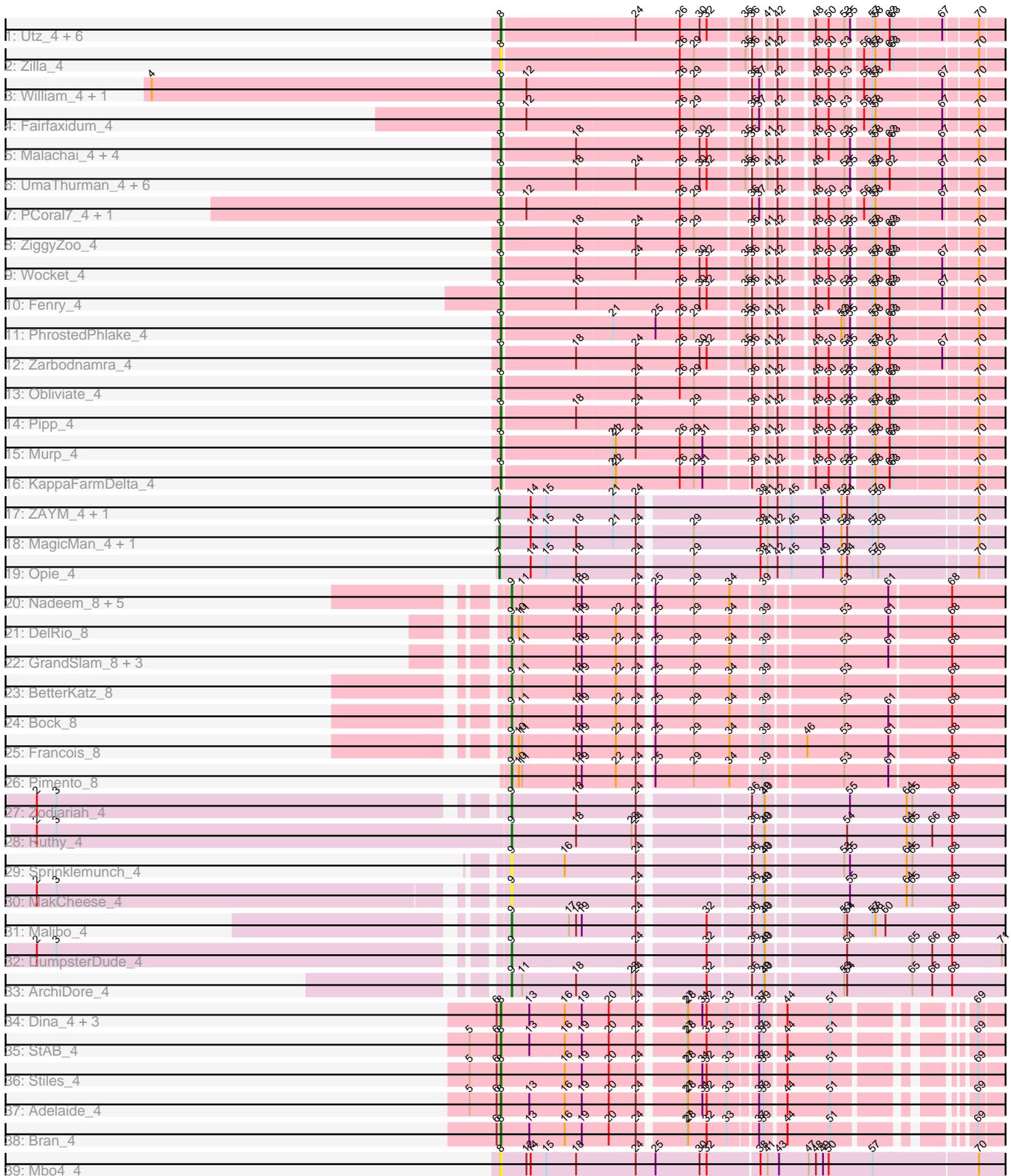# Zoomed Pham 287872

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 287872 Report

This analysis was run 03/28/26 on database version 641.

Pham number 287872 has 70 members, 6 are drafts.

