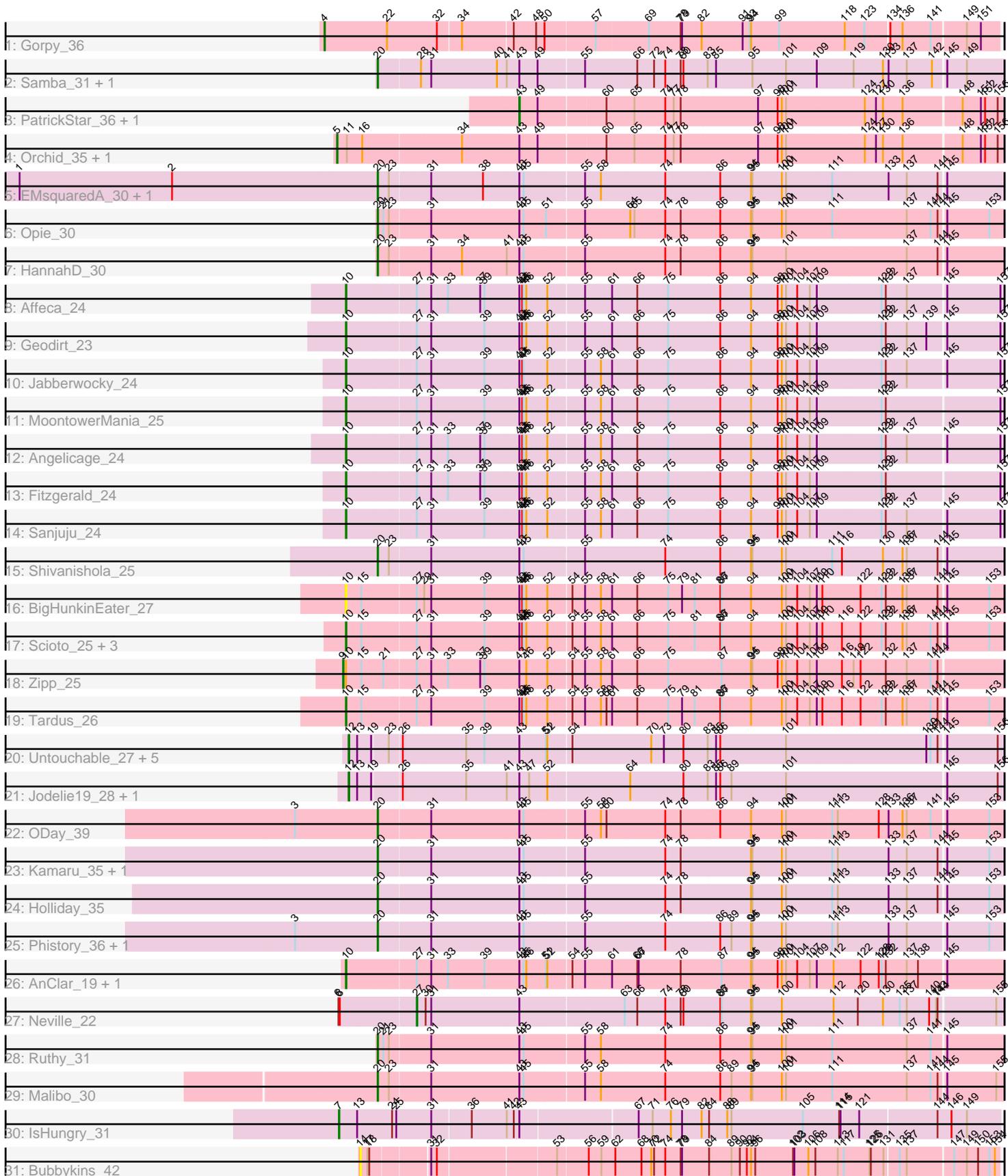Pham 291272

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 291272 Report

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

Pham number 291272 has 47 members, 8 are drafts.

Phages represented in each track:
• Track 1 : Gorpy_36
• Track 2 : Samba_31, ZiggyZoo_31
• Track 3 : PatrickStar_36, Kampe_36
• Track 4 : Orchid_35, RobinSparkles_38
• Track 5 : EMsquaredA_30, Marteena_30
• Track 6 : Opie_30
• Track 7 : HannahD_30
• Track 8 : Affeca_24
• Track 9 : Geodirt_23
• Track 10 : Jabberwocky_24
• Track 11 : MoontowerMania_25
• Track 12 : Angelicage_24
• Track 13 : Fitzgerald_24
• Track 14 : Sanjuju_24
• Track 15 : Shivanishola_25
• Track 16 : BigHunkinEater_27
• Track 17 : Scioto_25, Sampson_25, Abblin_25, Natkenzie_25
• Track 18 : Zipp_25
• Track 19 : Tardus_26
• Track 20 : Untouchable_27, Crocheter_27, Kenosha_27, Nadmeg_28, Dialga_28, ArtetaBall_28
• Track 21 : Jodelie19_28, TenaciousP_28
• Track 22 : ODay_39
• Track 23 : Kamaru_35, LitninMcQueen_34
• Track 24 : Holliday_35
• Track 25 : Phistory_36, ShawBrad_35
• Track 26 : AnClar_19, LittleMunchkin_20
• Track 27 : Neville_22
• Track 28 : Ruthy_31
• Track 29 : Malibo_30
• Track 30 : IsHungry_31
• Track 31 : Bubbykins_42

