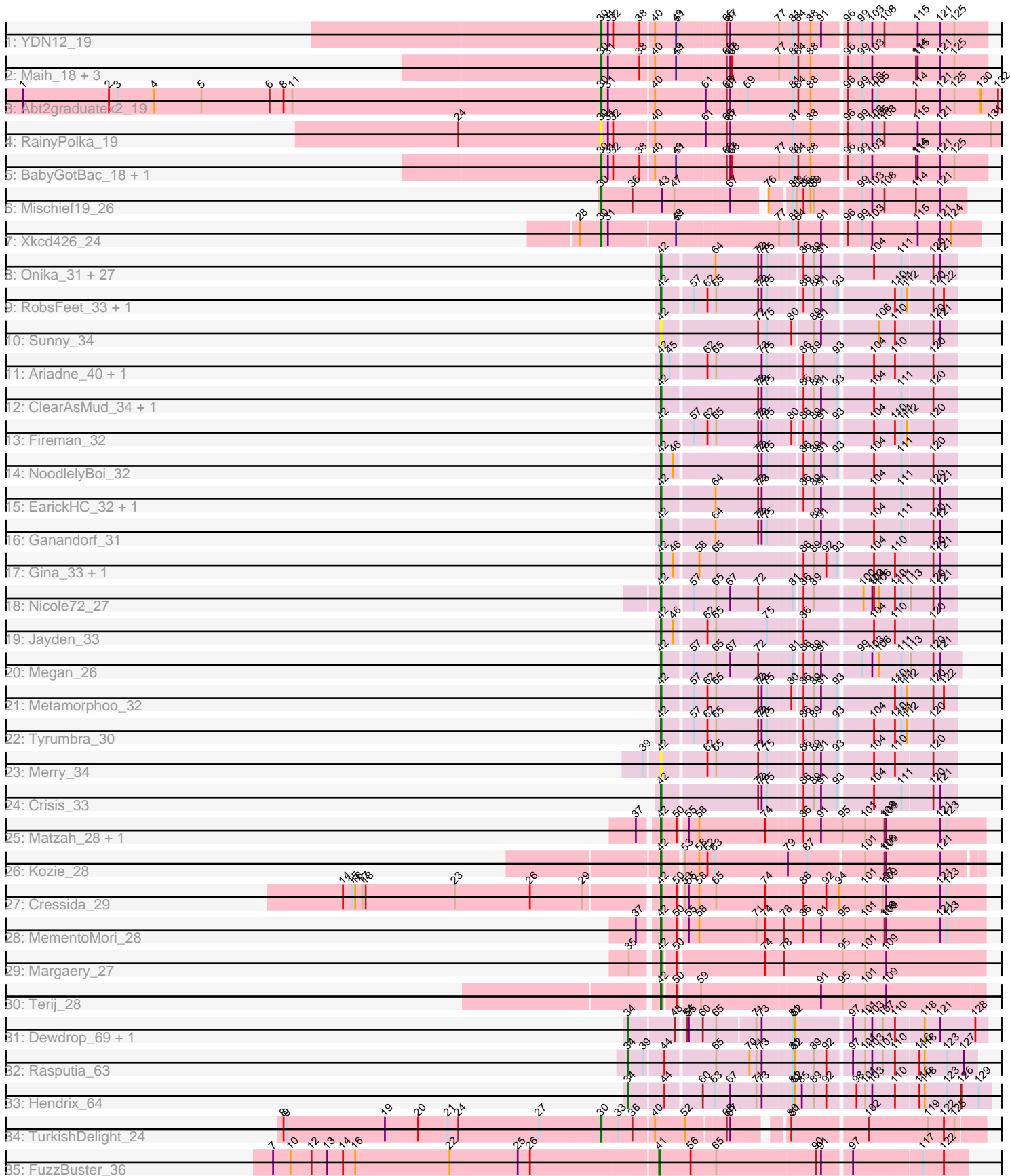


# Pham 202905



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 202905 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202905 has 73 members, 8 are drafts.

Phages represented in each track:

- Track 1 : YDN12\_19
- Track 2 : Maih\_18, BayC\_18, Asis\_18, Salete\_18
- Track 3 : Abt2graduatex2\_19
- Track 4 : RainyPolka\_19
- Track 5 : BabyGotBac\_18, TP1604\_18
- Track 6 : Mischief19\_26
- Track 7 : Xkcd426\_24
- Track 8 : Onika\_31, Piperis\_32, Selwyn23\_33, Yeti\_32, Pulchra\_33, Cranjis\_33, Ramiel05\_31, Glorp\_33, Honeyfin\_33, Antares\_32, Kowalski\_31, Jollipop\_32, PiperSansNom\_32, Phrancesco\_32, Phorgeous\_31, Paschalis\_31, Shotgun\_31, Scumberland\_33, PhedwardCullen\_30, Hermeonysus\_31, CrazyRich\_31, LittleFortune\_33, Savannah\_31, Jefe\_32, Busephilis\_31, BrazzalePHS\_31, Quhwah\_35, PierreOrion\_32
- Track 9 : RobsFeet\_33, Shrubaron\_32
- Track 10 : Sunny\_34
- Track 11 : Ariadne\_40, Smarties\_40
- Track 12 : ClearAsMud\_34, SirFrank\_31
- Track 13 : Fireman\_32
- Track 14 : NoodlelyBoi\_32
- Track 15 : EarickHC\_32, KaiHaiDragon\_32
- Track 16 : Ganandorf\_31
- Track 17 : Gina\_33, Teamocil\_33
- Track 18 : Nicole72\_27
- Track 19 : Jayden\_33
- Track 20 : Megan\_26
- Track 21 : Metamorphoo\_32
- Track 22 : Tyumbra\_30
- Track 23 : Merry\_34
- Track 24 : Crisis\_33
- Track 25 : Matzah\_28, Cinna\_27
- Track 26 : Kozie\_28
- Track 27 : Cressida\_29
- Track 28 : MementoMori\_28
- Track 29 : Margaery\_27
- Track 30 : Terij\_28
- Track 31 : Dewdrop\_69, Leaf\_69
- Track 32 : Rasputia\_63

