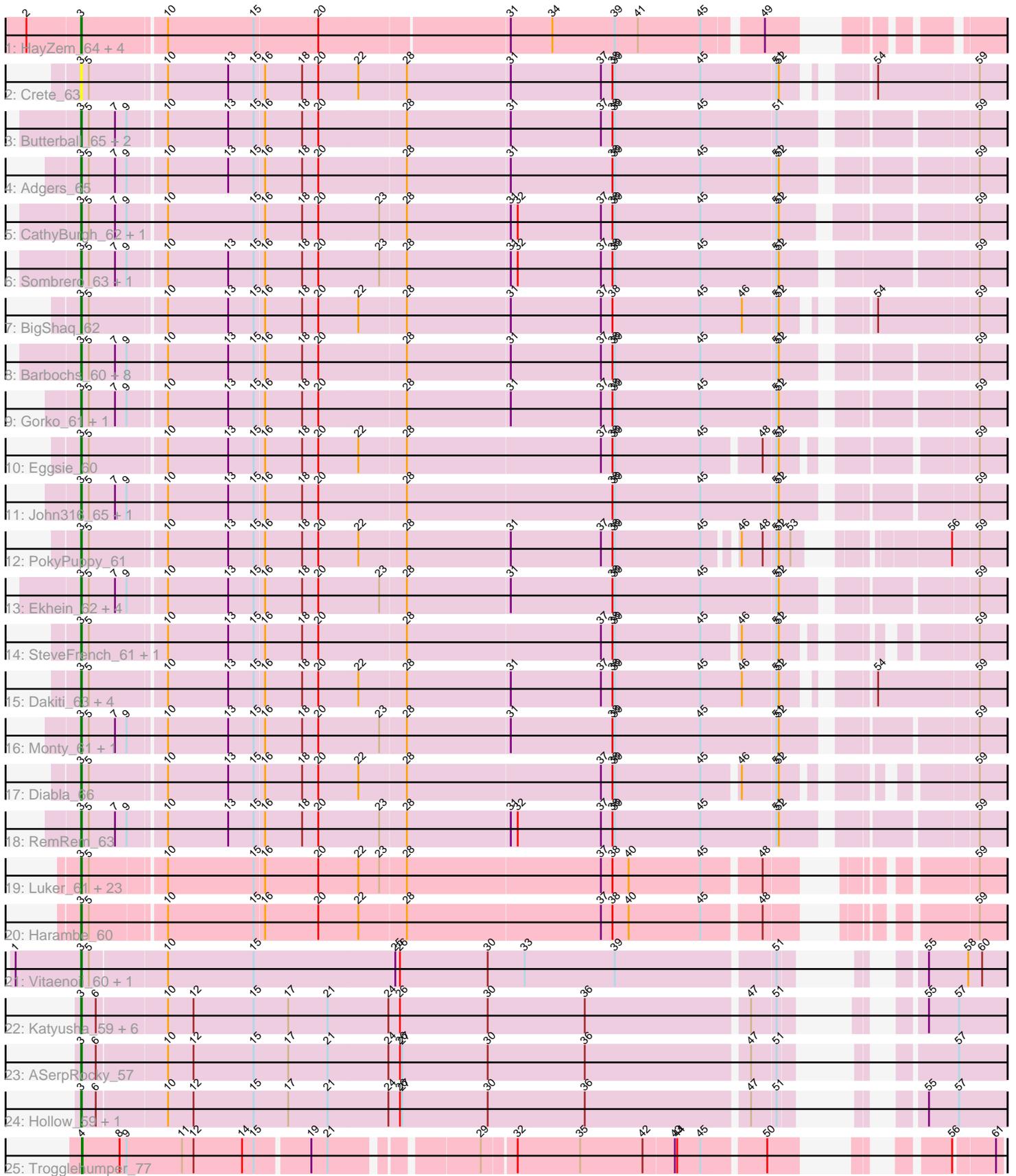


# Pham 283719



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 283719 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283719 has 84 members, 7 are drafts.

Phages represented in each track:

- Track 1 : HayZem\_64, Amore2\_64, Austin\_63, GTE7\_52, GMA7\_53
- Track 2 : Crete\_63
- Track 3 : Butterball\_65, Boneham\_66, FelixAlejandro\_67
- Track 4 : Adgers\_65
- Track 5 : CathyBurgh\_62, Lizzo\_62
- Track 6 : Sombrero\_63, Kelzog\_64
- Track 7 : BigShaq\_62
- Track 8 : Barbochs\_60, Msay19\_67, Beaver\_65, Poland\_67, Hotorobo\_62, CinnamonToast\_68, BirksAndSocks\_67, BillyBobJr\_68, Jellybones\_64
- Track 9 : Gorko\_61, Breezic\_62
- Track 10 : Eggsie\_60
- Track 11 : John316\_65, GourdThymes\_62
- Track 12 : PokyPuppy\_61
- Track 13 : Ekhein\_62, Worcestershire\_62, Flakey\_61, Exiguo\_61, Sam12\_61
- Track 14 : SteveFrench\_61, RoyalG\_62
- Track 15 : Dakiti\_63, Linetti\_62, PierreThree\_61, Chelms\_62, BenoitCattle\_62
- Track 16 : Monty\_61, Squibbles\_61
- Track 17 : Diabla\_66
- Track 18 : RemRem\_63
- Track 19 : Luker\_61, GalacticEye\_60, Bianmat\_60, Guillaume\_60, Newt\_61, Hello\_60, Berries\_60, Charianelly\_60, Anamika\_60, Shelley\_60, Jams\_60, MrWormie\_60, Damp\_60, Hail2Pitt\_59, Lahirium\_60, Neoevie\_60, Minos\_61, Lidong\_60, Woes\_60, Nimi13\_60, Kaseim\_60, Jormungandr\_60, Teal\_60, Sticker17\_60
- Track 20 : Harambe\_60
- Track 21 : Vitaenoi\_60, Philon9\_60
- Track 22 : Katyusha\_59, Benczkowski14\_59, Niagara\_59, Tredge\_59, Teatealatte\_60, Teech\_60, Kvothe\_58
- Track 23 : ASerpRocky\_57
- Track 24 : Hollow\_59, Demosthenes\_57
- Track 25 : Trogglehumper\_77

