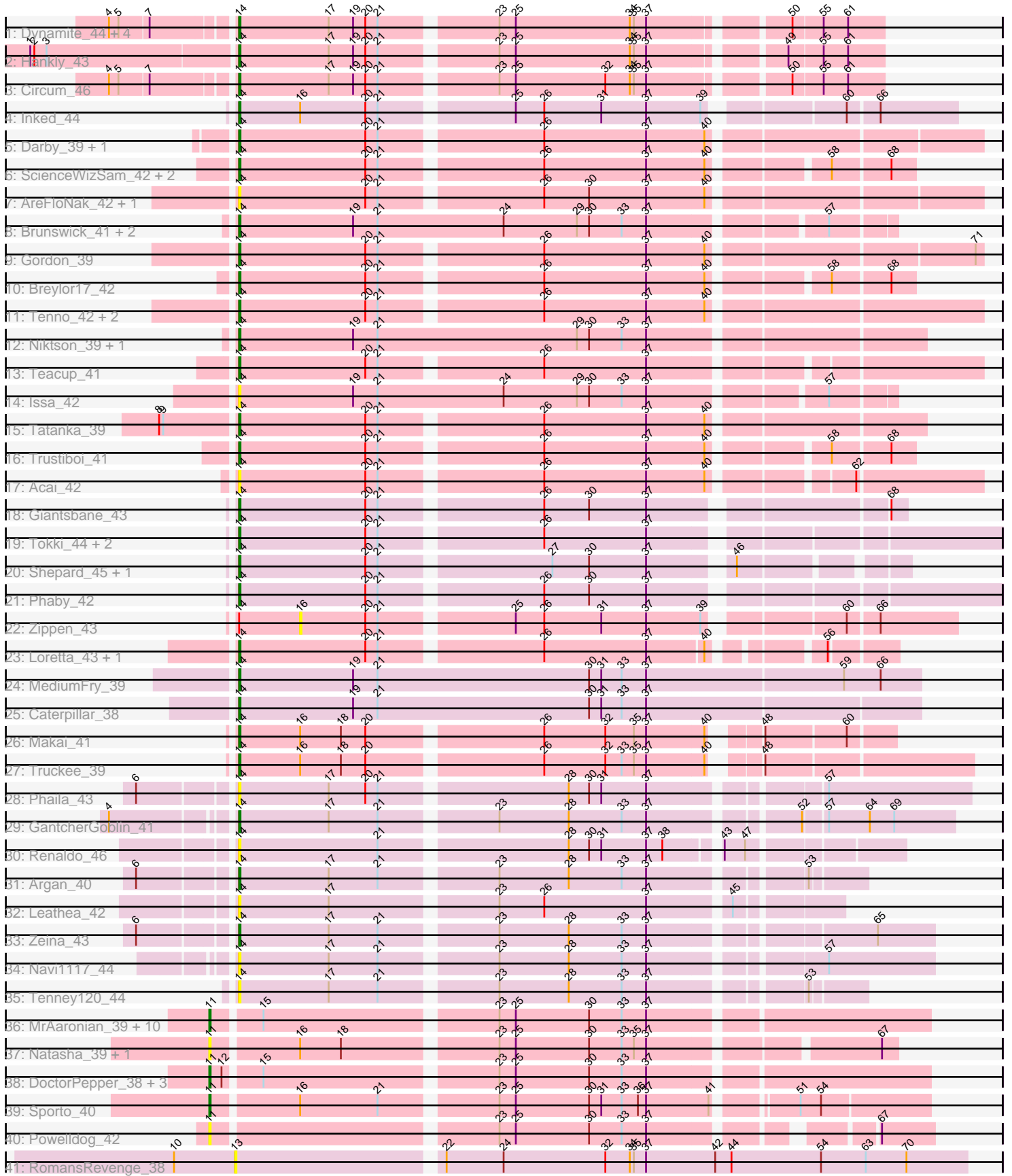


Pham 200234



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 200234 Report

This analysis was run 01/18/25 on database version 583.