Phages represented in each track:
• Track 1 : Utz_4, Mellie_4, Samba_4, BlingBling_4, Lysidious_4, Hitter_4, Jalammah_4
• Track 2 : Zilla_4
• Track 3 : William_4, PrincePatrick_4
• Track 4 : Fairfaxidum_4
• Track 5 : Malachai_4, Begonia_4, Guacamole_4, Wisp_4, JasperJr_4
• Track 6 : UmaThurman_4, Archis_4, CaptainKirk2_4, MintFen_4, Barco_4, Delian_4, Melba_4
• Track 7 : PCoral7_4, Toast_4
• Track 8 : ZiggyZoo_4
• Track 9 : Wocket_4
• Track 10 : Fenry_4
• Track 11 : PhrostedPhlake_4
• Track 12 : Zarbodnamra_4
• Track 13 : Obliviate_4
• Track 14 : Pipp_4
• Track 15 : Murp_4
• Track 16 : KappaFarmDelta_4
• Track 17 : ZAYM_4, TaronosaurasRx_4
• Track 18 : MagicMan_4, Schnabeltier_4
• Track 19 : Opie_4
• Track 20 : Nadeem_8, Parada_8, NancyRae_8, Brylie_8, Mulch_8, WheatThin_8
• Track 21 : DelRio_8
• Track 22 : GrandSlam_8, Chop_8, Hamood_8, Ayotoya_8
• Track 23 : BetterKatz_8
• Track 24 : Bock_8
• Track 25 : Francois_8
• Track 26 : Pimento_8
• Track 27 : Zodiariah_4
• Track 28 : Ruthy_4
• Track 29 : Sprinklemunch_4
• Track 30 : MakCheese_4
• Track 31 : Malibo_4
• Track 32 : DumpsterDude_4
• Track 33 : ArchiDore_4
• Track 34 : Dina_4, SamW_4, Lederberg_4, Troy_4
• Track 35 : StAB_4

- Track 36 : Stiles_4
- Track 37 : Adelaide_4
- Track 38 : Bran_4
- Track 39 : Mbo4_4

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 40 of the 64 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
- Adelaide_4, Archis_4, Barco_4, Begonia_4, BlingBling_4, Bran_4, CaptainKirk2_4, Delian_4, Dina_4, Fairfaxidum_4, Fenry_4, Guacamole_4, Hitter_4, Jalammah_4, JasperJr_4, KappaFarmDelta_4, Lederberg_4, Lysidious_4, Malachai_4, Mbo4_4, Melba_4, Mellie_4, MintFen_4, Murp_4, Obliviate_4, PCoral7_4, PhrostedPhlake_4, Pipp_4, PrincePatrick_4, SamW_4, Samba_4, StAB_4, Stiles_4, Toast_4, Troy_4, UmaThurman_4, Utz_4, William_4, Wisp_4, Wocket_4, Zarbodnamra_4, ZiggyZoo_4, Zilla_4,

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

Genes that do not have the "Most Annotated" start:
- ArchiDore_4, Ayotoya_8, BetterKatz_8, Bock_8, Brylie_8, Chop_8, DelRio_8, DumpsterDude_4, Francois_8, GrandSlam_8, Hamood_8, MagicMan_4, MakCheese_4, Malibo_4, Mulch_8, Nadeem_8, NancyRae_8, Opie_4, Parada_8, Pimento_8, Ruthy_4, Schnabeltier_4, Sprinklemunch_4, TaronosaurasRx_4, WheatThin_8, ZAYM_4, Zodiariah_4,

Summary by start number:

Start 7:
- Found in 5 of 70 (7.1%) of genes in pham
- Manual Annotations of this start: 4 of 64
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MagicMan_4 (DB), Opie_4 (DB), Schnabeltier_4 (DB), TaronosaurasRx_4 (DB), ZAYM_4 (DB),

Start 8:
- Found in 43 of 70 (61.4%) of genes in pham
- Manual Annotations of this start: 40 of 64
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adelaide_4 (EP), Archis_4 (CV), Barco_4 (CV), Begonia_4 (CV), BlingBling_4 (CV), Bran_4 (EP), CaptainKirk2_4 (CV), Delian_4 (CV), Dina_4 (EP), Fairfaxidum_4 (CV), Fenry_4 (CV), Guacamole_4 (CV), Hitter_4 (CV), Jalammah_4 (CV), JasperJr_4 (CV), KappaFarmDelta_4 (CV), Lederberg_4 (EP), Lysidious_4 (CV), Malachai_4 (CV), Mbo4_4 (singleton), Melba_4 (CV), Mellie_4 (CV), MintFen_4 (CV), Murp_4 (CV), Obliviate_4 (CV), PCoral7_4 (CV), PhrostedPhlake_4 (CV), Pipp_4 (CV), PrincePatrick_4 (CV), SamW_4 (EP), Samba_4 (CV), StAB_4 (EP), Stiles_4 (EP), Toast_4 (CV), Troy_4 (EP),

UmaThurman_4 (CV), Utz_4 (CV), William_4 (CV), Wisp_4 (CV), Wocket_4 (CV), Zarbodnamra_4 (CV), ZiggyZoo_4 (CV), Zilla_4 (CV),

