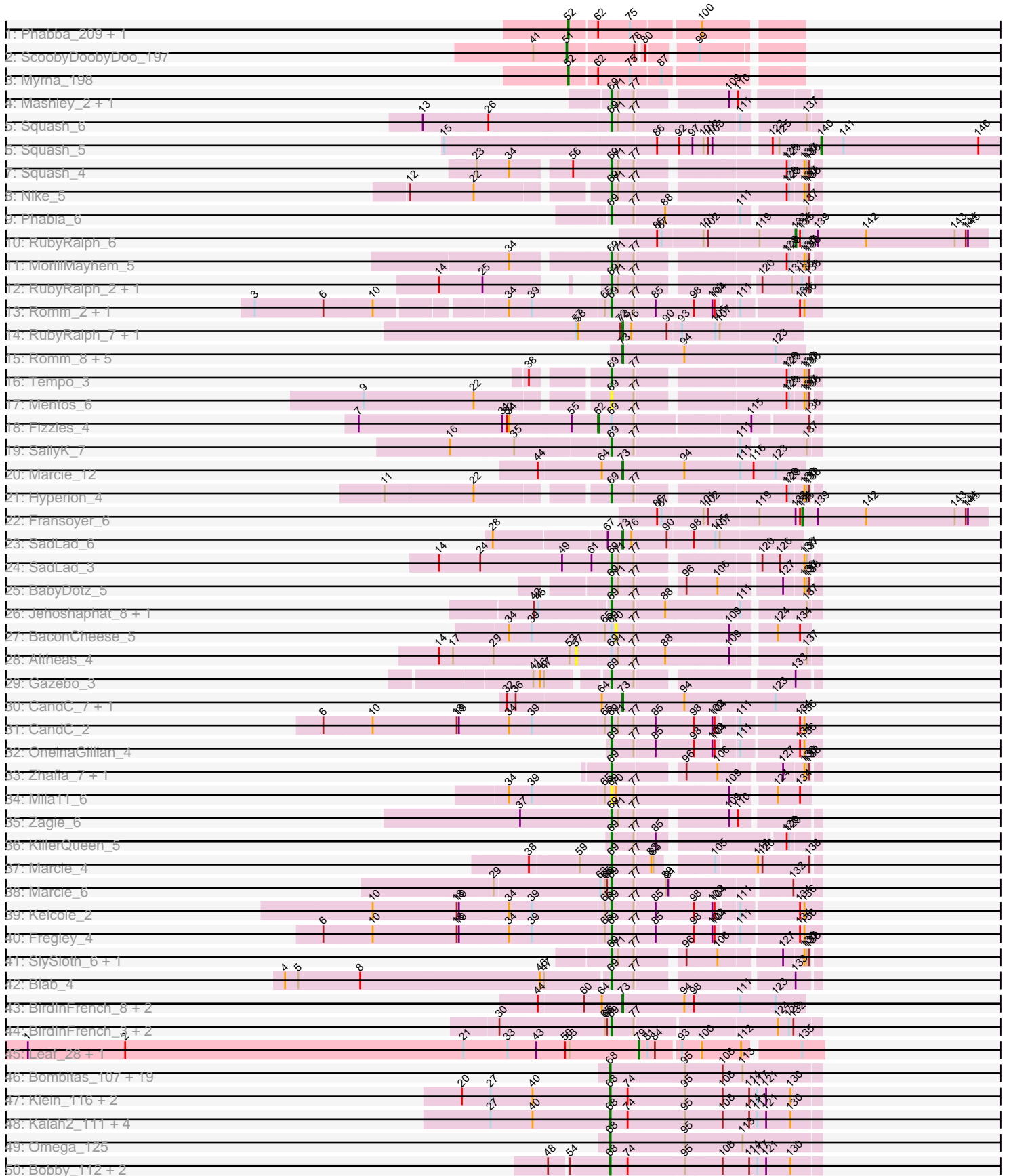
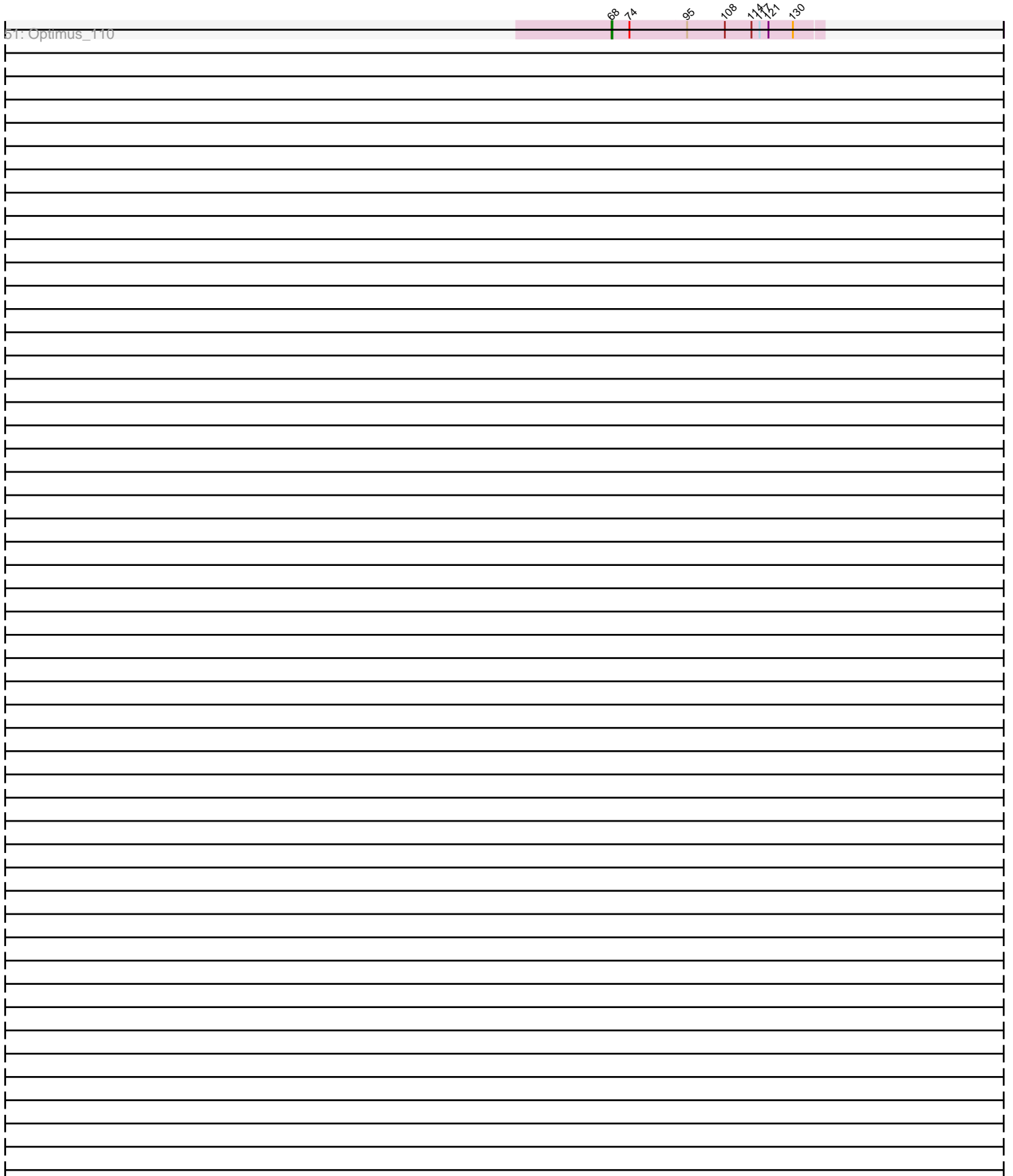