Pham number 200234 has 72 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Dynamite\_44, KeaneyLin\_43, NapoleonB\_44, GoCrazy\_43, Bowling\_43
- Track 2 : Hankly\_43
- Track 3 : Circum\_46
- Track 4 : Inked\_44
- Track 5 : Darby\_39, Nightmare\_42
- Track 6 : ScienceWizSam\_42, Synopsis\_39, DevitoJr\_40
- Track 7 : AreFloNak\_42, Nivinsha\_42
- Track 8 : Brunswick\_41, LucySwiss\_42, CastorTray\_42
- Track 9 : Gordon\_39
- Track 10 : Breylor17\_42
- Track 11 : Tenno\_42, CapnMurica\_39, MiniBagel\_41
- Track 12 : Niktson\_39, ElephantMan\_39
- Track 13 : Teacup\_41
- Track 14 : Issa\_42
- Track 15 : Tatanka\_39
- Track 16 : Trustiboi\_41
- Track 17 : Acai\_42
- Track 18 : Giantsbane\_43
- Track 19 : Tokki\_44, Bouchard\_41, Chlochlo\_41
- Track 20 : Shepard\_45, LilHuddy\_42
- Track 21 : Phaby\_42
- Track 22 : Zippen\_43
- Track 23 : Loretta\_43, Ingrid\_43
- Track 24 : MediumFry\_39
- Track 25 : Caterpillar\_38
- Track 26 : Makai\_41
- Track 27 : Truckee\_39
- Track 28 : Phaila\_43
- Track 29 : GantcherGoblin\_41
- Track 30 : Renaldo\_46
- Track 31 : Argan\_40
- Track 32 : Leathea\_42
- Track 33 : Zeina\_43
- Track 34 : Navi1117\_44
- Track 35 : Tenney120\_44
- Track 36 : MrAaronian\_39, Sloopyjoe\_39, Shiba\_38, Raunak\_40, ProfFrink\_39, Djungelskog\_39, Boog\_38, Egad\_39, Michelle\_39, BronxBay\_39, StarLord\_39

- Track 37 : Natasha\_39, RustyBoy\_39
- Track 38 : DoctorPepper\_38, Salk\_39, Stayer\_39, Linda\_39
- Track 39 : Sporto\_40
- Track 40 : PowellDog\_42
- Track 41 : RomansRevenge\_38

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

The start number called the most often in the published annotations is 14, it was called in 38 of the 52 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acai\_42, AreFloNak\_42, Argan\_40, Bouchard\_41, Bowling\_43, Breylor17\_42, Brunswick\_41, CapnMurica\_39, CastorTray\_42, Caterpillar\_38, Chlocho\_41, Circum\_46, Darby\_39, DevitoJr\_40, Dynamite\_44, ElephantMan\_39, GantcherGoblin\_41, Giantsbane\_43, GoCrazy\_43, Gordon\_39, Hankly\_43, Ingrid\_43, Inked\_44, Issa\_42, KeaneyLin\_43, Leatheia\_42, LilHuddy\_42, Loretta\_43, LucySwiss\_42, Makai\_41, MediumFry\_39, MiniBagel\_41, NapoleonB\_44, Navi1117\_44, Nightmare\_42, Niktson\_39, Nivinsha\_42, Phaby\_42, Phaila\_43, Renaldo\_46, ScienceWizSam\_42, Shepard\_45, Synopsis\_39, Tatanka\_39, Teacup\_41, Tenney120\_44, Tenno\_42, Tokki\_44, Truckee\_39, Trustiboi\_41, Zeina\_43,

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

- Zippen\_43,

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

- Boog\_38, BronxBay\_39, Djungelskog\_39, DoctorPepper\_38, Egad\_39, Linda\_39, Michelle\_39, MrAaronian\_39, Natasha\_39, PowellDog\_42, ProfFrink\_39, Raunak\_40, RomansRevenge\_38, RustyBoy\_39, Salk\_39, Shiba\_38, Sloopyjoe\_39, Sporto\_40, StarLord\_39, Stayer\_39,

**Summary by start number:**

Start 11:

- Found in 19 of 72 ( 26.4% ) of genes in pham
- Manual Annotations of this start: 14 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Boog\_38 (AW), BronxBay\_39 (AW), Djungelskog\_39 (AW), DoctorPepper\_38 (AW), Egad\_39 (AW), Linda\_39 (AW), Michelle\_39 (AW), MrAaronian\_39 (AW), Natasha\_39 (AW), PowellDog\_42 (AW), ProfFrink\_39 (AW), Raunak\_40 (AW), RustyBoy\_39 (AW), Salk\_39 (AW), Shiba\_38 (AW), Sloopyjoe\_39 (AW), Sporto\_40 (AW), StarLord\_39 (AW), Stayer\_39 (AW),