Start 9:
• Found in 22 of 70 (31.4%) of genes in pham
• Manual Annotations of this start: 20 of 64
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ArchiDore_4 (DW), Ayotoya_8 (DI), BetterKatz_8 (DI), Bock_8 (DI), Brylie_8 (DI), Chop_8 (DI), DelRio_8 (DI), DumpsterDude_4 (DW), Francois_8 (DI), GrandSlam_8 (DI), Hamood_8 (DI), MakCheese_4 (DW), Malibo_4 (DW), Mulch_8 (DI), Nadeem_8 (DI), NancyRae_8 (DI), Parada_8 (DI), Pimento_8 (DI), Ruthy_4 (DW), Sprinklemunch_4 (DW), WheatThin_8 (DI), Zodiariah_4 (DW),

Summary by clusters:

There are 6 clusters represented in this pham: singleton, DI, DB, CV, DW, EP,

Info for manual annotations of cluster CV:
•Start number 8 was manually annotated 32 times for cluster CV.

Info for manual annotations of cluster DB:
•Start number 7 was manually annotated 4 times for cluster DB.

Info for manual annotations of cluster DI:
•Start number 9 was manually annotated 15 times for cluster DI.

Info for manual annotations of cluster DW:
•Start number 9 was manually annotated 5 times for cluster DW.

Info for manual annotations of cluster EP:
•Start number 8 was manually annotated 8 times for cluster EP.

Gene Information:

Gene: Adelaide_4 Start: 3258, Stop: 4631, Start Num: 8
Candidate Starts for Adelaide_4:
(5, 3192), (6, 3249), (Start: 8 @3258 has 40 MA's), (13, 3318), (16, 3390), (19, 3426), (20, 3483), (24, 3540), (27, 3627), (28, 3630), (31, 3660), (32, 3669), (33, 3711), (37, 3765), (39, 3774), (44, 3813), (51, 3903), (69, 4110), (73, 4197), (74, 4206), (83, 4326), (86, 4431), (88, 4464), (90, 4503), (91, 4515), (92, 4521), (98, 4608),

Gene: ArchiDore_4 Start: 3443, Stop: 4939, Start Num: 9
Candidate Starts for ArchiDore_4:
(Start: 9 @3443 has 20 MA's), (11, 3464), (18, 3575), (23, 3689), (24, 3698), (32, 3827), (36, 3905), (39, 3929), (40, 3932), (53, 4082), (54, 4088), (65, 4226), (66, 4268), (68, 4310), (74, 4463), (75, 4466), (84, 4658), (85, 4724), (89, 4820),

Gene: Archis_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Archis_4:

(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Ayotoya_8 Start: 5183, Stop: 6661, Start Num: 9
Candidate Starts for Ayotoya_8:
(Start: 9 @5183 has 20 MA's), (11, 5204), (18, 5315), (19, 5327), (22, 5399), (24, 5438), (25, 5459), (29, 5540), (34, 5615), (39, 5675), (53, 5825), (61, 5918), (68, 6041), (75, 6194), (82, 6350), (84, 6380), (85, 6446), (97, 6638),

Gene: Barco_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Barco_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Begonia_4 Start: 3316, Stop: 4731, Start Num: 8
Candidate Starts for Begonia_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4612), (90, 4624),

Gene: BetterKatz_8 Start: 5151, Stop: 6629, Start Num: 9
Candidate Starts for BetterKatz_8:
(Start: 9 @5151 has 20 MA's), (11, 5172), (18, 5283), (19, 5295), (22, 5367), (24, 5406), (25, 5427), (29, 5508), (34, 5583), (39, 5643), (53, 5793), (68, 6009), (75, 6162), (82, 6318), (84, 6348), (85, 6414), (97, 6606),

Gene: BlingBling_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for BlingBling_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Bock_8 Start: 4901, Stop: 6379, Start Num: 9
Candidate Starts for Bock_8:
(Start: 9 @4901 has 20 MA's), (11, 4922), (18, 5033), (19, 5045), (22, 5117), (24, 5156), (25, 5177), (29, 5258), (34, 5333), (39, 5393), (53, 5543), (61, 5636), (68, 5759), (75, 5912), (82, 6068), (84, 6098), (85, 6164), (97, 6356),

Gene: Bran_4 Start: 3260, Stop: 4636, Start Num: 8
Candidate Starts for Bran_4:
(6, 3251), (Start: 8 @3260 has 40 MA's), (13, 3320), (16, 3392), (19, 3428), (20, 3485), (24, 3542), (27, 3629), (28, 3632), (32, 3671), (33, 3713), (37, 3767), (39, 3776), (44, 3815), (51, 3905), (69, 4112), (73, 4199), (74, 4208), (83, 4331), (86, 4436), (88, 4469), (90, 4508), (91, 4520), (92, 4526), (98, 4613),

