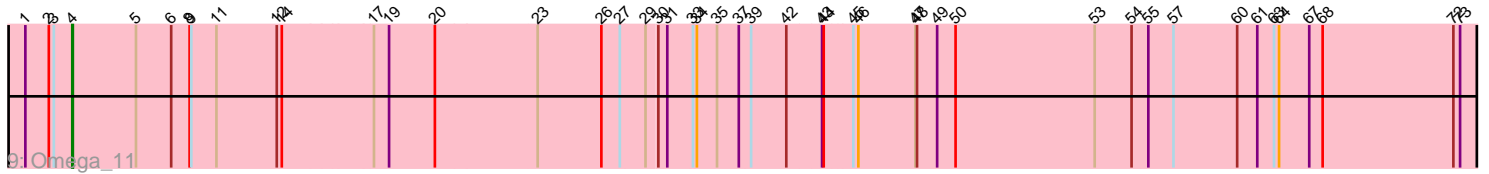
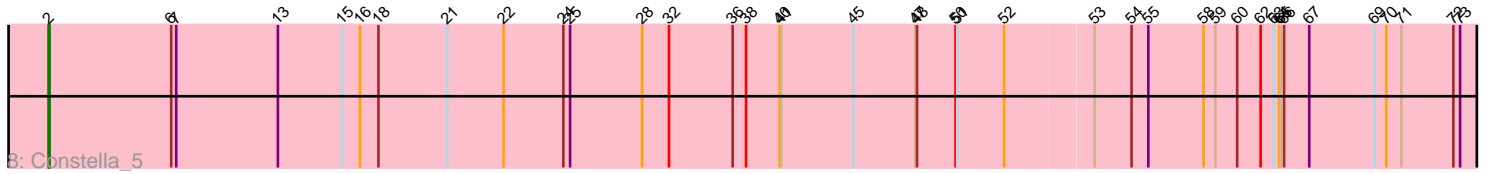
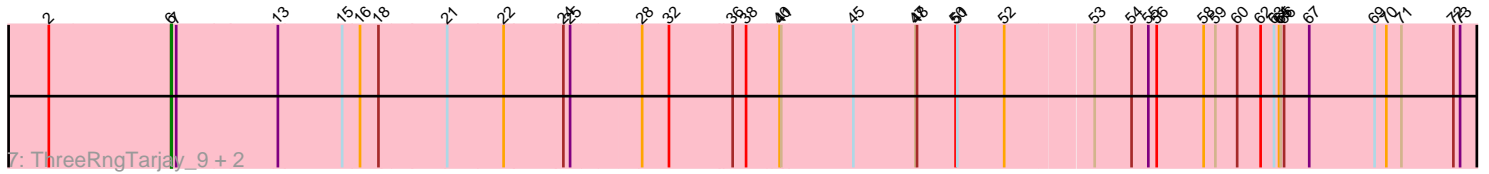
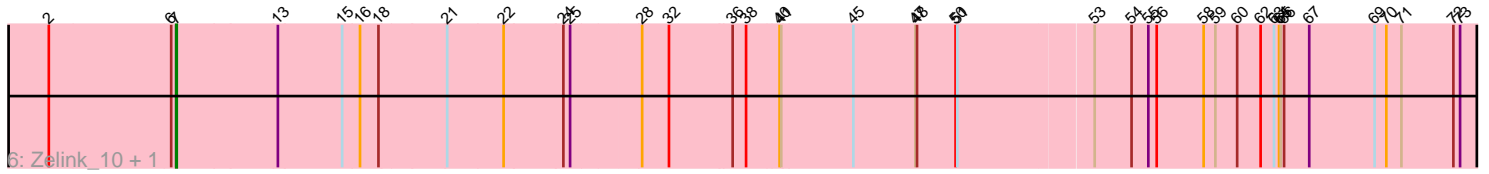
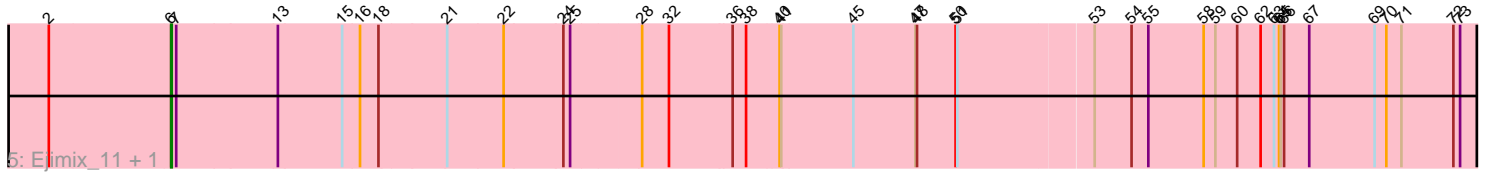
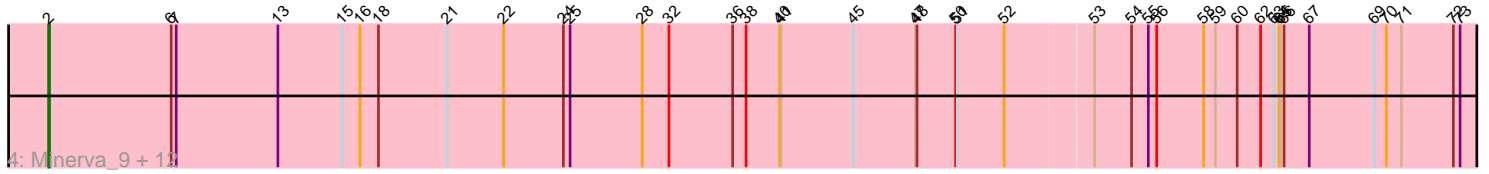
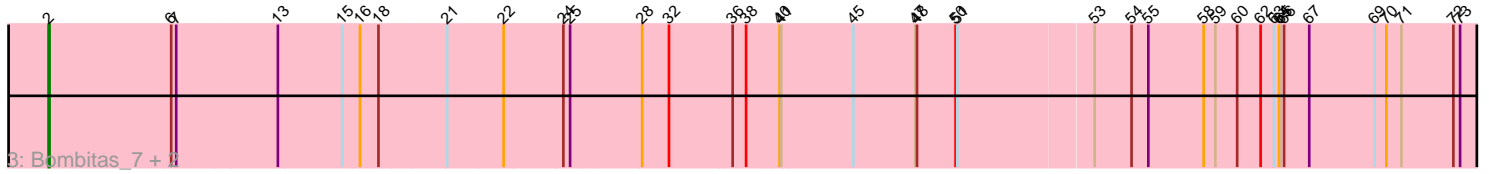
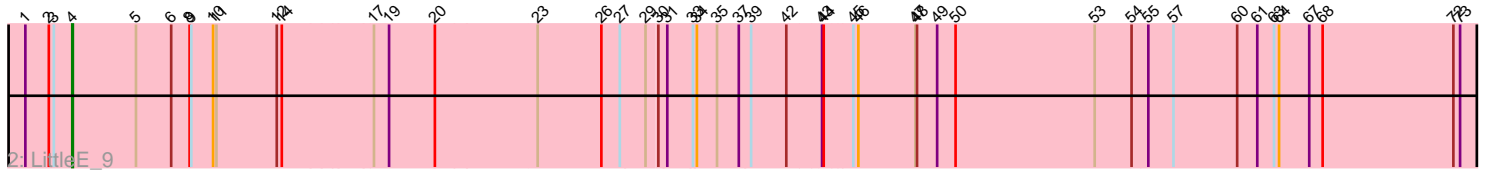
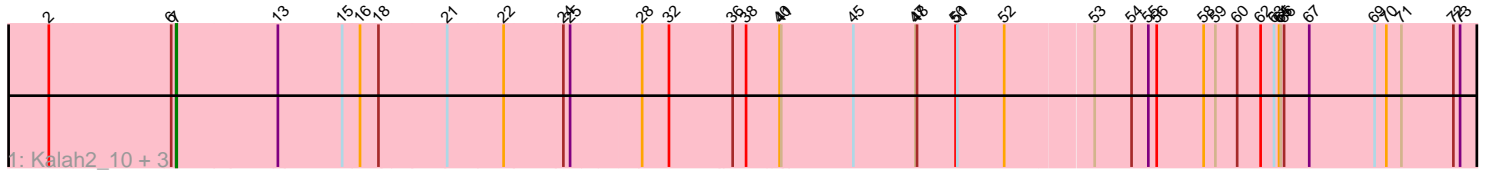