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

The start number called the most often in the published annotations is 20, it was called in 14 of the 39 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• EMsquaredA_30, HannahD_30, Holliday_35, Kamaru_35, LitninMcQueen_34, Malibo_30, Marteena_30, ODay_39, Opie_30, Phistory_36, Ruthy_31, Samba_31, ShawBrad_35, Shivanishola_25, ZiggyZoo_31,

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

Genes that do not have the "Most Annotated" start:
• Abblin_25, Affeca_24, AnClar_19, Angelicage_24, ArtetaBall_28, BigHunkinEater_27, Bubbykins_42, Crocheter_27, Dialga_28, Fitzgerald_24, Geodirt_23, Gorpy_36, IsHungry_31, Jabberwocky_24, Jodelie19_28, Kampe_36, Kenosha_27, LittleMunchkin_20, MoontowerMania_25, Nadmeg_28, Natkenzie_25, Neville_22, Orchid_35, PatrickStar_36, RobinSparkles_38, Sampson_25, Sanjuju_24, Scioto_25, Tardus_26, TenaciousP_28, Untouchable_27, Zipp_25,

Summary by start number:

Start 4:
• Found in 1 of 47 (2.1%) of genes in pham
• Manual Annotations of this start: 1 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Gorpy_36 (AY),

Start 5:
• Found in 2 of 47 (4.3%) of genes in pham
• Manual Annotations of this start: 2 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Orchid_35 (CX), RobinSparkles_38 (CX),

Start 7:
• Found in 1 of 47 (2.1%) of genes in pham
• Manual Annotations of this start: 1 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: IsHungry_31 (FF),

Start 9:
• Found in 1 of 47 (2.1%) of genes in pham
• Manual Annotations of this start: 1 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Zipp_25 (DE4),

Start 10:
• Found in 16 of 47 (34.0%) of genes in pham
• Manual Annotations of this start: 11 of 39
• Called 93.8% of time when present
• Phage (with cluster) where this start called: Abblin_25 (DE4), Affeca_24 (DE1), AnClar_19 (DR), Angelicage_24 (DE1), BigHunkinEater_27 (DE4), Fitzgerald_24

(DE1), Geodirt_23 (DE1), Jabberwocky_24 (DE1), LittleMunchkin_20 (DR), MoontowerMania_25 (DE1), Natkenzie_25 (DE4), Sampson_25 (DE4), Sanjuju_24 (DE1), Scioto_25 (DE4), Tardus_26 (DE4),

Start 12:
• Found in 8 of 47 (17.0%) of genes in pham
• Manual Annotations of this start: 6 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ArtetaBall_28 (DJ), Crocheter_27 (DJ), Dialga_28 (DJ), Jodelie19_28 (DJ), Kenosha_27 (DJ), Nadmeg_28 (DJ), TenaciousP_28 (DJ), Untouchable_27 (DJ),

Start 14:
• Found in 1 of 47 (2.1%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Bubbykins_42 (UNK),

Start 20:
• Found in 15 of 47 (31.9%) of genes in pham
• Manual Annotations of this start: 14 of 39
• Called 100.0% of time when present
• Phage (with cluster) where this start called: EMsquaredA_30 (CY1), HannahD_30 (DB), Holliday_35 (DN1), Kamaru_35 (DN1), LitninMcQueen_34 (DN1), Malibo_30 (DW), Marteena_30 (CY1), ODay_39 (DN), Opie_30 (DB), Phistory_36 (DN1), Ruthy_31 (DW), Samba_31 (CV), ShawBrad_35 (DN1), Shivanishola_25 (DE1), ZiggyZoo_31 (CV),

Start 27:
• Found in 17 of 47 (36.2%) of genes in pham
• Manual Annotations of this start: 1 of 39
• Called 5.9% of time when present
• Phage (with cluster) where this start called: Neville_22 (DU2),

Start 43:
• Found in 45 of 47 (95.7%) of genes in pham
• Manual Annotations of this start: 2 of 39
• Called 4.4% of time when present
• Phage (with cluster) where this start called: Kampe_36 (CX), PatrickStar_36 (CX),

Summary by clusters:

There are 15 clusters represented in this pham: DN, CY1, DJ, DE4, DE1, DB, CX, DN1, FF, AY, DW, DU2, UNK, DR, CV,

Info for manual annotations of cluster AY:
•Start number 4 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster CV:
•Start number 20 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster CX:
•Start number 5 was manually annotated 2 times for cluster CX.

•Start number 43 was manually annotated 2 times for cluster CX.

Info for manual annotations of cluster CY1:
•Start number 20 was manually annotated 2 times for cluster CY1.

Info for manual annotations of cluster DB:
•Start number 20 was manually annotated 2 times for cluster DB.

Info for manual annotations of cluster DE1:
•Start number 10 was manually annotated 7 times for cluster DE1.
•Start number 20 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DE4:
•Start number 9 was manually annotated 1 time for cluster DE4.
•Start number 10 was manually annotated 2 times for cluster DE4.