Start 13:

- Found in 1 of 72 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RomansRevenge\_38 (singleton),

#### Start 14:

- Found in 52 of 72 ( 72.2% ) of genes in pham
- Manual Annotations of this start: 38 of 52
- Called 98.1% of time when present
- Phage (with cluster) where this start called: Acai\_42 (AU1), AreFloNak\_42 (AU1), Argan\_40 (AU6), Bouchard\_41 (AU2), Bowling\_43 (AM), Breylor17\_42 (AU1), Brunswick\_41 (AU1), CapnMurica\_39 (AU1), CastorTray\_42 (AU1), Caterpillar\_38 (AU4), Chlochlo\_41 (AU2), Circum\_46 (AM), Darby\_39 (AU1), DevitoJr\_40 (AU1), Dynamite\_44 (AM), ElephantMan\_39 (AU1), GantcherGoblin\_41 (AU6), Giantsbane\_43 (AU2), GoCrazy\_43 (AM), Gordon\_39 (AU1), Hankly\_43 (AM), Ingrid\_43 (AU3), Inked\_44 (AU), Issa\_42 (AU1), KeaneyLin\_43 (AM), Leathea\_42 (AU6), LilHuddy\_42 (AU2), Loretta\_43 (AU3), LucySwiss\_42 (AU1), Makai\_41 (AU5), MediumFry\_39 (AU4), MiniBagel\_41 (AU1), NapoleonB\_44 (AM), Navi1117\_44 (AU6), Nightmare\_42 (AU1), Niktson\_39 (AU1), Nivinsha\_42 (AU1), Phaby\_42 (AU2), Phaila\_43 (AU6), Renaldo\_46 (AU6), ScienceWizSam\_42 (AU1), Shepard\_45 (AU2), Synopsis\_39 (AU1), Tatanka\_39 (AU1), Teacup\_41 (AU1), Tenney120\_44 (AU6), Tenno\_42 (AU1), Tokki\_44 (AU2), Truckee\_39 (AU5), Trustiboi\_41 (AU1), Zeina\_43 (AU6),

#### Start 16:

- Found in 7 of 72 ( 9.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Zippen\_43 (AU3),

#### Summary by clusters:

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

Info for manual annotations of cluster AM:

- Start number 14 was manually annotated 6 times for cluster AM.

Info for manual annotations of cluster AU:

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

Info for manual annotations of cluster AU1:

- Start number 14 was manually annotated 17 times for cluster AU1.

Info for manual annotations of cluster AU2:

- Start number 14 was manually annotated 5 times for cluster AU2.

Info for manual annotations of cluster AU3:

- Start number 14 was manually annotated 2 times for cluster AU3.

Info for manual annotations of cluster AU4:

- Start number 14 was manually annotated 2 times for cluster AU4.

Info for manual annotations of cluster AU5:

- Start number 14 was manually annotated 2 times for cluster AU5.

Info for manual annotations of cluster AU6:

- Start number 14 was manually annotated 3 times for cluster AU6.

Info for manual annotations of cluster AW:

•Start number 11 was manually annotated 14 times for cluster AW.

**Gene Information:**

Gene: Acai\_42 Start: 31913, Stop: 32422, Start Num: 14

Candidate Starts for Acai\_42:

(Start: 14 @31913 has 38 MA's), (20, 32006), (21, 32015), (26, 32126), (37, 32201), (40, 32243), (62, 32333),

Gene: AreFloNak\_42 Start: 31859, Stop: 32374, Start Num: 14

Candidate Starts for AreFloNak\_42:

(Start: 14 @31859 has 38 MA's), (20, 31952), (21, 31961), (26, 32072), (30, 32105), (37, 32147), (40, 32189),

Gene: Argan\_40 Start: 30235, Stop: 30660, Start Num: 14

Candidate Starts for Argan\_40:

(6, 30172), (Start: 14 @30235 has 38 MA's), (17, 30301), (21, 30337), (23, 30415), (28, 30466), (33, 30505), (37, 30523), (53, 30622),

Gene: Boog\_38 Start: 29150, Stop: 29647, Start Num: 11

Candidate Starts for Boog\_38:

(Start: 11 @29150 has 14 MA's), (15, 29183), (23, 29345), (25, 29357), (30, 29411), (33, 29435), (37, 29453),

