluster AW.
- Start number 29 was manually annotated 4 times for cluster AW.
- Start number 31 was manually annotated 11 times for cluster AW.
- Start number 36 was manually annotated 1 time for cluster AW.

Info for manual annotations of cluster FK:

- Start number 26 was manually annotated 4 times for cluster FK.

### **Gene Information:**

Gene: Altjira\_43 Start: 31618, Stop: 31881, Start Num: 30

Candidate Starts for Altjira\_43:

(14, 31555), (Start: 30 @31618 has 3 MA's), (41, 31675), (51, 31744), (53, 31759), (59, 31786),

Gene: Anandi\_86 Start: 51309, Stop: 51569, Start Num: 28

Candidate Starts for Anandi\_86:

(Start: 28 @51309 has 3 MA's), (34, 51330), (39, 51357), (41, 51369), (50, 51435),

Gene: Arcadia\_38 Start: 28208, Stop: 28612, Start Num: 8

Candidate Starts for Arcadia\_38:

(Start: 8 @28208 has 17 MA's), (38, 28337), (42, 28361), (67, 28535), (72, 28577), (73, 28586),

Gene: BenitoAntonio\_39 Start: 28046, Stop: 28417, Start Num: 8

Candidate Starts for BenitoAntonio\_39:

(Start: 8 @28046 has 17 MA's), (33, 28148), (40, 28184), (45, 28214), (69, 28361), (72, 28382), (73, 28391),

Gene: Benllo\_38 Start: 28724, Stop: 29095, Start Num: 8

Candidate Starts for Benllo\_38:

(Start: 8 @28724 has 17 MA's), (14, 28748), (33, 28826), (40, 28862), (45, 28892), (69, 29039), (72, 29060), (73, 29069),

Gene: BlackHoleSun\_44 Start: 30591, Stop: 30857, Start Num: 30

Candidate Starts for BlackHoleSun\_44:

(Start: 30 @30591 has 3 MA's), (41, 30648), (51, 30717), (53, 30732), (58, 30759),

Gene: Boog\_79 Start: 48864, Stop: 49196, Start Num: 12

Candidate Starts for Boog\_79:

(2, 48750), (4, 48828), (5, 48831), (10, 48858), (Start: 12 @48864 has 2 MA's), (16, 48885), (17, 48888), (Start: 22 @48900 has 1 MA's), (Start: 36 @48966 has 1 MA's), (54, 49080), (55, 49086), (57, 49095), (68, 49143),

Gene: BronxBay\_80 Start: 49187, Stop: 49447, Start Num: 31

Candidate Starts for BronxBay\_80:

(19, 49145), (23, 49154), (Start: 31 @49187 has 11 MA's), (47, 49283), (53, 49325), (56, 49340),

Gene: Brunswick\_80 Start: 51050, Stop: 51316, Start Num: 27

Candidate Starts for Brunswick\_80:

(1, 50804), (6, 50966), (Start: 27 @51050 has 5 MA's), (60, 51230),

Gene: CastorTray\_81 Start: 51434, Stop: 51715, Start Num: 27

Candidate Starts for CastorTray\_81:

(Start: 27 @51434 has 5 MA's), (39, 51482),

Gene: Caterpillar\_75 Start: 50096, Stop: 50374, Start Num: 24

Candidate Starts for Caterpillar\_75:

(Start: 24 @50096 has 1 MA's), (Start: 29 @50111 has 8 MA's), (39, 50156), (50, 50234), (53, 50252), (70, 50342), (71, 50351),

Gene: Cheesy\_38 Start: 27895, Stop: 28266, Start Num: 8

Candidate Starts for Cheesy\_38:

(Start: 8 @27895 has 17 MA's), (16, 27931), (33, 27997), (43, 28051), (45, 28063), (69, 28210), (72, 28231), (73, 28240),

Gene: Circum\_40 Start: 28555, Stop: 28926, Start Num: 8

Candidate Starts for Circum\_40:

(Start: 8 @28555 has 17 MA's), (16, 28591), (33, 28657), (43, 28711), (45, 28723), (69, 28870), (72, 28891), (73, 28900),

