

Pham 224508



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 224508 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224508 has 82 members, 24 are drafts.

Phages represented in each track:

- Track 1 : MAckerman\_78, AvadaKedavra\_80, Appletree2\_79, Wyatt2\_81, Rose5\_80, CicholasNage\_77, Enceladus\_77, Acquire49\_80, Poochiewood\_78, Wamburgrxpress\_80, JoeDirt\_80, LeBron\_79, Zaria\_81, OhShagHennessy\_77, DirkDirk\_77, UPIE\_79, Halena\_78, Tyson\_81, Calm\_82, Silverleaf\_80
- Track 2 : Gardann\_83, Rumpelstiltskin\_80, Crossroads\_83, Sarshaun\_84, Soap141\_83, Nicholasp3\_83, Underpass\_74
- Track 3 : Itos\_82, Faith1\_83, Winky\_83, Miley16\_83, SoJulia\_85, BobsGarage\_83, Netyap\_84, Gabriela\_82, DrSeegs\_83, Breezona\_83, BigCheese\_83
- Track 4 : Claus\_83, DanBing\_83, Hafay\_84, ZhongYanYuan\_80, Baoshan\_80
- Track 5 : Tourach\_82
- Track 6 : Bazzle\_80
- Track 7 : Finemlucis\_82
- Track 8 : Archie\_80
- Track 9 : Red305\_82, Lumos\_81, MsGreen\_81, Clautastrophe\_79, Bellis\_79, Jobypre\_81, Snenia\_80, Jubie\_80
- Track 10 : Nicholas\_79, Moostard\_79, Kingsolomon\_79, Finnry\_81, TriFive\_81, Samty\_80
- Track 11 : Ellson\_80, DuncansLeg\_81, LiyuLake\_80, BourbonZero\_82, KirDoubleO7\_79
- Track 12 : Whirlwind\_82
- Track 13 : MiniMac\_85, Lolly9\_80, MiniLon\_85
- Track 14 : Krypton555\_82
- Track 15 : BrainDrainer\_81, Douzhi\_81, Sheng711\_82, PYPDinur\_80
- Track 16 : Bromden\_81
- Track 17 : Kropertea\_77
- Track 18 : Douge\_80
- Track 19 : FarmResident\_82, Quby\_81
- Track 20 : Chaser\_79
- Track 21 : DyoEdafos\_85

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

The start number called the most often in the published annotations is 19, it was called in 57 of the 58 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_80, Appletree2\_79, Archie\_80, AvadaKedavra\_80, Baoshan\_80, Bazzle\_80, Bellis\_79, BigCheese\_83, BobsGarage\_83, BourbonZero\_82, Breezona\_83, Bromden\_81, Calm\_82, Chaser\_79, CicholasNage\_77, Claus\_83, Clautastrophe\_79, Crossroads\_83, DanBing\_83, DirkDirk\_77, DrSeegs\_83, DuncansLeg\_81, DyoEdafos\_85, Ellson\_80, Enceladus\_77, Faith1\_83, FarmResident\_82, Finemlucis\_82, Finnry\_81, Gabriela\_82, Gardann\_83, Hafay\_84, Halena\_78, Itos\_82, Jobypre\_81, JoeDirt\_80, Jubie\_80, Kingsolomon\_79, KirDoubleO7\_79, Krypton555\_82, LeBron\_79, LiyuLake\_80, Lolly9\_80, Lumos\_81, MAckerman\_78, Miley16\_83, MiniLon\_85, MiniMac\_85, Moostard\_79, MsGreen\_81, Netyap\_84, Nicholas\_79, Nicholasp3\_83, OhShagHennessy\_77, Poochiewood\_78, Quby\_81, Red305\_82, Rose5\_80, Rumpelstiltskin\_80, Samty\_80, Sarshaun\_84, Silverleaf\_80, Snenia\_80, SoJulia\_85, Soap141\_83, Tourach\_82, TriFive\_81, Tyson\_81, UPIE\_79, Underpass\_74, Wamburggrxpress\_80, Whirlwind\_82, Winky\_83, Wyatt2\_81, Zaria\_81, ZhongYanYuan\_80,