Gene: Brylie_8 Start: 4898, Stop: 6376, Start Num: 9
Candidate Starts for Brylie_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255), (34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161), (97, 6353),

Gene: CaptainKirk2_4 Start: 3316, Stop: 4728, Start Num: 8

Candidate Starts for CaptainKirk2_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Chop_8 Start: 4931, Stop: 6409, Start Num: 9
Candidate Starts for Chop_8:
(Start: 9 @4931 has 20 MA's), (11, 4952), (18, 5063), (19, 5075), (22, 5147), (24, 5186), (25, 5207), (29, 5288), (34, 5363), (39, 5423), (53, 5573), (61, 5666), (68, 5789), (75, 5942), (82, 6098), (84, 6128), (85, 6194), (97, 6386),

Gene: DelRio_8 Start: 5192, Stop: 6673, Start Num: 9
Candidate Starts for DelRio_8:
(Start: 9 @5192 has 20 MA's), (10, 5207), (11, 5213), (18, 5324), (19, 5336), (22, 5408), (24, 5447), (25, 5468), (29, 5549), (34, 5624), (39, 5684), (53, 5834), (61, 5927), (68, 6050), (75, 6206), (82, 6362), (84, 6392), (85, 6458), (97, 6650),

Gene: Delian_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Delian_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Dina_4 Start: 3258, Stop: 4631, Start Num: 8
Candidate Starts for Dina_4:
(6, 3249), (Start: 8 @3258 has 40 MA's), (13, 3318), (16, 3390), (19, 3426), (20, 3483), (24, 3540), (27, 3627), (28, 3630), (31, 3660), (32, 3669), (33, 3711), (37, 3765), (39, 3774), (44, 3813), (51, 3903), (69, 4110), (73, 4197), (74, 4206), (83, 4326), (86, 4431), (88, 4464), (90, 4503), (91, 4515), (92, 4521), (98, 4608),

Gene: DumpsterDude_4 Start: 3443, Stop: 4948, Start Num: 9
Candidate Starts for DumpsterDude_4:
(1, 2396), (2, 2516), (3, 2558), (Start: 9 @3443 has 20 MA's), (24, 3698), (32, 3827), (36, 3905), (39, 3929), (40, 3932), (54, 4088), (65, 4226), (66, 4268), (68, 4310), (71, 4409), (74, 4463), (75, 4466), (84, 4667), (85, 4733),

Gene: Fairfaxidum_4 Start: 3317, Stop: 4723, Start Num: 8
Candidate Starts for Fairfaxidum_4:
(Start: 8 @3317 has 40 MA's), (12, 3362), (26, 3680), (29, 3710), (36, 3815), (37, 3830), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (56, 4001), (57, 4019), (58, 4025), (67, 4160), (70, 4214), (77, 4328), (90, 4616),

Gene: Fenry_4 Start: 3317, Stop: 4729, Start Num: 8
Candidate Starts for Fenry_4:
(Start: 8 @3317 has 40 MA's), (18, 3467), (26, 3680), (30, 3722), (32, 3737), (35, 3809), (36, 3815), (41, 3839), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (55, 3986), (57, 4019), (58, 4025), (62, 4055), (63, 4061), (67, 4160), (70, 4214), (89, 4610), (90, 4622),

Gene: Francois_8 Start: 4897, Stop: 6378, Start Num: 9
Candidate Starts for Francois_8:
(Start: 9 @4897 has 20 MA's), (10, 4912), (11, 4918), (18, 5029), (19, 5041), (22, 5113), (24, 5152), (25, 5173), (29, 5254), (34, 5329), (39, 5389), (46, 5461), (53, 5539), (61, 5632), (68, 5755), (75, 5908), (82, 6067), (84, 6097), (85, 6163), (94, 6304), (97, 6355),

Gene: GrandSlam_8 Start: 4931, Stop: 6409, Start Num: 9
Candidate Starts for GrandSlam_8:
(Start: 9 @4931 has 20 MA's), (11, 4952), (18, 5063), (19, 5075), (22, 5147), (24, 5186), (25, 5207),
(29, 5288), (34, 5363), (39, 5423), (53, 5573), (61, 5666), (68, 5789), (75, 5942), (82, 6098), (84, 6128),
(85, 6194), (97, 6386),