Gene: Bouchard\_41 Start: 32020, Stop: 32466, Start Num: 14

Candidate Starts for Bouchard\_41:

(Start: 14 @32020 has 38 MA's), (20, 32113), (21, 32122), (26, 32233), (37, 32308),

Gene: Bowling\_43 Start: 30182, Stop: 30625, Start Num: 14

Candidate Starts for Bowling\_43:

(4, 30101), (5, 30107), (7, 30128), (Start: 14 @30182 has 38 MA's), (17, 30248), (19, 30266), (20, 30275), (21, 30284), (23, 30362), (25, 30374), (34, 30458), (35, 30461), (37, 30470), (50, 30560), (55, 30581), (61, 30599),

Gene: Breylor17\_42 Start: 32693, Stop: 33154, Start Num: 14

Candidate Starts for Breylor17\_42:

(Start: 14 @32693 has 38 MA's), (20, 32786), (21, 32795), (26, 32906), (37, 32981), (40, 33023), (58, 33098), (68, 33137),

Gene: BronxBay\_39 Start: 29447, Stop: 29944, Start Num: 11

Candidate Starts for BronxBay\_39:

(Start: 11 @29447 has 14 MA's), (15, 29480), (23, 29642), (25, 29654), (30, 29708), (33, 29732), (37, 29750),

Gene: Brunswick\_41 Start: 31519, Stop: 31977, Start Num: 14

Candidate Starts for Brunswick\_41:

(Start: 14 @31519 has 38 MA's), (19, 31603), (21, 31621), (24, 31714), (29, 31768), (30, 31777), (33, 31801), (37, 31819), (57, 31933),

Gene: CapnMurica\_39 Start: 32622, Stop: 33140, Start Num: 14  
Candidate Starts for CapnMurica\_39:  
(Start: 14 @32622 has 38 MA's), (20, 32715), (21, 32724), (26, 32835), (37, 32910), (40, 32952),

Gene: CastorTray\_42 Start: 32244, Stop: 32702, Start Num: 14  
Candidate Starts for CastorTray\_42:  
(Start: 14 @32244 has 38 MA's), (19, 32328), (21, 32346), (24, 32439), (29, 32493), (30, 32502), (33, 32526), (37, 32544), (57, 32658),

Gene: Caterpillar\_38 Start: 31053, Stop: 31547, Start Num: 14  
Candidate Starts for Caterpillar\_38:  
(Start: 14 @31053 has 38 MA's), (19, 31137), (21, 31155), (30, 31311), (31, 31320), (33, 31335), (37, 31353),

Gene: Chlochlo\_41 Start: 32054, Stop: 32506, Start Num: 14  
Candidate Starts for Chlochlo\_41:  
(Start: 14 @32054 has 38 MA's), (20, 32147), (21, 32156), (26, 32267), (37, 32342),

Gene: Circum\_46 Start: 30820, Stop: 31263, Start Num: 14  
Candidate Starts for Circum\_46:  
(4, 30739), (5, 30745), (7, 30766), (Start: 14 @30820 has 38 MA's), (17, 30886), (19, 30904), (20, 30913), (21, 30922), (23, 31000), (25, 31012), (32, 31078), (34, 31096), (35, 31099), (37, 31108), (50, 31198), (55, 31219), (61, 31237),

Gene: Darby\_39 Start: 31365, Stop: 31880, Start Num: 14  
Candidate Starts for Darby\_39:  
(Start: 14 @31365 has 38 MA's), (20, 31458), (21, 31467), (26, 31578), (37, 31653), (40, 31695),

Gene: DevitoJr\_40 Start: 31863, Stop: 32324, Start Num: 14  
Candidate Starts for DevitoJr\_40:  
(Start: 14 @31863 has 38 MA's), (20, 31956), (21, 31965), (26, 32076), (37, 32151), (40, 32193), (58, 32268), (68, 32307),

Gene: Djungelskog\_39 Start: 29447, Stop: 29944, Start Num: 11  
Candidate Starts for Djungelskog\_39:  
(Start: 11 @29447 has 14 MA's), (15, 29480), (23, 29642), (25, 29654), (30, 29708), (33, 29732), (37, 29750),

Gene: DoctorPepper\_38 Start: 29149, Stop: 29646, Start Num: 11  
Candidate Starts for DoctorPepper\_38:  
(Start: 11 @29149 has 14 MA's), (12, 29158), (15, 29182), (23, 29344), (25, 29356), (30, 29410), (33, 29434), (37, 29452),

