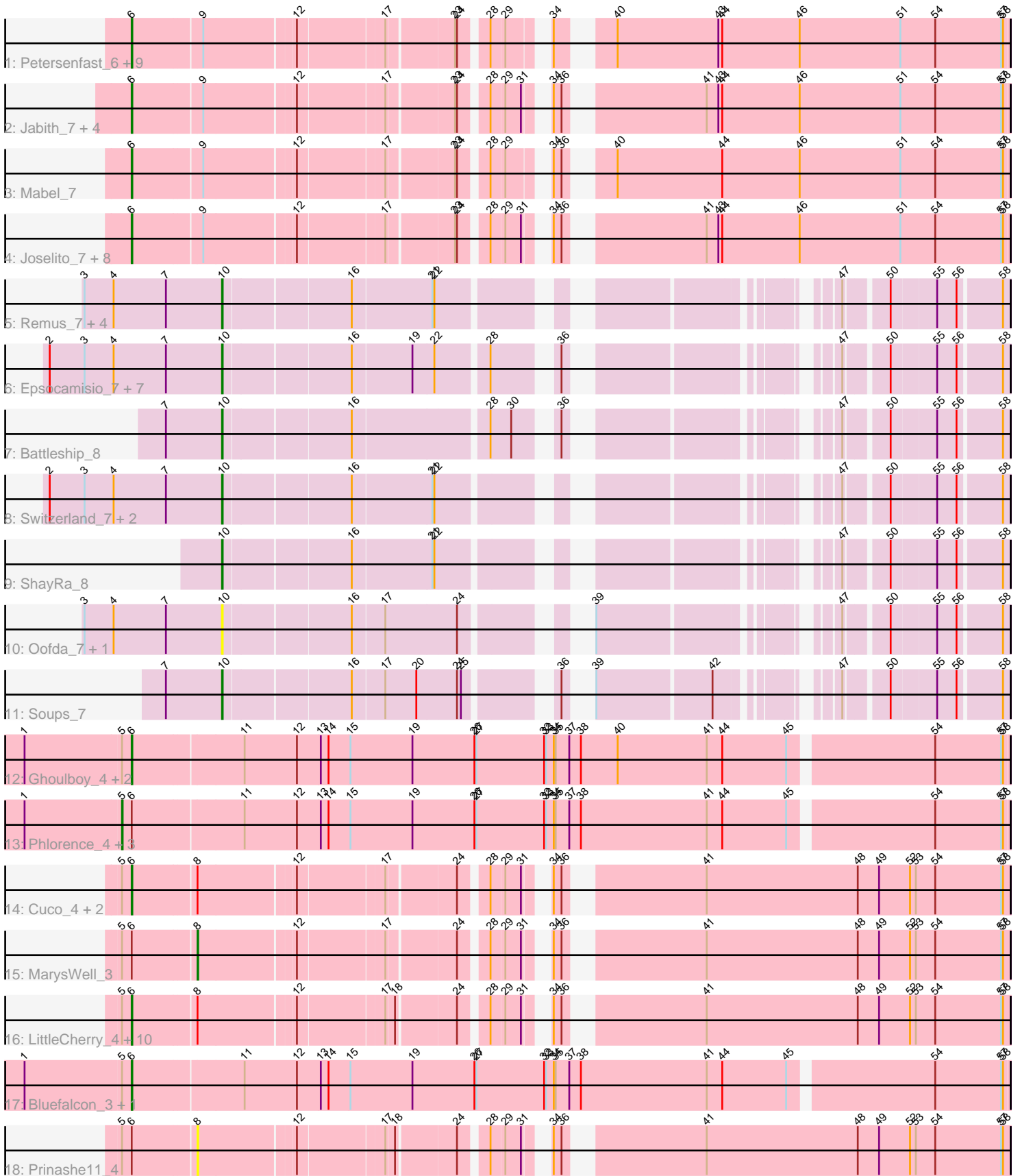


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 216124 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216124 has 71 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Petersenfast\_6, Bud\_7, Et2Brutus\_6, Mulciber\_7, Hutc2\_7, Bachome\_7, Salz\_7, Fibonacci\_7, Snape\_7, Sham4\_7
- Track 2 : Jabith\_7, Gilberta\_7, TinyTimmy\_7, MaCh\_7, Ebony\_7
- Track 3 : Mabel\_7
- Track 4 : Joselito\_7, Aneem\_7, Timothy\_7, Lucivia\_7, Flaverint\_7, Insomnia\_7, Bowtie\_7, Orange\_7, Munch\_7
- Track 5 : Remus\_7, DekHockey33\_7, Waits\_7, Strosahl\_7, KatherineG\_7
- Track 6 : Epsocamisio\_7, ReMo\_7, Looper\_7, Boohoo\_7, JSwag\_7, Nebulosus\_7, Anaysia\_7, LastResort\_7
- Track 7 : Battleship\_8
- Track 8 : Switzerland\_7, Rosalind\_7, MinecraftSteve\_8
- Track 9 : ShayRa\_8
- Track 10 : Oofda\_7, Warrior24\_7
- Track 11 : Soups\_7
- Track 12 : Ghoulboy\_4, SydNat\_4, Zolita\_3
- Track 13 : Phlorence\_4, Jovo\_4, Aragog\_4, AgentM\_4
- Track 14 : Cuco\_4, Theia\_3, Dublin\_3
- Track 15 : MarysWell\_3
- Track 16 : LittleCherry\_4, Midas2\_4, Twigg\_4, Milcery\_4, Coog\_4, Micasa\_4, Tarynearal\_3, George\_3, Swirley\_4, HuhtaEnerson15\_4, Bonamassa\_4
- Track 17 : Bluefalcon\_3, Discoknowium\_4
- Track 18 : Prinashe11\_4

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