# Pham 2931



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 2931 Report

This analysis was run 04/28/24 on database version 559.

Pham number 2931 has 30 members, 3 are drafts.

Phages represented in each track:

- Track 1 : Kalah2\_10, Phoebus\_10, Pound\_9, Hughesyang\_9
- Track 2 : LittleE\_9
- Track 3 : Bombitas\_7, JuicyJay\_11, Yeet\_8
- Track 4 : Minerva\_9, Dove\_8, Optimus\_7, EricMillard\_10, Beem\_10, Bagrid\_8, HokkenD\_5, Halley\_10, DmpstrDiver\_9, Thibault\_6, Duke13\_6, Dallas\_9, NihilNomen\_9
- Track 5 : Ejimix\_11, Redno2\_9
- Track 6 : Zelink\_10, Odette\_9
- Track 7 : ThreeRngTarjay\_9, BAKA\_6, Schatzie\_8
- Track 8 : Constella\_5
- Track 9 : Omega\_11

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

The start number called the most often in the published annotations is 2, it was called in 15 of the 27 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Bagrid\_8, Beem\_10, Bombitas\_7, Constella\_5, Dallas\_9, DmpstrDiver\_9, Dove\_8, Duke13\_6, EricMillard\_10, Halley\_10, HokkenD\_5, JuicyJay\_11, Minerva\_9, NihilNomen\_9, Optimus\_7, Thibault\_6, Yeet\_8,