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

The start number called the most often in the published annotations is 3, it was called in 76 of the 77 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_57, Adgers\_65, Amore2\_64, Anamika\_60, Austin\_63, Barbochs\_60, Beaver\_65, Benczkowski14\_59, BenoitCattle\_62, Berries\_60, Bianmat\_60, BigShaq\_62, BillyBobJr\_68, BirksAndSocks\_67, Boneham\_66, Breezic\_62, Butterball\_65, CathyBurgh\_62, Charianelly\_60, Chelms\_62, CinnamonToast\_68, Crete\_63, Dakiti\_63, Damp\_60, Demosthenes\_57, Diabla\_66, Eggsie\_60, Ekhein\_62, Exiguo\_61, FelixAlejandro\_67, Flakey\_61, GMA7\_53, GTE7\_52, GalacticEye\_60, Gorko\_61, GourdThymes\_62, Guillaume\_60, Hail2Pitt\_59, Harambe\_60, HayZem\_64, Hello\_60, Hollow\_59, Hotorobo\_62, Jams\_60, Jellybones\_64, John316\_65, Jormungandr\_60, Kaseim\_60, Katyusha\_59, Kelzog\_64, Kvothe\_58, Lahirium\_60, Lidong\_60, Linetti\_62, Lizzo\_62, Luker\_61, Minos\_61, Monty\_61, MrWormie\_60, Msay19\_67, Neoevie\_60, Newt\_61, Niagara\_59, Nimi13\_60, Philon9\_60, PierreThree\_61, PokyPuppy\_61, Poland\_67, RemRem\_63, RoyalG\_62, Sam12\_61, Shelley\_60, Sombrero\_63, Squibbles\_61, SteveFrench\_61, Sticker17\_60, Teal\_60, Teatealatte\_60, Teech\_60, Tredge\_59, Vitaenoi\_60, Woes\_60, Worcestershire\_62,

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

- 

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

- Trogglehumper\_77,

### Summary by start number:

Start 3:

- Found in 83 of 84 ( 98.8% ) of genes in pham
- Manual Annotations of this start: 76 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_57 (CS4), Adgers\_65 (CS2), Amore2\_64 (CS1), Anamika\_60 (CS3), Austin\_63 (CS1), Barbochs\_60 (CS2), Beaver\_65 (CS2), Benczkowski14\_59 (CS4), BenoitCattle\_62 (CS2), Berries\_60 (CS3), Bianmat\_60 (CS3), BigShaq\_62 (CS2), BillyBobJr\_68 (CS2), BirksAndSocks\_67 (CS2), Boneham\_66 (CS2), Breezic\_62 (CS2), Butterball\_65 (CS2), CathyBurgh\_62 (CS2), Charianelly\_60 (CS3), Chelms\_62 (CS2), CinnamonToast\_68 (CS2), Crete\_63 (CS2), Dakiti\_63 (CS2), Damp\_60 (CS3), Demosthenes\_57 (CS4), Diabla\_66 (CS2), Eggsie\_60 (CS2), Ekhein\_62 (CS2), Exiguo\_61 (CS2), FelixAlejandro\_67 (CS2), Flakey\_61 (CS2), GMA7\_53 (CS1), GTE7\_52 (CS1), GalacticEye\_60 (CS3), Gorko\_61 (CS2), GourdThymes\_62 (CS2), Guillaume\_60 (CS3), Hail2Pitt\_59 (CS3), Harambe\_60 (CS3), HayZem\_64 (CS1), Hello\_60 (CS3), Hollow\_59 (CS4), Hotorobo\_62 (CS2), Jams\_60 (CS3), Jellybones\_64 (CS2), John316\_65 (CS2), Jormungandr\_60 (CS3), Kaseim\_60 (CS3), Katyusha\_59 (CS4), Kelzog\_64 (CS2), Kvothe\_58 (CS4), Lahirium\_60 (CS3), Lidong\_60 (CS3), Linetti\_62 (CS2), Lizzo\_62 (CS2), Luker\_61 (CS3), Minos\_61 (CS3), Monty\_61 (CS2), MrWormie\_60 (CS3), Msay19\_67 (CS2), Neoevie\_60 (CS3), Newt\_61 (CS3), Niagara\_59 (CS4), Nimi13\_60 (CS3), Philon9\_60 (CS4), PierreThree\_61 (CS2), PokyPuppy\_61 (CS2), Poland\_67 (CS2), RemRem\_63 (CS2), RoyalG\_62 (CS2), Sam12\_61 (CS2), Shelley\_60 (CS3), Sombrero\_63 (CS2), Squibbles\_61 (CS2), SteveFrench\_61 (CS2), Sticker17\_60 (CS3), Teal\_60 (CS3), Teatealatte\_60 (CS4), Teech\_60 (CS4), Tredge\_59 (CS4), Vitaenoi\_60 (CS4),

Woes\_60 (CS3), Worcestershire\_62 (CS2),

Start 4:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Trogglehumper\_77 (singleton),

### **Summary by clusters:**

There are 5 clusters represented in this pham: CS4, singleton, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 3 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 3 was manually annotated 36 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 3 was manually annotated 25 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 3 was manually annotated 12 times for cluster CS4.

### **Gene Information:**

Gene: ASerpRocky\_57 Start: 54524, Stop: 53475, Start Num: 3

Candidate Starts for ASerpRocky\_57:

(Start: 3 @54524 has 76 MA's), (6, 54506), (10, 54419), (12, 54386), (15, 54308), (17, 54263), (21, 54212), (24, 54134), (26, 54119), (27, 54116), (30, 54005), (36, 53879), (47, 53675), (51, 53645), (57, 53537),

Gene: Adgers\_65 Start: 54370, Stop: 53243, Start Num: 3

Candidate Starts for Adgers\_65:

(Start: 3 @54370 has 76 MA's), (5, 54361), (7, 54328), (9, 54313), (10, 54271), (13, 54193), (15, 54160), (16, 54148), (18, 54100), (20, 54079), (28, 53968), (31, 53836), (38, 53704), (39, 53701), (45, 53590), (51, 53494), (52, 53491), (59, 53278),

Gene: Amore2\_64 Start: 54486, Stop: 53440, Start Num: 3

Candidate Starts for Amore2\_64:

(2, 54552), (Start: 3 @54486 has 76 MA's), (10, 54387), (15, 54276), (20, 54195), (31, 53958), (34, 53904), (39, 53823), (41, 53793), (45, 53712), (49, 53646),

Gene: Anamika\_60 Start: 54710, Stop: 53646, Start Num: 3

Candidate Starts for Anamika\_60:

(Start: 3 @54710 has 76 MA's), (5, 54701), (10, 54614), (15, 54503), (16, 54491), (20, 54422), (22, 54371), (23, 54344), (28, 54311), (37, 54062), (38, 54047), (40, 54026), (45, 53933), (48, 53864), (59, 53681),

Gene: Austin\_63 Start: 54484, Stop: 53438, Start Num: 3

Candidate Starts for Austin\_63:

(2, 54550), (Start: 3 @54484 has 76 MA's), (10, 54385), (15, 54274), (20, 54193), (31, 53956), (34, 53902), (39, 53821), (41, 53791), (45, 53710), (49, 53644),

Gene: Barbochs\_60 Start: 53926, Stop: 52799, Start Num: 3

Candidate Starts for Barbochs\_60:

(Start: 3 @53926 has 76 MA's), (5, 53917), (7, 53884), (9, 53869), (10, 53827), (13, 53749), (15, 53716), (16, 53704), (18, 53656), (20, 53635), (28, 53524), (31, 53392), (37, 53275), (38, 53260), (39, 53257), (45, 53146), (51, 53050), (52, 53047), (59, 52834),

Gene: Beaver\_65 Start: 55684, Stop: 54551, Start Num: 3

Candidate Starts for Beaver\_65:

(Start: 3 @55684 has 76 MA's), (5, 55675), (7, 55642), (9, 55627), (10, 55585), (13, 55507), (15, 55474), (16, 55462), (18, 55414), (20, 55393), (28, 55282), (31, 55150), (37, 55033), (38, 55018), (39, 55015), (45, 54904), (51, 54808), (52, 54805), (59, 54586),

Gene: Benczkowski14\_59 Start: 55042, Stop: 53990, Start Num: 3

Candidate Starts for Benczkowski14\_59:

(Start: 3 @55042 has 76 MA's), (6, 55024), (10, 54937), (12, 54904), (15, 54826), (17, 54781), (21, 54730), (24, 54652), (26, 54637), (30, 54523), (36, 54397), (47, 54193), (51, 54163), (55, 54091), (57, 54052),

Gene: BenoitCattle\_62 Start: 54321, Stop: 53203, Start Num: 3

Candidate Starts for BenoitCattle\_62:

(Start: 3 @54321 has 76 MA's), (5, 54312), (10, 54222), (13, 54144), (15, 54111), (16, 54099), (18, 54051), (20, 54030), (22, 53979), (28, 53919), (31, 53787), (37, 53670), (38, 53655), (39, 53652), (45, 53541), (46, 53487), (51, 53445), (52, 53442), (54, 53364), (59, 53238),

Gene: Berries\_60 Start: 54682, Stop: 53618, Start Num: 3

Candidate Starts for Berries\_60:

(Start: 3 @54682 has 76 MA's), (5, 54673), (10, 54586), (15, 54475), (16, 54463), (20, 54394), (22, 54343), (23, 54316), (28, 54283), (37, 54034), (38, 54019), (40, 53998), (45, 53905), (48, 53836), (59, 53653),

Gene: Bianmat\_60 Start: 54722, Stop: 53658, Start Num: 3

Candidate Starts for Bianmat\_60:

(Start: 3 @54722 has 76 MA's), (5, 54713), (10, 54626), (15, 54515), (16, 54503), (20, 54434), (22, 54383), (23, 54356), (28, 54323), (37, 54074), (38, 54059), (40, 54038), (45, 53945), (48, 53876), (59, 53693),

Gene: BigShaq\_62 Start: 54326, Stop: 53208, Start Num: 3

Candidate Starts for BigShaq\_62:

(Start: 3 @54326 has 76 MA's), (5, 54317), (10, 54227), (13, 54149), (15, 54116), (16, 54104), (18, 54056), (20, 54035), (22, 53984), (28, 53924), (31, 53792), (37, 53675), (38, 53660), (45, 53546), (46, 53492), (51, 53450), (52, 53447), (54, 53369), (59, 53243),

Gene: BillyBobJr\_68 Start: 56006, Stop: 54879, Start Num: 3

Candidate Starts for BillyBobJr\_68:

(Start: 3 @56006 has 76 MA's), (5, 55997), (7, 55964), (9, 55949), (10, 55907), (13, 55829), (15, 55796), (16, 55784), (18, 55736), (20, 55715), (28, 55604), (31, 55472), (37, 55355), (38, 55340), (39, 55337), (45, 55226), (51, 55130), (52, 55127), (59, 54914),

Gene: BirksAndSocks\_67 Start: 56010, Stop: 54907, Start Num: 3

Candidate Starts for BirksAndSocks\_67:

(Start: 3 @56010 has 76 MA's), (5, 56001), (7, 55968), (9, 55953), (10, 55911), (13, 55833), (15, 55800), (16, 55788), (18, 55740), (20, 55719), (28, 55608), (31, 55476), (37, 55359), (38, 55344), (39, 55341), (45, 55230), (51, 55134), (52, 55131), (59, 54942),

Gene: Boneham\_66 Start: 55935, Stop: 54808, Start Num: 3

Candidate Starts for Boneham\_66:

(Start: 3 @55935 has 76 MA's), (5, 55926), (7, 55893), (9, 55878), (10, 55836), (13, 55758), (15, 55725), (16, 55713), (18, 55665), (20, 55644), (28, 55533), (31, 55401), (37, 55284), (38, 55269), (39, 55266), (45, 55155), (51, 55059), (59, 54843),

Gene: Breezic\_62 Start: 53921, Stop: 52794, Start Num: 3

Candidate Starts for Breezic\_62:

(Start: 3 @53921 has 76 MA's), (5, 53912), (7, 53879), (9, 53864), (10, 53822), (13, 53744), (15, 53711), (16, 53699), (18, 53651), (20, 53630), (28, 53519), (31, 53387), (37, 53270), (38, 53255), (39, 53252), (45, 53141), (51, 53045), (52, 53042), (59, 52829),