Info for manual annotations of cluster DJ:
•Start number 12 was manually annotated 6 times for cluster DJ.

Info for manual annotations of cluster DN:
•Start number 20 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DN1:
•Start number 20 was manually annotated 4 times for cluster DN1.

Info for manual annotations of cluster DR:
•Start number 10 was manually annotated 2 times for cluster DR.

Info for manual annotations of cluster DU2:
•Start number 27 was manually annotated 1 time for cluster DU2.

Info for manual annotations of cluster DW:
•Start number 20 was manually annotated 2 times for cluster DW.

Info for manual annotations of cluster FF:
•Start number 7 was manually annotated 1 time for cluster FF.

Gene Information:

Gene: Abblin_25 Start: 19737, Stop: 21101, Start Num: 10
Candidate Starts for Abblin_25:
(Start: 10 @19737 has 11 MA's), (15, 19770), (Start: 27 @19878 has 1 MA's), (31, 19908), (39, 20022), (Start: 43 @20094 has 2 MA's), (44, 20100), (45, 20103), (46, 20109), (52, 20151), (54, 20199), (55, 20226), (58, 20256), (61, 20280), (66, 20331), (75, 20397), (81, 20451), (86, 20505), (87, 20508), (94, 20571), (100, 20637), (101, 20646), (104, 20670), (107, 20697), (109, 20712), (110, 20721), (116, 20763), (122, 20802), (129, 20847), (132, 20856), (136, 20892), (137, 20901), (141, 20952), (144, 20967), (145, 20979), (153, 21069),

Gene: Affeca_24 Start: 19645, Stop: 21006, Start Num: 10
Candidate Starts for Affeca_24:

(Start: 10 @19645 has 11 MA's), (Start: 27 @19786 has 1 MA's), (31, 19816), (33, 19852), (37, 19921), (39, 19930), (Start: 43 @20002 has 2 MA's), (44, 20008), (45, 20011), (46, 20017), (52, 20059), (55, 20134), (61, 20188), (66, 20239), (75, 20305), (86, 20413), (94, 20479), (98, 20536), (100, 20545), (101, 20554), (104, 20578), (107, 20605), (109, 20620), (129, 20755), (132, 20764), (137, 20809), (145, 20887), (157, 21001),

Gene: AnClar_19 Start: 16411, Stop: 17775, Start Num: 10
Candidate Starts for AnClar_19:
(Start: 10 @16411 has 11 MA's), (Start: 27 @16552 has 1 MA's), (31, 16582), (33, 16618), (39, 16696), (Start: 43 @16768 has 2 MA's), (45, 16777), (46, 16783), (51, 16822), (52, 16825), (54, 16873), (55, 16900), (61, 16954), (66, 17005), (67, 17008), (78, 17095), (87, 17182), (94, 17245), (95, 17248), (98, 17302), (100, 17311), (101, 17320), (104, 17344), (107, 17371), (109, 17386), (112, 17419), (122, 17476), (128, 17515), (129, 17521), (132, 17530), (137, 17575), (138, 17599), (145, 17653),

Gene: Angelicage_24 Start: 20068, Stop: 21429, Start Num: 10
Candidate Starts for Angelicage_24:
(Start: 10 @20068 has 11 MA's), (Start: 27 @20209 has 1 MA's), (31, 20239), (33, 20275), (37, 20344), (39, 20353), (Start: 43 @20425 has 2 MA's), (44, 20431), (45, 20434), (46, 20440), (52, 20482), (55, 20557), (58, 20587), (61, 20611), (66, 20662), (75, 20728), (86, 20836), (94, 20902), (98, 20959), (100, 20968), (101, 20977), (104, 21001), (107, 21028), (109, 21043), (129, 21178), (132, 21187), (137, 21232), (145, 21310), (157, 21424),

Gene: ArtetaBall_28 Start: 19527, Stop: 20882, Start Num: 12
Candidate Starts for ArtetaBall_28:
(Start: 12 @19527 has 6 MA's), (13, 19545), (19, 19575), (23, 19608), (26, 19632), (35, 19764), (39, 19803), (Start: 43 @19875 has 2 MA's), (51, 19929), (52, 19932), (54, 19980), (70, 20142), (73, 20169), (80, 20211), (83, 20262), (85, 20280), (86, 20289), (101, 20430), (139, 20727), (141, 20736), (144, 20751), (145, 20763), (156, 20871),

Gene: BigHunkinEater_27 Start: 18907, Stop: 20271, Start Num: 10
Candidate Starts for BigHunkinEater_27:
(Start: 10 @18907 has 11 MA's), (15, 18940), (Start: 27 @19048 has 1 MA's), (29, 19063), (31, 19078), (39, 19192), (Start: 43 @19264 has 2 MA's), (44, 19270), (45, 19273), (46, 19279), (52, 19321), (54, 19369), (55, 19396), (58, 19426), (61, 19450), (66, 19501), (75, 19567), (79, 19594), (81, 19621), (86, 19675), (87, 19678), (94, 19741), (100, 19807), (101, 19816), (104, 19840), (107, 19867), (109, 19882), (110, 19891), (122, 19972), (129, 20017), (132, 20026), (136, 20062), (137, 20071), (144, 20137), (145, 20149), (153, 20239),