Pham 311441



Pham 311441



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 311441 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311441 has 97 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Phabba\_209, Greely\_205
- Track 2 : ScoobyDoobyDoo\_197
- Track 3 : Myrna\_198
- Track 4 : Mashley\_2, AluminumJesus\_2
- Track 5 : Squash\_6
- Track 6 : Squash\_5
- Track 7 : Squash\_4
- Track 8 : Nike\_5
- Track 9 : Phabia\_6
- Track 10 : RubyRalph\_6
- Track 11 : MorillMayhem\_5
- Track 12 : RubyRalph\_2, Fransoyer\_2
- Track 13 : Romm\_2, RobinRose\_3
- Track 14 : RubyRalph\_7, Fransoyer\_7
- Track 15 : Romm\_8, Tempo\_7, Kelcole\_6, OneinaGillian\_7, RobinRose\_8, KillerQueen\_8
- Track 16 : Tempo\_3
- Track 17 : Mentos\_6
- Track 18 : Fizzles\_4
- Track 19 : SallyK\_7
- Track 20 : Marcie\_12
- Track 21 : Hyperion\_4
- Track 22 : Fransoyer\_6
- Track 23 : SadLad\_6
- Track 24 : SadLad\_3
- Track 25 : BabyDotz\_5
- Track 26 : Jehoshaphat\_8, Teehee\_8
- Track 27 : BaconCheese\_5
- Track 28 : Altheas\_4
- Track 29 : Gazebo\_3
- Track 30 : CandC\_7, Fregley\_9
- Track 31 : CandC\_2
- Track 32 : OneinaGillian\_4
- Track 33 : Zhafia\_7, Namago\_4
- Track 34 : Mila11\_6
- Track 35 : Zagie\_6
- Track 36 : KillerQueen\_5