Gene: Correa\_36 Start: 27083, Stop: 27454, Start Num: 8

Candidate Starts for Correa\_36:

(Start: 8 @27083 has 17 MA's), (33, 27185), (40, 27221), (45, 27251), (69, 27398), (72, 27419), (73, 27428),

Gene: Darby\_75 Start: 50480, Stop: 50761, Start Num: 27

Candidate Starts for Darby\_75:

(Start: 27 @50480 has 5 MA's), (39, 50528), (41, 50540),

Gene: Djungelskog\_79 Start: 49189, Stop: 49449, Start Num: 31

Candidate Starts for Djungelskog\_79:

(Start: 31 @49189 has 11 MA's), (47, 49285), (53, 49327), (56, 49342),

Gene: DoctorPepper\_79 Start: 48848, Stop: 49180, Start Num: 12

Candidate Starts for DoctorPepper\_79:

(2, 48734), (4, 48812), (5, 48815), (10, 48842), (Start: 12 @48848 has 2 MA's), (16, 48869), (17, 48872), (Start: 22 @48884 has 1 MA's), (Start: 36 @48950 has 1 MA's), (54, 49064), (55, 49070), (57, 49079), (68, 49127),

Gene: Egad\_81 Start: 49224, Stop: 49454, Start Num: 36

Candidate Starts for Egad\_81:

(2, 49008), (4, 49086), (5, 49089), (10, 49116), (Start: 12 @49122 has 2 MA's), (16, 49143), (17, 49146), (Start: 22 @49158 has 1 MA's), (Start: 36 @49224 has 1 MA's), (54, 49338), (55, 49344), (57, 49353), (68, 49401),

Gene: Elsa\_38 Start: 28208, Stop: 28612, Start Num: 8

Candidate Starts for Elsa\_38:

(Start: 8 @28208 has 17 MA's), (38, 28337), (42, 28361), (67, 28535), (72, 28577), (73, 28586),

Gene: Elver\_77 Start: 46880, Stop: 47149, Start Num: 26

Candidate Starts for Elver\_77:

(Start: 26 @46880 has 4 MA's), (37, 46937), (41, 46955), (51, 47024),

Gene: Gandionco\_76 Start: 46778, Stop: 47047, Start Num: 26

Candidate Starts for Gandionco\_76:

(Start: 26 @46778 has 4 MA's), (37, 46835), (41, 46853), (51, 46922),

Gene: GantcherGoblin\_40 Start: 30430, Stop: 30693, Start Num: 30

Candidate Starts for GantcherGoblin\_40:

(14, 30367), (Start: 30 @30430 has 3 MA's), (41, 30487), (53, 30571), (59, 30598),

Gene: GoCrazy\_37 Start: 28033, Stop: 28404, Start Num: 8

Candidate Starts for GoCrazy\_37:

(Start: 8 @28033 has 17 MA's), (33, 28135), (40, 28171), (45, 28201), (72, 28369), (73, 28378),

Gene: Gordon\_75 Start: 51276, Stop: 51530, Start Num: 27

Candidate Starts for Gordon\_75:

(Start: 27 @51276 has 5 MA's), (41, 51336), (52, 51414),

Gene: Hankly\_38 Start: 27578, Stop: 27949, Start Num: 8

Candidate Starts for Hankly\_38:

(Start: 8 @27578 has 17 MA's), (16, 27614), (33, 27680), (43, 27734), (45, 27746), (69, 27893), (72, 27914), (73, 27923),

Gene: Heisenberger\_38 Start: 27888, Stop: 28259, Start Num: 8

Candidate Starts for Heisenberger\_38:

(Start: 8 @27888 has 17 MA's), (16, 27924), (33, 27990), (43, 28044), (45, 28056), (69, 28203), (72, 28224), (73, 28233),

Gene: Hemma\_76 Start: 48693, Stop: 48956, Start Num: 29

Candidate Starts for Hemma\_76:

(Start: 29 @48693 has 8 MA's), (47, 48792), (53, 48834), (71, 48933),

Gene: HerbBucket\_80 Start: 48950, Stop: 49180, Start Num: 36

Candidate Starts for HerbBucket\_80:

(2, 48734), (4, 48812), (5, 48815), (10, 48842), (Start: 12 @48848 has 2 MA's), (16, 48869), (17, 48872), (Start: 22 @48884 has 1 MA's), (Start: 36 @48950 has 1 MA's), (54, 49064), (55, 49070), (57, 49079), (68, 49127),

Gene: Ingrid\_85 Start: 51217, Stop: 51480, Start Num: 29

Candidate Starts for Ingrid\_85:

(9, 51142), (11, 51145), (13, 51154), (Start: 29 @51217 has 8 MA's), (32, 51229), (42, 51283), (53, 51358), (71, 51457),

Gene: Inked\_84 Start: 51766, Stop: 52023, Start Num: 29

Candidate Starts for Inked\_84:

(Start: 29 @51766 has 8 MA's), (34, 51784), (41, 51823), (61, 51940), (71, 52000),

Gene: JEGGS\_38 Start: 27942, Stop: 28313, Start Num: 8

Candidate Starts for JEGGS\_38:

(Start: 8 @27942 has 17 MA's), (16, 27978), (33, 28044), (43, 28098), (45, 28110), (69, 28257), (72, 28278), (73, 28287),

Gene: JeNeSaisPas\_75 Start: 47358, Stop: 47627, Start Num: 26

Candidate Starts for JeNeSaisPas\_75:

(Start: 26 @47358 has 4 MA's), (37, 47415), (41, 47433), (51, 47502),

Gene: Jeremy4pt0\_79 Start: 48874, Stop: 49134, Start Num: 31

Candidate Starts for Jeremy4pt0\_79:

(25, 48859), (Start: 31 @48874 has 11 MA's), (43, 48940), (47, 48970), (53, 49012), (56, 49027),

Gene: Kardesai\_40 Start: 28608, Stop: 28979, Start Num: 8

Candidate Starts for Kardesai\_40:

(Start: 8 @28608 has 17 MA's), (16, 28644), (33, 28710), (43, 28764), (45, 28776), (69, 28923), (72, 28944), (73, 28953),

Gene: KeaneyLin\_37 Start: 28033, Stop: 28404, Start Num: 8

Candidate Starts for KeaneyLin\_37:

(Start: 8 @28033 has 17 MA's), (33, 28135), (40, 28171), (45, 28201), (72, 28369), (73, 28378),

Gene: Kureo\_78 Start: 46178, Stop: 46447, Start Num: 26

Candidate Starts for Kureo\_78:

(Start: 26 @46178 has 4 MA's), (37, 46235), (41, 46253), (51, 46322),

Gene: Linda\_80 Start: 49171, Stop: 49467, Start Num: 22

Candidate Starts for Linda\_80:

(2, 49021), (4, 49099), (5, 49102), (10, 49129), (Start: 12 @49135 has 2 MA's), (16, 49156), (17, 49159), (Start: 22 @49171 has 1 MA's), (Start: 36 @49237 has 1 MA's), (54, 49351), (55, 49357), (57, 49366), (68, 49414),

Gene: Loretta\_81 Start: 51217, Stop: 51480, Start Num: 29

Candidate Starts for Loretta\_81:

(9, 51142), (11, 51145), (13, 51154), (Start: 29 @51217 has 8 MA's), (32, 51229), (42, 51283), (53, 51358), (71, 51457),

Gene: Marianna39\_78 Start: 47353, Stop: 47622, Start Num: 26

Candidate Starts for Marianna39\_78:

(Start: 26 @47353 has 4 MA's), (37, 47410), (41, 47428), (51, 47497),

Gene: MediumFry\_75 Start: 50571, Stop: 50834, Start Num: 28

Candidate Starts for MediumFry\_75:

(Start: 28 @50571 has 3 MA's), (39, 50619), (41, 50631), (50, 50697), (55, 50727), (62, 50751), (71, 50811),

Gene: Michelle\_80 Start: 49186, Stop: 49446, Start Num: 31

Candidate Starts for Michelle\_80:

(19, 49144), (23, 49153), (Start: 31 @49186 has 11 MA's), (47, 49282), (53, 49324), (56, 49339),

Gene: Mooshroom\_41 Start: 28608, Stop: 28979, Start Num: 8

Candidate Starts for Mooshroom\_41:

(Start: 8 @28608 has 17 MA's), (16, 28644), (33, 28710), (43, 28764), (45, 28776), (69, 28923), (72, 28944), (73, 28953),

Gene: MrAaronian\_80 Start: 49186, Stop: 49446, Start Num: 31

Candidate Starts for MrAaronian\_80:

(Start: 31 @49186 has 11 MA's), (47, 49282), (53, 49324), (56, 49339),

Gene: Nason\_38 Start: 28208, Stop: 28612, Start Num: 8

Candidate Starts for Nason\_38:

(Start: 8 @28208 has 17 MA's), (38, 28337), (42, 28361), (67, 28535), (72, 28577), (73, 28586),

Gene: Natasha\_83 Start: 49509, Stop: 49778, Start Num: 29

Candidate Starts for Natasha\_83:

(15, 49458), (Start: 29 @49509 has 8 MA's), (35, 49533), (44, 49581), (54, 49656), (55, 49662), (56, 49665), (59, 49680), (63, 49704), (64, 49713), (65, 49716),

Gene: Navi1117\_42 Start: 30843, Stop: 31109, Start Num: 30

Candidate Starts for Navi1117\_42:

(14, 30780), (Start: 30 @30843 has 3 MA's), (41, 30897), (53, 30984),

Gene: Onestar\_80 Start: 49456, Stop: 49686, Start Num: 36

Candidate Starts for Onestar\_80:

(5, 49321), (Start: 12 @49354 has 2 MA's), (Start: 22 @49390 has 1 MA's), (Start: 36 @49456 has 1 MA's), (54, 49570), (55, 49576), (57, 49585), (68, 49633),

Gene: Paella\_79 Start: 47473, Stop: 47742, Start Num: 26

Candidate Starts for Paella\_79:

(Start: 26 @47473 has 4 MA's), (37, 47530), (41, 47548), (51, 47617),

Gene: Powelldog\_85 Start: 50422, Stop: 50691, Start Num: 29

Candidate Starts for Powelldog\_85:

(Start: 29 @50422 has 8 MA's), (41, 50479), (50, 50545), (54, 50569), (55, 50575), (56, 50578), (63, 50617), (66, 50632), (68, 50638),

Gene: ProfFrink\_80 Start: 49155, Stop: 49415, Start Num: 31

Candidate Starts for ProfFrink\_80:

(19, 49113), (20, 49116), (Start: 31 @49155 has 11 MA's), (41, 49209), (50, 49275), (56, 49308),

Gene: Qui\_79 Start: 47473, Stop: 47742, Start Num: 26

Candidate Starts for Qui\_79:

(Start: 26 @47473 has 4 MA's), (37, 47530), (41, 47548), (51, 47617),

Gene: Raunak\_81 Start: 48865, Stop: 49125, Start Num: 31

Candidate Starts for Raunak\_81:

(19, 48823), (20, 48826), (23, 48832), (Start: 31 @48865 has 11 MA's), (41, 48919), (50, 48985), (56, 49018),

Gene: RustyBoy\_84 Start: 49708, Stop: 49977, Start Num: 29

Candidate Starts for RustyBoy\_84:

(15, 49657), (Start: 29 @49708 has 8 MA's), (35, 49732), (44, 49780), (54, 49855), (55, 49861), (56, 49864), (59, 49879), (63, 49903), (64, 49912), (65, 49915),

Gene: Salk\_80 Start: 49169, Stop: 49429, Start Num: 31

Candidate Starts for Salk\_80:

(19, 49127), (20, 49130), (Start: 31 @49169 has 11 MA's), (41, 49223), (50, 49289), (56, 49322),

Gene: Shiba\_79 Start: 48881, Stop: 49141, Start Num: 31

Candidate Starts for Shiba\_79:

(25, 48866), (Start: 31 @48881 has 11 MA's), (43, 48947), (47, 48977), (53, 49019), (56, 49034),