Gene: Dynamite\_44 Start: 30372, Stop: 30815, Start Num: 14  
Candidate Starts for Dynamite\_44:  
(4, 30291), (5, 30297), (7, 30318), (Start: 14 @30372 has 38 MA's), (17, 30438), (19, 30456), (20, 30465), (21, 30474), (23, 30552), (25, 30564), (34, 30648), (35, 30651), (37, 30660), (50, 30750), (55, 30771), (61, 30789),

Gene: Egad\_39 Start: 29448, Stop: 29945, Start Num: 11  
Candidate Starts for Egad\_39:  
(Start: 11 @29448 has 14 MA's), (15, 29481), (23, 29643), (25, 29655), (30, 29709), (33, 29733), (37, 29751),

Gene: ElephantMan\_39 Start: 32062, Stop: 32550, Start Num: 14

Candidate Starts for ElephantMan\_39:

(Start: 14 @32062 has 38 MA's), (19, 32146), (21, 32164), (29, 32311), (30, 32320), (33, 32344), (37, 32362),

Gene: GantcherGoblin\_41 Start: 30686, Stop: 31177, Start Num: 14

Candidate Starts for GantcherGoblin\_41:

(4, 30608), (Start: 14 @30686 has 38 MA's), (17, 30752), (21, 30788), (23, 30866), (28, 30917), (33, 30956), (37, 30974), (52, 31070), (57, 31085), (64, 31115), (69, 31133),

Gene: Giantsbane\_43 Start: 31240, Stop: 31692, Start Num: 14

Candidate Starts for Giantsbane\_43:

(Start: 14 @31240 has 38 MA's), (20, 31333), (21, 31342), (26, 31453), (30, 31486), (37, 31528), (68, 31681),

Gene: GoCrazy\_43 Start: 30298, Stop: 30741, Start Num: 14

Candidate Starts for GoCrazy\_43:

(4, 30217), (5, 30223), (7, 30244), (Start: 14 @30298 has 38 MA's), (17, 30364), (19, 30382), (20, 30391), (21, 30400), (23, 30478), (25, 30490), (34, 30574), (35, 30577), (37, 30586), (50, 30676), (55, 30697), (61, 30715),

Gene: Gordon\_39 Start: 32650, Stop: 33165, Start Num: 14

Candidate Starts for Gordon\_39:

(Start: 14 @32650 has 38 MA's), (20, 32743), (21, 32752), (26, 32863), (37, 32938), (40, 32980), (71, 33160),

Gene: Hankly\_43 Start: 29599, Stop: 30042, Start Num: 14

Candidate Starts for Hankly\_43:

(1, 29452), (2, 29455), (3, 29464), (Start: 14 @29599 has 38 MA's), (17, 29665), (19, 29683), (20, 29692), (21, 29701), (23, 29779), (25, 29791), (34, 29875), (35, 29878), (37, 29887), (49, 29974), (55, 29998), (61, 30016),

Gene: Ingrid\_43 Start: 31998, Stop: 32435, Start Num: 14

Candidate Starts for Ingrid\_43:

(Start: 14 @31998 has 38 MA's), (20, 32091), (21, 32100), (26, 32211), (37, 32286), (40, 32325), (56, 32391),

Gene: Inked\_44 Start: 32908, Stop: 33399, Start Num: 14

Candidate Starts for Inked\_44:

(Start: 14 @32908 has 38 MA's), (16, 32953), (20, 33001), (21, 33010), (25, 33100), (26, 33121), (31, 33163), (37, 33196), (39, 33235), (60, 33322), (66, 33343),

Gene: Issa\_42 Start: 31974, Stop: 32432, Start Num: 14

Candidate Starts for Issa\_42:

(Start: 14 @31974 has 38 MA's), (19, 32058), (21, 32076), (24, 32169), (29, 32223), (30, 32232), (33, 32256), (37, 32274), (57, 32388),

Gene: KeaneyLin\_43 Start: 30298, Stop: 30741, Start Num: 14

Candidate Starts for KeaneyLin\_43:

(4, 30217), (5, 30223), (7, 30244), (Start: 14 @30298 has 38 MA's), (17, 30364), (19, 30382), (20, 30391), (21, 30400), (23, 30478), (25, 30490), (34, 30574), (35, 30577), (37, 30586), (50, 30676), (55, 30697), (61, 30715),