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

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

- BrainDrainer\_81, Douge\_80, Douzhi\_81, Kropertea\_77, PYPDinur\_80, Sheng711\_82,

### Summary by start number:

Start 19:

- Found in 76 of 82 ( 92.7% ) of genes in pham
- Manual Annotations of this start: 57 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_80 (L1), Appletree2\_79 (L1), Archie\_80 (L2), AvadaKedavra\_80 (L1), Baoshan\_80 (L2), Bazzle\_80 (L2), Bellis\_79 (L3), BigCheese\_83 (L2), BobsGarage\_83 (L2), BourbonZero\_82 (L3), Breezona\_83 (L2), Bromden\_81 (L4), Calm\_82 (L1), Chaser\_79 (L4), CicholasNage\_77 (L1), Claus\_83 (L2), Clautastrophe\_79 (L3), Crossroads\_83 (L2), DanBing\_83 (L2), DirkDirk\_77 (L1), DrSeegs\_83 (L2), DuncansLeg\_81 (L3), DyoEdafos\_85 (L4), Ellson\_80 (L3), Enceladus\_77 (L1), Faith1\_83 (L2), FarmResident\_82 (L4), Finemlucis\_82 (L2), Finnry\_81 (L3), Gabriela\_82 (L2), Gardann\_83 (L2), Hafay\_84 (L2), Halena\_78 (L1), Itos\_82 (L2), Jobypre\_81 (L3), JoeDirt\_80 (L1), Jubie\_80 (L3), Kingsolomon\_79 (L3), KirDoubleO7\_79 (L3), Krypton555\_82 (L3), LeBron\_79 (L1), LiyuLake\_80 (L3), Lolly9\_80 (L3), Lumos\_81 (L3), MAckerman\_78 (L1), Miley16\_83 (L2), MiniLon\_85 (L3), MiniMac\_85 (L3), Moostard\_79 (L3), MsGreen\_81 (L3), Netyap\_84 (L2), Nicholas\_79 (L3), Nicholasp3\_83 (L2), OhShagHennessy\_77 (L1), Poochiewood\_78 (L1), Quby\_81 (L4), Red305\_82 (L3), Rose5\_80 (L1), Rumpelstiltskin\_80 (L2), Samty\_80 (L3), Sarshaun\_84 (L2), Silverleaf\_80 (L1), Snenia\_80 (L3), SoJulia\_85 (L2), Soap141\_83 (L2), Tourach\_82 (L2), TriFive\_81 (L3), Tyson\_81 (L1), UPIE\_79 (L1), Underpass\_74 (L2), Wamburggrxpress\_80 (L1), Whirlwind\_82 (L3), Winky\_83 (L2), Wyatt2\_81 (L1), Zaria\_81 (L1), ZhongYanYuan\_80 (L2),

Start 20:

- Found in 6 of 82 ( 7.3% ) of genes in pham
- No Manual Annotations of this start.

- Called 16.7% of time when present
- Phage (with cluster) where this start called: Kropertea\_77 (L4),

Start 21:

- Found in 6 of 82 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 1 of 58
- Called 83.3% of time when present
- Phage (with cluster) where this start called: BrainDrainer\_81 (L4), Douge\_80 (L4), Douzhi\_81 (L4), PYPDinur\_80 (L4), Sheng711\_82 (L4),

### **Summary by clusters:**

There are 4 clusters represented in this pham: L4, L2, L3, L1,

Info for manual annotations of cluster L1:

- Start number 19 was manually annotated 19 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 19 was manually annotated 18 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 19 was manually annotated 17 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 19 was manually annotated 3 times for cluster L4.
- Start number 21 was manually annotated 1 time for cluster L4.