- Track 37 : Marcie\_4
- Track 38 : Marcie\_6
- Track 39 : Kelcole\_2
- Track 40 : Fregley\_4
- Track 41 : SlySloth\_6, Judebell\_6
- Track 42 : Blab\_4
- Track 43 : BirdInFrench\_8, Wilca\_8, Pepe25\_7
- Track 44 : BirdInFrench\_3, Wilca\_3, Pepe25\_2
- Track 45 : Leaf\_28, Dewdrop\_28
- Track 46 : Bombitas\_107, Lucky2013\_111, Shaboozey\_112, HokkenD\_109, BronnyJames\_112, Courthouse\_109, Gonephishing\_108, Nekros\_116, Ariel\_114, Yeet\_110, LittleE\_119, Hannaconda\_105, Schatzie\_114, Nibley\_107, KashFlow\_111, Porcelain\_114, Squint\_112, Superphikiman\_111, MiaZeal\_114, Odette\_121
- Track 47 : Klein\_116, EricMillard\_111, BAKA\_119
- Track 48 : Kalah2\_111, Zelink\_114, ThreeRngTarjay\_115, Wanda\_119, Duke13\_114
- Track 49 : Omega\_125
- Track 50 : Bobby\_112, Hidrated\_103, Marleymoo\_102
- Track 51 : Optimus\_110

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

The start number called the most often in the published annotations is 69, it was called in 33 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AluminumJesus\_2, BabyDotz\_5, BirdInFrench\_3, Blab\_4, CandC\_2, Fransoyer\_2, Fregley\_4, Gazebo\_3, Hyperion\_4, Jehoshaphat\_8, Judebell\_6, Kelcole\_2, KillerQueen\_5, Marcie\_4, Marcie\_6, Mashley\_2, Mentos\_6, Mila11\_6, MorillMayhem\_5, Namago\_4, Nike\_5, OneinaGillian\_4, Pepe25\_2, Phabia\_6, RobinRose\_3, Romm\_2, RubyRalph\_2, SadLad\_3, SallyK\_7, SlySloth\_6, Squash\_4, Squash\_6, Teehee\_8, Tempo\_3, Wilca\_3, Zagie\_6, Zhafia\_7,

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

- Altheas\_4, BaconCheese\_5, Fizzles\_4,

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

- Ariel\_114, BAKA\_119, BirdInFrench\_8, Bobby\_112, Bombitas\_107, BronnyJames\_112, CandC\_7, Courthouse\_109, Dewdrop\_28, Duke13\_114, EricMillard\_111, Fransoyer\_6, Fransoyer\_7, Fregley\_9, Gonephishing\_108, Greely\_205, Hannaconda\_105, Hidrated\_103, HokkenD\_109, Kalah2\_111, KashFlow\_111, Kelcole\_6, KillerQueen\_8, Klein\_116, Leaf\_28, LittleE\_119, Lucky2013\_111, Marcie\_12, Marleymoo\_102, MiaZeal\_114, Myrna\_198, Nekros\_116, Nibley\_107, Odette\_121, Omega\_125, OneinaGillian\_7, Optimus\_110, Pepe25\_7, Phabba\_209, Porcelain\_114, RobinRose\_8, Romm\_8, RubyRalph\_6, RubyRalph\_7, SadLad\_6, Schatzie\_114, ScoobyDoobyDoo\_197, Shaboozey\_112, Squash\_5, Squint\_112, Superphikiman\_111, Tempo\_7, ThreeRngTarjay\_115, Wanda\_119, Wilca\_8, Yeet\_110, Zelink\_114,

**Summary by start number:**

Start 51:

- Found in 1 of 97 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ScoobyDoobyDoo\_197 (C2),

Start 52:

- Found in 3 of 97 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 2 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Greely\_205 (C2), Myrna\_198 (C2), Phabba\_209 (C2),

Start 57:

- Found in 3 of 97 ( 3.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Altheas\_4 (EG),

Start 62:

- Found in 4 of 97 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Fizzles\_4 (EG),

Start 68:

- Found in 33 of 97 ( 34.0% ) of genes in pham
- Manual Annotations of this start: 25 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_114 (J), BAKA\_119 (J), Bobby\_112 (J), Bombitas\_107 (J), BronnyJames\_112 (J), Courthouse\_109 (J), Duke13\_114 (J), EricMillard\_111 (J), Gonephishing\_108 (J), Hannaconda\_105 (J), Hidrated\_103 (J), HokkenD\_109 (J), Kalah2\_111 (J), KashFlow\_111 (J), Klein\_116 (J), LittleE\_119 (J), Lucky2013\_111 (J), Marleymoo\_102 (J), MiaZeal\_114 (J), Nekros\_116 (J), Nibley\_107 (J), Odette\_121 (J), Omega\_125 (J), Optimus\_110 (J), Porcelain\_114 (J), Schatzie\_114 (J), Shaboozey\_112 (J), Squint\_112 (J), Superphikiman\_111 (J), ThreeRngTarjay\_115 (J), Wanda\_119 (J), Yeet\_110 (J), Zelink\_114 (J),

Start 69:

- Found in 40 of 97 ( 41.2% ) of genes in pham
- Manual Annotations of this start: 33 of 81
- Called 92.5% of time when present
- Phage (with cluster) where this start called: AluminumJesus\_2 (EG), BabyDotz\_5 (EG), BirdInFrench\_3 (EG), Blab\_4 (EG), CandC\_2 (EG), Fransoyer\_2 (EG), Fregley\_4 (EG), Gazebo\_3 (EG), Hyperion\_4 (EG), Jehoshaphat\_8 (EG), Judebell\_6 (EG), Kelcole\_2 (EG), KillerQueen\_5 (EG), Marcie\_4 (EG), Marcie\_6 (EG), Mashley\_2 (EG), Mentos\_6 (EG), Mila11\_6 (EG), MorillMayhem\_5 (EG), Namago\_4 (EG), Nike\_5 (EG), OneinaGillian\_4 (EG), Pepe25\_2 (EG), Phabia\_6 (EG), RobinRose\_3 (EG), Romm\_2 (EG), RubyRalph\_2 (EG), SadLad\_3 (EG), SallyK\_7 (EG), SlySloth\_6 (EG), Squash\_4 (EG), Squash\_6 (EG), Teehee\_8 (EG), Tempo\_3 (EG), Wilca\_3 (EG), Zagie\_6 (EG), Zhafia\_7 (EG),

#### Start 70:

- Found in 2 of 97 ( 2.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: BaconCheese\_5 (EG),

#### Start 73:

- Found in 15 of 97 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 14 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BirdInFrench\_8 (EG), CandC\_7 (EG), Fransoyer\_7 (EG), Fregley\_9 (EG), Kelcole\_6 (EG), KillerQueen\_8 (EG), Marcie\_12 (EG), OneinaGillian\_7 (EG), Pepe25\_7 (EG), RobinRose\_8 (EG), Romm\_8 (EG), RubyRalph\_7 (EG), SadLad\_6 (EG), Tempo\_7 (EG), Wilca\_8 (EG),

#### Start 79:

- Found in 2 of 97 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dewdrop\_28 (GC), Leaf\_28 (GC),

#### Start 133:

- Found in 4 of 97 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 25.0% of time when present
- Phage (with cluster) where this start called: RubyRalph\_6 (EG),

#### Start 135:

- Found in 6 of 97 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Fransoyer\_6 (EG),

#### Start 140:

- Found in 1 of 97 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Squash\_5 (EG),

### **Summary by clusters:**

There are 4 clusters represented in this pham: C2, EG, J, GC,

#### Info for manual annotations of cluster C2:

- Start number 51 was manually annotated 1 time for cluster C2.
- Start number 52 was manually annotated 2 times for cluster C2.

#### Info for manual annotations of cluster EG:

- Start number 62 was manually annotated 1 time for cluster EG.
- Start number 69 was manually annotated 33 times for cluster EG.
- Start number 73 was manually annotated 14 times for cluster EG.
- Start number 133 was manually annotated 1 time for cluster EG.
- Start number 135 was manually annotated 1 time for cluster EG.

•Start number 140 was manually annotated 1 time for cluster EG.

Info for manual annotations of cluster GC:

•Start number 79 was manually annotated 2 times for cluster GC.

Info for manual annotations of cluster J:

•Start number 68 was manually annotated 25 times for cluster J.