Gene: Leathea\_42 Start: 30450, Stop: 30863, Start Num: 14  
Candidate Starts for Leathea\_42:  
(Start: 14 @30450 has 38 MA's), (17, 30516), (23, 30630), (26, 30663), (37, 30738), (45, 30792),

Gene: LilHuddy\_42 Start: 32005, Stop: 32451, Start Num: 14  
Candidate Starts for LilHuddy\_42:  
(Start: 14 @32005 has 38 MA's), (20, 32098), (21, 32107), (27, 32224), (30, 32251), (37, 32293), (46, 32344),

Gene: Linda\_39 Start: 29442, Stop: 29939, Start Num: 11  
Candidate Starts for Linda\_39:  
(Start: 11 @29442 has 14 MA's), (12, 29451), (15, 29475), (23, 29637), (25, 29649), (30, 29703), (33, 29727), (37, 29745),

Gene: Loretta\_43 Start: 31998, Stop: 32435, Start Num: 14  
Candidate Starts for Loretta\_43:  
(Start: 14 @31998 has 38 MA's), (20, 32091), (21, 32100), (26, 32211), (37, 32286), (40, 32325), (56, 32391),

Gene: LucySwiss\_42 Start: 31434, Stop: 31892, Start Num: 14  
Candidate Starts for LucySwiss\_42:  
(Start: 14 @31434 has 38 MA's), (19, 31518), (21, 31536), (24, 31629), (29, 31683), (30, 31692), (33, 31716), (37, 31734), (57, 31848),

Gene: Makai\_41 Start: 32217, Stop: 32660, Start Num: 14  
Candidate Starts for Makai\_41:  
(Start: 14 @32217 has 38 MA's), (16, 32262), (18, 32292), (20, 32310), (26, 32430), (32, 32475), (35, 32496), (37, 32505), (40, 32547), (48, 32571), (60, 32628),

Gene: MediumFry\_39 Start: 31366, Stop: 31863, Start Num: 14  
Candidate Starts for MediumFry\_39:  
(Start: 14 @31366 has 38 MA's), (19, 31450), (21, 31468), (30, 31624), (31, 31633), (33, 31648), (37, 31666), (59, 31807), (66, 31834),

Gene: Michelle\_39 Start: 29447, Stop: 29944, Start Num: 11  
Candidate Starts for Michelle\_39:  
(Start: 11 @29447 has 14 MA's), (15, 29480), (23, 29642), (25, 29654), (30, 29708), (33, 29732), (37, 29750),

Gene: MiniBagel\_41 Start: 32604, Stop: 33122, Start Num: 14  
Candidate Starts for MiniBagel\_41:  
(Start: 14 @32604 has 38 MA's), (20, 32697), (21, 32706), (26, 32817), (37, 32892), (40, 32934),

Gene: MrAaronian\_39 Start: 29447, Stop: 29944, Start Num: 11  
Candidate Starts for MrAaronian\_39:  
(Start: 11 @29447 has 14 MA's), (15, 29480), (23, 29642), (25, 29654), (30, 29708), (33, 29732), (37, 29750),

Gene: NapoleonB\_44 Start: 30372, Stop: 30815, Start Num: 14  
Candidate Starts for NapoleonB\_44:  
(4, 30291), (5, 30297), (7, 30318), (Start: 14 @30372 has 38 MA's), (17, 30438), (19, 30456), (20, 30465), (21, 30474), (23, 30552), (25, 30564), (34, 30648), (35, 30651), (37, 30660), (50, 30750), (55,



30771), (61, 30789),

Gene: Natasha\_39 Start: 28972, Stop: 29439, Start Num: 11

Candidate Starts for Natasha\_39:

(Start: 11 @28972 has 14 MA's), (16, 29032), (18, 29062), (23, 29167), (25, 29179), (30, 29233), (33, 29257), (35, 29266), (37, 29275), (67, 29428),

Gene: Navi1117\_44 Start: 31102, Stop: 31581, Start Num: 14

Candidate Starts for Navi1117\_44:

(Start: 14 @31102 has 38 MA's), (17, 31168), (21, 31204), (23, 31282), (28, 31333), (33, 31372), (37, 31390), (57, 31504),

Gene: Nightmare\_42 Start: 32534, Stop: 33052, Start Num: 14

Candidate Starts for Nightmare\_42:

(Start: 14 @32534 has 38 MA's), (20, 32627), (21, 32636), (26, 32747), (37, 32822), (40, 32864),

Gene: Niktson\_39 Start: 32062, Stop: 32550, Start Num: 14

Candidate Starts for Niktson\_39:

(Start: 14 @32062 has 38 MA's), (19, 32146), (21, 32164), (29, 32311), (30, 32320), (33, 32344), (37, 32362),

Gene: Nivinsha\_42 Start: 31859, Stop: 32374, Start Num: 14

Candidate Starts for Nivinsha\_42:

(Start: 14 @31859 has 38 MA's), (20, 31952), (21, 31961), (26, 32072), (30, 32105), (37, 32147), (40, 32189),

Gene: Phaby\_42 Start: 32029, Stop: 32550, Start Num: 14

Candidate Starts for Phaby\_42:

(Start: 14 @32029 has 38 MA's), (20, 32122), (21, 32131), (26, 32242), (30, 32275), (37, 32317),

Gene: Phaila\_43 Start: 30560, Stop: 31063, Start Num: 14

Candidate Starts for Phaila\_43:

(6, 30497), (Start: 14 @30560 has 38 MA's), (17, 30626), (20, 30653), (21, 30662), (28, 30791), (30, 30806), (31, 30815), (37, 30848), (57, 30959),

Gene: Powelldog\_42 Start: 29507, Stop: 29983, Start Num: 11

Candidate Starts for Powelldog\_42:

(Start: 11 @29507 has 14 MA's), (23, 29702), (25, 29714), (30, 29768), (33, 29792), (37, 29810), (67, 29945),

Gene: ProfFrink\_39 Start: 29447, Stop: 29944, Start Num: 11

Candidate Starts for ProfFrink\_39:

(Start: 11 @29447 has 14 MA's), (15, 29480), (23, 29642), (25, 29654), (30, 29708), (33, 29732), (37, 29750),

Gene: Raunak\_40 Start: 29144, Stop: 29641, Start Num: 11

Candidate Starts for Raunak\_40:

(Start: 11 @29144 has 14 MA's), (15, 29177), (23, 29339), (25, 29351), (30, 29405), (33, 29429), (37, 29447),

Gene: Renaldo\_46 Start: 32321, Stop: 32773, Start Num: 14

Candidate Starts for Renaldo\_46:

(Start: 14 @32321 has 38 MA's), (21, 32423), (28, 32552), (30, 32567), (31, 32576), (37, 32609), (38, 32621), (43, 32654), (47, 32669),

Gene: RomansRevenge\_38 Start: 35285, Stop: 34758, Start Num: 13

Candidate Starts for RomansRevenge\_38:

(10, 35330), (13, 35285), (22, 35141), (24, 35099), (32, 35024), (34, 35006), (35, 35003), (37, 34994), (42, 34943), (44, 34931), (54, 34865), (63, 34832), (70, 34802),

Gene: RustyBoy\_39 Start: 28953, Stop: 29420, Start Num: 11

Candidate Starts for RustyBoy\_39:

(Start: 11 @28953 has 14 MA's), (16, 29013), (18, 29043), (23, 29148), (25, 29160), (30, 29214), (33, 29238), (35, 29247), (37, 29256), (67, 29409),

Gene: Salk\_39 Start: 29442, Stop: 29939, Start Num: 11

Candidate Starts for Salk\_39:

(Start: 11 @29442 has 14 MA's), (12, 29451), (15, 29475), (23, 29637), (25, 29649), (30, 29703), (33, 29727), (37, 29745),

Gene: ScienceWizSam\_42 Start: 32182, Stop: 32643, Start Num: 14

Candidate Starts for ScienceWizSam\_42:

(Start: 14 @32182 has 38 MA's), (20, 32275), (21, 32284), (26, 32395), (37, 32470), (40, 32512), (58, 32587), (68, 32626),

Gene: Shepard\_45 Start: 32289, Stop: 32735, Start Num: 14

Candidate Starts for Shepard\_45:

(Start: 14 @32289 has 38 MA's), (20, 32382), (21, 32391), (27, 32508), (30, 32535), (37, 32577), (46, 32628),

Gene: Shiba\_38 Start: 29144, Stop: 29641, Start Num: 11

Candidate Starts for Shiba\_38:

(Start: 11 @29144 has 14 MA's), (15, 29177), (23, 29339), (25, 29351), (30, 29405), (33, 29429), (37, 29447),