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

- BAKA\_6, Ejimix\_11, Hughesyang\_9, Kalah2\_10, LittleE\_9, Odette\_9, Omega\_11, Phoebus\_10, Pound\_9, Redno2\_9, Schatzie\_8, ThreeRngTarjay\_9, Zelink\_10,

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

- 

### **Summary by start number:**

Start 2:

- Found in 30 of 30 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 15 of 27

- Called 56.7% of time when present
- Phage (with cluster) where this start called: Bagrid\_8 (J), Beem\_10 (J), Bombitas\_7 (J), Constella\_5 (J), Dallas\_9 (J), DmpstrDiver\_9 (J), Dove\_8 (J), Duke13\_6 (J), EricMillard\_10 (J), Halley\_10 (J), HokkenD\_5 (J), JuicyJay\_11 (J), Minerva\_9 (J), NihilNomen\_9 (J), Optimus\_7 (J), Thibault\_6 (J), Yeet\_8 (J),

Start 4:

- Found in 2 of 30 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 2 of 27
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LittleE\_9 (J), Omega\_11 (J),

Start 6:

- Found in 30 of 30 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 5 of 27
- Called 16.7% of time when present
- Phage (with cluster) where this start called: BAKA\_6 (J), Ejimix\_11 (J), Redno2\_9 (J), Schatzie\_8 (J), ThreeRngTarjay\_9 (J),

Start 7:

- Found in 28 of 30 ( 93.3% ) of genes in pham
- Manual Annotations of this start: 5 of 27
- Called 21.4% of time when present
- Phage (with cluster) where this start called: Hughesyang\_9 (J), Kalah2\_10 (J), Odette\_9 (J), Phoebus\_10 (J), Pound\_9 (J), Zelink\_10 (J),

### **Summary by clusters:**

There is one cluster represented in this pham: J

Info for manual annotations of cluster J:

- Start number 2 was manually annotated 15 times for cluster J.
- Start number 4 was manually annotated 2 times for cluster J.
- Start number 6 was manually annotated 5 times for cluster J.
- Start number 7 was manually annotated 5 times for cluster J.

### **Gene Information:**

Gene: BAKA\_6 Start: 2912, Stop: 5281, Start Num: 6

Candidate Starts for BAKA\_6:

(Start: 2 @2699 has 15 MA's), (Start: 6 @2912 has 5 MA's), (Start: 7 @2921 has 5 MA's), (13, 3098), (15, 3212), (16, 3242), (18, 3275), (21, 3392), (22, 3491), (24, 3596), (25, 3608), (28, 3725), (32, 3773), (36, 3884), (38, 3908), (40, 3962), (41, 3965), (45, 4091), (47, 4202), (48, 4205), (50, 4274), (51, 4277), (52, 4361), (53, 4508), (54, 4574), (55, 4604), (56, 4619), (58, 4703), (59, 4724), (60, 4763), (62, 4805), (63, 4829), (64, 4838), (65, 4841), (66, 4847), (67, 4892), (69, 5009), (70, 5030), (71, 5057), (72, 5150), (73, 5162),

Gene: Bagrid\_8 Start: 2496, Stop: 5078, Start Num: 2

Candidate Starts for Bagrid\_8:

(Start: 2 @2496 has 15 MA's), (Start: 6 @2709 has 5 MA's), (Start: 7 @2718 has 5 MA's), (13, 2895), (15, 3009), (16, 3039), (18, 3072), (21, 3189), (22, 3288), (24, 3393), (25, 3405), (28, 3522), (32,

3570), (36, 3681), (38, 3705), (40, 3759), (41, 3762), (45, 3888), (47, 3999), (48, 4002), (50, 4071), (51, 4074), (52, 4158), (53, 4305), (54, 4371), (55, 4401), (56, 4416), (58, 4500), (59, 4521), (60, 4560), (62, 4602), (63, 4626), (64, 4635), (65, 4638), (66, 4644), (67, 4689), (69, 4806), (70, 4827), (71, 4854), (72, 4947), (73, 4959),

Gene: Beem\_10 Start: 3062, Stop: 5644, Start Num: 2

Candidate Starts for Beem\_10:

(Start: 2 @3062 has 15 MA's), (Start: 6 @3275 has 5 MA's), (Start: 7 @3284 has 5 MA's), (13, 3461), (15, 3575), (16, 3605), (18, 3638), (21, 3755), (22, 3854), (24, 3959), (25, 3971), (28, 4088), (32, 4136), (36, 4247), (38, 4271), (40, 4325), (41, 4328), (45, 4454), (47, 4565), (48, 4568), (50, 4637), (51, 4640), (52, 4724), (53, 4871), (54, 4937), (55, 4967), (56, 4982), (58, 5066), (59, 5087), (60, 5126), (62, 5168), (63, 5192), (64, 5201), (65, 5204), (66, 5210), (67, 5255), (69, 5372), (70, 5393), (71, 5420), (72, 5513), (73, 5525),

Gene: Bombitas\_7 Start: 2371, Stop: 4953, Start Num: 2

Candidate Starts for Bombitas\_7:

(Start: 2 @2371 has 15 MA's), (Start: 6 @2584 has 5 MA's), (Start: 7 @2593 has 5 MA's), (13, 2770), (15, 2884), (16, 2914), (18, 2947), (21, 3064), (22, 3163), (24, 3268), (25, 3280), (28, 3397), (32, 3445), (36, 3556), (38, 3580), (40, 3634), (41, 3637), (45, 3763), (47, 3874), (48, 3877), (50, 3946), (51, 3949), (53, 4180), (54, 4246), (55, 4276), (58, 4375), (59, 4396), (60, 4435), (62, 4477), (63, 4501), (64, 4510), (65, 4513), (66, 4519), (67, 4564), (69, 4681), (70, 4702), (71, 4729), (72, 4822), (73, 4834),

Gene: Constella\_5 Start: 1880, Stop: 4462, Start Num: 2

Candidate Starts for Constella\_5:

(Start: 2 @1880 has 15 MA's), (Start: 6 @2093 has 5 MA's), (Start: 7 @2102 has 5 MA's), (13, 2279), (15, 2393), (16, 2423), (18, 2456), (21, 2573), (22, 2672), (24, 2777), (25, 2789), (28, 2906), (32, 2954), (36, 3065), (38, 3089), (40, 3143), (41, 3146), (45, 3272), (47, 3383), (48, 3386), (50, 3455), (51, 3458), (52, 3542), (53, 3689), (54, 3755), (55, 3785), (58, 3884), (59, 3905), (60, 3944), (62, 3986), (63, 4010), (64, 4019), (65, 4022), (66, 4028), (67, 4073), (69, 4190), (70, 4211), (71, 4238), (72, 4331), (73, 4343),

Gene: Dallas\_9 Start: 2601, Stop: 5183, Start Num: 2

Candidate Starts for Dallas\_9:

(Start: 2 @2601 has 15 MA's), (Start: 6 @2814 has 5 MA's), (Start: 7 @2823 has 5 MA's), (13, 3000), (15, 3114), (16, 3144), (18, 3177), (21, 3294), (22, 3393), (24, 3498), (25, 3510), (28, 3627), (32, 3675), (36, 3786), (38, 3810), (40, 3864), (41, 3867), (45, 3993), (47, 4104), (48, 4107), (50, 4176), (51, 4179), (52, 4263), (53, 4410), (54, 4476), (55, 4506), (56, 4521), (58, 4605), (59, 4626), (60, 4665), (62, 4707), (63, 4731), (64, 4740), (65, 4743), (66, 4749), (67, 4794), (69, 4911), (70, 4932), (71, 4959), (72, 5052), (73, 5064),

Gene: DmpstrDiver\_9 Start: 3242, Stop: 5824, Start Num: 2

Candidate Starts for DmpstrDiver\_9:

(Start: 2 @3242 has 15 MA's), (Start: 6 @3455 has 5 MA's), (Start: 7 @3464 has 5 MA's), (13, 3641), (15, 3755), (16, 3785), (18, 3818), (21, 3935), (22, 4034), (24, 4139), (25, 4151), (28, 4268), (32, 4316), (36, 4427), (38, 4451), (40, 4505), (41, 4508), (45, 4634), (47, 4745), (48, 4748), (50, 4817), (51, 4820), (52, 4904), (53, 5051), (54, 5117), (55, 5147), (56, 5162), (58, 5246), (59, 5267), (60, 5306), (62, 5348), (63, 5372), (64, 5381), (65, 5384), (66, 5390), (67, 5435), (69, 5552), (70, 5573), (71, 5600), (72, 5693), (73, 5705),

Gene: Dove\_8 Start: 2370, Stop: 4952, Start Num: 2

Candidate Starts for Dove\_8:

(Start: 2 @2370 has 15 MA's), (Start: 6 @2583 has 5 MA's), (Start: 7 @2592 has 5 MA's), (13, 2769), (15, 2883), (16, 2913), (18, 2946), (21, 3063), (22, 3162), (24, 3267), (25, 3279), (28, 3396), (32, 3444), (36, 3555), (38, 3579), (40, 3633), (41, 3636), (45, 3762), (47, 3873), (48, 3876), (50, 3945), (51, 3948), (52, 4032), (53, 4179), (54, 4245), (55, 4275), (56, 4290), (58, 4374), (59, 4395), (60, 4434), (62, 4476), (63, 4500), (64, 4509), (65, 4512), (66, 4518), (67, 4563), (69, 4680), (70, 4701), (71, 4728), (72, 4821), (73, 4833),

Gene: Duke13\_6 Start: 2627, Stop: 5209, Start Num: 2

Candidate Starts for Duke13\_6:

(Start: 2 @2627 has 15 MA's), (Start: 6 @2840 has 5 MA's), (Start: 7 @2849 has 5 MA's), (13, 3026), (15, 3140), (16, 3170), (18, 3203), (21, 3320), (22, 3419), (24, 3524), (25, 3536), (28, 3653), (32, 3701), (36, 3812), (38, 3836), (40, 3890), (41, 3893), (45, 4019), (47, 4130), (48, 4133), (50, 4202), (51, 4205), (52, 4289), (53, 4436), (54, 4502), (55, 4532), (56, 4547), (58, 4631), (59, 4652), (60, 4691), (62, 4733), (63, 4757), (64, 4766), (65, 4769), (66, 4775), (67, 4820), (69, 4937), (70, 4958), (71, 4985), (72, 5078), (73, 5090),