Gene: Bubbykins_42 Start: 32858, Stop: 34141, Start Num: 14
Candidate Starts for Bubbykins_42:
(14, 32858), (17, 32873), (18, 32876), (31, 32984), (32, 32996), (53, 33236), (56, 33299), (59, 33326), (62, 33356), (68, 33407), (70, 33428), (72, 33434), (74, 33458), (78, 33488), (79, 33491), (84, 33548), (89, 33596), (90, 33614), (92, 33629), (94, 33638), (96, 33647), (102, 33728), (103, 33731), (106, 33761), (108, 33776), (113, 33821), (117, 33833), (125, 33887), (126, 33890), (131, 33914), (135, 33938), (137, 33953), (147, 34046), (149, 34073), (150, 34097), (153, 34121), (154, 34133),

Gene: Crocheter_27 Start: 19527, Stop: 20882, Start Num: 12
Candidate Starts for Crocheter_27:
(Start: 12 @19527 has 6 MA's), (13, 19545), (19, 19575), (23, 19608), (26, 19632), (35, 19764), (39, 19803), (Start: 43 @19875 has 2 MA's), (51, 19929), (52, 19932), (54, 19980), (70, 20142), (73, 20169), (80, 20211), (83, 20262), (85, 20280), (86, 20289), (101, 20430), (139, 20727), (141, 20736), (144, 20751), (145, 20763), (156, 20871),

Gene: Dialga_28 Start: 19549, Stop: 20904, Start Num: 12
Candidate Starts for Dialga_28:
(Start: 12 @19549 has 6 MA's), (13, 19567), (19, 19597), (23, 19630), (26, 19654), (35, 19786), (39, 19825), (Start: 43 @19897 has 2 MA's), (51, 19951), (52, 19954), (54, 20002), (70, 20164), (73, 20191), (80, 20233), (83, 20284), (85, 20302), (86, 20311), (101, 20452), (139, 20749), (141, 20758), (144, 20773), (145, 20785), (156, 20893),

Gene: EMsquaredA_30 Start: 25192, Stop: 26484, Start Num: 20
Candidate Starts for EMsquaredA_30:
(1, 24430), (2, 24757), (Start: 20 @25192 has 14 MA's), (23, 25213), (31, 25294), (38, 25405), (Start: 43 @25480 has 2 MA's), (45, 25489), (55, 25612), (58, 25642), (74, 25777), (86, 25891), (94, 25957), (95, 25960), (100, 26023), (101, 26032), (111, 26128), (133, 26248), (137, 26287), (144, 26353), (145, 26365),

Gene: Fitzgerald_24 Start: 20115, Stop: 21476, Start Num: 10
Candidate Starts for Fitzgerald_24:
(Start: 10 @20115 has 11 MA's), (Start: 27 @20256 has 1 MA's), (31, 20286), (33, 20322), (37, 20391), (39, 20400), (Start: 43 @20472 has 2 MA's), (44, 20478), (45, 20481), (46, 20487), (52, 20529), (55, 20604), (58, 20634), (61, 20658), (66, 20709), (75, 20775), (86, 20883), (94, 20949), (98, 21006), (100, 21015), (101, 21024), (104, 21048), (107, 21075), (109, 21090), (129, 21225), (132, 21234), (157, 21471),

Gene: Geodirt_23 Start: 19423, Stop: 20784, Start Num: 10
Candidate Starts for Geodirt_23:
(Start: 10 @19423 has 11 MA's), (Start: 27 @19564 has 1 MA's), (31, 19594), (39, 19708), (Start: 43 @19780 has 2 MA's), (44, 19786), (45, 19789), (46, 19795), (52, 19837), (55, 19912), (61, 19966), (66, 20017), (75, 20083), (86, 20191), (94, 20257), (98, 20314), (100, 20323), (101, 20332), (104, 20356), (107, 20383), (109, 20398), (129, 20533), (132, 20542), (137, 20587), (139, 20629), (145, 20665), (157, 20779),

Gene: Gorpy_36 Start: 24267, Stop: 25628, Start Num: 4
Candidate Starts for Gorpy_36:
(Start: 4 @24267 has 1 MA's), (22, 24393), (32, 24495), (34, 24543), (42, 24648), (48, 24696), (50, 24714), (57, 24810), (69, 24915), (78, 24978), (79, 24981), (82, 25023), (91, 25110), (93, 25125), (94, 25128), (99, 25185), (118, 25323), (123, 25362), (134, 25407), (136, 25431), (141, 25491), (149, 25560), (151, 25590),

Gene: HannahD_30 Start: 24895, Stop: 26187, Start Num: 20
Candidate Starts for HannahD_30:
(Start: 20 @24895 has 14 MA's), (23, 24916), (31, 24997), (34, 25063), (41, 25156), (Start: 43 @25183 has 2 MA's), (45, 25192), (55, 25315), (74, 25480), (78, 25510), (86, 25594), (94, 25660), (95, 25663), (101, 25735), (137, 25990), (144, 26056), (145, 26068),