Gene: Guacamole_4 Start: 3317, Stop: 4732, Start Num: 8
Candidate Starts for Guacamole_4:
(Start: 8 @3317 has 40 MA's), (18, 3467), (26, 3680), (30, 3722), (32, 3737), (35, 3809), (36, 3815),
(41, 3839), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (55, 3986), (57, 4019), (58, 4025), (62, 4055),
(63, 4061), (67, 4160), (70, 4214), (89, 4613), (90, 4625),

Gene: Hamood_8 Start: 4931, Stop: 6409, Start Num: 9
Candidate Starts for Hamood_8:
(Start: 9 @4931 has 20 MA's), (11, 4952), (18, 5063), (19, 5075), (22, 5147), (24, 5186), (25, 5207),
(29, 5288), (34, 5363), (39, 5423), (53, 5573), (61, 5666), (68, 5789), (75, 5942), (82, 6098), (84, 6128),
(85, 6194), (97, 6386),

Gene: Hitter_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Hitter_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814),
(41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054),
(63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Jalammah_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Jalammah_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814),
(41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054),
(63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: JasperJr_4 Start: 3317, Stop: 4732, Start Num: 8
Candidate Starts for JasperJr_4:
(Start: 8 @3317 has 40 MA's), (18, 3467), (26, 3680), (30, 3722), (32, 3737), (35, 3809), (36, 3815),
(41, 3839), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (55, 3986), (57, 4019), (58, 4025), (62, 4055),
(63, 4061), (67, 4160), (70, 4214), (89, 4613), (90, 4625),

Gene: KappaFarmDelta_4 Start: 3301, Stop: 4713, Start Num: 8
Candidate Starts for KappaFarmDelta_4:
(Start: 8 @3301 has 40 MA's), (21, 3523), (22, 3529), (26, 3664), (29, 3694), (31, 3712), (36, 3799),
(41, 3823), (42, 3838), (48, 3898), (50, 3925), (53, 3958), (55, 3970), (57, 4003), (58, 4009), (62, 4039),
(63, 4045), (70, 4198), (89, 4594), (90, 4606),

Gene: Lederberg_4 Start: 3258, Stop: 4631, Start Num: 8
Candidate Starts for Lederberg_4:
(6, 3249), (Start: 8 @3258 has 40 MA's), (13, 3318), (16, 3390), (19, 3426), (20, 3483), (24, 3540), (27,
3627), (28, 3630), (31, 3660), (32, 3669), (33, 3711), (37, 3765), (39, 3774), (44, 3813), (51, 3903), (69,
4110), (73, 4197), (74, 4206), (83, 4326), (86, 4431), (88, 4464), (90, 4503), (91, 4515), (92, 4521), (98,
4608),

Gene: Lysidious_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Lysidious_4:

(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: MagicMan_4 Start: 3593, Stop: 5035, Start Num: 7
Candidate Starts for MagicMan_4:
(Start: 7 @3593 has 4 MA's), (14, 3656), (15, 3689), (18, 3749), (21, 3827), (24, 3875), (29, 3977), (38, 4115), (41, 4130), (42, 4148), (45, 4178), (49, 4244), (52, 4283), (54, 4295), (57, 4349), (59, 4361), (70, 4550), (79, 4706), (88, 4868), (95, 4955),

Gene: MakCheese_4 Start: 3438, Stop: 4937, Start Num: 9
Candidate Starts for MakCheese_4:
(1, 2397), (2, 2517), (3, 2559), (Start: 9 @3438 has 20 MA's), (24, 3693), (36, 3903), (39, 3927), (40, 3930), (55, 4092), (64, 4212), (65, 4224), (68, 4308), (74, 4464), (75, 4467), (76, 4476), (78, 4578), (82, 4626), (84, 4656), (85, 4722), (87, 4785),

Gene: Malachai_4 Start: 3316, Stop: 4731, Start Num: 8
Candidate Starts for Malachai_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4612), (90, 4624),

Gene: Malibo_4 Start: 3443, Stop: 4954, Start Num: 9
Candidate Starts for Malibo_4:
(Start: 9 @3443 has 20 MA's), (17, 3560), (18, 3575), (19, 3587), (24, 3698), (32, 3827), (36, 3905), (39, 3929), (40, 3932), (53, 4082), (54, 4088), (57, 4142), (58, 4148), (60, 4169), (68, 4307), (75, 4463), (76, 4472), (80, 4607), (81, 4613), (82, 4643), (84, 4673), (85, 4739),

Gene: Mbo4_4 Start: 3494, Stop: 4975, Start Num: 8
Candidate Starts for Mbo4_4:
(Start: 8 @3494 has 40 MA's), (12, 3545), (14, 3554), (15, 3587), (18, 3647), (24, 3773), (25, 3815), (30, 3908), (32, 3923), (38, 4028), (41, 4043), (43, 4067), (47, 4130), (48, 4145), (49, 4160), (50, 4172), (57, 4265), (70, 4469), (72, 4553), (87, 4817), (88, 4820), (92, 4880), (96, 4919),