Gene: Butterball\_65 Start: 55940, Stop: 54813, Start Num: 3

Candidate Starts for Butterball\_65:

(Start: 3 @55940 has 76 MA's), (5, 55931), (7, 55898), (9, 55883), (10, 55841), (13, 55763), (15, 55730), (16, 55718), (18, 55670), (20, 55649), (28, 55538), (31, 55406), (37, 55289), (38, 55274), (39, 55271), (45, 55160), (51, 55064), (59, 54848),

Gene: CathyBurgh\_62 Start: 54516, Stop: 53389, Start Num: 3

Candidate Starts for CathyBurgh\_62:

(Start: 3 @54516 has 76 MA's), (5, 54507), (7, 54474), (9, 54459), (10, 54417), (15, 54306), (16, 54294), (18, 54246), (20, 54225), (23, 54147), (28, 54114), (31, 53982), (32, 53973), (37, 53865), (38, 53850), (39, 53847), (45, 53736), (51, 53640), (52, 53637), (59, 53424),

Gene: Charianelly\_60 Start: 54432, Stop: 53368, Start Num: 3

Candidate Starts for Charianelly\_60:

(Start: 3 @54432 has 76 MA's), (5, 54423), (10, 54336), (15, 54225), (16, 54213), (20, 54144), (22, 54093), (23, 54066), (28, 54033), (37, 53784), (38, 53769), (40, 53748), (45, 53655), (48, 53586), (59, 53403),

Gene: Chelms\_62 Start: 54452, Stop: 53334, Start Num: 3

Candidate Starts for Chelms\_62:

(Start: 3 @54452 has 76 MA's), (5, 54443), (10, 54353), (13, 54275), (15, 54242), (16, 54230), (18, 54182), (20, 54161), (22, 54110), (28, 54050), (31, 53918), (37, 53801), (38, 53786), (39, 53783), (45, 53672), (46, 53618), (51, 53576), (52, 53573), (54, 53495), (59, 53369),

Gene: CinnamonToast\_68 Start: 56006, Stop: 54879, Start Num: 3

Candidate Starts for CinnamonToast\_68:

(Start: 3 @56006 has 76 MA's), (5, 55997), (7, 55964), (9, 55949), (10, 55907), (13, 55829), (15, 55796), (16, 55784), (18, 55736), (20, 55715), (28, 55604), (31, 55472), (37, 55355), (38, 55340), (39, 55337), (45, 55226), (51, 55130), (52, 55127), (59, 54914),

Gene: Crete\_63 Start: 54574, Stop: 53456, Start Num: 3

Candidate Starts for Crete\_63:

(Start: 3 @54574 has 76 MA's), (5, 54565), (10, 54475), (13, 54397), (15, 54364), (16, 54352), (18, 54304), (20, 54283), (22, 54232), (28, 54172), (31, 54040), (37, 53923), (38, 53908), (39, 53905), (45, 53794), (51, 53698), (52, 53695), (54, 53617), (59, 53491),

Gene: Dakiti\_63 Start: 55320, Stop: 54202, Start Num: 3

Candidate Starts for Dakiti\_63:

(Start: 3 @55320 has 76 MA's), (5, 55311), (10, 55221), (13, 55143), (15, 55110), (16, 55098), (18, 55050), (20, 55029), (22, 54978), (28, 54918), (31, 54786), (37, 54669), (38, 54654), (39, 54651), (45, 54540), (46, 54486), (51, 54444), (52, 54441), (54, 54363), (59, 54237),

Gene: Damp\_60 Start: 53596, Stop: 52532, Start Num: 3

Candidate Starts for Damp\_60:

(Start: 3 @53596 has 76 MA's), (5, 53587), (10, 53500), (15, 53389), (16, 53377), (20, 53308), (22, 53257), (23, 53230), (28, 53197), (37, 52948), (38, 52933), (40, 52912), (45, 52819), (48, 52750), (59, 52567),

Gene: Demosthenes\_57 Start: 54494, Stop: 53451, Start Num: 3

Candidate Starts for Demosthenes\_57:

(Start: 3 @54494 has 76 MA's), (6, 54476), (10, 54389), (12, 54356), (15, 54278), (17, 54233), (21, 54182), (24, 54104), (26, 54089), (27, 54086), (30, 53975), (36, 53849), (47, 53645), (51, 53615), (55, 53552), (57, 53513),

Gene: Diabla\_66 Start: 55935, Stop: 54856, Start Num: 3

Candidate Starts for Diabla\_66:

(Start: 3 @55935 has 76 MA's), (5, 55926), (10, 55836), (13, 55758), (15, 55725), (16, 55713), (18, 55665), (20, 55644), (22, 55593), (28, 55533), (37, 55284), (38, 55269), (39, 55266), (45, 55155), (46, 55113), (51, 55071), (52, 55068), (59, 54891),

Gene: Eggsie\_60 Start: 53739, Stop: 52636, Start Num: 3

Candidate Starts for Eggsie\_60:

(Start: 3 @53739 has 76 MA's), (5, 53730), (10, 53640), (13, 53562), (15, 53529), (16, 53517), (18, 53469), (20, 53448), (22, 53397), (28, 53337), (37, 53088), (38, 53073), (39, 53070), (45, 52959), (48, 52890), (51, 52875), (52, 52872), (59, 52671),

Gene: Ekhein\_62 Start: 53626, Stop: 52499, Start Num: 3

Candidate Starts for Ekhein\_62:

(Start: 3 @53626 has 76 MA's), (5, 53617), (7, 53584), (9, 53569), (10, 53527), (13, 53449), (15, 53416), (16, 53404), (18, 53356), (20, 53335), (23, 53257), (28, 53224), (31, 53092), (38, 52960), (39, 52957), (45, 52846), (51, 52750), (52, 52747), (59, 52534),

Gene: Exiguo\_61 Start: 53662, Stop: 52511, Start Num: 3

Candidate Starts for Exiguo\_61:

(Start: 3 @53662 has 76 MA's), (5, 53653), (7, 53620), (9, 53605), (10, 53563), (13, 53485), (15, 53452), (16, 53440), (18, 53392), (20, 53371), (23, 53293), (28, 53260), (31, 53128), (38, 52996), (39, 52993), (45, 52882), (51, 52786), (52, 52783), (59, 52546),