### **Gene Information:**

Gene: Altheas\_4 Start: 1637, Stop: 1335, Start Num: 57

Candidate Starts for Altheas\_4:

(14, 1820), (17, 1802), (29, 1748), (53, 1646), (57, 1637), (Start: 69 @1592 has 33 MA's), (71, 1583), (77, 1562), (88, 1523), (109, 1442), (137, 1352),

Gene: AluminumJesus\_2 Start: 1146, Stop: 907, Start Num: 69

Candidate Starts for AluminumJesus\_2:

(Start: 69 @1146 has 33 MA's), (71, 1137), (77, 1116), (109, 1008), (110, 996),

Gene: Ariel\_114 Start: 62150, Stop: 62425, Start Num: 68

Candidate Starts for Ariel\_114:

(Start: 68 @62150 has 25 MA's), (95, 62249), (108, 62297), (113, 62324),

Gene: BAKA\_119 Start: 66443, Stop: 66718, Start Num: 68

Candidate Starts for BAKA\_119:

(20, 66242), (27, 66281), (40, 66338), (Start: 68 @66443 has 25 MA's), (74, 66467), (95, 66542), (108, 66590), (114, 66626), (117, 66635), (121, 66647), (130, 66680),

Gene: BabyDotz\_5 Start: 2093, Stop: 1857, Start Num: 69

Candidate Starts for BabyDotz\_5:

(Start: 69 @2093 has 33 MA's), (71, 2084), (77, 2063), (96, 2009), (106, 1970), (127, 1898), (136, 1874), (137, 1871), (138, 1868),

Gene: BaconCheese\_5 Start: 1813, Stop: 1574, Start Num: 70

Candidate Starts for BaconCheese\_5:

(34, 1954), (39, 1924), (65, 1828), (Start: 69 @1819 has 33 MA's), (70, 1813), (77, 1789), (109, 1669), (124, 1618), (134, 1588),

Gene: BirdInFrench\_8 Start: 2337, Stop: 2095, Start Num: 73

Candidate Starts for BirdInFrench\_8:

(44, 2448), (60, 2388), (64, 2364), (Start: 73 @2337 has 14 MA's), (94, 2253), (98, 2241), (111, 2181), (123, 2133),

Gene: BirdInFrench\_3 Start: 1383, Stop: 1120, Start Num: 69

Candidate Starts for BirdInFrench\_3:

(30, 1533), (65, 1392), (66, 1389), (Start: 69 @1383 has 33 MA's), (77, 1353), (124, 1176), (129, 1161), (132, 1155),

Gene: Blab\_4 Start: 1367, Stop: 1125, Start Num: 69

Candidate Starts for Blab\_4:

(4, 1802), (5, 1784), (8, 1700), (46, 1457), (47, 1451), (Start: 69 @1367 has 33 MA's), (77, 1337), (Start: 133 @1154 has 1 MA's),

Gene: Bobby\_112 Start: 67871, Stop: 68146, Start Num: 68

Candidate Starts for Bobby\_112:

(48, 67796), (54, 67820), (Start: 68 @67871 has 25 MA's), (74, 67895), (95, 67970), (108, 68018), (114, 68054), (117, 68063), (121, 68075), (130, 68108),

Gene: Bombitas\_107 Start: 63715, Stop: 63990, Start Num: 68

Candidate Starts for Bombitas\_107:

(Start: 68 @63715 has 25 MA's), (95, 63814), (108, 63862), (113, 63889),

Gene: BronnyJames\_112 Start: 62639, Stop: 62914, Start Num: 68

Candidate Starts for BronnyJames\_112:

(Start: 68 @62639 has 25 MA's), (95, 62738), (108, 62786), (113, 62813),

Gene: CandC\_7 Start: 2104, Stop: 1862, Start Num: 73

Candidate Starts for CandC\_7:

(32, 2257), (36, 2245), (64, 2131), (Start: 73 @2104 has 14 MA's), (94, 2020), (123, 1900),

Gene: CandC\_2 Start: 1102, Stop: 839, Start Num: 69

Candidate Starts for CandC\_2:

(6, 1486), (10, 1420), (18, 1306), (19, 1303), (34, 1237), (39, 1207), (65, 1111), (Start: 69 @1102 has 33 MA's), (71, 1093), (77, 1072), (85, 1045), (98, 994), (103, 973), (104, 970), (111, 943), (134, 868), (136, 862),

Gene: Courthouse\_109 Start: 61750, Stop: 62025, Start Num: 68

Candidate Starts for Courthouse\_109:

(Start: 68 @61750 has 25 MA's), (95, 61849), (108, 61897), (113, 61924),

Gene: Dewdrop\_28 Start: 11724, Stop: 11948, Start Num: 79

Candidate Starts for Dewdrop\_28:

(1, 10896), (2, 11028), (21, 11487), (33, 11547), (43, 11586), (50, 11625), (53, 11631), (Start: 79 @11724 has 2 MA's), (81, 11736), (84, 11745), (93, 11775), (100, 11799), (112, 11850), (Start: 135 @11919 has 1 MA's),

Gene: Duke13\_114 Start: 64111, Stop: 64386, Start Num: 68

Candidate Starts for Duke13\_114:

(27, 63949), (40, 64006), (Start: 68 @64111 has 25 MA's), (74, 64135), (95, 64210), (108, 64258), (114, 64294), (117, 64303), (121, 64315), (130, 64348),

Gene: EricMillard\_111 Start: 66080, Stop: 66355, Start Num: 68

Candidate Starts for EricMillard\_111:

(20, 65879), (27, 65918), (40, 65975), (Start: 68 @66080 has 25 MA's), (74, 66104), (95, 66179), (108, 66227), (114, 66263), (117, 66272), (121, 66284), (130, 66317),

Gene: Fizzles\_4 Start: 1765, Stop: 1490, Start Num: 62

Candidate Starts for Fizzles\_4:

(7, 2089), (31, 1894), (32, 1888), (34, 1885), (55, 1801), (Start: 62 @1765 has 1 MA's), (Start: 69 @1747 has 33 MA's), (77, 1717), (115, 1573), (138, 1501),

Gene: Fransoyer\_7 Start: 2353, Stop: 2120, Start Num: 73

Candidate Starts for Fransoyer\_7:

(57, 2416), (58, 2413), (72, 2356), (Start: 73 @2353 has 14 MA's), (76, 2341), (90, 2293), (93, 2275), (105, 2233), (107, 2227),

Gene: Fransoyer\_6 Start: 2120, Stop: 1869, Start Num: 135

Candidate Starts for Fransoyer\_6:

(86, 2306), (87, 2300), (101, 2249), (102, 2243), (119, 2177), (Start: 133 @2129 has 1 MA's), (134, 2123), (Start: 135 @2120 has 1 MA's), (139, 2099), (142, 2033), (143, 1913), (144, 1898), (145, 1895),

Gene: Fransoyer\_2 Start: 1080, Stop: 841, Start Num: 69

Candidate Starts for Fransoyer\_2:

(14, 1230), (25, 1173), (Start: 69 @1080 has 33 MA's), (71, 1071), (77, 1050), (120, 909), (131, 873), (Start: 135 @861 has 1 MA's), (138, 852),

Gene: Fregley\_4 Start: 1640, Stop: 1377, Start Num: 69

Candidate Starts for Fregley\_4:

(6, 2024), (10, 1958), (18, 1844), (19, 1841), (34, 1775), (39, 1745), (65, 1649), (Start: 69 @1640 has 33 MA's), (77, 1610), (85, 1583), (98, 1532), (103, 1511), (104, 1508), (111, 1481), (134, 1406), (136, 1400),

Gene: Fregley\_9 Start: 2642, Stop: 2400, Start Num: 73

Candidate Starts for Fregley\_9:

(32, 2795), (36, 2783), (64, 2669), (Start: 73 @2642 has 14 MA's), (94, 2558), (123, 2438),

Gene: Gazebo\_3 Start: 1551, Stop: 1309, Start Num: 69

Candidate Starts for Gazebo\_3:

(41, 1638), (46, 1629), (47, 1623), (Start: 69 @1551 has 33 MA's), (77, 1521), (Start: 133 @1338 has 1 MA's),

Gene: Gonephishing\_108 Start: 61177, Stop: 61452, Start Num: 68

Candidate Starts for Gonephishing\_108:

(Start: 68 @61177 has 25 MA's), (95, 61276), (108, 61324), (113, 61351),

Gene: Greely\_205 Start: 116611, Stop: 116895, Start Num: 52

Candidate Starts for Greely\_205:

(Start: 52 @116611 has 2 MA's), (Start: 62 @116647 has 1 MA's), (75, 116689), (100, 116776),

Gene: Hannaconda\_105 Start: 60123, Stop: 60398, Start Num: 68

Candidate Starts for Hannaconda\_105:

(Start: 68 @60123 has 25 MA's), (95, 60222), (108, 60270), (113, 60297),

Gene: Hidrated\_103 Start: 63941, Stop: 64216, Start Num: 68

Candidate Starts for Hidrated\_103:

(48, 63866), (54, 63890), (Start: 68 @63941 has 25 MA's), (74, 63965), (95, 64040), (108, 64088), (114, 64124), (117, 64133), (121, 64145), (130, 64178),

Gene: HokkenD\_109 Start: 65230, Stop: 65505, Start Num: 68

Candidate Starts for HokkenD\_109:

(Start: 68 @65230 has 25 MA's), (95, 65329), (108, 65377), (113, 65404),

Gene: Hyperion\_4 Start: 1519, Stop: 1271, Start Num: 69

Candidate Starts for Hyperion\_4:

(11, 1795), (22, 1678), (Start: 69 @1519 has 33 MA's), (77, 1489), (128, 1309), (129, 1306), (136, 1288), (137, 1285), (138, 1282),

Gene: Jehoshaphat\_8 Start: 2791, Stop: 2534, Start Num: 69

Candidate Starts for Jehoshaphat\_8:

(42, 2881), (45, 2875), (Start: 69 @2791 has 33 MA's), (77, 2761), (88, 2722), (111, 2629), (137, 2551),

Gene: Judebell\_6 Start: 2078, Stop: 1842, Start Num: 69

Candidate Starts for Judebell\_6:

(Start: 69 @2078 has 33 MA's), (71, 2069), (77, 2048), (96, 1994), (106, 1955), (127, 1883), (136, 1859), (137, 1856), (138, 1853),

Gene: Kalah2\_111 Start: 66306, Stop: 66581, Start Num: 68

Candidate Starts for Kalah2\_111:

(27, 66144), (40, 66201), (Start: 68 @66306 has 25 MA's), (74, 66330), (95, 66405), (108, 66453), (114, 66489), (117, 66498), (121, 66510), (130, 66543),

Gene: KashFlow\_111 Start: 62628, Stop: 62903, Start Num: 68

Candidate Starts for KashFlow\_111:

(Start: 68 @62628 has 25 MA's), (95, 62727), (108, 62775), (113, 62802),

Gene: Kelcole\_6 Start: 2251, Stop: 2009, Start Num: 73

Candidate Starts for Kelcole\_6:

(Start: 73 @2251 has 14 MA's), (94, 2167), (123, 2047),

Gene: Kelcole\_2 Start: 1102, Stop: 839, Start Num: 69

Candidate Starts for Kelcole\_2:

(10, 1420), (18, 1306), (19, 1303), (34, 1237), (39, 1207), (65, 1111), (Start: 69 @1102 has 33 MA's), (77, 1072), (85, 1045), (98, 994), (103, 973), (104, 970), (111, 943), (134, 868), (136, 862),

Gene: KillerQueen\_8 Start: 2064, Stop: 1822, Start Num: 73

Candidate Starts for KillerQueen\_8:

(Start: 73 @2064 has 14 MA's), (94, 1980), (123, 1860),

Gene: KillerQueen\_5 Start: 1627, Stop: 1382, Start Num: 69

Candidate Starts for KillerQueen\_5:

(Start: 69 @1627 has 33 MA's), (77, 1597), (85, 1570), (128, 1420), (129, 1417),

Gene: Klein\_116 Start: 64663, Stop: 64938, Start Num: 68

Candidate Starts for Klein\_116:

(20, 64462), (27, 64501), (40, 64558), (Start: 68 @64663 has 25 MA's), (74, 64687), (95, 64762), (108, 64810), (114, 64846), (117, 64855), (121, 64867), (130, 64900),

Gene: Leaf\_28 Start: 11724, Stop: 11948, Start Num: 79

Candidate Starts for Leaf\_28:

(1, 10896), (2, 11028), (21, 11487), (33, 11547), (43, 11586), (50, 11625), (53, 11631), (Start: 79 @11724 has 2 MA's), (81, 11736), (84, 11745), (93, 11775), (100, 11799), (112, 11850), (Start: 135 @11919 has 1 MA's),

Gene: LittleE\_119 Start: 66043, Stop: 66318, Start Num: 68

Candidate Starts for LittleE\_119:

(Start: 68 @66043 has 25 MA's), (95, 66142), (108, 66190), (113, 66217),

Gene: Lucky2013\_111 Start: 62191, Stop: 62466, Start Num: 68

Candidate Starts for Lucky2013\_111:

(Start: 68 @62191 has 25 MA's), (95, 62290), (108, 62338), (113, 62365),

Gene: Marcie\_12 Start: 2904, Stop: 2662, Start Num: 73

Candidate Starts for Marcie\_12:

(44, 3015), (64, 2931), (Start: 73 @2904 has 14 MA's), (94, 2820), (111, 2748), (116, 2730), (123, 2700),

Gene: Marcie\_4 Start: 1305, Stop: 1057, Start Num: 69

Candidate Starts for Marcie\_4:

(38, 1410), (59, 1347), (Start: 69 @1305 has 33 MA's), (77, 1275), (82, 1254), (83, 1251), (105, 1191), (118, 1137), (120, 1131), (138, 1068),

Gene: Marcie\_6 Start: 1750, Stop: 1493, Start Num: 69

Candidate Starts for Marcie\_6:

(29, 1906), (63, 1765), (65, 1759), (66, 1756), (Start: 69 @1750 has 33 MA's), (77, 1720), (89, 1681), (91, 1678), (132, 1528),