Gene: Melba_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Melba_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Mellie_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Mellie_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: MintFen_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for MintFen_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Mulch_8 Start: 4898, Stop: 6376, Start Num: 9

Candidate Starts for Mulch_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255),
(34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161),
(97, 6353),

Gene: Murp_4 Start: 3304, Stop: 4716, Start Num: 8
Candidate Starts for Murp_4:
(Start: 8 @3304 has 40 MA's), (21, 3526), (22, 3532), (24, 3574), (26, 3667), (29, 3697), (31, 3715),
(36, 3802), (41, 3826), (42, 3841), (48, 3901), (50, 3928), (53, 3961), (55, 3973), (57, 4006), (58, 4012),
(62, 4042), (63, 4048), (70, 4201), (90, 4609),

Gene: Nadeem_8 Start: 4898, Stop: 6376, Start Num: 9
Candidate Starts for Nadeem_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255),
(34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161),
(97, 6353),

Gene: NancyRae_8 Start: 4898, Stop: 6376, Start Num: 9
Candidate Starts for NancyRae_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255),
(34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161),
(97, 6353),

Gene: Obliviate_4 Start: 3316, Stop: 4752, Start Num: 8
Candidate Starts for Obliviate_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (29, 3709), (36, 3814), (41, 3838), (42, 3853),
(48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (70, 4213),
(89, 4633), (90, 4645),

Gene: Opie_4 Start: 3599, Stop: 5044, Start Num: 7
Candidate Starts for Opie_4:
(Start: 7 @3599 has 4 MA's), (14, 3662), (15, 3695), (18, 3755), (24, 3881), (29, 3983), (38, 4124), (41,
4139), (42, 4157), (45, 4187), (49, 4253), (52, 4292), (54, 4304), (57, 4358), (59, 4370), (70, 4559), (88,
4877), (95, 4964),

Gene: PCoral7_4 Start: 3317, Stop: 4723, Start Num: 8
Candidate Starts for PCoral7_4:
(Start: 8 @3317 has 40 MA's), (12, 3362), (26, 3680), (29, 3710), (36, 3815), (37, 3830), (42, 3854),
(48, 3914), (50, 3941), (53, 3974), (56, 4001), (57, 4019), (58, 4025), (67, 4160), (70, 4214), (90, 4616),

Gene: Parada_8 Start: 4898, Stop: 6376, Start Num: 9
Candidate Starts for Parada_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255),
(34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161),
(97, 6353),

Gene: PhrostedPhlake_4 Start: 3317, Stop: 4750, Start Num: 8
Candidate Starts for PhrostedPhlake_4:
(Start: 8 @3317 has 40 MA's), (21, 3539), (25, 3629), (26, 3680), (29, 3710), (35, 3809), (36, 3815),
(41, 3839), (42, 3854), (48, 3914), (52, 3968), (53, 3974), (55, 3986), (57, 4019), (58, 4025), (62, 4055),
(63, 4061), (70, 4214), (90, 4643),

Gene: Pimento_8 Start: 4898, Stop: 6373, Start Num: 9

Candidate Starts for Pimento_8:
(Start: 9 @4898 has 20 MA's), (10, 4913), (11, 4919), (18, 5030), (19, 5042), (22, 5114), (24, 5153), (25, 5174), (29, 5255), (34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6062), (84, 6092), (85, 6158), (97, 6350),

Gene: Pipp_4 Start: 3315, Stop: 4751, Start Num: 8
Candidate Starts for Pipp_4:
(Start: 8 @3315 has 40 MA's), (18, 3465), (24, 3585), (29, 3708), (36, 3813), (41, 3837), (42, 3852), (48, 3912), (50, 3939), (53, 3972), (55, 3984), (57, 4017), (58, 4023), (62, 4053), (63, 4059), (70, 4212), (89, 4632), (90, 4644), (94, 4677),

Gene: PrincePatrick_4 Start: 3318, Stop: 4724, Start Num: 8
Candidate Starts for PrincePatrick_4:
(4, 2580), (Start: 8 @3318 has 40 MA's), (12, 3363), (26, 3681), (29, 3711), (36, 3816), (37, 3831), (42, 3855), (48, 3915), (50, 3942), (53, 3975), (56, 4002), (57, 4020), (58, 4026), (67, 4161), (70, 4215), (90, 4617),