Gene: Holliday_35 Start: 27235, Stop: 28530, Start Num: 20
Candidate Starts for Holliday_35:
(Start: 20 @27235 has 14 MA's), (31, 27340), (Start: 43 @27526 has 2 MA's), (45, 27535), (55, 27658), (74, 27823), (78, 27853), (94, 28003), (95, 28006), (100, 28069), (101, 28078), (111, 28174), (113, 28186), (133, 28294), (137, 28333), (144, 28399), (145, 28411), (153, 28501),

Gene: IsHungry_31 Start: 23474, Stop: 24847, Start Num: 7
Candidate Starts for IsHungry_31:
(Start: 7 @23474 has 1 MA's), (13, 23513), (24, 23588), (25, 23597), (31, 23672), (36, 23753), (41, 23828), (42, 23843), (Start: 43 @23855 has 2 MA's), (67, 24092), (71, 24122), (76, 24158), (79,

24179), (82, 24221), (84, 24236), (88, 24275), (89, 24284), (105, 24437), (114, 24515), (115, 24518), (121, 24557), (144, 24713), (146, 24743), (149, 24776),

Gene: Jabberwocky_24 Start: 20582, Stop: 21943, Start Num: 10
Candidate Starts for Jabberwocky_24:
(Start: 10 @20582 has 11 MA's), (27 @20723 has 1 MA's), (31, 20753), (39, 20867), (Start: 43 @20939 has 2 MA's), (44, 20945), (45, 20948), (52, 20996), (55, 21071), (58, 21101), (61, 21125), (66, 21176), (75, 21242), (86, 21350), (94, 21416), (98, 21473), (100, 21482), (101, 21491), (104, 21515), (107, 21542), (109, 21557), (129, 21692), (132, 21701), (137, 21746), (145, 21824), (157, 21938),

Gene: Jodelie19_28 Start: 20820, Stop: 22175, Start Num: 12
Candidate Starts for Jodelie19_28:
(Start: 12 @20820 has 6 MA's), (13, 20838), (19, 20868), (26, 20925), (35, 21057), (41, 21141), (Start: 43 @21168 has 2 MA's), (47, 21189), (52, 21225), (64, 21390), (80, 21504), (83, 21555), (85, 21573), (86, 21582), (89, 21606), (101, 21723), (145, 22056), (156, 22164),

Gene: Kamaru_35 Start: 27235, Stop: 28530, Start Num: 20
Candidate Starts for Kamaru_35:
(Start: 20 @27235 has 14 MA's), (31, 27340), (Start: 43 @27526 has 2 MA's), (45, 27535), (55, 27658), (74, 27823), (78, 27853), (94, 28003), (95, 28006), (100, 28069), (101, 28078), (111, 28174), (113, 28186), (133, 28294), (137, 28333), (144, 28399), (145, 28411), (153, 28501),

Gene: Kampe_36 Start: 37364, Stop: 38371, Start Num: 43
Candidate Starts for Kampe_36:
(Start: 43 @37364 has 2 MA's), (49, 37403), (60, 37538), (65, 37598), (74, 37664), (77, 37682), (78, 37697), (97, 37862), (98, 37904), (100, 37913), (101, 37922), (124, 38087), (127, 38111), (130, 38126), (136, 38168), (148, 38288), (151, 38327), (152, 38336), (156, 38360),

Gene: Kenosha_27 Start: 19938, Stop: 21293, Start Num: 12
Candidate Starts for Kenosha_27:
(Start: 12 @19938 has 6 MA's), (13, 19956), (19, 19986), (23, 20019), (26, 20043), (35, 20175), (39, 20214), (Start: 43 @20286 has 2 MA's), (51, 20340), (52, 20343), (54, 20391), (70, 20553), (73, 20580), (80, 20622), (83, 20673), (85, 20691), (86, 20700), (101, 20841), (139, 21138), (141, 21147), (144, 21162), (145, 21174), (156, 21282),

Gene: LitninMcQueen_34 Start: 26978, Stop: 28273, Start Num: 20
Candidate Starts for LitninMcQueen_34:
(Start: 20 @26978 has 14 MA's), (31, 27083), (Start: 43 @27269 has 2 MA's), (45, 27278), (55, 27401), (74, 27566), (78, 27596), (94, 27746), (95, 27749), (100, 27812), (101, 27821), (111, 27917), (113, 27929), (133, 28037), (137, 28076), (144, 28142), (145, 28154), (153, 28244),

Gene: LittleMunchkin_20 Start: 17045, Stop: 18409, Start Num: 10
Candidate Starts for LittleMunchkin_20:
(Start: 10 @17045 has 11 MA's), (27 @17186 has 1 MA's), (31, 17216), (33, 17252), (39, 17330), (Start: 43 @17402 has 2 MA's), (45, 17411), (46, 17417), (51, 17456), (52, 17459), (54, 17507), (55, 17534), (61, 17588), (66, 17639), (67, 17642), (78, 17729), (87, 17816), (94, 17879), (95, 17882), (98, 17936), (100, 17945), (101, 17954), (104, 17978), (107, 18005), (109, 18020), (112, 18053), (122, 18110), (128, 18149), (129, 18155), (132, 18164), (137, 18209), (138, 18233), (145, 18287),