Gene: Ejimix\_11 Start: 4025, Stop: 6394, Start Num: 6

Candidate Starts for Ejimix\_11:

(Start: 2 @3812 has 15 MA's), (Start: 6 @4025 has 5 MA's), (Start: 7 @4034 has 5 MA's), (13, 4211), (15, 4325), (16, 4355), (18, 4388), (21, 4505), (22, 4604), (24, 4709), (25, 4721), (28, 4838), (32, 4886), (36, 4997), (38, 5021), (40, 5075), (41, 5078), (45, 5204), (47, 5315), (48, 5318), (50, 5387), (51, 5390), (53, 5621), (54, 5687), (55, 5717), (58, 5816), (59, 5837), (60, 5876), (62, 5918), (63, 5942), (64, 5951), (65, 5954), (66, 5960), (67, 6005), (69, 6122), (70, 6143), (71, 6170), (72, 6263), (73, 6275),

Gene: EricMillard\_10 Start: 3347, Stop: 5929, Start Num: 2

Candidate Starts for EricMillard\_10:

(Start: 2 @3347 has 15 MA's), (Start: 6 @3560 has 5 MA's), (Start: 7 @3569 has 5 MA's), (13, 3746), (15, 3860), (16, 3890), (18, 3923), (21, 4040), (22, 4139), (24, 4244), (25, 4256), (28, 4373), (32, 4421), (36, 4532), (38, 4556), (40, 4610), (41, 4613), (45, 4739), (47, 4850), (48, 4853), (50, 4922), (51, 4925), (52, 5009), (53, 5156), (54, 5222), (55, 5252), (56, 5267), (58, 5351), (59, 5372), (60, 5411), (62, 5453), (63, 5477), (64, 5486), (65, 5489), (66, 5495), (67, 5540), (69, 5657), (70, 5678), (71, 5705), (72, 5798), (73, 5810),

Gene: Halley\_10 Start: 3062, Stop: 5644, Start Num: 2

Candidate Starts for Halley\_10:

(Start: 2 @3062 has 15 MA's), (Start: 6 @3275 has 5 MA's), (Start: 7 @3284 has 5 MA's), (13, 3461), (15, 3575), (16, 3605), (18, 3638), (21, 3755), (22, 3854), (24, 3959), (25, 3971), (28, 4088), (32, 4136), (36, 4247), (38, 4271), (40, 4325), (41, 4328), (45, 4454), (47, 4565), (48, 4568), (50, 4637), (51, 4640), (52, 4724), (53, 4871), (54, 4937), (55, 4967), (56, 4982), (58, 5066), (59, 5087), (60, 5126), (62, 5168), (63, 5192), (64, 5201), (65, 5204), (66, 5210), (67, 5255), (69, 5372), (70, 5393), (71, 5420), (72, 5513), (73, 5525),

Gene: HokkenD\_5 Start: 2630, Stop: 5212, Start Num: 2

Candidate Starts for HokkenD\_5:

(Start: 2 @2630 has 15 MA's), (Start: 6 @2843 has 5 MA's), (Start: 7 @2852 has 5 MA's), (13, 3029), (15, 3143), (16, 3173), (18, 3206), (21, 3323), (22, 3422), (24, 3527), (25, 3539), (28, 3656), (32, 3704), (36, 3815), (38, 3839), (40, 3893), (41, 3896), (45, 4022), (47, 4133), (48, 4136), (50, 4205), (51, 4208), (52, 4292), (53, 4439), (54, 4505), (55, 4535), (56, 4550), (58, 4634), (59, 4655), (60, 4694), (62, 4736), (63, 4760), (64, 4769), (65, 4772), (66, 4778), (67, 4823), (69, 4940), (70, 4961), (71, 4988), (72, 5081), (73, 5093),

Gene: Hughesyang\_9 Start: 3464, Stop: 5824, Start Num: 7

Candidate Starts for Hughesyang\_9:

(Start: 2 @3242 has 15 MA's), (Start: 6 @3455 has 5 MA's), (Start: 7 @3464 has 5 MA's), (13, 3641), (15, 3755), (16, 3785), (18, 3818), (21, 3935), (22, 4034), (24, 4139), (25, 4151), (28, 4268), (32, 4316), (36, 4427), (38, 4451), (40, 4505), (41, 4508), (45, 4634), (47, 4745), (48, 4748), (50, 4817), (51, 4820), (52, 4904), (53, 5051), (54, 5117), (55, 5147), (56, 5162), (58, 5246), (59, 5267), (60, 5306), (62, 5348), (63, 5372), (64, 5381), (65, 5384), (66, 5390), (67, 5435), (69, 5552), (70, 5573), (71, 5600), (72, 5693), (73, 5705),