Gene: Ruthy_4 Start: 3515, Stop: 5017, Start Num: 9
Candidate Starts for Ruthy_4:
(2, 2516), (3, 2558), (Start: 9 @3515 has 20 MA's), (18, 3647), (23, 3761), (24, 3770), (36, 3977), (39, 4001), (40, 4004), (54, 4160), (64, 4286), (65, 4298), (66, 4340), (68, 4382), (74, 4535), (75, 4538), (84, 4736), (85, 4802),

Gene: SamW_4 Start: 3258, Stop: 4631, Start Num: 8
Candidate Starts for SamW_4:
(6, 3249), (Start: 8 @3258 has 40 MA's), (13, 3318), (16, 3390), (19, 3426), (20, 3483), (24, 3540), (27, 3627), (28, 3630), (31, 3660), (32, 3669), (33, 3711), (37, 3765), (39, 3774), (44, 3813), (51, 3903), (69, 4110), (73, 4197), (74, 4206), (83, 4326), (86, 4431), (88, 4464), (90, 4503), (91, 4515), (92, 4521), (98, 4608),

Gene: Samba_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Samba_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Schnabeltier_4 Start: 3594, Stop: 5036, Start Num: 7
Candidate Starts for Schnabeltier_4:
(Start: 7 @3594 has 4 MA's), (14, 3657), (15, 3690), (18, 3750), (21, 3828), (24, 3876), (29, 3978), (38, 4116), (41, 4131), (42, 4149), (45, 4179), (49, 4245), (52, 4284), (54, 4296), (57, 4350), (59, 4362), (70, 4551), (79, 4707), (88, 4869), (95, 4956),

Gene: Sprinklemunch_4 Start: 3442, Stop: 4938, Start Num: 9
Candidate Starts for Sprinklemunch_4:
(Start: 9 @3442 has 20 MA's), (16, 3550), (24, 3697), (36, 3907), (39, 3931), (40, 3934), (53, 4084), (55, 4096), (64, 4216), (65, 4228), (68, 4312), (75, 4468), (76, 4477), (78, 4576), (82, 4627), (84, 4657), (85, 4723), (87, 4786),

Gene: StAB_4 Start: 3260, Stop: 4636, Start Num: 8
Candidate Starts for StAB_4:
(5, 3194), (6, 3251), (Start: 8 @3260 has 40 MA's), (13, 3320), (16, 3392), (19, 3428), (20, 3485), (24, 3542), (27, 3629), (28, 3632), (32, 3671), (33, 3713), (37, 3767), (39, 3776), (44, 3815), (51, 3905), (69, 4112), (73, 4199), (74, 4208), (83, 4331), (86, 4436), (88, 4469), (90, 4508), (91, 4520), (92, 4526), (98,

4613),

Gene: Stiles_4 Start: 3260, Stop: 4636, Start Num: 8
Candidate Starts for Stiles_4:
(5, 3194), (6, 3251), (Start: 8 @3260 has 40 MA's), (16, 3392), (19, 3428), (20, 3485), (24, 3542), (27, 3629), (28, 3632), (31, 3662), (32, 3671), (33, 3713), (37, 3767), (39, 3776), (44, 3815), (51, 3905), (69, 4112), (73, 4199), (74, 4208), (83, 4331), (86, 4436), (88, 4469), (90, 4508), (91, 4520), (92, 4526), (98, 4613),

Gene: TaronosaurasRx_4 Start: 3595, Stop: 5043, Start Num: 7
Candidate Starts for TaronosaurasRx_4:
(Start: 7 @3595 has 4 MA's), (14, 3658), (15, 3691), (21, 3829), (24, 3877), (38, 4117), (41, 4132), (42, 4150), (45, 4180), (49, 4246), (52, 4285), (54, 4297), (57, 4351), (59, 4363), (70, 4552), (88, 4870), (95, 4957),

Gene: Toast_4 Start: 3317, Stop: 4723, Start Num: 8
Candidate Starts for Toast_4:
(Start: 8 @3317 has 40 MA's), (12, 3362), (26, 3680), (29, 3710), (36, 3815), (37, 3830), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (56, 4001), (57, 4019), (58, 4025), (67, 4160), (70, 4214), (90, 4616),

Gene: Troy_4 Start: 3258, Stop: 4631, Start Num: 8
Candidate Starts for Troy_4:
(6, 3249), (Start: 8 @3258 has 40 MA's), (13, 3318), (16, 3390), (19, 3426), (20, 3483), (24, 3540), (27, 3627), (28, 3630), (31, 3660), (32, 3669), (33, 3711), (37, 3765), (39, 3774), (44, 3813), (51, 3903), (69, 4110), (73, 4197), (74, 4206), (83, 4326), (86, 4431), (88, 4464), (90, 4503), (91, 4515), (92, 4521), (98, 4608),