- Track 33 : Hendrix\_64
- Track 34 : TurkishDelight\_24
- Track 35 : FuzzBuster\_36

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

The start number called the most often in the published annotations is 42, it was called in 49 of the 65 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_32, Ariadne\_40, BrazzalePHS\_31, Busephilis\_31, Cinna\_27, ClearAsMud\_34, Cranjis\_33, CrazyRich\_31, Cressida\_29, Crisis\_33, EarickHC\_32, Fireman\_32, Ganandorf\_31, Gina\_33, Glorp\_33, Hermeonysus\_31, Honeyfin\_33, Jayden\_33, Jefe\_32, Jollipop\_32, KaiHaiDragon\_32, Kowalski\_31, Kozie\_28, LittleFortune\_33, Margaery\_27, Matzah\_28, Megan\_26, MementoMori\_28, Merry\_34, Metamorphoo\_32, Nicole72\_27, NoodlelyBoi\_32, Onika\_31, Paschalis\_31, PhedwardCullen\_30, Phorgeous\_31, Phrancesco\_32, PierreOrion\_32, PiperSansNom\_32, Piperis\_32, Pulchra\_33, Quhwah\_35, Ramiel05\_31, RobsFeet\_33, Savannah\_31, Scumberland\_33, Selwyn23\_33, Shotgun\_31, Shrubaron\_32, SirFrank\_31, Smarties\_40, Sunny\_34, Teamocil\_33, Terij\_28, Tyumbra\_30, Yeti\_32,

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

- 

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

- Abt2graduatex2\_19, Asis\_18, BabyGotBac\_18, BayC\_18, Dewdrop\_69, FuzzBuster\_36, Hendrix\_64, Leaf\_69, Maih\_18, Mischief19\_26, RainyPolka\_19, Rasputia\_63, Salete\_18, TP1604\_18, TurkishDelight\_24, Xkcd426\_24, YDN12\_19,

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

Start 30:

- Found in 12 of 73 ( 16.4% ) of genes in pham
- Manual Annotations of this start: 11 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abt2graduatex2\_19 (BG), Asis\_18 (BG), BabyGotBac\_18 (BG), BayC\_18 (BG), Maih\_18 (BG), Mischief19\_26 (BG), RainyPolka\_19 (BG), Salete\_18 (BG), TP1604\_18 (BG), TurkishDelight\_24 (singleton), Xkcd426\_24 (BG), YDN12\_19 (BG),

Start 34:

- Found in 4 of 73 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 4 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dewdrop\_69 (GC), Hendrix\_64 (GC), Leaf\_69 (GC), Rasputia\_63 (GC),

Start 41:

- Found in 1 of 73 ( 1.4% ) of genes in pham

- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FuzzBuster\_36 (singleton),

Start 42:

- Found in 56 of 73 ( 76.7% ) of genes in pham
- Manual Annotations of this start: 49 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antares\_32 (EC), Ariadne\_40 (EC), BrazzalePHS\_31 (EC), Busephilis\_31 (EC), Cinna\_27 (EI), ClearAsMud\_34 (EC), Cranjis\_33 (EC), CrazyRich\_31 (EC), Cressida\_29 (EI), Crisis\_33 (EC), EarickHC\_32 (EC), Fireman\_32 (EC), Ganandorf\_31 (EC), Gina\_33 (EC), Glorp\_33 (EC), Hermeonysus\_31 (EC), Honeyfin\_33 (EC), Jayden\_33 (EC), Jefe\_32 (EC), Jollipop\_32 (EC), KaiHaiDragon\_32 (EC), Kowalski\_31 (EC), Kozi\_28 (EI), LittleFortune\_33 (EC), Margaery\_27 (EI), Matzah\_28 (EI), Megan\_26 (EC), MementoMori\_28 (EI), Merry\_34 (EC), Metamorphoo\_32 (EC), Nicole72\_27 (EC), NoodlelyBoi\_32 (EC), Onika\_31 (EC), Paschalis\_31 (EC), PhedwardCullen\_30 (EC), Phorgeous\_31 (EC), Phrancesco\_32 (EC), PierreOrion\_32 (EC), PiperSansNom\_32 (EC), Piperis\_32 (EC), Pulchra\_33 (EC), Quhwah\_35 (EC), Ramiel05\_31 (EC), RobsFeet\_33 (EC), Savannah\_31 (EC), Scumberland\_33 (EC), Selwyn23\_33 (EC), Shotgun\_31 (EC), Shrubaron\_32 (EC), SirFrank\_31 (EC), Smarties\_40 (EC), Sunny\_34 (EC), Teamocil\_33 (EC), Terij\_28 (EI), Tyrumbra\_30 (EC), Yeti\_32 (EC),

### Summary by clusters:

There are 5 clusters represented in this pham: GC, singleton, BG, EI, EC,

Info for manual annotations of cluster BG:

- Start number 30 was manually annotated 10 times for cluster BG.