Gene: FelixAlejandro\_67 Start: 56338, Stop: 55211, Start Num: 3

Candidate Starts for FelixAlejandro\_67:

(Start: 3 @56338 has 76 MA's), (5, 56329), (7, 56296), (9, 56281), (10, 56239), (13, 56161), (15, 56128), (16, 56116), (18, 56068), (20, 56047), (28, 55936), (31, 55804), (37, 55687), (38, 55672), (39, 55669), (45, 55558), (51, 55462), (59, 55246),

Gene: Flakey\_61 Start: 54502, Stop: 53375, Start Num: 3

Candidate Starts for Flakey\_61:

(Start: 3 @54502 has 76 MA's), (5, 54493), (7, 54460), (9, 54445), (10, 54403), (13, 54325), (15, 54292), (16, 54280), (18, 54232), (20, 54211), (23, 54133), (28, 54100), (31, 53968), (38, 53836), (39, 53833), (45, 53722), (51, 53626), (52, 53623), (59, 53410),

Gene: GMA7\_53 Start: 48700, Stop: 47654, Start Num: 3

Candidate Starts for GMA7\_53:

(2, 48766), (Start: 3 @48700 has 76 MA's), (10, 48601), (15, 48490), (20, 48409), (31, 48172), (34, 48118), (39, 48037), (41, 48007), (45, 47926), (49, 47860),

Gene: GTE7\_52 Start: 48731, Stop: 47685, Start Num: 3

Candidate Starts for GTE7\_52:

(2, 48797), (Start: 3 @48731 has 76 MA's), (10, 48632), (15, 48521), (20, 48440), (31, 48203), (34, 48149), (39, 48068), (41, 48038), (45, 47957), (49, 47891),

Gene: GalacticEye\_60 Start: 54393, Stop: 53329, Start Num: 3

Candidate Starts for GalacticEye\_60:

(Start: 3 @54393 has 76 MA's), (5, 54384), (10, 54297), (15, 54186), (16, 54174), (20, 54105), (22, 54054), (23, 54027), (28, 53994), (37, 53745), (38, 53730), (40, 53709), (45, 53616), (48, 53547), (59, 53364),

Gene: Gorko\_61 Start: 53648, Stop: 52521, Start Num: 3

Candidate Starts for Gorko\_61:

(Start: 3 @53648 has 76 MA's), (5, 53639), (7, 53606), (9, 53591), (10, 53549), (13, 53471), (15, 53438), (16, 53426), (18, 53378), (20, 53357), (28, 53246), (31, 53114), (37, 52997), (38, 52982), (39, 52979), (45, 52868), (51, 52772), (52, 52769), (59, 52556),

Gene: GourdThymes\_62 Start: 54522, Stop: 53395, Start Num: 3

Candidate Starts for GourdThymes\_62:

(Start: 3 @54522 has 76 MA's), (5, 54513), (7, 54480), (9, 54465), (10, 54423), (13, 54345), (15, 54312), (16, 54300), (18, 54252), (20, 54231), (28, 54120), (38, 53856), (39, 53853), (45, 53742), (51, 53646), (52, 53643), (59, 53430),

Gene: Guillaume\_60 Start: 54443, Stop: 53379, Start Num: 3

Candidate Starts for Guillaume\_60:

(Start: 3 @54443 has 76 MA's), (5, 54434), (10, 54347), (15, 54236), (16, 54224), (20, 54155), (22, 54104), (23, 54077), (28, 54044), (37, 53795), (38, 53780), (40, 53759), (45, 53666), (48, 53597), (59, 53414),

Gene: Hail2Pitt\_59 Start: 54919, Stop: 53855, Start Num: 3

Candidate Starts for Hail2Pitt\_59:

(Start: 3 @54919 has 76 MA's), (5, 54910), (10, 54823), (15, 54712), (16, 54700), (20, 54631), (22, 54580), (23, 54553), (28, 54520), (37, 54271), (38, 54256), (40, 54235), (45, 54142), (48, 54073), (59, 53890),

Gene: Harambe\_60 Start: 54710, Stop: 53646, Start Num: 3

Candidate Starts for Harambe\_60:

(Start: 3 @54710 has 76 MA's), (5, 54701), (10, 54614), (15, 54503), (16, 54491), (20, 54422), (22, 54371), (28, 54311), (37, 54062), (38, 54047), (40, 54026), (45, 53933), (48, 53864), (59, 53681),

Gene: HayZem\_64 Start: 54483, Stop: 53437, Start Num: 3

Candidate Starts for HayZem\_64:

(2, 54549), (Start: 3 @54483 has 76 MA's), (10, 54384), (15, 54273), (20, 54192), (31, 53955), (34, 53901), (39, 53820), (41, 53790), (45, 53709), (49, 53643),

Gene: Hello\_60 Start: 54672, Stop: 53608, Start Num: 3

Candidate Starts for Hello\_60:

(Start: 3 @54672 has 76 MA's), (5, 54663), (10, 54576), (15, 54465), (16, 54453), (20, 54384), (22, 54333), (23, 54306), (28, 54273), (37, 54024), (38, 54009), (40, 53988), (45, 53895), (48, 53826), (59, 53643),

Gene: Hollow\_59 Start: 55223, Stop: 54174, Start Num: 3

Candidate Starts for Hollow\_59:

(Start: 3 @55223 has 76 MA's), (6, 55205), (10, 55118), (12, 55085), (15, 55007), (17, 54962), (21, 54911), (24, 54833), (26, 54818), (27, 54815), (30, 54704), (36, 54578), (47, 54374), (51, 54344), (55, 54275), (57, 54236),

Gene: Hotorobo\_62 Start: 54509, Stop: 53382, Start Num: 3

Candidate Starts for Hotorobo\_62:

(Start: 3 @54509 has 76 MA's), (5, 54500), (7, 54467), (9, 54452), (10, 54410), (13, 54332), (15, 54299), (16, 54287), (18, 54239), (20, 54218), (28, 54107), (31, 53975), (37, 53858), (38, 53843), (39, 53840), (45, 53729), (51, 53633), (52, 53630), (59, 53417),

Gene: Jams\_60 Start: 53882, Stop: 52818, Start Num: 3

Candidate Starts for Jams\_60:

(Start: 3 @53882 has 76 MA's), (5, 53873), (10, 53786), (15, 53675), (16, 53663), (20, 53594), (22, 53543), (23, 53516), (28, 53483), (37, 53234), (38, 53219), (40, 53198), (45, 53105), (48, 53036), (59, 52853),

Gene: Jellybones\_64 Start: 55622, Stop: 54495, Start Num: 3

Candidate Starts for Jellybones\_64:

(Start: 3 @55622 has 76 MA's), (5, 55613), (7, 55580), (9, 55565), (10, 55523), (13, 55445), (15, 55412), (16, 55400), (18, 55352), (20, 55331), (28, 55220), (31, 55088), (37, 54971), (38, 54956), (39, 54953), (45, 54842), (51, 54746), (52, 54743), (59, 54530),

Gene: John316\_65 Start: 55667, Stop: 54540, Start Num: 3

Candidate Starts for John316\_65:

(Start: 3 @55667 has 76 MA's), (5, 55658), (7, 55625), (9, 55610), (10, 55568), (13, 55490), (15, 55457), (16, 55445), (18, 55397), (20, 55376), (28, 55265), (38, 55001), (39, 54998), (45, 54887), (51, 54791), (52, 54788), (59, 54575),

Gene: Jormungandr\_60 Start: 54425, Stop: 53361, Start Num: 3

Candidate Starts for Jormungandr\_60:

(Start: 3 @54425 has 76 MA's), (5, 54416), (10, 54329), (15, 54218), (16, 54206), (20, 54137), (22, 54086), (23, 54059), (28, 54026), (37, 53777), (38, 53762), (40, 53741), (45, 53648), (48, 53579), (59, 53396),

Gene: Kaseim\_60 Start: 53867, Stop: 52803, Start Num: 3

Candidate Starts for Kaseim\_60:

(Start: 3 @53867 has 76 MA's), (5, 53858), (10, 53771), (15, 53660), (16, 53648), (20, 53579), (22, 53528), (23, 53501), (28, 53468), (37, 53219), (38, 53204), (40, 53183), (45, 53090), (48, 53021), (59, 52838),

Gene: Katyusha\_59 Start: 55042, Stop: 53990, Start Num: 3

Candidate Starts for Katyusha\_59:

(Start: 3 @55042 has 76 MA's), (6, 55024), (10, 54937), (12, 54904), (15, 54826), (17, 54781), (21, 54730), (24, 54652), (26, 54637), (30, 54523), (36, 54397), (47, 54193), (51, 54163), (55, 54091), (57, 54052),

Gene: Kelzog\_64 Start: 54522, Stop: 53389, Start Num: 3

Candidate Starts for Kelzog\_64:

(Start: 3 @54522 has 76 MA's), (5, 54513), (7, 54480), (9, 54465), (10, 54423), (13, 54345), (15, 54312), (16, 54300), (18, 54252), (20, 54231), (23, 54153), (28, 54120), (31, 53988), (32, 53979), (37, 53871), (38, 53856), (39, 53853), (45, 53742), (51, 53646), (52, 53643), (59, 53424),

Gene: Kvothe\_58 Start: 54944, Stop: 53889, Start Num: 3

Candidate Starts for Kvothe\_58:

(Start: 3 @54944 has 76 MA's), (6, 54926), (10, 54839), (12, 54806), (15, 54728), (17, 54683), (21, 54632), (24, 54554), (26, 54539), (30, 54425), (36, 54299), (47, 54095), (51, 54065), (55, 53990), (57, 53951),

Gene: Lahirium\_60 Start: 54947, Stop: 53883, Start Num: 3

Candidate Starts for Lahirium\_60:

(Start: 3 @54947 has 76 MA's), (5, 54938), (10, 54851), (15, 54740), (16, 54728), (20, 54659), (22, 54608), (23, 54581), (28, 54548), (37, 54299), (38, 54284), (40, 54263), (45, 54170), (48, 54101), (59, 53918),

Gene: Lidong\_60 Start: 54682, Stop: 53618, Start Num: 3

Candidate Starts for Lidong\_60:

(Start: 3 @54682 has 76 MA's), (5, 54673), (10, 54586), (15, 54475), (16, 54463), (20, 54394), (22, 54343), (23, 54316), (28, 54283), (37, 54034), (38, 54019), (40, 53998), (45, 53905), (48, 53836), (59, 53653),

Gene: Linetti\_62 Start: 55314, Stop: 54196, Start Num: 3

Candidate Starts for Linetti\_62:

(Start: 3 @55314 has 76 MA's), (5, 55305), (10, 55215), (13, 55137), (15, 55104), (16, 55092), (18, 55044), (20, 55023), (22, 54972), (28, 54912), (31, 54780), (37, 54663), (38, 54648), (39, 54645), (45, 54534), (46, 54480), (51, 54438), (52, 54435), (54, 54357), (59, 54231),

Gene: Lizzo\_62 Start: 54516, Stop: 53389, Start Num: 3

Candidate Starts for Lizzo\_62:

(Start: 3 @54516 has 76 MA's), (5, 54507), (7, 54474), (9, 54459), (10, 54417), (15, 54306), (16, 54294), (18, 54246), (20, 54225), (23, 54147), (28, 54114), (31, 53982), (32, 53973), (37, 53865), (38, 53850), (39, 53847), (45, 53736), (51, 53640), (52, 53637), (59, 53424),

Gene: Luker\_61 Start: 54900, Stop: 53836, Start Num: 3

Candidate Starts for Luker\_61:

(Start: 3 @54900 has 76 MA's), (5, 54891), (10, 54804), (15, 54693), (16, 54681), (20, 54612), (22, 54561), (23, 54534), (28, 54501), (37, 54252), (38, 54237), (40, 54216), (45, 54123), (48, 54054), (59, 53871),

Gene: Minos\_61 Start: 54424, Stop: 53360, Start Num: 3

Candidate Starts for Minos\_61:

(Start: 3 @54424 has 76 MA's), (5, 54415), (10, 54328), (15, 54217), (16, 54205), (20, 54136), (22, 54085), (23, 54058), (28, 54025), (37, 53776), (38, 53761), (40, 53740), (45, 53647), (48, 53578), (59, 53395),