The start number called the most often in the published annotations is 6, it was called in 42 of the 66 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aneem\_7, Bachome\_7, Bluefalcon\_3, Bonamassa\_4, Bowtie\_7, Bud\_7, Coog\_4, Cuco\_4, Discoknowium\_4, Dublin\_3, Ebony\_7, Et2Brutus\_6, Fibonacci\_7, Flaverint\_7, George\_3, Ghoulboy\_4, Gilberta\_7, HuhtaEnerson15\_4, Hutc2\_7, Insomnia\_7, Jabith\_7, Joselito\_7, LittleCherry\_4, Lucivia\_7, MaCh\_7, Mabel\_7, Micasa\_4, Midas2\_4, Milcery\_4, Mulciber\_7, Munch\_7, Orange\_7, Petersenfast\_6,

Salz\_7, Sham4\_7, Snape\_7, Swirley\_4, SydNat\_4, Tarynearal\_3, Theia\_3, Timothy\_7, TinyTimmy\_7, Twigg\_4, Zolita\_3,

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

- AgentM\_4, Aragog\_4, Jovo\_4, MarysWell\_3, Phlorence\_4, Prinashe11\_4,

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

- Anaysia\_7, Battleship\_8, Boohoo\_7, DekHockey33\_7, Epsocamisio\_7, JSwag\_7, KatherineG\_7, LastResort\_7, Looper\_7, MinecraftSteve\_8, Nebulosus\_7, Oofda\_7, ReMo\_7, Remus\_7, Rosalind\_7, ShayRa\_8, Soups\_7, Strosahl\_7, Switzerland\_7, Waits\_7, Warrior24\_7,

### Summary by start number:

Start 5:

- Found in 25 of 71 ( 35.2% ) of genes in pham
- Manual Annotations of this start: 4 of 66
- Called 16.0% of time when present
- Phage (with cluster) where this start called: AgentM\_4 (A5), Aragog\_4 (A5), Jovo\_4 (A5), Phlorence\_4 (A5),

Start 6:

- Found in 50 of 71 ( 70.4% ) of genes in pham
- Manual Annotations of this start: 42 of 66
- Called 88.0% of time when present
- Phage (with cluster) where this start called: Aneem\_7 (A11), Bachome\_7 (A11), Bluefalcon\_3 (A5), Bonamassa\_4 (A5), Bowtie\_7 (A11), Bud\_7 (A11), Coog\_4 (A5), Cuco\_4 (A5), Discoknowium\_4 (A5), Dublin\_3 (A5), Ebony\_7 (A11), Et2Brutus\_6 (A11), Fibonacci\_7 (A11), Flaverint\_7 (A11), George\_3 (A5), Ghouboy\_4 (A5), Gilberta\_7 (A11), HuhtaEnerson15\_4 (A5), Hutc2\_7 (A11), Insomnia\_7 (A11), Jabith\_7 (A11), Joselito\_7 (A11), LittleCherry\_4 (A5), Lucivia\_7 (A11), MaCh\_7 (A11), Mabel\_7 (A11), Micasa\_4 (A5), Midas2\_4 (A5), Milcery\_4 (A5), Mulciber\_7 (A11), Munch\_7 (A11), Orange\_7 (A11), Petersenfast\_6 (A11), Salz\_7 (A11), Sham4\_7 (A11), Snape\_7 (A11), Swirley\_4 (A5), SydNat\_4 (A5), Tarynearal\_3 (A5), Theia\_3 (A5), Timothy\_7 (A11), TinyTimmy\_7 (A11), Twigg\_4 (A5), Zolita\_3 (A5),

Start 8:

- Found in 16 of 71 ( 22.5% ) of genes in pham
- Manual Annotations of this start: 1 of 66
- Called 12.5% of time when present
- Phage (with cluster) where this start called: MarysWell\_3 (A5), Prinashe11\_4 (A5),

Start 10:

- Found in 21 of 71 ( 29.6% ) of genes in pham
- Manual Annotations of this start: 19 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anaysia\_7 (A15), Battleship\_8 (A15), Boohoo\_7 (A15), DekHockey33\_7 (A15), Epsocamisio\_7 (A15), JSwag\_7 (A15), KatherineG\_7 (A15), LastResort\_7 (A15), Looper\_7 (A15), MinecraftSteve\_8 (A15), Nebulosus\_7 (A15), Oofda\_7 (A15), ReMo\_7 (A15), Remus\_7 (A15), Rosalind\_7 (A15), ShayRa\_8 (A15), Soups\_7 (A15), Strosahl\_7 (A15), Switzerland\_7 (A15), Waits\_7 (A15), Warrior24\_7 (A15),

## Summary by clusters:

There are 3 clusters represented in this pham: A15, A5, A11,

Info for manual annotations of cluster A11:

- Start number 6 was manually annotated 24 times for cluster A11.

Info for manual annotations of cluster A15:

- Start number 10 was manually annotated 19 times for cluster A15.

Info for manual annotations of cluster A5:

- Start number 5 was manually annotated 4 times for cluster A5.
- Start number 6 was manually annotated 18 times for cluster A5.
- Start number 8 was manually annotated 1 time for cluster A5.

## Gene Information:

Gene: AgentM\_4 Start: 2343, Stop: 3680, Start Num: 5

Candidate Starts for AgentM\_4:

(1, 2196), (Start: 5 @2343 has 4 MA's), (Start: 6 @2355 has 42 MA's), (11, 2520), (12, 2601), (13, 2637), (14, 2649), (15, 2682), (19, 2778), (26, 2874), (27, 2877), (32, 2982), (33, 2985), (34, 2997), (35, 3000), (37, 3021), (38, 3039), (41, 3234), (44, 3258), (45, 3357), (54, 3567), (57, 3669), (58, 3672),

Gene: Anaysia\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Anaysia\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Aneem\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Aneem\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Aragog\_4 Start: 2373, Stop: 3710, Start Num: 5

Candidate Starts for Aragog\_4:

(1, 2226), (Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (11, 2550), (12, 2631), (13, 2667), (14, 2679), (15, 2712), (19, 2808), (26, 2904), (27, 2907), (32, 3012), (33, 3015), (34, 3027), (35, 3030), (37, 3051), (38, 3069), (41, 3264), (44, 3288), (45, 3387), (54, 3597), (57, 3699), (58, 3702),

Gene: Bachome\_7 Start: 4193, Stop: 5407, Start Num: 6

Candidate Starts for Bachome\_7:

(Start: 6 @4193 has 42 MA's), (9, 4295), (12, 4427), (17, 4553), (23, 4646), (24, 4649), (28, 4685), (29, 4703), (34, 4745), (40, 4802), (43, 4958), (44, 4964), (46, 5084), (51, 5240), (54, 5294), (57, 5396), (58, 5399),

Gene: Battleship\_8 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for Battleship\_8:

(7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (28, 3942), (30, 3972), (36, 4017), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Bluefalcon\_3 Start: 2352, Stop: 3677, Start Num: 6

Candidate Starts for Bluefalcon\_3:

(1, 2193), (Start: 5 @2340 has 4 MA's), (Start: 6 @2352 has 42 MA's), (11, 2517), (12, 2598), (13, 2634), (14, 2646), (15, 2679), (19, 2775), (26, 2871), (27, 2874), (32, 2979), (33, 2982), (34, 2994), (35, 2997), (37, 3018), (38, 3036), (41, 3231), (44, 3255), (45, 3354), (54, 3564), (57, 3666), (58, 3669),

Gene: Bonamassa\_4 Start: 2386, Stop: 3603, Start Num: 6

Candidate Starts for Bonamassa\_4:

(Start: 5 @2374 has 4 MA's), (Start: 6 @2386 has 42 MA's), (Start: 8 @2479 has 1 MA's), (12, 2620), (17, 2746), (18, 2758), (24, 2842), (28, 2878), (29, 2896), (31, 2920), (34, 2938), (36, 2950), (41, 3133), (48, 3367), (49, 3400), (52, 3448), (53, 3457), (54, 3487), (57, 3589), (58, 3592),

Gene: Boohoo\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Boohoo\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Bowtie\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Bowtie\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Bud\_7 Start: 4202, Stop: 5416, Start Num: 6

Candidate Starts for Bud\_7:

(Start: 6 @4202 has 42 MA's), (9, 4304), (12, 4436), (17, 4562), (23, 4655), (24, 4658), (28, 4694), (29, 4712), (34, 4754), (40, 4811), (43, 4967), (44, 4973), (46, 5093), (51, 5249), (54, 5303), (57, 5405), (58, 5408),

Gene: Coog\_4 Start: 2354, Stop: 3571, Start Num: 6

Candidate Starts for Coog\_4:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (18, 2726), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: Cuco\_4 Start: 2385, Stop: 3602, Start Num: 6

Candidate Starts for Cuco\_4:

(Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (Start: 8 @2478 has 1 MA's), (12, 2619), (17, 2745), (24, 2841), (28, 2877), (29, 2895), (31, 2919), (34, 2937), (36, 2949), (41, 3132), (48, 3366), (49, 3399), (52, 3447), (53, 3456), (54, 3486), (57, 3588), (58, 3591),

Gene: DekHockey33\_7 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for DekHockey33\_7:

(3, 3348), (4, 3393), (7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Discoknowium\_4 Start: 2385, Stop: 3710, Start Num: 6

Candidate Starts for Discoknowium\_4:

(1, 2226), (Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (11, 2550), (12, 2631), (13, 2667), (14, 2679), (15, 2712), (19, 2808), (26, 2904), (27, 2907), (32, 3012), (33, 3015), (34, 3027), (35, 3030), (37, 3051), (38, 3069), (41, 3264), (44, 3288), (45, 3387), (54, 3597), (57, 3699), (58, 3702),