Info for manual annotations of cluster EC:

- Start number 42 was manually annotated 42 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 42 was manually annotated 7 times for cluster EI.

Info for manual annotations of cluster GC:

- Start number 34 was manually annotated 4 times for cluster GC.

### Gene Information:

Gene: Abt2graduatex2\_19 Start: 19085, Stop: 19747, Start Num: 30

Candidate Starts for Abt2graduatex2\_19:

(1, 18098), (2, 18245), (3, 18260), (4, 18323), (5, 18404), (6, 18521), (8, 18545), (11, 18560), (Start: 30 @19085 has 11 MA's), (31, 19097), (40, 19172), (61, 19256), (66, 19289), (67, 19295), (69, 19322), (81, 19400), (84, 19409), (88, 19430), (96, 19484), (99, 19508), (103, 19526), (105, 19535), (114, 19601), (121, 19643), (125, 19667), (130, 19712), (132, 19742),

Gene: Antares\_32 Start: 19129, Stop: 19593, Start Num: 42

Candidate Starts for Antares\_32:

(Start: 42 @19129 has 49 MA's), (64, 19210), (72, 19282), (73, 19288), (75, 19297), (86, 19348), (89, 19366), (91, 19378), (104, 19459), (111, 19504), (120, 19555), (121, 19567),

Gene: Ariadne\_40 Start: 20819, Stop: 21283, Start Num: 42

Candidate Starts for Ariadne\_40:

(Start: 42 @20819 has 49 MA's), (45, 20834), (62, 20888), (65, 20900), (73, 20978), (75, 20987), (86, 21038), (89, 21056), (93, 21095), (104, 21149), (110, 21185), (120, 21245),

Gene: Asis\_18 Start: 18600, Stop: 19238, Start Num: 30

Candidate Starts for Asis\_18:

(Start: 30 @18600 has 11 MA's), (31, 18612), (38, 18666), (40, 18687), (49, 18723), (51, 18726), (66, 18804), (67, 18810), (68, 18813), (77, 18891), (81, 18915), (84, 18924), (88, 18945), (96, 18999), (99, 19023), (103, 19041), (114, 19116), (115, 19119), (121, 19158), (125, 19182),

Gene: BabyGotBac\_18 Start: 18600, Stop: 19238, Start Num: 30

Candidate Starts for BabyGotBac\_18:

(Start: 30 @18600 has 11 MA's), (31, 18612), (32, 18621), (38, 18666), (40, 18687), (49, 18723), (51, 18726), (66, 18804), (67, 18810), (68, 18813), (77, 18891), (81, 18915), (84, 18924), (88, 18945), (96, 18999), (99, 19023), (103, 19041), (114, 19116), (115, 19119), (121, 19158), (125, 19182),

Gene: BayC\_18 Start: 18600, Stop: 19238, Start Num: 30

Candidate Starts for BayC\_18:

(Start: 30 @18600 has 11 MA's), (31, 18612), (38, 18666), (40, 18687), (49, 18723), (51, 18726), (66, 18804), (67, 18810), (68, 18813), (77, 18891), (81, 18915), (84, 18924), (88, 18945), (96, 18999), (99, 19023), (103, 19041), (114, 19116), (115, 19119), (121, 19158), (125, 19182),

Gene: BrazzalePHS\_31 Start: 18924, Stop: 19388, Start Num: 42

Candidate Starts for BrazzalePHS\_31:

(Start: 42 @18924 has 49 MA's), (64, 19005), (72, 19077), (73, 19083), (75, 19092), (86, 19143), (89, 19161), (91, 19173), (104, 19254), (111, 19299), (120, 19350), (121, 19362),

Gene: Busephilis\_31 Start: 18859, Stop: 19323, Start Num: 42

Candidate Starts for Busephilis\_31:

(Start: 42 @18859 has 49 MA's), (64, 18940), (72, 19012), (73, 19018), (75, 19027), (86, 19078), (89, 19096), (91, 19108), (104, 19189), (111, 19234), (120, 19285), (121, 19297),

Gene: Cinna\_27 Start: 18274, Stop: 18807, Start Num: 42

Candidate Starts for Cinna\_27:

(37, 18247), (Start: 42 @18274 has 49 MA's), (50, 18301), (55, 18313), (58, 18331), (74, 18439), (86, 18496), (91, 18526), (95, 18562), (101, 18601), (108, 18634), (109, 18637), (121, 18730), (123, 18742),

Gene: ClearAsMud\_34 Start: 19638, Stop: 20102, Start Num: 42

Candidate Starts for ClearAsMud\_34:

(Start: 42 @19638 has 49 MA's), (72, 19791), (73, 19797), (75, 19806), (86, 19857), (89, 19875), (91, 19887), (93, 19914), (104, 19968), (111, 20013), (120, 20064),

Gene: Cranjis\_33 Start: 19084, Stop: 19548, Start Num: 42

Candidate Starts for Cranjis\_33:

(Start: 42 @19084 has 49 MA's), (64, 19165), (72, 19237), (73, 19243), (75, 19252), (86, 19303), (89, 19321), (91, 19333), (104, 19414), (111, 19459), (120, 19510), (121, 19522),

Gene: CrazyRich\_31 Start: 18893, Stop: 19357, Start Num: 42

Candidate Starts for CrazyRich\_31:

(Start: 42 @18893 has 49 MA's), (64, 18974), (72, 19046), (73, 19052), (75, 19061), (86, 19112), (89, 19130), (91, 19142), (104, 19223), (111, 19268), (120, 19319), (121, 19331),

Gene: Cressida\_29 Start: 18333, Stop: 18866, Start Num: 42

Candidate Starts for Cressida\_29:

(14, 17808), (15, 17823), (16, 17829), (17, 17841), (18, 17847), (23, 18000), (26, 18129), (29, 18219), (Start: 42 @18333 has 49 MA's), (50, 18360), (53, 18366), (55, 18372), (58, 18390), (65, 18417), (74, 18498), (86, 18555), (92, 18594), (94, 18615), (101, 18660), (107, 18690), (109, 18696), (121, 18789), (123, 18801),

Gene: Crisis\_33 Start: 18878, Stop: 19342, Start Num: 42

Candidate Starts for Crisis\_33:

(Start: 42 @18878 has 49 MA's), (72, 19031), (73, 19037), (75, 19046), (86, 19097), (89, 19115), (91, 19127), (93, 19154), (104, 19208), (111, 19253), (120, 19304), (121, 19316),

Gene: Dewdrop\_69 Start: 38303, Stop: 38872, Start Num: 34

Candidate Starts for Dewdrop\_69:

(Start: 34 @38303 has 4 MA's), (48, 38378), (54, 38390), (55, 38393), (60, 38417), (65, 38438), (71, 38501), (73, 38510), (81, 38558), (82, 38561), (97, 38648), (101, 38669), (103, 38681), (107, 38699), (110, 38720), (118, 38765), (121, 38792), (128, 38852),

Gene: EarickHC\_32 Start: 18804, Stop: 19268, Start Num: 42

Candidate Starts for EarickHC\_32:

(Start: 42 @18804 has 49 MA's), (64, 18885), (72, 18957), (73, 18963), (86, 19023), (89, 19041), (91, 19053), (104, 19134), (111, 19179), (120, 19230), (121, 19242),

Gene: Fireman\_32 Start: 18694, Stop: 19158, Start Num: 42

Candidate Starts for Fireman\_32:

(Start: 42 @18694 has 49 MA's), (57, 18742), (62, 18763), (65, 18775), (72, 18847), (73, 18853), (75, 18862), (80, 18898), (86, 18913), (89, 18931), (91, 18943), (93, 18970), (104, 19024), (110, 19060), (111, 19069), (112, 19078), (120, 19120),

Gene: FuzzBuster\_36 Start: 18981, Stop: 19487, Start Num: 41

Candidate Starts for FuzzBuster\_36:

(7, 18327), (10, 18357), (12, 18393), (13, 18420), (14, 18447), (16, 18468), (22, 18630), (25, 18747), (26, 18768), (Start: 41 @18981 has 1 MA's), (56, 19035), (65, 19077), (90, 19242), (91, 19251), (97, 19296), (117, 19410), (122, 19446),

Gene: Ganandorf\_31 Start: 18940, Stop: 19404, Start Num: 42

Candidate Starts for Ganandorf\_31:

(Start: 42 @18940 has 49 MA's), (64, 19021), (72, 19093), (73, 19099), (75, 19108), (89, 19177), (91, 19189), (104, 19270), (111, 19315), (120, 19366), (121, 19378),

Gene: Gina\_33 Start: 18717, Stop: 19181, Start Num: 42

Candidate Starts for Gina\_33:

(Start: 42 @18717 has 49 MA's), (46, 18738), (58, 18774), (65, 18798), (86, 18936), (89, 18954), (92, 18975), (93, 18993), (104, 19047), (110, 19083), (120, 19143), (121, 19155),

Gene: Glorp\_33 Start: 18941, Stop: 19405, Start Num: 42

Candidate Starts for Glorp\_33:

(Start: 42 @18941 has 49 MA's), (64, 19022), (72, 19094), (73, 19100), (75, 19109), (86, 19160), (89, 19178), (91, 19190), (104, 19271), (111, 19316), (120, 19367), (121, 19379),

Gene: Hendrix\_64 Start: 37513, Stop: 38091, Start Num: 34

Candidate Starts for Hendrix\_64:

(Start: 34 @37513 has 4 MA's), (44, 37570), (60, 37627), (63, 37645), (67, 37672), (71, 37717), (73, 37726), (81, 37774), (82, 37777), (85, 37786), (89, 37807), (92, 37828), (98, 37870), (101, 37885), (103, 37897), (110, 37936), (116, 37972), (118, 37981), (123, 38020), (126, 38041), (129, 38071),