Gene: Sloopyjoe\_80 Start: 49188, Stop: 49448, Start Num: 31

Candidate Starts for Sloopyjoe\_80:

(19, 49146), (23, 49155), (Start: 31 @49188 has 11 MA's), (47, 49284), (53, 49326), (56, 49341),

Gene: Spain\_80 Start: 49186, Stop: 49446, Start Num: 31

Candidate Starts for Spain\_80:

(Start: 31 @49186 has 11 MA's), (47, 49282), (53, 49324), (56, 49339),

Gene: Sporto\_78 Start: 49862, Stop: 50125, Start Num: 29

Candidate Starts for Sporto\_78:

(21, 49826), (Start: 29 @49862 has 8 MA's), (32, 49874), (Start: 36 @49895 has 1 MA's), (41, 49919), (44, 49934), (48, 49964), (50, 49985), (53, 50003), (54, 50009), (56, 50018), (63, 50051), (65, 50063),

Gene: Sprinkle\_80 Start: 49799, Stop: 50068, Start Num: 29

Candidate Starts for Sprinkle\_80:

(18, 49760), (21, 49763), (Start: 29 @49799 has 8 MA's), (35, 49823), (43, 49868), (46, 49889),

Gene: StarLord\_80 Start: 49181, Stop: 49441, Start Num: 31

Candidate Starts for StarLord\_80:

(19, 49139), (23, 49148), (Start: 31 @49181 has 11 MA's), (47, 49277), (53, 49319), (56, 49334),

Gene: Stardom\_36 Start: 27087, Stop: 27458, Start Num: 8

Candidate Starts for Stardom\_36:

(Start: 8 @27087 has 17 MA's), (16, 27123), (Start: 36 @27207 has 1 MA's), (40, 27225), (45, 27255), (69, 27402), (72, 27423), (73, 27432),

Gene: Stardrop\_41 Start: 30860, Stop: 31126, Start Num: 30

Candidate Starts for Stardrop\_41:

(14, 30797), (Start: 30 @30860 has 3 MA's), (41, 30914), (53, 31001),

Gene: Stayer\_80 Start: 49184, Stop: 49444, Start Num: 31

Candidate Starts for Stayer\_80:

(19, 49142), (23, 49151), (Start: 31 @49184 has 11 MA's), (47, 49280), (53, 49322), (56, 49337),

Gene: Tribby\_38 Start: 27916, Stop: 28287, Start Num: 8

Candidate Starts for Tribby\_38:

(Start: 8 @27916 has 17 MA's), (33, 28018), (40, 28054), (45, 28084), (69, 28231), (72, 28252), (73, 28261),

Gene: Truckee\_78 Start: 51261, Stop: 51521, Start Num: 28

Candidate Starts for Truckee\_78:

(Start: 28 @51261 has 3 MA's), (39, 51309), (41, 51321), (52, 51399),

Gene: Trustiboi\_77 Start: 51124, Stop: 51387, Start Num: 27

Candidate Starts for Trustiboi\_77:

(Start: 27 @51124 has 5 MA's), (39, 51172), (41, 51184),

Gene: Xenomorph\_35 Start: 27874, Stop: 28245, Start Num: 8

Candidate Starts for Xenomorph\_35:

(Start: 8 @27874 has 17 MA's), (16, 27910), (Start: 36 @27994 has 1 MA's), (40, 28012), (45, 28042), (69, 28189), (72, 28210), (73, 28219),

Gene: YoshiYama\_38 Start: 28139, Stop: 28510, Start Num: 8

Candidate Starts for YoshiYama\_38:

(Start: 8 @28139 has 17 MA's), (14, 28163), (33, 28241), (40, 28277), (45, 28307), (69, 28454), (72, 28475), (73, 28484),

Gene: Zippen\_85 Start: 51805, Stop: 52068, Start Num: 29

Candidate Starts for Zippen\_85:

(3, 51661), (7, 51721), (Start: 28 @51802 has 3 MA's), (Start: 29 @51805 has 8 MA's), (34, 51823), (49, 51922), (56, 51961), (70, 52033), (71, 52042),