Gene: Sloopyjoe\_39 Start: 29448, Stop: 29945, Start Num: 11

Candidate Starts for Sloopyjoe\_39:

(Start: 11 @29448 has 14 MA's), (15, 29481), (23, 29643), (25, 29655), (30, 29709), (33, 29733), (37, 29751),

Gene: Sporto\_40 Start: 30692, Stop: 31183, Start Num: 11

Candidate Starts for Sporto\_40:

(Start: 11 @30692 has 14 MA's), (16, 30752), (21, 30809), (23, 30887), (25, 30899), (30, 30953), (31, 30962), (33, 30977), (36, 30989), (37, 30995), (41, 31040), (51, 31091), (54, 31106),

Gene: StarLord\_39 Start: 29448, Stop: 29945, Start Num: 11

Candidate Starts for StarLord\_39:

(Start: 11 @29448 has 14 MA's), (15, 29481), (23, 29643), (25, 29655), (30, 29709), (33, 29733), (37, 29751),

Gene: Stayer\_39 Start: 29442, Stop: 29939, Start Num: 11

Candidate Starts for Stayer\_39:

(Start: 11 @29442 has 14 MA's), (12, 29451), (15, 29475), (23, 29637), (25, 29649), (30, 29703), (33, 29727), (37, 29745),

Gene: Synopsis\_39 Start: 31848, Stop: 32309, Start Num: 14

Candidate Starts for Synopsis\_39:

(Start: 14 @31848 has 38 MA's), (20, 31941), (21, 31950), (26, 32061), (37, 32136), (40, 32178), (58, 32253), (68, 32292),

Gene: Tatanka\_39 Start: 32005, Stop: 32481, Start Num: 14

Candidate Starts for Tatanka\_39:

(8, 31954), (9, 31957), (Start: 14 @32005 has 38 MA's), (20, 32098), (21, 32107), (26, 32218), (37, 32293), (40, 32335),

Gene: Teacup\_41 Start: 31988, Stop: 32497, Start Num: 14

Candidate Starts for Teacup\_41:

(Start: 14 @31988 has 38 MA's), (20, 32081), (21, 32090), (26, 32201), (37, 32276),

Gene: Tenney120\_44 Start: 31029, Stop: 31454, Start Num: 14

Candidate Starts for Tenney120\_44:

(Start: 14 @31029 has 38 MA's), (17, 31095), (21, 31131), (23, 31209), (28, 31260), (33, 31299), (37, 31317), (53, 31416),

Gene: Tenno\_42 Start: 32612, Stop: 33130, Start Num: 14

Candidate Starts for Tenno\_42:

(Start: 14 @32612 has 38 MA's), (20, 32705), (21, 32714), (26, 32825), (37, 32900), (40, 32942),

Gene: Tokki\_44 Start: 31975, Stop: 32496, Start Num: 14

Candidate Starts for Tokki\_44:

(Start: 14 @31975 has 38 MA's), (20, 32068), (21, 32077), (26, 32188), (37, 32263),

Gene: Truckee\_39 Start: 31923, Stop: 32423, Start Num: 14

Candidate Starts for Truckee\_39:

(Start: 14 @31923 has 38 MA's), (16, 31968), (18, 31998), (20, 32016), (26, 32136), (32, 32181), (33, 32193), (35, 32202), (37, 32211), (40, 32253), (48, 32277),

Gene: Trustiboi\_41 Start: 32399, Stop: 32860, Start Num: 14

Candidate Starts for Trustiboi\_41:

(Start: 14 @32399 has 38 MA's), (20, 32492), (21, 32501), (26, 32612), (37, 32687), (40, 32729), (58, 32804), (68, 32843),

Gene: Zeina\_43 Start: 31010, Stop: 31486, Start Num: 14

Candidate Starts for Zeina\_43:

(6, 30947), (Start: 14 @31010 has 38 MA's), (17, 31076), (21, 31112), (23, 31190), (28, 31241), (33, 31280), (37, 31298), (65, 31445),

Gene: Zippen\_43 Start: 32830, Stop: 33276, Start Num: 16

Candidate Starts for Zippen\_43:

(Start: 14 @32785 has 38 MA's), (16, 32830), (20, 32878), (21, 32887), (25, 32977), (26, 32998), (31, 33040), (37, 33073), (39, 33112), (60, 33199), (66, 33220),