Gene: Dublin\_3 Start: 2354, Stop: 3571, Start Num: 6

Candidate Starts for Dublin\_3:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: Ebony\_7 Start: 4202, Stop: 5416, Start Num: 6

Candidate Starts for Ebony\_7:

(Start: 6 @4202 has 42 MA's), (9, 4304), (12, 4436), (17, 4562), (23, 4655), (24, 4658), (28, 4694), (29, 4712), (31, 4736), (34, 4754), (36, 4766), (41, 4949), (43, 4967), (44, 4973), (46, 5093), (51, 5249), (54, 5303), (57, 5405), (58, 5408),

Gene: Epsocamisio\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Epsocamisio\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Et2Brutus\_6 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Et2Brutus\_6:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: Fibonacci\_7 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Fibonacci\_7:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: Flaverint\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Flaverint\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: George\_3 Start: 2385, Stop: 3602, Start Num: 6

Candidate Starts for George\_3:

(Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (Start: 8 @2478 has 1 MA's), (12, 2619), (17, 2745), (18, 2757), (24, 2841), (28, 2877), (29, 2895), (31, 2919), (34, 2937), (36, 2949), (41, 3132), (48, 3366), (49, 3399), (52, 3447), (53, 3456), (54, 3486), (57, 3588), (58, 3591),

Gene: Ghouboy\_4 Start: 2354, Stop: 3679, Start Num: 6

Candidate Starts for Ghouboy\_4:

(1, 2195), (Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (11, 2519), (12, 2600), (13, 2636), (14, 2648), (15, 2681), (19, 2777), (26, 2873), (27, 2876), (32, 2981), (33, 2984), (34, 2996), (35, 2999), (37, 3020), (38, 3038), (40, 3095), (41, 3233), (44, 3257), (45, 3356), (54, 3566), (57, 3668), (58, 3671),

Gene: Gilberta\_7 Start: 4193, Stop: 5407, Start Num: 6

Candidate Starts for Gilberta\_7:

(Start: 6 @4193 has 42 MA's), (9, 4295), (12, 4427), (17, 4553), (23, 4646), (24, 4649), (28, 4685), (29, 4703), (31, 4727), (34, 4745), (36, 4757), (41, 4940), (43, 4958), (44, 4964), (46, 5084), (51, 5240), (54, 5294), (57, 5396), (58, 5399),

Gene: HuhtaEnerson15\_4 Start: 2386, Stop: 3603, Start Num: 6

Candidate Starts for HuhtaEnerson15\_4:

(Start: 5 @2374 has 4 MA's), (Start: 6 @2386 has 42 MA's), (Start: 8 @2479 has 1 MA's), (12, 2620), (17, 2746), (18, 2758), (24, 2842), (28, 2878), (29, 2896), (31, 2920), (34, 2938), (36, 2950), (41, 3133), (48, 3367), (49, 3400), (52, 3448), (53, 3457), (54, 3487), (57, 3589), (58, 3592),

Gene: Hutc2\_7 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Hutc2\_7:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: Insomnia\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Insomnia\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: JSwag\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for JSwag\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Jabith\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Jabith\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Joselito\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Joselito\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Jovo\_4 Start: 2374, Stop: 3711, Start Num: 5

Candidate Starts for Jovo\_4:

(1, 2227), (Start: 5 @2374 has 4 MA's), (Start: 6 @2386 has 42 MA's), (11, 2551), (12, 2632), (13, 2668), (14, 2680), (15, 2713), (19, 2809), (26, 2905), (27, 2908), (32, 3013), (33, 3016), (34, 3028), (35, 3031), (37, 3052), (38, 3070), (41, 3265), (44, 3289), (45, 3388), (54, 3598), (57, 3700), (58, 3703),

Gene: KatherineG\_7 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for KatherineG\_7:

(3, 3348), (4, 3393), (7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: LastResort\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for LastResort\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: LittleCherry\_4 Start: 2387, Stop: 3604, Start Num: 6