Gene: UmaThurman_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for UmaThurman_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Utz_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Utz_4:
(Start: 8 @3316 has 40 MA's), (24, 3586), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: WheatThin_8 Start: 4898, Stop: 6376, Start Num: 9
Candidate Starts for WheatThin_8:
(Start: 9 @4898 has 20 MA's), (11, 4919), (18, 5030), (19, 5042), (24, 5153), (25, 5174), (29, 5255), (34, 5330), (39, 5390), (53, 5540), (61, 5633), (68, 5756), (75, 5909), (82, 6065), (84, 6095), (85, 6161), (97, 6353),

Gene: William_4 Start: 3317, Stop: 4723, Start Num: 8
Candidate Starts for William_4:
(4, 2579), (Start: 8 @3317 has 40 MA's), (12, 3362), (26, 3680), (29, 3710), (36, 3815), (37, 3830), (42, 3854), (48, 3914), (50, 3941), (53, 3974), (56, 4001), (57, 4019), (58, 4025), (67, 4160), (70, 4214), (90, 4616),

Gene: Wisp_4 Start: 3316, Stop: 4728, Start Num: 8
Candidate Starts for Wisp_4:

(Start: 8 @3316 has 40 MA's), (18, 3466), (26, 3679), (30, 3721), (32, 3736), (35, 3808), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (67, 4159), (70, 4213), (89, 4609), (90, 4621),

Gene: Wocket_4 Start: 3307, Stop: 4719, Start Num: 8
Candidate Starts for Wocket_4:
(Start: 8 @3307 has 40 MA's), (18, 3457), (24, 3577), (26, 3670), (30, 3712), (32, 3727), (35, 3799), (36, 3805), (41, 3829), (42, 3844), (48, 3904), (50, 3931), (53, 3964), (55, 3976), (57, 4009), (58, 4015), (62, 4045), (63, 4051), (67, 4150), (70, 4204), (89, 4600), (90, 4612), (93, 4636),

Gene: ZAYM_4 Start: 3594, Stop: 5036, Start Num: 7
Candidate Starts for ZAYM_4:
(Start: 7 @3594 has 4 MA's), (14, 3657), (15, 3690), (21, 3828), (24, 3876), (38, 4116), (41, 4131), (42, 4149), (45, 4179), (49, 4245), (52, 4284), (54, 4296), (57, 4350), (59, 4362), (70, 4551), (88, 4869), (95, 4956),

Gene: Zarbodnamra_4 Start: 3315, Stop: 4727, Start Num: 8
Candidate Starts for Zarbodnamra_4:
(Start: 8 @3315 has 40 MA's), (18, 3465), (24, 3585), (26, 3678), (30, 3720), (32, 3735), (35, 3807), (36, 3813), (41, 3837), (42, 3852), (48, 3912), (50, 3939), (53, 3972), (55, 3984), (57, 4017), (58, 4023), (62, 4053), (67, 4158), (70, 4212), (89, 4608), (90, 4620),

Gene: ZiggyZoo_4 Start: 3316, Stop: 4752, Start Num: 8
Candidate Starts for ZiggyZoo_4:
(Start: 8 @3316 has 40 MA's), (18, 3466), (24, 3586), (26, 3679), (29, 3709), (36, 3814), (41, 3838), (42, 3853), (48, 3913), (50, 3940), (53, 3973), (55, 3985), (57, 4018), (58, 4024), (62, 4054), (63, 4060), (70, 4213), (89, 4633), (90, 4645),

Gene: Zilla_4 Start: 3304, Stop: 4719, Start Num: 8
Candidate Starts for Zilla_4:
(Start: 8 @3304 has 40 MA's), (26, 3667), (29, 3697), (35, 3796), (36, 3802), (41, 3826), (42, 3841), (48, 3901), (50, 3928), (53, 3961), (56, 3988), (57, 4006), (58, 4012), (62, 4042), (63, 4048), (70, 4201), (89, 4600), (90, 4612),

Gene: Zodiariah_4 Start: 3443, Stop: 4942, Start Num: 9
Candidate Starts for Zodiariah_4:
(1, 2396), (2, 2516), (3, 2558), (Start: 9 @3443 has 20 MA's), (18, 3575), (24, 3698), (36, 3908), (39, 3932), (40, 3935), (55, 4097), (64, 4217), (65, 4229), (68, 4313), (74, 4469), (75, 4472), (76, 4481), (78, 4583), (82, 4631), (84, 4661), (85, 4727), (87, 4790),