### **Gene Information:**

Gene: Acquire49\_80 Start: 52642, Stop: 52884, Start Num: 19

Candidate Starts for Acquire49\_80:

(Start: 19 @52642 has 57 MA's), (23, 52681), (25, 52723), (28, 52759), (39, 52867),

Gene: Appletree2\_79 Start: 52253, Stop: 52495, Start Num: 19

Candidate Starts for Appletree2\_79:

(Start: 19 @52253 has 57 MA's), (23, 52292), (25, 52334), (28, 52370), (39, 52478),

Gene: Archie\_80 Start: 54193, Stop: 54423, Start Num: 19

Candidate Starts for Archie\_80:

(Start: 19 @54193 has 57 MA's), (23, 54232), (35, 54376),

Gene: AvadaKedavra\_80 Start: 52721, Stop: 52963, Start Num: 19

Candidate Starts for AvadaKedavra\_80:

(Start: 19 @52721 has 57 MA's), (23, 52760), (25, 52802), (28, 52838), (39, 52946),

Gene: Baoshan\_80 Start: 54479, Stop: 54709, Start Num: 19

Candidate Starts for Baoshan\_80:

(12, 54377), (15, 54431), (Start: 19 @54479 has 57 MA's), (23, 54518), (25, 54557),

Gene: Bazzle\_80 Start: 54382, Stop: 54612, Start Num: 19

Candidate Starts for Bazzle\_80:

(Start: 19 @54382 has 57 MA's), (23, 54421), (25, 54460), (32, 54532),

Gene: Bellis\_79 Start: 54375, Stop: 54614, Start Num: 19

Candidate Starts for Bellis\_79:

(16, 54330), (Start: 19 @54375 has 57 MA's), (25, 54453), (27, 54483), (35, 54555), (38, 54576),

Gene: BigCheese\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for BigCheese\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: BobsGarage\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for BobsGarage\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: BourbonZero\_82 Start: 54404, Stop: 54643, Start Num: 19

Candidate Starts for BourbonZero\_82:

(7, 54188), (10, 54245), (11, 54254), (Start: 19 @54404 has 57 MA's), (25, 54482), (27, 54512), (35, 54584), (38, 54605),

Gene: BrainDrainer\_81 Start: 53381, Stop: 53605, Start Num: 21

Candidate Starts for BrainDrainer\_81:

(18, 53360), (20, 53378), (Start: 21 @53381 has 1 MA's), (29, 53498), (31, 53519), (34, 53534),

Gene: Breezona\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for Breezona\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: Bromden\_81 Start: 54008, Stop: 54238, Start Num: 19

Candidate Starts for Bromden\_81:

(10, 53846), (15, 53960), (17, 53969), (Start: 19 @54008 has 57 MA's), (23, 54047), (25, 54086), (26, 54089), (30, 54137), (38, 54212),

Gene: Calm\_82 Start: 52964, Stop: 53206, Start Num: 19

Candidate Starts for Calm\_82:

(Start: 19 @52964 has 57 MA's), (23, 53003), (25, 53045), (28, 53081), (39, 53189),

Gene: Chaser\_79 Start: 53007, Stop: 53243, Start Num: 19

Candidate Starts for Chaser\_79:

(Start: 19 @53007 has 57 MA's), (22, 53043), (23, 53046), (25, 53091), (34, 53169),

Gene: CicholasNage\_77 Start: 52306, Stop: 52548, Start Num: 19

Candidate Starts for CicholasNage\_77:

(Start: 19 @52306 has 57 MA's), (23, 52345), (25, 52387), (28, 52423), (39, 52531),

Gene: Claus\_83 Start: 54544, Stop: 54774, Start Num: 19

Candidate Starts for Claus\_83:

(12, 54442), (15, 54496), (Start: 19 @54544 has 57 MA's), (23, 54583), (25, 54622),

Gene: Clautastrophe\_79 Start: 54373, Stop: 54612, Start Num: 19

Candidate Starts for Clautastrophe\_79:

(16, 54328), (Start: 19 @54373 has 57 MA's), (25, 54451), (27, 54481), (35, 54553), (38, 54574),

Gene: Crossroads\_83 Start: 54684, Stop: 54914, Start Num: 19

Candidate Starts for Crossroads\_83:

(15, 54636), (Start: 19 @54684 has 57 MA's), (23, 54723), (25, 54762),

Gene: DanBing\_83 Start: 54414, Stop: 54644, Start Num: 19

Candidate Starts for DanBing\_83:

(12, 54312), (15, 54366), (Start: 19 @54414 has 57 MA's), (23, 54453), (25, 54492),

Gene: DirkDirk\_77 Start: 51833, Stop: 52075, Start Num: 19

Candidate Starts for DirkDirk\_77:

(Start: 19 @51833 has 57 MA's), (23, 51872), (25, 51914), (28, 51950), (39, 52058),

Gene: Douge\_80 Start: 52966, Stop: 53190, Start Num: 21

Candidate Starts for Douge\_80:

(4, 52675), (5, 52687), (7, 52741), (9, 52780), (20, 52963), (Start: 21 @52966 has 1 MA's), (29, 53083), (31, 53104), (34, 53119),

Gene: Douzhi\_81 Start: 53198, Stop: 53422, Start Num: 21

Candidate Starts for Douzhi\_81:

(18, 53177), (20, 53195), (Start: 21 @53198 has 1 MA's), (29, 53315), (31, 53336), (34, 53351),

Gene: DrSeegs\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for DrSeegs\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: DuncansLeg\_81 Start: 54392, Stop: 54631, Start Num: 19

Candidate Starts for DuncansLeg\_81:

(7, 54176), (10, 54233), (11, 54242), (Start: 19 @54392 has 57 MA's), (25, 54470), (27, 54500), (35, 54572), (38, 54593),

Gene: DyoEdafos\_85 Start: 53861, Stop: 54097, Start Num: 19

Candidate Starts for DyoEdafos\_85:

(1, 53528), (7, 53642), (8, 53645), (Start: 19 @53861 has 57 MA's), (22, 53897), (23, 53900), (29, 53987), (38, 54071),

Gene: Ellson\_80 Start: 54707, Stop: 54946, Start Num: 19

Candidate Starts for Ellson\_80:

(7, 54491), (10, 54548), (11, 54557), (Start: 19 @54707 has 57 MA's), (25, 54785), (27, 54815), (35, 54887), (38, 54908),

Gene: Enceladus\_77 Start: 52610, Stop: 52852, Start Num: 19

Candidate Starts for Enceladus\_77:

(Start: 19 @52610 has 57 MA's), (23, 52649), (25, 52691), (28, 52727), (39, 52835),

Gene: Faith1\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for Faith1\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: FarmResident\_82 Start: 52928, Stop: 53164, Start Num: 19

Candidate Starts for FarmResident\_82:

(13, 52856), (Start: 19 @52928 has 57 MA's), (22, 52964), (23, 52967), (38, 53138),

Gene: Finemlucis\_82 Start: 55077, Stop: 55313, Start Num: 19

Candidate Starts for Finemlucis\_82:

(15, 55029), (Start: 19 @55077 has 57 MA's), (23, 55116), (25, 55161), (33, 55236), (34, 55239),

Gene: Finnry\_81 Start: 54624, Stop: 54878, Start Num: 19

Candidate Starts for Finnry\_81:

(16, 54579), (Start: 19 @54624 has 57 MA's), (25, 54702), (27, 54732), (39, 54855),

Gene: Gabriela\_82 Start: 53955, Stop: 54185, Start Num: 19

Candidate Starts for Gabriela\_82:

(14, 53898), (15, 53907), (Start: 19 @53955 has 57 MA's), (23, 53994), (25, 54033),

Gene: Gardann\_83 Start: 54444, Stop: 54674, Start Num: 19

Candidate Starts for Gardann\_83:

(15, 54396), (Start: 19 @54444 has 57 MA's), (23, 54483), (25, 54522),

Gene: Hafay\_84 Start: 54539, Stop: 54769, Start Num: 19

Candidate Starts for Hafay\_84:

(12, 54437), (15, 54491), (Start: 19 @54539 has 57 MA's), (23, 54578), (25, 54617),

Gene: Halena\_78 Start: 51880, Stop: 52122, Start Num: 19

Candidate Starts for Halena\_78:

(Start: 19 @51880 has 57 MA's), (23, 51919), (25, 51961), (28, 51997), (39, 52105),