Candidate Starts for LittleCherry\_4:

(Start: 5 @2375 has 4 MA's), (Start: 6 @2387 has 42 MA's), (Start: 8 @2480 has 1 MA's), (12, 2621), (17, 2747), (18, 2759), (24, 2843), (28, 2879), (29, 2897), (31, 2921), (34, 2939), (36, 2951), (41, 3134), (48, 3368), (49, 3401), (52, 3449), (53, 3458), (54, 3488), (57, 3590), (58, 3593),

Gene: Looper\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Looper\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Lucivia\_7 Start: 4193, Stop: 5407, Start Num: 6

Candidate Starts for Lucivia\_7:

(Start: 6 @4193 has 42 MA's), (9, 4295), (12, 4427), (17, 4553), (23, 4646), (24, 4649), (28, 4685), (29, 4703), (31, 4727), (34, 4745), (36, 4757), (41, 4940), (43, 4958), (44, 4964), (46, 5084), (51, 5240), (54, 5294), (57, 5396), (58, 5399),

Gene: MaCh\_7 Start: 4193, Stop: 5407, Start Num: 6

Candidate Starts for MaCh\_7:

(Start: 6 @4193 has 42 MA's), (9, 4295), (12, 4427), (17, 4553), (23, 4646), (24, 4649), (28, 4685), (29, 4703), (31, 4727), (34, 4745), (36, 4757), (41, 4940), (43, 4958), (44, 4964), (46, 5084), (51, 5240), (54, 5294), (57, 5396), (58, 5399),

Gene: Mabel\_7 Start: 4208, Stop: 5422, Start Num: 6

Candidate Starts for Mabel\_7:

(Start: 6 @4208 has 42 MA's), (9, 4310), (12, 4442), (17, 4568), (23, 4661), (24, 4664), (28, 4700), (29, 4718), (34, 4760), (36, 4772), (40, 4817), (44, 4979), (46, 5099), (51, 5255), (54, 5309), (57, 5411), (58, 5414),

Gene: MarysWell\_3 Start: 2448, Stop: 3572, Start Num: 8

Candidate Starts for MarysWell\_3:

(Start: 5 @2343 has 4 MA's), (Start: 6 @2355 has 42 MA's), (Start: 8 @2448 has 1 MA's), (12, 2589), (17, 2715), (24, 2811), (28, 2847), (29, 2865), (31, 2889), (34, 2907), (36, 2919), (41, 3102), (48, 3336), (49, 3369), (52, 3417), (53, 3426), (54, 3456), (57, 3558), (58, 3561),

Gene: Micasa\_4 Start: 2355, Stop: 3572, Start Num: 6

Candidate Starts for Micasa\_4:

(Start: 5 @2343 has 4 MA's), (Start: 6 @2355 has 42 MA's), (Start: 8 @2448 has 1 MA's), (12, 2589), (17, 2715), (18, 2727), (24, 2811), (28, 2847), (29, 2865), (31, 2889), (34, 2907), (36, 2919), (41, 3102), (48, 3336), (49, 3369), (52, 3417), (53, 3426), (54, 3456), (57, 3558), (58, 3561),

Gene: Midas2\_4 Start: 2354, Stop: 3571, Start Num: 6

Candidate Starts for Midas2\_4:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (18, 2726), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: Milcery\_4 Start: 2385, Stop: 3602, Start Num: 6

Candidate Starts for Milcery\_4:

(Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (Start: 8 @2478 has 1 MA's), (12, 2619), (17, 2745), (18, 2757), (24, 2841), (28, 2877), (29, 2895), (31, 2919), (34, 2937), (36, 2949), (41, 3132), (48, 3366), (49, 3399), (52, 3447), (53, 3456), (54, 3486), (57, 3588), (58, 3591),

Gene: MinecraftSteve\_8 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for MinecraftSteve\_8:



(2, 3294), (3, 3348), (4, 3393), (7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Mulciber\_7 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Mulciber\_7:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: Munch\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Munch\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Nebulosus\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Nebulosus\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Oofda\_7 Start: 3417, Stop: 4409, Start Num: 10

Candidate Starts for Oofda\_7:

(3, 3204), (4, 3249), (7, 3330), (Start: 10 @3417 has 19 MA's), (16, 3603), (17, 3651), (24, 3759), (39, 3885), (47, 4182), (50, 4239), (55, 4305), (56, 4335), (58, 4398),

Gene: Orange\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Orange\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Petersenfast\_6 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Petersenfast\_6:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: Phlorence\_4 Start: 2373, Stop: 3710, Start Num: 5

Candidate Starts for Phlorence\_4:

(1, 2226), (Start: 5 @2373 has 4 MA's), (Start: 6 @2385 has 42 MA's), (11, 2550), (12, 2631), (13, 2667), (14, 2679), (15, 2712), (19, 2808), (26, 2904), (27, 2907), (32, 3012), (33, 3015), (34, 3027), (35, 3030), (37, 3051), (38, 3069), (41, 3264), (44, 3288), (45, 3387), (54, 3597), (57, 3699), (58, 3702),

Gene: Prin Ashe11\_4 Start: 2447, Stop: 3571, Start Num: 8

Candidate Starts for Prin Ashe11\_4:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (18, 2726), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: ReMo\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for ReMo\_7:

(2, 3147), (3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (19, 3690), (22, 3723), (28, 3795), (36, 3870), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Remus\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Remus\_7:

(3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (21, 3720), (22, 3723), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Rosalind\_7 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for Rosalind\_7:

(2, 3294), (3, 3348), (4, 3393), (7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Salz\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Salz\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (34, 4748), (40, 4805), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Sham4\_7 Start: 4199, Stop: 5413, Start Num: 6

Candidate Starts for Sham4\_7:

(Start: 6 @4199 has 42 MA's), (9, 4301), (12, 4433), (17, 4559), (23, 4652), (24, 4655), (28, 4691), (29, 4709), (34, 4751), (40, 4808), (43, 4964), (44, 4970), (46, 5090), (51, 5246), (54, 5300), (57, 5402), (58, 5405),

Gene: ShayRa\_8 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for ShayRa\_8:

(Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Snape\_7 Start: 4202, Stop: 5416, Start Num: 6

Candidate Starts for Snape\_7:

(Start: 6 @4202 has 42 MA's), (9, 4304), (12, 4436), (17, 4562), (23, 4655), (24, 4658), (28, 4694), (29, 4712), (34, 4754), (40, 4811), (43, 4967), (44, 4973), (46, 5093), (51, 5249), (54, 5303), (57, 5405), (58, 5408),

Gene: Soups\_7 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for Soups\_7:

(7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (17, 3795), (20, 3843), (24, 3903), (25, 3909), (36, 4017), (39, 4029), (42, 4200), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: Strosahl\_7 Start: 3414, Stop: 4406, Start Num: 10

Candidate Starts for Strosahl\_7:

(3, 3201), (4, 3246), (7, 3327), (Start: 10 @3414 has 19 MA's), (16, 3600), (21, 3720), (22, 3723), (47, 4179), (50, 4236), (55, 4302), (56, 4332), (58, 4395),

Gene: Swirley\_4 Start: 2354, Stop: 3571, Start Num: 6

Candidate Starts for Swirley\_4:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (18, 2726), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: Switzerland\_7 Start: 3561, Stop: 4553, Start Num: 10

Candidate Starts for Switzerland\_7:

(2, 3294), (3, 3348), (4, 3393), (7, 3474), (Start: 10 @3561 has 19 MA's), (16, 3747), (21, 3867), (22, 3870), (47, 4326), (50, 4383), (55, 4449), (56, 4479), (58, 4542),

Gene: SydNat\_4 Start: 2354, Stop: 3679, Start Num: 6

Candidate Starts for SydNat\_4:

(1, 2195), (Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (11, 2519), (12, 2600), (13, 2636), (14, 2648), (15, 2681), (19, 2777), (26, 2873), (27, 2876), (32, 2981), (33, 2984), (34, 2996), (35, 2999), (37, 3020), (38, 3038), (40, 3095), (41, 3233), (44, 3257), (45, 3356), (54, 3566), (57, 3668), (58, 3671),

Gene: Tarynearal\_3 Start: 2383, Stop: 3600, Start Num: 6

Candidate Starts for Tarynearal\_3:

(Start: 5 @2371 has 4 MA's), (Start: 6 @2383 has 42 MA's), (Start: 8 @2476 has 1 MA's), (12, 2617), (17, 2743), (18, 2755), (24, 2839), (28, 2875), (29, 2893), (31, 2917), (34, 2935), (36, 2947), (41, 3130), (48, 3364), (49, 3397), (52, 3445), (53, 3454), (54, 3484), (57, 3586), (58, 3589),

Gene: Theia\_3 Start: 2355, Stop: 3572, Start Num: 6

Candidate Starts for Theia\_3:

(Start: 5 @2343 has 4 MA's), (Start: 6 @2355 has 42 MA's), (Start: 8 @2448 has 1 MA's), (12, 2589), (17, 2715), (24, 2811), (28, 2847), (29, 2865), (31, 2889), (34, 2907), (36, 2919), (41, 3102), (48, 3336), (49, 3369), (52, 3417), (53, 3426), (54, 3456), (57, 3558), (58, 3561),

Gene: Timothy\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for Timothy\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: TinyTimmy\_7 Start: 4196, Stop: 5410, Start Num: 6

Candidate Starts for TinyTimmy\_7:

(Start: 6 @4196 has 42 MA's), (9, 4298), (12, 4430), (17, 4556), (23, 4649), (24, 4652), (28, 4688), (29, 4706), (31, 4730), (34, 4748), (36, 4760), (41, 4943), (43, 4961), (44, 4967), (46, 5087), (51, 5243), (54, 5297), (57, 5399), (58, 5402),

Gene: Twigg\_4 Start: 2354, Stop: 3571, Start Num: 6

Candidate Starts for Twigg\_4:

(Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (Start: 8 @2447 has 1 MA's), (12, 2588), (17, 2714), (18, 2726), (24, 2810), (28, 2846), (29, 2864), (31, 2888), (34, 2906), (36, 2918), (41, 3101), (48, 3335), (49, 3368), (52, 3416), (53, 3425), (54, 3455), (57, 3557), (58, 3560),

Gene: Waits\_7 Start: 3413, Stop: 4405, Start Num: 10

Candidate Starts for Waits\_7:

(3, 3200), (4, 3245), (7, 3326), (Start: 10 @3413 has 19 MA's), (16, 3599), (21, 3719), (22, 3722), (47, 4178), (50, 4235), (55, 4301), (56, 4331), (58, 4394),

Gene: Warrior24\_7 Start: 3417, Stop: 4409, Start Num: 10

Candidate Starts for Warrior24\_7:

(3, 3204), (4, 3249), (7, 3330), (Start: 10 @3417 has 19 MA's), (16, 3603), (17, 3651), (24, 3759), (39, 3885), (47, 4182), (50, 4239), (55, 4305), (56, 4335), (58, 4398),

Gene: Zolita\_3 Start: 2354, Stop: 3679, Start Num: 6

Candidate Starts for Zolita\_3:

(1, 2195), (Start: 5 @2342 has 4 MA's), (Start: 6 @2354 has 42 MA's), (11, 2519), (12, 2600), (13, 2636), (14, 2648), (15, 2681), (19, 2777), (26, 2873), (27, 2876), (32, 2981), (33, 2984), (34, 2996), (35, 2999), (37, 3020), (38, 3038), (40, 3095), (41, 3233), (44, 3257), (45, 3356), (54, 3566), (57, 3668), (58, 3671),