Gene: Malibo_30 Start: 24379, Stop: 25671, Start Num: 20
Candidate Starts for Malibo_30:
(Start: 20 @24379 has 14 MA's), (23, 24400), (31, 24481), (Start: 43 @24667 has 2 MA's), (45, 24676), (55, 24799), (58, 24829), (74, 24964), (86, 25078), (89, 25102), (94, 25144), (95, 25147), (100, 25210),

(101, 25219), (111, 25315), (137, 25474), (141, 25525), (144, 25540), (145, 25552), (155, 25657),

Gene: Marteena_30 Start: 25192, Stop: 26484, Start Num: 20
Candidate Starts for Marteena_30:
(1, 24430), (2, 24757), (Start: 20 @25192 has 14 MA's), (23, 25213), (31, 25294), (38, 25405), (Start: 43 @25480 has 2 MA's), (45, 25489), (55, 25612), (58, 25642), (74, 25777), (86, 25891), (94, 25957), (95, 25960), (100, 26023), (101, 26032), (111, 26128), (133, 26248), (137, 26287), (144, 26353), (145, 26365),

Gene: MoontowerMania_25 Start: 19790, Stop: 21151, Start Num: 10
Candidate Starts for MoontowerMania_25:
(Start: 10 @19790 has 11 MA's), (Start: 27 @19931 has 1 MA's), (31, 19961), (39, 20075), (Start: 43 @20147 has 2 MA's), (44, 20153), (45, 20156), (46, 20162), (52, 20204), (55, 20279), (58, 20309), (61, 20333), (66, 20384), (75, 20450), (86, 20558), (94, 20624), (98, 20681), (100, 20690), (101, 20699), (104, 20723), (107, 20750), (109, 20765), (129, 20900), (132, 20909), (157, 21146),

Gene: Nadmeg_28 Start: 20601, Stop: 21956, Start Num: 12
Candidate Starts for Nadmeg_28:
(Start: 12 @20601 has 6 MA's), (13, 20619), (19, 20649), (23, 20682), (26, 20706), (35, 20838), (39, 20877), (Start: 43 @20949 has 2 MA's), (51, 21003), (52, 21006), (54, 21054), (70, 21216), (73, 21243), (80, 21285), (83, 21336), (85, 21354), (86, 21363), (101, 21504), (139, 21801), (141, 21810), (144, 21825), (145, 21837), (156, 21945),

Gene: Natkenzie_25 Start: 19737, Stop: 21101, Start Num: 10
Candidate Starts for Natkenzie_25:
(Start: 10 @19737 has 11 MA's), (15, 19770), (Start: 27 @19878 has 1 MA's), (31, 19908), (39, 20022), (Start: 43 @20094 has 2 MA's), (44, 20100), (45, 20103), (46, 20109), (52, 20151), (54, 20199), (55, 20226), (58, 20256), (61, 20280), (66, 20331), (75, 20397), (81, 20451), (86, 20505), (87, 20508), (94, 20571), (100, 20637), (101, 20646), (104, 20670), (107, 20697), (109, 20712), (110, 20721), (116, 20763), (122, 20802), (129, 20847), (132, 20856), (136, 20892), (137, 20901), (141, 20952), (144, 20967), (145, 20979), (153, 21069),

Gene: Neville_22 Start: 13040, Stop: 14260, Start Num: 27
Candidate Starts for Neville_22:
(6, 12884), (8, 12887), (Start: 27 @13040 has 1 MA's), (30, 13058), (31, 13070), (Start: 43 @13256 has 2 MA's), (63, 13469), (66, 13493), (74, 13553), (78, 13583), (80, 13589), (86, 13667), (87, 13670), (94, 13733), (95, 13736), (100, 13799), (112, 13907), (120, 13958), (130, 14012), (135, 14048), (137, 14063), (140, 14111), (143, 14126), (144, 14129), (155, 14246),

Gene: ODay_39 Start: 29045, Stop: 30340, Start Num: 20
Candidate Starts for ODay_39:
(3, 28868), (Start: 20 @29045 has 14 MA's), (31, 29150), (Start: 43 @29336 has 2 MA's), (45, 29345), (55, 29468), (58, 29498), (60, 29510), (74, 29633), (78, 29663), (86, 29747), (94, 29813), (100, 29879), (101, 29888), (111, 29984), (113, 29996), (128, 30083), (133, 30104), (136, 30134), (137, 30143), (141, 30194), (145, 30221), (153, 30311),

Gene: Opie_30 Start: 25229, Stop: 26521, Start Num: 20
Candidate Starts for Opie_30:
(Start: 20 @25229 has 14 MA's), (21, 25238), (23, 25250), (31, 25331), (Start: 43 @25517 has 2 MA's), (45, 25526), (51, 25571), (55, 25649), (64, 25739), (65, 25748), (74, 25814), (78, 25844), (86, 25928), (94, 25994), (95, 25997), (100, 26060), (101, 26069), (111, 26165), (137, 26324), (141, 26375), (144, 26390), (145, 26402), (153, 26492),