Gene: Monty\_61 Start: 53648, Stop: 52521, Start Num: 3

Candidate Starts for Monty\_61:

(Start: 3 @53648 has 76 MA's), (5, 53639), (7, 53606), (9, 53591), (10, 53549), (13, 53471), (15, 53438), (16, 53426), (18, 53378), (20, 53357), (23, 53279), (28, 53246), (31, 53114), (38, 52982), (39, 52979), (45, 52868), (51, 52772), (52, 52769), (59, 52556),

Gene: MrWormie\_60 Start: 53585, Stop: 52521, Start Num: 3

Candidate Starts for MrWormie\_60:

(Start: 3 @53585 has 76 MA's), (5, 53576), (10, 53489), (15, 53378), (16, 53366), (20, 53297), (22, 53246), (23, 53219), (28, 53186), (37, 52937), (38, 52922), (40, 52901), (45, 52808), (48, 52739), (59, 52556),

Gene: Msay19\_67 Start: 56224, Stop: 55097, Start Num: 3

Candidate Starts for Msay19\_67:

(Start: 3 @56224 has 76 MA's), (5, 56215), (7, 56182), (9, 56167), (10, 56125), (13, 56047), (15, 56014), (16, 56002), (18, 55954), (20, 55933), (28, 55822), (31, 55690), (37, 55573), (38, 55558), (39, 55555), (45, 55444), (51, 55348), (52, 55345), (59, 55132),

Gene: Neoevie\_60 Start: 54686, Stop: 53622, Start Num: 3

Candidate Starts for Neoevie\_60:

(Start: 3 @54686 has 76 MA's), (5, 54677), (10, 54590), (15, 54479), (16, 54467), (20, 54398), (22, 54347), (23, 54320), (28, 54287), (37, 54038), (38, 54023), (40, 54002), (45, 53909), (48, 53840), (59, 53657),

Gene: Newt\_61 Start: 54914, Stop: 53850, Start Num: 3

Candidate Starts for Newt\_61:

(Start: 3 @54914 has 76 MA's), (5, 54905), (10, 54818), (15, 54707), (16, 54695), (20, 54626), (22, 54575), (23, 54548), (28, 54515), (37, 54266), (38, 54251), (40, 54230), (45, 54137), (48, 54068), (59, 53885),

Gene: Niagara\_59 Start: 55035, Stop: 53980, Start Num: 3

Candidate Starts for Niagara\_59:

(Start: 3 @55035 has 76 MA's), (6, 55017), (10, 54930), (12, 54897), (15, 54819), (17, 54774), (21, 54723), (24, 54645), (26, 54630), (30, 54516), (36, 54390), (47, 54186), (51, 54156), (55, 54081), (57, 54042),

Gene: Nimi13\_60 Start: 54433, Stop: 53369, Start Num: 3

Candidate Starts for Nimi13\_60:

(Start: 3 @54433 has 76 MA's), (5, 54424), (10, 54337), (15, 54226), (16, 54214), (20, 54145), (22, 54094), (23, 54067), (28, 54034), (37, 53785), (38, 53770), (40, 53749), (45, 53656), (48, 53587), (59, 53404),

Gene: Philon9\_60 Start: 56153, Stop: 55104, Start Num: 3

Candidate Starts for Philon9\_60:

(1, 56237), (Start: 3 @56153 has 76 MA's), (5, 56144), (10, 56048), (15, 55937), (25, 55754), (26, 55748), (30, 55634), (33, 55586), (39, 55469), (51, 55274), (55, 55205), (58, 55154), (60, 55136),

Gene: PierreThree\_61 Start: 54951, Stop: 53833, Start Num: 3

Candidate Starts for PierreThree\_61:

(Start: 3 @54951 has 76 MA's), (5, 54942), (10, 54852), (13, 54774), (15, 54741), (16, 54729), (18, 54681), (20, 54660), (22, 54609), (28, 54549), (31, 54417), (37, 54300), (38, 54285), (39, 54282), (45, 54171), (46, 54117), (51, 54075), (52, 54072), (54, 53994), (59, 53868),

Gene: PokyPuppy\_61 Start: 54888, Stop: 53806, Start Num: 3

Candidate Starts for PokyPuppy\_61:

(Start: 3 @54888 has 76 MA's), (5, 54879), (10, 54789), (13, 54711), (15, 54678), (16, 54666), (18, 54618), (20, 54597), (22, 54546), (28, 54486), (31, 54354), (37, 54237), (38, 54222), (39, 54219), (45, 54108), (46, 54075), (48, 54048), (51, 54033), (52, 54030), (53, 54015), (56, 53871), (59, 53841),

Gene: Poland\_67 Start: 56203, Stop: 55076, Start Num: 3

Candidate Starts for Poland\_67:

(Start: 3 @56203 has 76 MA's), (5, 56194), (7, 56161), (9, 56146), (10, 56104), (13, 56026), (15, 55993), (16, 55981), (18, 55933), (20, 55912), (28, 55801), (31, 55669), (37, 55552), (38, 55537), (39, 55534), (45, 55423), (51, 55327), (52, 55324), (59, 55111),

Gene: RemRem\_63 Start: 53638, Stop: 52511, Start Num: 3

Candidate Starts for RemRem\_63:

(Start: 3 @53638 has 76 MA's), (5, 53629), (7, 53596), (9, 53581), (10, 53539), (13, 53461), (15, 53428), (16, 53416), (18, 53368), (20, 53347), (23, 53269), (28, 53236), (31, 53104), (32, 53095), (37, 52987), (38, 52972), (39, 52969), (45, 52858), (51, 52762), (52, 52759), (59, 52546),

Gene: RoyalG\_62 Start: 54360, Stop: 53281, Start Num: 3

Candidate Starts for RoyalG\_62:

(Start: 3 @54360 has 76 MA's), (5, 54351), (10, 54261), (13, 54183), (15, 54150), (16, 54138), (18, 54090), (20, 54069), (28, 53958), (37, 53709), (38, 53694), (39, 53691), (45, 53580), (46, 53538), (51, 53496), (52, 53493), (59, 53316),

Gene: Sam12\_61 Start: 53662, Stop: 52511, Start Num: 3

Candidate Starts for Sam12\_61:

(Start: 3 @53662 has 76 MA's), (5, 53653), (7, 53620), (9, 53605), (10, 53563), (13, 53485), (15, 53452), (16, 53440), (18, 53392), (20, 53371), (23, 53293), (28, 53260), (31, 53128), (38, 52996), (39, 52993), (45, 52882), (51, 52786), (52, 52783), (59, 52546),

Gene: Shelley\_60 Start: 53909, Stop: 52845, Start Num: 3

Candidate Starts for Shelley\_60:

(Start: 3 @53909 has 76 MA's), (5, 53900), (10, 53813), (15, 53702), (16, 53690), (20, 53621), (22, 53570), (23, 53543), (28, 53510), (37, 53261), (38, 53246), (40, 53225), (45, 53132), (48, 53063), (59, 52880),

Gene: Sombrero\_63 Start: 54229, Stop: 53096, Start Num: 3

Candidate Starts for Sombrero\_63:

(Start: 3 @54229 has 76 MA's), (5, 54220), (7, 54187), (9, 54172), (10, 54130), (13, 54052), (15, 54019), (16, 54007), (18, 53959), (20, 53938), (23, 53860), (28, 53827), (31, 53695), (32, 53686), (37, 53578), (38, 53563), (39, 53560), (45, 53449), (51, 53353), (52, 53350), (59, 53131),

Gene: Squibbles\_61 Start: 54501, Stop: 53374, Start Num: 3

Candidate Starts for Squibbles\_61:

(Start: 3 @54501 has 76 MA's), (5, 54492), (7, 54459), (9, 54444), (10, 54402), (13, 54324), (15, 54291), (16, 54279), (18, 54231), (20, 54210), (23, 54132), (28, 54099), (31, 53967), (38, 53835), (39, 53832), (45, 53721), (51, 53625), (52, 53622), (59, 53409),

Gene: SteveFrench\_61 Start: 54600, Stop: 53521, Start Num: 3

Candidate Starts for SteveFrench\_61:

(Start: 3 @54600 has 76 MA's), (5, 54591), (10, 54501), (13, 54423), (15, 54390), (16, 54378), (18, 54330), (20, 54309), (28, 54198), (37, 53949), (38, 53934), (39, 53931), (45, 53820), (46, 53778), (51, 53736), (52, 53733), (59, 53556),

Gene: Sticker17\_60 Start: 54397, Stop: 53360, Start Num: 3

Candidate Starts for Sticker17\_60:

(Start: 3 @54397 has 76 MA's), (5, 54388), (10, 54301), (15, 54190), (16, 54178), (20, 54109), (22, 54058), (23, 54031), (28, 53998), (37, 53749), (38, 53734), (40, 53713), (45, 53620), (48, 53551), (59, 53395),

Gene: Teal\_60 Start: 54891, Stop: 53827, Start Num: 3

Candidate Starts for Teal\_60:

(Start: 3 @54891 has 76 MA's), (5, 54882), (10, 54795), (15, 54684), (16, 54672), (20, 54603), (22, 54552), (23, 54525), (28, 54492), (37, 54243), (38, 54228), (40, 54207), (45, 54114), (48, 54045), (59, 53862),

Gene: Teatealatte\_60 Start: 54932, Stop: 53877, Start Num: 3

Candidate Starts for Teatealatte\_60:

(Start: 3 @54932 has 76 MA's), (6, 54914), (10, 54827), (12, 54794), (15, 54716), (17, 54671), (21, 54620), (24, 54542), (26, 54527), (30, 54413), (36, 54287), (47, 54083), (51, 54053), (55, 53978), (57, 53939),

Gene: Teech\_60 Start: 54748, Stop: 53693, Start Num: 3

Candidate Starts for Teech\_60:

(Start: 3 @54748 has 76 MA's), (6, 54730), (10, 54643), (12, 54610), (15, 54532), (17, 54487), (21, 54436), (24, 54358), (26, 54343), (30, 54229), (36, 54103), (47, 53899), (51, 53869), (55, 53794), (57, 53755),

Gene: Tredge\_59 Start: 54932, Stop: 53877, Start Num: 3

Candidate Starts for Tredge\_59:

(Start: 3 @54932 has 76 MA's), (6, 54914), (10, 54827), (12, 54794), (15, 54716), (17, 54671), (21, 54620), (24, 54542), (26, 54527), (30, 54413), (36, 54287), (47, 54083), (51, 54053), (55, 53978), (57, 53939),

Gene: Trogglehumper\_77 Start: 60720, Stop: 59722, Start Num: 4

Candidate Starts for Trogglehumper\_77:

(Start: 4 @60720 has 1 MA's), (8, 60672), (9, 60663), (11, 60591), (12, 60576), (14, 60513), (15, 60498), (19, 60432), (21, 60411), (29, 60246), (32, 60207), (35, 60126), (42, 60045), (43, 60006), (44, 60003), (45, 59973), (50, 59898), (56, 59778), (61, 59730),

Gene: Vitaenoi\_60 Start: 56137, Stop: 55088, Start Num: 3

Candidate Starts for Vitaenoi\_60:

(1, 56221), (Start: 3 @56137 has 76 MA's), (5, 56128), (10, 56032), (15, 55921), (25, 55738), (26, 55732), (30, 55618), (33, 55570), (39, 55453), (51, 55258), (55, 55189), (58, 55138), (60, 55120),

Gene: Woes\_60 Start: 54942, Stop: 53878, Start Num: 3

Candidate Starts for Woes\_60:

(Start: 3 @54942 has 76 MA's), (5, 54933), (10, 54846), (15, 54735), (16, 54723), (20, 54654), (22, 54603), (23, 54576), (28, 54543), (37, 54294), (38, 54279), (40, 54258), (45, 54165), (48, 54096), (59, 53913),

Gene: Worcestershire\_62 Start: 53640, Stop: 52513, Start Num: 3

Candidate Starts for Worcestershire\_62:

(Start: 3 @53640 has 76 MA's), (5, 53631), (7, 53598), (9, 53583), (10, 53541), (13, 53463), (15, 53430), (16, 53418), (18, 53370), (20, 53349), (23, 53271), (28, 53238), (31, 53106), (38, 52974), (39, 52971), (45, 52860), (51, 52764), (52, 52761), (59, 52548),