Gene: Hermeonysus\_31 Start: 18813, Stop: 19277, Start Num: 42

Candidate Starts for Hermeonysus\_31:

(Start: 42 @18813 has 49 MA's), (64, 18894), (72, 18966), (73, 18972), (75, 18981), (86, 19032), (89, 19050), (91, 19062), (104, 19143), (111, 19188), (120, 19239), (121, 19251),

Gene: Honeyfin\_33 Start: 19128, Stop: 19592, Start Num: 42

Candidate Starts for Honeyfin\_33:

(Start: 42 @19128 has 49 MA's), (64, 19209), (72, 19281), (73, 19287), (75, 19296), (86, 19347), (89, 19365), (91, 19377), (104, 19458), (111, 19503), (120, 19554), (121, 19566),

Gene: Jayden\_33 Start: 18864, Stop: 19328, Start Num: 42

Candidate Starts for Jayden\_33:

(Start: 42 @18864 has 49 MA's), (46, 18885), (62, 18933), (65, 18945), (75, 19032), (86, 19083), (104, 19194), (110, 19230), (120, 19290),

Gene: Jefe\_32 Start: 18865, Stop: 19329, Start Num: 42

Candidate Starts for Jefe\_32:

(Start: 42 @18865 has 49 MA's), (64, 18946), (72, 19018), (73, 19024), (75, 19033), (86, 19084), (89, 19102), (91, 19114), (104, 19195), (111, 19240), (120, 19291), (121, 19303),

Gene: Jollipop\_32 Start: 19210, Stop: 19674, Start Num: 42

Candidate Starts for Jollipop\_32:

(Start: 42 @19210 has 49 MA's), (64, 19291), (72, 19363), (73, 19369), (75, 19378), (86, 19429), (89, 19447), (91, 19459), (104, 19540), (111, 19585), (120, 19636), (121, 19648),

Gene: KaiHaiDragon\_32 Start: 18804, Stop: 19268, Start Num: 42

Candidate Starts for KaiHaiDragon\_32:

(Start: 42 @18804 has 49 MA's), (64, 18885), (72, 18957), (73, 18963), (86, 19023), (89, 19041), (91, 19053), (104, 19134), (111, 19179), (120, 19230), (121, 19242),

Gene: Kowalski\_31 Start: 18920, Stop: 19384, Start Num: 42

Candidate Starts for Kowalski\_31:

(Start: 42 @18920 has 49 MA's), (64, 19001), (72, 19073), (73, 19079), (75, 19088), (86, 19139), (89, 19157), (91, 19169), (104, 19250), (111, 19295), (120, 19346), (121, 19358),

Gene: Kozie\_28 Start: 18580, Stop: 19092, Start Num: 42

Candidate Starts for Kozie\_28:

(Start: 42 @18580 has 49 MA's), (53, 18613), (58, 18637), (62, 18649), (63, 18661), (79, 18778), (87, 18808), (101, 18898), (108, 18931), (109, 18934), (121, 19027),

Gene: Leaf\_69 Start: 38303, Stop: 38872, Start Num: 34

Candidate Starts for Leaf\_69:

(Start: 34 @38303 has 4 MA's), (48, 38378), (54, 38390), (55, 38393), (60, 38417), (65, 38438), (71, 38501), (73, 38510), (81, 38558), (82, 38561), (97, 38648), (101, 38669), (103, 38681), (107, 38699), (110, 38720), (118, 38765), (121, 38792), (128, 38852),

Gene: LittleFortune\_33 Start: 19170, Stop: 19634, Start Num: 42

Candidate Starts for LittleFortune\_33:

(Start: 42 @19170 has 49 MA's), (64, 19251), (72, 19323), (73, 19329), (75, 19338), (86, 19389), (89, 19407), (91, 19419), (104, 19500), (111, 19545), (120, 19596), (121, 19608),

Gene: Maih\_18 Start: 18599, Stop: 19237, Start Num: 30

Candidate Starts for Maih\_18:

(Start: 30 @18599 has 11 MA's), (31, 18611), (38, 18665), (40, 18686), (49, 18722), (51, 18725), (66, 18803), (67, 18809), (68, 18812), (77, 18890), (81, 18914), (84, 18923), (88, 18944), (96, 18998), (99, 19022), (103, 19040), (114, 19115), (115, 19118), (121, 19157), (125, 19181),

Gene: Margaery\_27 Start: 18221, Stop: 18748, Start Num: 42

Candidate Starts for Margaery\_27:

(35, 18182), (Start: 42 @18221 has 49 MA's), (50, 18242), (74, 18380), (78, 18410), (95, 18503), (101, 18542), (109, 18578),

Gene: Matzah\_28 Start: 18251, Stop: 18784, Start Num: 42

Candidate Starts for Matzah\_28:

(37, 18224), (Start: 42 @18251 has 49 MA's), (50, 18278), (55, 18290), (58, 18308), (74, 18416), (86, 18473), (91, 18503), (95, 18539), (101, 18578), (108, 18611), (109, 18614), (121, 18707), (123, 18719),

Gene: Megan\_26 Start: 20113, Stop: 20586, Start Num: 42

Candidate Starts for Megan\_26:

(Start: 42 @20113 has 49 MA's), (57, 20161), (65, 20194), (67, 20218), (72, 20266), (81, 20320), (86, 20332), (89, 20350), (91, 20362), (99, 20422), (103, 20440), (106, 20452), (111, 20488), (113, 20500), (120, 20539), (121, 20551),

Gene: MementoMori\_28 Start: 17980, Stop: 18513, Start Num: 42

Candidate Starts for MementoMori\_28:

(37, 17953), (Start: 42 @17980 has 49 MA's), (50, 18007), (55, 18019), (58, 18037), (71, 18130), (74, 18145), (78, 18175), (86, 18202), (91, 18232), (95, 18268), (101, 18307), (108, 18340), (109, 18343), (121, 18436), (123, 18448),

Gene: Merry\_34 Start: 20977, Stop: 21441, Start Num: 42

Candidate Starts for Merry\_34:

(39, 20953), (Start: 42 @20977 has 49 MA's), (62, 21046), (65, 21058), (72, 21130), (75, 21145), (86, 21196), (89, 21214), (91, 21226), (93, 21253), (104, 21307), (110, 21343), (120, 21403),

Gene: Metamorphoo\_32 Start: 18716, Stop: 19180, Start Num: 42

Candidate Starts for Metamorphoo\_32:

(Start: 42 @18716 has 49 MA's), (57, 18764), (62, 18785), (65, 18797), (72, 18869), (73, 18875), (75, 18884), (80, 18920), (86, 18935), (89, 18953), (91, 18965), (93, 18992), (110, 19082), (111, 19091), (112, 19100), (120, 19142), (122, 19160),

Gene: Mischief19\_26 Start: 28535, Stop: 29116, Start Num: 30

Candidate Starts for Mischief19\_26:

(Start: 30 @28535 has 11 MA's), (36, 28589), (43, 28640), (47, 28661), (67, 28754), (76, 28799), (81, 28832), (83, 28838), (86, 28850), (88, 28862), (89, 28868), (99, 28940), (103, 28958), (108, 28979), (114, 29030), (121, 29072),

Gene: Nicole72\_27 Start: 20490, Stop: 20954, Start Num: 42

Candidate Starts for Nicole72\_27:



(Start: 42 @20490 has 49 MA's), (57, 20538), (65, 20571), (67, 20595), (72, 20643), (81, 20697), (86, 20709), (89, 20727), (100, 20802), (103, 20817), (104, 20820), (106, 20829), (110, 20856), (111, 20865), (113, 20877), (120, 20916), (121, 20928),

Gene: NoodlelyBoi\_32 Start: 19248, Stop: 19712, Start Num: 42

Candidate Starts for NoodlelyBoi\_32:

(Start: 42 @19248 has 49 MA's), (46, 19269), (72, 19401), (73, 19407), (75, 19416), (86, 19467), (89, 19485), (91, 19497), (93, 19524), (104, 19578), (111, 19623), (120, 19674),

Gene: Onika\_31 Start: 18895, Stop: 19359, Start Num: 42

Candidate Starts for Onika\_31:

(Start: 42 @18895 has 49 MA's), (64, 18976), (72, 19048), (73, 19054), (75, 19063), (86, 19114), (89, 19132), (91, 19144), (104, 19225), (111, 19270), (120, 19321), (121, 19333),

Gene: Paschalis\_31 Start: 18908, Stop: 19372, Start Num: 42

Candidate Starts for Paschalis\_31:

(Start: 42 @18908 has 49 MA's), (64, 18989), (72, 19061), (73, 19067), (75, 19076), (86, 19127), (89, 19145), (91, 19157), (104, 19238), (111, 19283), (120, 19334), (121, 19346),

Gene: PhedwardCullen\_30 Start: 18653, Stop: 19117, Start Num: 42

Candidate Starts for PhedwardCullen\_30:

(Start: 42 @18653 has 49 MA's), (64, 18734), (72, 18806), (73, 18812), (75, 18821), (86, 18872), (89, 18890), (91, 18902), (104, 18983), (111, 19028), (120, 19079), (121, 19091),

Gene: Phorgeous\_31 Start: 18762, Stop: 19226, Start Num: 42

Candidate Starts for Phorgeous\_31:

(Start: 42 @18762 has 49 MA's), (64, 18843), (72, 18915), (73, 18921), (75, 18930), (86, 18981), (89, 18999), (91, 19011), (104, 19092), (111, 19137), (120, 19188), (121, 19200),

Gene: Phrancesco\_32 Start: 19040, Stop: 19504, Start Num: 42

Candidate Starts for Phrancesco\_32:

(Start: 42 @19040 has 49 MA's), (64, 19121), (72, 19193), (73, 19199), (75, 19208), (86, 19259), (89, 19277), (91, 19289), (104, 19370), (111, 19415), (120, 19466), (121, 19478),

Gene: PierreOrion\_32 Start: 19063, Stop: 19527, Start Num: 42

Candidate Starts for PierreOrion\_32:

(Start: 42 @19063 has 49 MA's), (64, 19144), (72, 19216), (73, 19222), (75, 19231), (86, 19282), (89, 19300), (91, 19312), (104, 19393), (111, 19438), (120, 19489), (121, 19501),