Gene: Orchid_35 Start: 36987, Stop: 38372, Start Num: 5
Candidate Starts for Orchid_35:
(Start: 5 @36987 has 2 MA's), (11, 37008), (16, 37041), (34, 37248), (Start: 43 @37365 has 2 MA's),
(49, 37404), (60, 37539), (65, 37599), (74, 37665), (77, 37683), (78, 37698), (97, 37863), (98, 37905),
(100, 37914), (101, 37923), (124, 38088), (127, 38112), (130, 38127), (136, 38169), (148, 38289),
(151, 38328), (152, 38337), (156, 38361),

Gene: PatrickStar_36 Start: 37364, Stop: 38371, Start Num: 43
Candidate Starts for PatrickStar_36:
(Start: 43 @37364 has 2 MA's), (49, 37403), (60, 37538), (65, 37598), (74, 37664), (77, 37682), (78,
37697), (97, 37862), (98, 37904), (100, 37913), (101, 37922), (124, 38087), (127, 38111), (130,
38126), (136, 38168), (148, 38288), (151, 38327), (152, 38336), (156, 38360),

Gene: Phistory_36 Start: 27923, Stop: 29218, Start Num: 20
Candidate Starts for Phistory_36:
(3, 27746), (Start: 20 @27923 has 14 MA's), (31, 28028), (Start: 43 @28214 has 2 MA's), (45, 28223),
(55, 28346), (74, 28511), (86, 28625), (89, 28649), (94, 28691), (95, 28694), (100, 28757), (101,
28766), (111, 28862), (113, 28874), (133, 28982), (137, 29021), (145, 29099), (153, 29189),

Gene: RobinSparkles_38 Start: 37904, Stop: 39289, Start Num: 5
Candidate Starts for RobinSparkles_38:
(Start: 5 @37904 has 2 MA's), (11, 37925), (16, 37958), (34, 38165), (Start: 43 @38282 has 2 MA's),
(49, 38321), (60, 38456), (65, 38516), (74, 38582), (77, 38600), (78, 38615), (97, 38780), (98, 38822),
(100, 38831), (101, 38840), (124, 39005), (127, 39029), (130, 39044), (136, 39086), (148, 39206),
(151, 39245), (152, 39254), (156, 39278),

Gene: Ruthy_31 Start: 25882, Stop: 27174, Start Num: 20
Candidate Starts for Ruthy_31:
(Start: 20 @25882 has 14 MA's), (21, 25891), (23, 25903), (31, 25984), (Start: 43 @26170 has 2 MA's),
(45, 26179), (55, 26302), (58, 26332), (74, 26467), (86, 26581), (94, 26647), (95, 26650), (100, 26713),
(101, 26722), (111, 26818), (137, 26977), (141, 27028), (145, 27055),

Gene: Samba_31 Start: 26209, Stop: 27507, Start Num: 20
Candidate Starts for Samba_31:
(Start: 20 @26209 has 14 MA's), (28, 26293), (31, 26314), (40, 26455), (41, 26473), (Start: 43 @26500
has 2 MA's), (49, 26539), (55, 26632), (66, 26737), (72, 26773), (74, 26797), (78, 26830), (80, 26836),
(83, 26887), (85, 26905), (95, 26983), (101, 27055), (109, 27121), (119, 27196), (130, 27259), (133,
27271), (137, 27310), (142, 27364), (145, 27388), (149, 27430),

Gene: Sampson_25 Start: 19682, Stop: 21046, Start Num: 10
Candidate Starts for Sampson_25:
(Start: 10 @19682 has 11 MA's), (15, 19715), (Start: 27 @19823 has 1 MA's), (31, 19853), (39, 19967),
(Start: 43 @20039 has 2 MA's), (44, 20045), (45, 20048), (46, 20054), (52, 20096), (54, 20144), (55,
20171), (58, 20201), (61, 20225), (66, 20276), (75, 20342), (81, 20396), (86, 20450), (87, 20453), (94,
20516), (100, 20582), (101, 20591), (104, 20615), (107, 20642), (109, 20657), (110, 20666), (116,
20708), (122, 20747), (129, 20792), (132, 20801), (136, 20837), (137, 20846), (141, 20897), (144,
20912), (145, 20924), (153, 21014),

Gene: Sanjuju_24 Start: 20194, Stop: 21555, Start Num: 10
Candidate Starts for Sanjuju_24:
(Start: 10 @20194 has 11 MA's), (Start: 27 @20335 has 1 MA's), (31, 20365), (39, 20479), (Start: 43
@20551 has 2 MA's), (44, 20557), (45, 20560), (46, 20566), (52, 20608), (55, 20683), (58, 20713), (61,
20737), (66, 20788), (75, 20854), (86, 20962), (94, 21028), (98, 21085), (100, 21094), (101, 21103),

(104, 21127), (107, 21154), (109, 21169), (129, 21304), (132, 21313), (137, 21358), (145, 21436), (157, 21550),