Gene: JuicyJay\_11 Start: 3892, Stop: 6474, Start Num: 2

Candidate Starts for JuicyJay\_11:

(Start: 2 @3892 has 15 MA's), (Start: 6 @4105 has 5 MA's), (Start: 7 @4114 has 5 MA's), (13, 4291), (15, 4405), (16, 4435), (18, 4468), (21, 4585), (22, 4684), (24, 4789), (25, 4801), (28, 4918), (32, 4966), (36, 5077), (38, 5101), (40, 5155), (41, 5158), (45, 5284), (47, 5395), (48, 5398), (50, 5467), (51, 5470), (53, 5701), (54, 5767), (55, 5797), (58, 5896), (59, 5917), (60, 5956), (62, 5998), (63, 6022), (64, 6031), (65, 6034), (66, 6040), (67, 6085), (69, 6202), (70, 6223), (71, 6250), (72, 6343), (73, 6355),

Gene: Kalah2\_10 Start: 3883, Stop: 6243, Start Num: 7

Candidate Starts for Kalah2\_10:

(Start: 2 @3661 has 15 MA's), (Start: 6 @3874 has 5 MA's), (Start: 7 @3883 has 5 MA's), (13, 4060), (15, 4174), (16, 4204), (18, 4237), (21, 4354), (22, 4453), (24, 4558), (25, 4570), (28, 4687), (32, 4735), (36, 4846), (38, 4870), (40, 4924), (41, 4927), (45, 5053), (47, 5164), (48, 5167), (50, 5236), (51, 5239), (52, 5323), (53, 5470), (54, 5536), (55, 5566), (56, 5581), (58, 5665), (59, 5686), (60, 5725), (62, 5767), (63, 5791), (64, 5800), (65, 5803), (66, 5809), (67, 5854), (69, 5971), (70, 5992), (71, 6019), (72, 6112), (73, 6124),

Gene: LittleE\_9 Start: 3067, Stop: 5619, Start Num: 4

Candidate Starts for LittleE\_9:

(1, 2983), (Start: 2 @3025 has 15 MA's), (3, 3034), (Start: 4 @3067 has 2 MA's), (5, 3181), (Start: 6 @3244 has 5 MA's), (8, 3277), (9, 3280), (10, 3319), (11, 3325), (12, 3433), (14, 3442), (17, 3598), (19, 3625), (20, 3706), (23, 3883), (26, 3997), (27, 4030), (29, 4075), (30, 4093), (31, 4108), (33, 4153), (34, 4159), (35, 4195), (37, 4234), (39, 4255), (42, 4318), (43, 4372), (44, 4375), (45, 4420), (46, 4429), (47, 4531), (48, 4534), (49, 4570), (50, 4603), (53, 4852), (54, 4915), (55, 4942), (57, 4987), (60, 5101), (61, 5137), (63, 5167), (64, 5176), (67, 5230), (68, 5254), (72, 5488), (73, 5500),

Gene: Minerva\_9 Start: 3121, Stop: 5703, Start Num: 2

Candidate Starts for Minerva\_9:

(Start: 2 @3121 has 15 MA's), (Start: 6 @3334 has 5 MA's), (Start: 7 @3343 has 5 MA's), (13, 3520), (15, 3634), (16, 3664), (18, 3697), (21, 3814), (22, 3913), (24, 4018), (25, 4030), (28, 4147), (32, 4195), (36, 4306), (38, 4330), (40, 4384), (41, 4387), (45, 4513), (47, 4624), (48, 4627), (50, 4696), (51, 4699), (52, 4783), (53, 4930), (54, 4996), (55, 5026), (56, 5041), (58, 5125), (59, 5146), (60, 5185), (62, 5227), (63, 5251), (64, 5260), (65, 5263), (66, 5269), (67, 5314), (69, 5431), (70, 5452), (71, 5479), (72, 5572), (73, 5584),

Gene: NihilNomen\_9 Start: 3121, Stop: 5703, Start Num: 2

Candidate Starts for NihilNomen\_9:

(Start: 2 @3121 has 15 MA's), (Start: 6 @3334 has 5 MA's), (Start: 7 @3343 has 5 MA's), (13, 3520), (15, 3634), (16, 3664), (18, 3697), (21, 3814), (22, 3913), (24, 4018), (25, 4030), (28, 4147), (32, 4195), (36, 4306), (38, 4330), (40, 4384), (41, 4387), (45, 4513), (47, 4624), (48, 4627), (50, 4696), (51, 4699), (52, 4783), (53, 4930), (54, 4996), (55, 5026), (56, 5041), (58, 5125), (59, 5146), (60, 5185), (62, 5227), (63, 5251), (64, 5260), (65, 5263), (66, 5269), (67, 5314), (69, 5431), (70, 5452), (71, 5479), (72, 5572), (73, 5584),

Gene: Odette\_9 Start: 2822, Stop: 5182, Start Num: 7

Candidate Starts for Odette\_9:

(Start: 2 @2600 has 15 MA's), (Start: 6 @2813 has 5 MA's), (Start: 7 @2822 has 5 MA's), (13, 2999), (15, 3113), (16, 3143), (18, 3176), (21, 3293), (22, 3392), (24, 3497), (25, 3509), (28, 3626), (32, 3674), (36, 3785), (38, 3809), (40, 3863), (41, 3866), (45, 3992), (47, 4103), (48, 4106), (50, 4175), (51, 4178), (53, 4409), (54, 4475), (55, 4505), (56, 4520), (58, 4604), (59, 4625), (60, 4664), (62, 4706), (63, 4730), (64, 4739), (65, 4742), (66, 4748), (67, 4793), (69, 4910), (70, 4931), (71, 4958), (72, 5051), (73, 5063),

Gene: Omega\_11 Start: 4412, Stop: 6964, Start Num: 4

Candidate Starts for Omega\_11:

(1, 4328), (Start: 2 @4370 has 15 MA's), (3, 4379), (Start: 4 @4412 has 2 MA's), (5, 4526), (Start: 6 @4589 has 5 MA's), (8, 4622), (9, 4625), (11, 4670), (12, 4778), (14, 4787), (17, 4943), (19, 4970), (20, 5051), (23, 5228), (26, 5342), (27, 5375), (29, 5420), (30, 5438), (31, 5453), (33, 5498), (34, 5504), (35, 5540), (37, 5579), (39, 5600), (42, 5663), (43, 5717), (44, 5720), (45, 5765), (46, 5774), (47, 5876), (48, 5879), (49, 5915), (50, 5948), (53, 6197), (54, 6260), (55, 6287), (57, 6332), (60, 6446), (61, 6482), (63, 6512), (64, 6521), (67, 6575), (68, 6599), (72, 6833), (73, 6845),

Gene: Optimus\_7 Start: 2627, Stop: 5209, Start Num: 2

Candidate Starts for Optimus\_7:

(Start: 2 @2627 has 15 MA's), (Start: 6 @2840 has 5 MA's), (Start: 7 @2849 has 5 MA's), (13, 3026), (15, 3140), (16, 3170), (18, 3203), (21, 3320), (22, 3419), (24, 3524), (25, 3536), (28, 3653), (32, 3701), (36, 3812), (38, 3836), (40, 3890), (41, 3893), (45, 4019), (47, 4130), (48, 4133), (50, 4202), (51, 4205), (52, 4289), (53, 4436), (54, 4502), (55, 4532), (56, 4547), (58, 4631), (59, 4652), (60, 4691), (62, 4733), (63, 4757), (64, 4766), (65, 4769), (66, 4775), (67, 4820), (69, 4937), (70, 4958), (71, 4985), (72, 5078), (73, 5090),

Gene: Phoebus\_10 Start: 3569, Stop: 5929, Start Num: 7

Candidate Starts for Phoebus\_10:

(Start: 2 @3347 has 15 MA's), (Start: 6 @3560 has 5 MA's), (Start: 7 @3569 has 5 MA's), (13, 3746), (15, 3860), (16, 3890), (18, 3923), (21, 4040), (22, 4139), (24, 4244), (25, 4256), (28, 4373), (32, 4421), (36, 4532), (38, 4556), (40, 4610), (41, 4613), (45, 4739), (47, 4850), (48, 4853), (50, 4922), (51, 4925), (52, 5009), (53, 5156), (54, 5222), (55, 5252), (56, 5267), (58, 5351), (59, 5372), (60, 5411), (62, 5453), (63, 5477), (64, 5486), (65, 5489), (66, 5495), (67, 5540), (69, 5657), (70, 5678), (71, 5705), (72, 5798), (73, 5810),

Gene: Pound\_9 Start: 3339, Stop: 5699, Start Num: 7

Candidate Starts for Pound\_9:

(Start: 2 @3117 has 15 MA's), (Start: 6 @3330 has 5 MA's), (Start: 7 @3339 has 5 MA's), (13, 3516), (15, 3630), (16, 3660), (18, 3693), (21, 3810), (22, 3909), (24, 4014), (25, 4026), (28, 4143), (32, 4191), (36, 4302), (38, 4326), (40, 4380), (41, 4383), (45, 4509), (47, 4620), (48, 4623), (50, 4692), (51, 4695), (52, 4779), (53, 4926), (54, 4992), (55, 5022), (56, 5037), (58, 5121), (59, 5142), (60, 5181), (62, 5223), (63, 5247), (64, 5256), (65, 5259), (66, 5265), (67, 5310), (69, 5427), (70, 5448), (71, 5475), (72, 5568), (73, 5580),

Gene: Redno2\_9 Start: 3045, Stop: 5414, Start Num: 6

Candidate Starts for Redno2\_9:

(Start: 2 @2832 has 15 MA's), (Start: 6 @3045 has 5 MA's), (Start: 7 @3054 has 5 MA's), (13, 3231), (15, 3345), (16, 3375), (18, 3408), (21, 3525), (22, 3624), (24, 3729), (25, 3741), (28, 3858), (32, 3906), (36, 4017), (38, 4041), (40, 4095), (41, 4098), (45, 4224), (47, 4335), (48, 4338), (50, 4407), (51, 4410), (53, 4641), (54, 4707), (55, 4737), (58, 4836), (59, 4857), (60, 4896), (62, 4938), (63, 4962), (64, 4971), (65, 4974), (66, 4980), (67, 5025), (69, 5142), (70, 5163), (71, 5190), (72, 5283), (73, 5295),