Gene: PiperSansNom\_32 Start: 19215, Stop: 19679, Start Num: 42

Candidate Starts for PiperSansNom\_32:

(Start: 42 @19215 has 49 MA's), (64, 19296), (72, 19368), (73, 19374), (75, 19383), (86, 19434), (89, 19452), (91, 19464), (104, 19545), (111, 19590), (120, 19641), (121, 19653),

Gene: Piperis\_32 Start: 18885, Stop: 19349, Start Num: 42

Candidate Starts for Piperis\_32:

(Start: 42 @18885 has 49 MA's), (64, 18966), (72, 19038), (73, 19044), (75, 19053), (86, 19104), (89, 19122), (91, 19134), (104, 19215), (111, 19260), (120, 19311), (121, 19323),

Gene: Pulchra\_33 Start: 19285, Stop: 19749, Start Num: 42

Candidate Starts for Pulchra\_33:

(Start: 42 @19285 has 49 MA's), (64, 19366), (72, 19438), (73, 19444), (75, 19453), (86, 19504), (89, 19522), (91, 19534), (104, 19615), (111, 19660), (120, 19711), (121, 19723),

Gene: Quhwah\_35 Start: 19511, Stop: 19975, Start Num: 42

Candidate Starts for Quhwah\_35:

(Start: 42 @19511 has 49 MA's), (64, 19592), (72, 19664), (73, 19670), (75, 19679), (86, 19730), (89, 19748), (91, 19760), (104, 19841), (111, 19886), (120, 19937), (121, 19949),

Gene: RainyPolka\_19 Start: 18941, Stop: 19603, Start Num: 30

Candidate Starts for RainyPolka\_19:

(24, 18701), (Start: 30 @18941 has 11 MA's), (31, 18953), (32, 18962), (40, 19028), (61, 19112), (66, 19145), (67, 19151), (81, 19256), (88, 19286), (96, 19340), (99, 19364), (103, 19382), (105, 19391), (108, 19403), (115, 19460), (121, 19499), (131, 19586),

Gene: Ramiel05\_31 Start: 18920, Stop: 19384, Start Num: 42

Candidate Starts for Ramiel05\_31:

(Start: 42 @18920 has 49 MA's), (64, 19001), (72, 19073), (73, 19079), (75, 19088), (86, 19139), (89, 19157), (91, 19169), (104, 19250), (111, 19295), (120, 19346), (121, 19358),

Gene: Rasputia\_63 Start: 37173, Stop: 37721, Start Num: 34

Candidate Starts for Rasputia\_63:

(Start: 34 @37173 has 4 MA's), (39, 37200), (44, 37230), (65, 37308), (70, 37365), (71, 37377), (73, 37386), (81, 37434), (82, 37437), (89, 37467), (92, 37488), (97, 37524), (101, 37545), (103, 37557), (107, 37575), (110, 37596), (116, 37632), (118, 37641), (123, 37680), (127, 37701),

Gene: RobsFeet\_33 Start: 18997, Stop: 19461, Start Num: 42

Candidate Starts for RobsFeet\_33:

(Start: 42 @18997 has 49 MA's), (57, 19045), (62, 19066), (65, 19078), (72, 19150), (73, 19156), (75, 19165), (86, 19216), (89, 19234), (91, 19246), (93, 19273), (110, 19363), (111, 19372), (112, 19381), (120, 19423), (122, 19441),

Gene: Salete\_18 Start: 18600, Stop: 19238, Start Num: 30

Candidate Starts for Salete\_18:

(Start: 30 @18600 has 11 MA's), (31, 18612), (38, 18666), (40, 18687), (49, 18723), (51, 18726), (66, 18804), (67, 18810), (68, 18813), (77, 18891), (81, 18915), (84, 18924), (88, 18945), (96, 18999), (99, 19023), (103, 19041), (114, 19116), (115, 19119), (121, 19158), (125, 19182),

Gene: Savannah\_31 Start: 18947, Stop: 19411, Start Num: 42

Candidate Starts for Savannah\_31:

(Start: 42 @18947 has 49 MA's), (64, 19028), (72, 19100), (73, 19106), (75, 19115), (86, 19166), (89, 19184), (91, 19196), (104, 19277), (111, 19322), (120, 19373), (121, 19385),

Gene: Scumberland\_33 Start: 19136, Stop: 19600, Start Num: 42

Candidate Starts for Scumberland\_33:

(Start: 42 @19136 has 49 MA's), (64, 19217), (72, 19289), (73, 19295), (75, 19304), (86, 19355), (89, 19373), (91, 19385), (104, 19466), (111, 19511), (120, 19562), (121, 19574),

Gene: Selwyn23\_33 Start: 19113, Stop: 19577, Start Num: 42

Candidate Starts for Selwyn23\_33:

(Start: 42 @19113 has 49 MA's), (64, 19194), (72, 19266), (73, 19272), (75, 19281), (86, 19332), (89, 19350), (91, 19362), (104, 19443), (111, 19488), (120, 19539), (121, 19551),

Gene: Shotgun\_31 Start: 18746, Stop: 19210, Start Num: 42

Candidate Starts for Shotgun\_31:

(Start: 42 @18746 has 49 MA's), (64, 18827), (72, 18899), (73, 18905), (75, 18914), (86, 18965), (89, 18983), (91, 18995), (104, 19076), (111, 19121), (120, 19172), (121, 19184),

Gene: Shrubaron\_32 Start: 18631, Stop: 19095, Start Num: 42

Candidate Starts for Shrubaron\_32:

(Start: 42 @18631 has 49 MA's), (57, 18679), (62, 18700), (65, 18712), (72, 18784), (73, 18790), (75, 18799), (86, 18850), (89, 18868), (91, 18880), (93, 18907), (110, 18997), (111, 19006), (112, 19015), (120, 19057), (122, 19075),

Gene: SirFrank\_31 Start: 18848, Stop: 19312, Start Num: 42

Candidate Starts for SirFrank\_31:

(Start: 42 @18848 has 49 MA's), (72, 19001), (73, 19007), (75, 19016), (86, 19067), (89, 19085), (91, 19097), (93, 19124), (104, 19178), (111, 19223), (120, 19274),

Gene: Smarties\_40 Start: 20819, Stop: 21283, Start Num: 42

Candidate Starts for Smarties\_40:

(Start: 42 @20819 has 49 MA's), (45, 20834), (62, 20888), (65, 20900), (73, 20978), (75, 20987), (86, 21038), (89, 21056), (93, 21095), (104, 21149), (110, 21185), (120, 21245),

Gene: Sunny\_34 Start: 20982, Stop: 21446, Start Num: 42

Candidate Starts for Sunny\_34:

(Start: 42 @20982 has 49 MA's), (72, 21135), (75, 21150), (80, 21186), (89, 21219), (91, 21231), (106, 21321), (110, 21348), (120, 21408), (121, 21420),

Gene: TP1604\_18 Start: 18600, Stop: 19238, Start Num: 30

Candidate Starts for TP1604\_18:

(Start: 30 @18600 has 11 MA's), (31, 18612), (32, 18621), (38, 18666), (40, 18687), (49, 18723), (51, 18726), (66, 18804), (67, 18810), (68, 18813), (77, 18891), (81, 18915), (84, 18924), (88, 18945), (96, 18999), (99, 19023), (103, 19041), (114, 19116), (115, 19119), (121, 19158), (125, 19182),

Gene: Teamocil\_33 Start: 18816, Stop: 19280, Start Num: 42

Candidate Starts for Teamocil\_33:

(Start: 42 @18816 has 49 MA's), (46, 18837), (58, 18873), (65, 18897), (86, 19035), (89, 19053), (92, 19074), (93, 19092), (104, 19146), (110, 19182), (120, 19242), (121, 19254),

Gene: Terij\_28 Start: 18304, Stop: 18828, Start Num: 42

Candidate Starts for Terij\_28:

(Start: 42 @18304 has 49 MA's), (50, 18325), (59, 18358), (91, 18550), (95, 18586), (101, 18625), (109, 18661),

Gene: TurkishDelight\_24 Start: 20839, Stop: 21438, Start Num: 30

Candidate Starts for TurkishDelight\_24:

(8, 20296), (9, 20302), (19, 20470), (20, 20527), (21, 20578), (24, 20596), (27, 20734), (Start: 30 @20839 has 11 MA's), (33, 20869), (36, 20893), (40, 20926), (52, 20977), (66, 21040), (67, 21046), (80, 21118), (81, 21121), (102, 21241), (119, 21343), (122, 21370), (125, 21388),

Gene: Tyrumbra\_30 Start: 18037, Stop: 18501, Start Num: 42

Candidate Starts for Tyrumbra\_30:

(Start: 42 @18037 has 49 MA's), (57, 18085), (62, 18106), (65, 18118), (72, 18190), (73, 18196), (75, 18205), (86, 18256), (89, 18274), (93, 18313), (104, 18367), (110, 18403), (111, 18412), (112, 18421), (120, 18463),

Gene: Xkcd426\_24 Start: 26011, Stop: 26637, Start Num: 30

Candidate Starts for Xkcd426\_24:

(28, 25975), (Start: 30 @26011 has 11 MA's), (31, 26023), (49, 26134), (51, 26137), (77, 26302), (81, 26326), (84, 26335), (91, 26374), (96, 26410), (99, 26434), (103, 26452), (115, 26530), (121, 26569), (124, 26587),

Gene: YDN12\_19 Start: 18536, Stop: 19174, Start Num: 30

Candidate Starts for YDN12\_19:

(Start: 30 @18536 has 11 MA's), (31, 18548), (32, 18557), (38, 18602), (40, 18623), (49, 18659), (51, 18662), (66, 18740), (67, 18746), (77, 18827), (81, 18851), (84, 18860), (88, 18881), (91, 18899), (96, 18935), (99, 18959), (103, 18977), (108, 18998), (115, 19055), (121, 19094), (125, 19118),

Gene: Yeti\_32 Start: 18915, Stop: 19379, Start Num: 42

Candidate Starts for Yeti\_32:

(Start: 42 @18915 has 49 MA's), (64, 18996), (72, 19068), (73, 19074), (75, 19083), (86, 19134), (89, 19152), (91, 19164), (104, 19245), (111, 19290), (120, 19341), (121, 19353),