Gene: Itos\_82 Start: 53515, Stop: 53745, Start Num: 19

Candidate Starts for Itos\_82:

(14, 53458), (15, 53467), (Start: 19 @53515 has 57 MA's), (23, 53554), (25, 53593),

Gene: Jobypre\_81 Start: 54373, Stop: 54612, Start Num: 19

Candidate Starts for Jobypre\_81:

(16, 54328), (Start: 19 @54373 has 57 MA's), (25, 54451), (27, 54481), (35, 54553), (38, 54574),

Gene: JoeDirt\_80 Start: 53208, Stop: 53450, Start Num: 19

Candidate Starts for JoeDirt\_80:

(Start: 19 @53208 has 57 MA's), (23, 53247), (25, 53289), (28, 53325), (39, 53433),

Gene: Jubie\_80 Start: 54508, Stop: 54747, Start Num: 19

Candidate Starts for Jubie\_80:

(16, 54463), (Start: 19 @54508 has 57 MA's), (25, 54586), (27, 54616), (35, 54688), (38, 54709),

Gene: Kingsolomon\_79 Start: 54380, Stop: 54634, Start Num: 19

Candidate Starts for Kingsolomon\_79:

(16, 54335), (Start: 19 @54380 has 57 MA's), (25, 54458), (27, 54488), (39, 54611),

Gene: KirDoubleO7\_79 Start: 54394, Stop: 54633, Start Num: 19

Candidate Starts for KirDoubleO7\_79:

(7, 54178), (10, 54235), (11, 54244), (Start: 19 @54394 has 57 MA's), (25, 54472), (27, 54502), (35, 54574), (38, 54595),

Gene: Kropertea\_77 Start: 53146, Stop: 53373, Start Num: 20

Candidate Starts for Kropertea\_77:

(6, 52906), (7, 52924), (20, 53146), (Start: 21 @53149 has 1 MA's), (26, 53230), (31, 53287), (36, 53332), (38, 53347),

Gene: Krypton555\_82 Start: 54649, Stop: 54903, Start Num: 19

Candidate Starts for Krypton555\_82:

(16, 54604), (Start: 19 @54649 has 57 MA's), (24, 54709), (25, 54727), (27, 54757), (39, 54880),

Gene: LeBron\_79 Start: 51879, Stop: 52121, Start Num: 19

Candidate Starts for LeBron\_79:

(Start: 19 @51879 has 57 MA's), (23, 51918), (25, 51960), (28, 51996), (39, 52104),

Gene: LiyuLake\_80 Start: 54467, Stop: 54706, Start Num: 19

Candidate Starts for LiyuLake\_80:

(7, 54251), (10, 54308), (11, 54317), (Start: 19 @54467 has 57 MA's), (25, 54545), (27, 54575), (35, 54647), (38, 54668),

Gene: Lolly9\_80 Start: 54471, Stop: 54710, Start Num: 19

Candidate Starts for Lolly9\_80:

(4, 54189), (7, 54255), (11, 54321), (16, 54426), (Start: 19 @54471 has 57 MA's), (25, 54549), (27, 54579), (29, 54591), (31, 54612), (37, 54663),

Gene: Lumos\_81 Start: 54370, Stop: 54609, Start Num: 19

Candidate Starts for Lumos\_81:

(16, 54325), (Start: 19 @54370 has 57 MA's), (25, 54448), (27, 54478), (35, 54550), (38, 54571),

Gene: MAckerman\_78 Start: 51873, Stop: 52115, Start Num: 19

Candidate Starts for MAckerman\_78:

(Start: 19 @51873 has 57 MA's), (23, 51912), (25, 51954), (28, 51990), (39, 52098),

Gene: Miley16\_83 Start: 54609, Stop: 54839, Start Num: 19

Candidate Starts for Miley16\_83:

(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: MiniLon\_85 Start: 54472, Stop: 54711, Start Num: 19

Candidate Starts for MiniLon\_85:

(4, 54190), (7, 54256), (11, 54322), (16, 54427), (Start: 19 @54472 has 57 MA's), (25, 54550), (27, 54580), (29, 54592), (31, 54613), (37, 54664),