Gene: Schatzie\_8 Start: 2584, Stop: 4953, Start Num: 6

Candidate Starts for Schatzie\_8:

(Start: 2 @2371 has 15 MA's), (Start: 6 @2584 has 5 MA's), (Start: 7 @2593 has 5 MA's), (13, 2770), (15, 2884), (16, 2914), (18, 2947), (21, 3064), (22, 3163), (24, 3268), (25, 3280), (28, 3397), (32, 3445), (36, 3556), (38, 3580), (40, 3634), (41, 3637), (45, 3763), (47, 3874), (48, 3877), (50, 3946), (51, 3949), (52, 4033), (53, 4180), (54, 4246), (55, 4276), (56, 4291), (58, 4375), (59, 4396), (60, 4435), (62, 4477), (63, 4501), (64, 4510), (65, 4513), (66, 4519), (67, 4564), (69, 4681), (70, 4702), (71, 4729), (72, 4822), (73, 4834),

Gene: Thibault\_6 Start: 2627, Stop: 5209, Start Num: 2

Candidate Starts for Thibault\_6:

(Start: 2 @2627 has 15 MA's), (Start: 6 @2840 has 5 MA's), (Start: 7 @2849 has 5 MA's), (13, 3026), (15, 3140), (16, 3170), (18, 3203), (21, 3320), (22, 3419), (24, 3524), (25, 3536), (28, 3653), (32, 3701), (36, 3812), (38, 3836), (40, 3890), (41, 3893), (45, 4019), (47, 4130), (48, 4133), (50, 4202), (51, 4205), (52, 4289), (53, 4436), (54, 4502), (55, 4532), (56, 4547), (58, 4631), (59, 4652), (60, 4691), (62, 4733), (63, 4757), (64, 4766), (65, 4769), (66, 4775), (67, 4820), (69, 4937), (70, 4958), (71, 4985), (72, 5078), (73, 5090),

Gene: ThreeRngTarjay\_9 Start: 3330, Stop: 5699, Start Num: 6

Candidate Starts for ThreeRngTarjay\_9:

(Start: 2 @3117 has 15 MA's), (Start: 6 @3330 has 5 MA's), (Start: 7 @3339 has 5 MA's), (13, 3516), (15, 3630), (16, 3660), (18, 3693), (21, 3810), (22, 3909), (24, 4014), (25, 4026), (28, 4143), (32, 4191), (36, 4302), (38, 4326), (40, 4380), (41, 4383), (45, 4509), (47, 4620), (48, 4623), (50, 4692), (51, 4695), (52, 4779), (53, 4926), (54, 4992), (55, 5022), (56, 5037), (58, 5121), (59, 5142), (60, 5181), (62, 5223), (63, 5247), (64, 5256), (65, 5259), (66, 5265), (67, 5310), (69, 5427), (70, 5448), (71, 5475), (72, 5568), (73, 5580),

Gene: Yeet\_8 Start: 2371, Stop: 4953, Start Num: 2

Candidate Starts for Yeet\_8:

(Start: 2 @2371 has 15 MA's), (Start: 6 @2584 has 5 MA's), (Start: 7 @2593 has 5 MA's), (13, 2770), (15, 2884), (16, 2914), (18, 2947), (21, 3064), (22, 3163), (24, 3268), (25, 3280), (28, 3397), (32, 3445), (36, 3556), (38, 3580), (40, 3634), (41, 3637), (45, 3763), (47, 3874), (48, 3877), (50, 3946), (51, 3949), (53, 4180), (54, 4246), (55, 4276), (58, 4375), (59, 4396), (60, 4435), (62, 4477), (63, 4501), (64, 4510), (65, 4513), (66, 4519), (67, 4564), (69, 4681), (70, 4702), (71, 4729), (72, 4822), (73, 4834),

Gene: Zelink\_10 Start: 3367, Stop: 5727, Start Num: 7

Candidate Starts for Zelink\_10:

(Start: 2 @3145 has 15 MA's), (Start: 6 @3358 has 5 MA's), (Start: 7 @3367 has 5 MA's), (13, 3544), (15, 3658), (16, 3688), (18, 3721), (21, 3838), (22, 3937), (24, 4042), (25, 4054), (28, 4171), (32, 4219), (36, 4330), (38, 4354), (40, 4408), (41, 4411), (45, 4537), (47, 4648), (48, 4651), (50, 4720), (51, 4723), (53, 4954), (54, 5020), (55, 5050), (56, 5065), (58, 5149), (59, 5170), (60, 5209), (62, 5251), (63, 5275), (64, 5284), (65, 5287), (66, 5293), (67, 5338), (69, 5455), (70, 5476), (71, 5503), (72, 5596), (73, 5608),