Gene: Scioto_25 Start: 19737, Stop: 21101, Start Num: 10
Candidate Starts for Scioto_25:
(Start: 10 @19737 has 11 MA's), (15, 19770), (Start: 27 @19878 has 1 MA's), (31, 19908), (39, 20022), (Start: 43 @20094 has 2 MA's), (44, 20100), (45, 20103), (46, 20109), (52, 20151), (54, 20199), (55, 20226), (58, 20256), (61, 20280), (66, 20331), (75, 20397), (81, 20451), (86, 20505), (87, 20508), (94, 20571), (100, 20637), (101, 20646), (104, 20670), (107, 20697), (109, 20712), (110, 20721), (116, 20763), (122, 20802), (129, 20847), (132, 20856), (136, 20892), (137, 20901), (141, 20952), (144, 20967), (145, 20979), (153, 21069),

Gene: ShawBrad_35 Start: 27145, Stop: 28440, Start Num: 20
Candidate Starts for ShawBrad_35:
(3, 26968), (Start: 20 @27145 has 14 MA's), (31, 27250), (Start: 43 @27436 has 2 MA's), (45, 27445), (55, 27568), (74, 27733), (86, 27847), (89, 27871), (94, 27913), (95, 27916), (100, 27979), (101, 27988), (111, 28084), (113, 28096), (133, 28204), (137, 28243), (145, 28321), (153, 28411),

Gene: Shivanishola_25 Start: 19590, Stop: 20882, Start Num: 20
Candidate Starts for Shivanishola_25:
(Start: 20 @19590 has 14 MA's), (23, 19611), (31, 19692), (Start: 43 @19878 has 2 MA's), (45, 19887), (55, 20010), (74, 20175), (86, 20289), (94, 20355), (95, 20358), (100, 20421), (101, 20430), (111, 20526), (116, 20547), (130, 20634), (136, 20676), (137, 20685), (144, 20751), (145, 20763),

Gene: Tardus_26 Start: 19018, Stop: 20382, Start Num: 10
Candidate Starts for Tardus_26:
(Start: 10 @19018 has 11 MA's), (15, 19051), (Start: 27 @19159 has 1 MA's), (31, 19189), (39, 19303), (Start: 43 @19375 has 2 MA's), (44, 19381), (45, 19384), (46, 19390), (52, 19432), (54, 19480), (55, 19507), (58, 19537), (60, 19549), (61, 19561), (66, 19612), (75, 19678), (79, 19705), (81, 19732), (86, 19786), (87, 19789), (94, 19852), (100, 19918), (101, 19927), (104, 19951), (107, 19978), (109, 19993), (110, 20002), (116, 20044), (122, 20083), (129, 20128), (132, 20137), (136, 20173), (137, 20182), (141, 20233), (144, 20248), (145, 20260), (153, 20350),

Gene: TenaciousP_28 Start: 20820, Stop: 22175, Start Num: 12
Candidate Starts for TenaciousP_28:
(Start: 12 @20820 has 6 MA's), (13, 20838), (19, 20868), (26, 20925), (35, 21057), (41, 21141), (Start: 43 @21168 has 2 MA's), (47, 21189), (52, 21225), (64, 21390), (80, 21504), (83, 21555), (85, 21573), (86, 21582), (89, 21606), (101, 21723), (145, 22056), (156, 22164),

Gene: Untouchable_27 Start: 19526, Stop: 20881, Start Num: 12
Candidate Starts for Untouchable_27:
(Start: 12 @19526 has 6 MA's), (13, 19544), (19, 19574), (23, 19607), (26, 19631), (35, 19763), (39, 19802), (Start: 43 @19874 has 2 MA's), (51, 19928), (52, 19931), (54, 19979), (70, 20141), (73, 20168), (80, 20210), (83, 20261), (85, 20279), (86, 20288), (101, 20429), (139, 20726), (141, 20735), (144, 20750), (145, 20762), (156, 20870),

Gene: ZiggyZoo_31 Start: 26050, Stop: 27348, Start Num: 20
Candidate Starts for ZiggyZoo_31:
(Start: 20 @26050 has 14 MA's), (28, 26134), (31, 26155), (40, 26296), (41, 26314), (Start: 43 @26341 has 2 MA's), (49, 26380), (55, 26473), (66, 26578), (72, 26614), (74, 26638), (78, 26671), (80, 26677), (83, 26728), (85, 26746), (95, 26824), (101, 26896), (109, 26962), (119, 27037), (130, 27100), (133, 27112), (137, 27151), (142, 27205), (145, 27229), (149, 27271),

Gene: Zipp_25 Start: 19842, Stop: 21212, Start Num: 9
Candidate Starts for Zipp_25:
(Start: 9 @19842 has 1 MA's), (Start: 10 @19848 has 11 MA's), (15, 19881), (21, 19926), (Start: 27 @19989 has 1 MA's), (31, 20019), (33, 20055), (37, 20124), (39, 20133), (Start: 43 @20205 has 2 MA's), (46, 20220), (52, 20262), (54, 20310), (55, 20337), (58, 20367), (61, 20391), (66, 20442), (75, 20508), (87, 20619), (94, 20682), (95, 20685), (98, 20739), (100, 20748), (101, 20757), (104, 20781), (107, 20808), (109, 20823), (116, 20874), (119, 20898), (122, 20913), (132, 20967), (137, 21012), (141, 21063), (144, 21078),