Gene: MiniMac\_85 Start: 54467, Stop: 54706, Start Num: 19

Candidate Starts for MiniMac\_85:

(4, 54185), (7, 54251), (11, 54317), (16, 54422), (Start: 19 @54467 has 57 MA's), (25, 54545), (27, 54575), (29, 54587), (31, 54608), (37, 54659),

Gene: Moostard\_79 Start: 54375, Stop: 54629, Start Num: 19

Candidate Starts for Moostard\_79:

(16, 54330), (Start: 19 @54375 has 57 MA's), (25, 54453), (27, 54483), (39, 54606),

Gene: MsGreen\_81 Start: 54372, Stop: 54611, Start Num: 19

Candidate Starts for MsGreen\_81:

(16, 54327), (Start: 19 @54372 has 57 MA's), (25, 54450), (27, 54480), (35, 54552), (38, 54573),

Gene: Netyap\_84 Start: 54610, Stop: 54840, Start Num: 19

Candidate Starts for Netyap\_84:

(14, 54553), (15, 54562), (Start: 19 @54610 has 57 MA's), (23, 54649), (25, 54688),

Gene: Nicholas\_79 Start: 54380, Stop: 54634, Start Num: 19

Candidate Starts for Nicholas\_79:



(16, 54335), (Start: 19 @54380 has 57 MA's), (25, 54458), (27, 54488), (39, 54611),

Gene: Nicholasp3\_83 Start: 54444, Stop: 54674, Start Num: 19

Candidate Starts for Nicholasp3\_83:

(15, 54396), (Start: 19 @54444 has 57 MA's), (23, 54483), (25, 54522),

Gene: OhShagHennessy\_77 Start: 51911, Stop: 52153, Start Num: 19

Candidate Starts for OhShagHennessy\_77:

(Start: 19 @51911 has 57 MA's), (23, 51950), (25, 51992), (28, 52028), (39, 52136),

Gene: PYPDinur\_80 Start: 53633, Stop: 53857, Start Num: 21

Candidate Starts for PYPDinur\_80:

(18, 53612), (20, 53630), (Start: 21 @53633 has 1 MA's), (29, 53750), (31, 53771), (34, 53786),

Gene: Poochiewood\_78 Start: 53216, Stop: 53458, Start Num: 19

Candidate Starts for Poochiewood\_78:

(Start: 19 @53216 has 57 MA's), (23, 53255), (25, 53297), (28, 53333), (39, 53441),

Gene: Quby\_81 Start: 52952, Stop: 53188, Start Num: 19

Candidate Starts for Quby\_81:

(13, 52880), (Start: 19 @52952 has 57 MA's), (22, 52988), (23, 52991), (38, 53162),

Gene: Red305\_82 Start: 54373, Stop: 54612, Start Num: 19

Candidate Starts for Red305\_82:

(16, 54328), (Start: 19 @54373 has 57 MA's), (25, 54451), (27, 54481), (35, 54553), (38, 54574),

Gene: Rose5\_80 Start: 53053, Stop: 53295, Start Num: 19

Candidate Starts for Rose5\_80:

(Start: 19 @53053 has 57 MA's), (23, 53092), (25, 53134), (28, 53170), (39, 53278),

Gene: Rumpelstiltskin\_80 Start: 54237, Stop: 54467, Start Num: 19

Candidate Starts for Rumpelstiltskin\_80:

(15, 54189), (Start: 19 @54237 has 57 MA's), (23, 54276), (25, 54315),

Gene: Samty\_80 Start: 54368, Stop: 54622, Start Num: 19

Candidate Starts for Samty\_80:

(16, 54323), (Start: 19 @54368 has 57 MA's), (25, 54446), (27, 54476), (39, 54599),

Gene: Sarshaun\_84 Start: 54702, Stop: 54932, Start Num: 19

Candidate Starts for Sarshaun\_84:

(15, 54654), (Start: 19 @54702 has 57 MA's), (23, 54741), (25, 54780),

Gene: Sheng711\_82 Start: 53267, Stop: 53491, Start Num: 21

Candidate Starts for Sheng711\_82:

(18, 53246), (20, 53264), (Start: 21 @53267 has 1 MA's), (29, 53384), (31, 53405), (34, 53420),

Gene: Silverleaf\_80 Start: 52509, Stop: 52751, Start Num: 19

Candidate Starts for Silverleaf\_80:

(Start: 19 @52509 has 57 MA's), (23, 52548), (25, 52590), (28, 52626), (39, 52734),

Gene: Snenia\_80 Start: 54374, Stop: 54613, Start Num: 19

Candidate Starts for Snenia\_80:

(16, 54329), (Start: 19 @54374 has 57 MA's), (25, 54452), (27, 54482), (35, 54554), (38, 54575),

Gene: SoJulia\_85 Start: 55770, Stop: 56000, Start Num: 19  
Candidate Starts for SoJulia\_85:  
(14, 55713), (15, 55722), (Start: 19 @55770 has 57 MA's), (23, 55809), (25, 55848),

Gene: Soap141\_83 Start: 54702, Stop: 54932, Start Num: 19  
Candidate Starts for Soap141\_83:  
(15, 54654), (Start: 19 @54702 has 57 MA's), (23, 54741), (25, 54780),

Gene: Tourach\_82 Start: 54727, Stop: 54957, Start Num: 19  
Candidate Starts for Tourach\_82:  
(2, 54400), (3, 54433), (15, 54679), (Start: 19 @54727 has 57 MA's), (23, 54766), (25, 54805),

Gene: TriFive\_81 Start: 54373, Stop: 54627, Start Num: 19  
Candidate Starts for TriFive\_81:  
(16, 54328), (Start: 19 @54373 has 57 MA's), (25, 54451), (27, 54481), (39, 54604),

Gene: Tyson\_81 Start: 52979, Stop: 53221, Start Num: 19  
Candidate Starts for Tyson\_81:  
(Start: 19 @52979 has 57 MA's), (23, 53018), (25, 53060), (28, 53096), (39, 53204),

Gene: UPIE\_79 Start: 52575, Stop: 52817, Start Num: 19  
Candidate Starts for UPIE\_79:  
(Start: 19 @52575 has 57 MA's), (23, 52614), (25, 52656), (28, 52692), (39, 52800),

Gene: Underpass\_74 Start: 49480, Stop: 49710, Start Num: 19  
Candidate Starts for Underpass\_74:  
(15, 49432), (Start: 19 @49480 has 57 MA's), (23, 49519), (25, 49558),

Gene: Wamburgexpress\_80 Start: 53014, Stop: 53256, Start Num: 19  
Candidate Starts for Wamburgexpress\_80:  
(Start: 19 @53014 has 57 MA's), (23, 53053), (25, 53095), (28, 53131), (39, 53239),

Gene: Whirlwind\_82 Start: 54612, Stop: 54866, Start Num: 19  
Candidate Starts for Whirlwind\_82:  
(16, 54567), (Start: 19 @54612 has 57 MA's), (24, 54672), (25, 54690), (27, 54720), (32, 54762), (39, 54843),

Gene: Winky\_83 Start: 54609, Stop: 54839, Start Num: 19  
Candidate Starts for Winky\_83:  
(14, 54552), (15, 54561), (Start: 19 @54609 has 57 MA's), (23, 54648), (25, 54687),

Gene: Wyatt2\_81 Start: 52977, Stop: 53219, Start Num: 19  
Candidate Starts for Wyatt2\_81:  
(Start: 19 @52977 has 57 MA's), (23, 53016), (25, 53058), (28, 53094), (39, 53202),

Gene: Zaria\_81 Start: 52429, Stop: 52671, Start Num: 19  
Candidate Starts for Zaria\_81:  
(Start: 19 @52429 has 57 MA's), (23, 52468), (25, 52510), (28, 52546), (39, 52654),

Gene: ZhongYanYuan\_80 Start: 54062, Stop: 54292, Start Num: 19  
Candidate Starts for ZhongYanYuan\_80:  
(12, 53960), (15, 54014), (Start: 19 @54062 has 57 MA's), (23, 54101), (25, 54140),