Gene: Marleymoo\_102 Start: 63617, Stop: 63892, Start Num: 68

Candidate Starts for Marleymoo\_102:

(48, 63542), (54, 63566), (Start: 68 @63617 has 25 MA's), (74, 63641), (95, 63716), (108, 63764), (114, 63800), (117, 63809), (121, 63821), (130, 63854),

Gene: Mashley\_2 Start: 1146, Stop: 907, Start Num: 69

Candidate Starts for Mashley\_2:

(Start: 69 @1146 has 33 MA's), (71, 1137), (77, 1116), (109, 1008), (110, 996),

Gene: Mentos\_6 Start: 1855, Stop: 1607, Start Num: 69

Candidate Starts for Mentos\_6:

(9, 2161), (22, 2014), (Start: 69 @1855 has 33 MA's), (77, 1825), (128, 1645), (129, 1642), (136, 1624), (137, 1621), (138, 1618),

Gene: MiaZeal\_114 Start: 62822, Stop: 63097, Start Num: 68

Candidate Starts for MiaZeal\_114:

(Start: 68 @62822 has 25 MA's), (95, 62921), (108, 62969), (113, 62996),

Gene: Mila11\_6 Start: 1804, Stop: 1559, Start Num: 69

Candidate Starts for Mila11\_6:

(34, 1939), (39, 1909), (65, 1813), (Start: 69 @1804 has 33 MA's), (70, 1798), (77, 1774), (109, 1654), (124, 1603), (134, 1573),

Gene: MorillMayhem\_5 Start: 1824, Stop: 1576, Start Num: 69

Candidate Starts for MorillMayhem\_5:

(34, 1947), (Start: 69 @1824 has 33 MA's), (71, 1815), (77, 1794), (128, 1614), (129, 1611), (136, 1593), (137, 1590), (138, 1587),

Gene: Myrna\_198 Start: 115997, Stop: 116281, Start Num: 52

Candidate Starts for Myrna\_198:

(Start: 52 @115997 has 2 MA's), (Start: 62 @116033 has 1 MA's), (75, 116075), (87, 116114),

Gene: Namago\_4 Start: 1406, Stop: 1170, Start Num: 69

Candidate Starts for Namago\_4:

(Start: 69 @1406 has 33 MA's), (96, 1322), (106, 1283), (127, 1211), (136, 1187), (137, 1184), (138, 1181),

Gene: Nekros\_116 Start: 65348, Stop: 65623, Start Num: 68  
Candidate Starts for Nekros\_116:  
(Start: 68 @65348 has 25 MA's), (95, 65447), (108, 65495), (113, 65522),

Gene: Nibley\_107 Start: 62216, Stop: 62491, Start Num: 68  
Candidate Starts for Nibley\_107:  
(Start: 68 @62216 has 25 MA's), (95, 62315), (108, 62363), (113, 62390),

Gene: Nike\_5 Start: 1873, Stop: 1625, Start Num: 69  
Candidate Starts for Nike\_5:  
(12, 2116), (22, 2032), (Start: 69 @1873 has 33 MA's), (71, 1864), (77, 1843), (128, 1663), (129, 1660),  
(136, 1642), (137, 1639), (138, 1636),

Gene: Odette\_121 Start: 66774, Stop: 67049, Start Num: 68  
Candidate Starts for Odette\_121:  
(Start: 68 @66774 has 25 MA's), (95, 66873), (108, 66921), (113, 66948),

Gene: Omega\_125 Start: 67192, Stop: 67467, Start Num: 68  
Candidate Starts for Omega\_125:  
(Start: 68 @67192 has 25 MA's), (95, 67291), (113, 67366),

Gene: OneinaGillian\_4 Start: 1454, Stop: 1191, Start Num: 69  
Candidate Starts for OneinaGillian\_4:  
(Start: 69 @1454 has 33 MA's), (77, 1424), (85, 1397), (98, 1346), (103, 1325), (104, 1322), (111,  
1295), (134, 1220), (136, 1214),

Gene: OneinaGillian\_7 Start: 1891, Stop: 1649, Start Num: 73  
Candidate Starts for OneinaGillian\_7:  
(Start: 73 @1891 has 14 MA's), (94, 1807), (123, 1687),

Gene: Optimus\_110 Start: 64614, Stop: 64889, Start Num: 68  
Candidate Starts for Optimus\_110:  
(Start: 68 @64614 has 25 MA's), (74, 64638), (95, 64713), (108, 64761), (114, 64797), (117, 64806),  
(121, 64818), (130, 64851),

Gene: Pepe25\_2 Start: 1383, Stop: 1120, Start Num: 69  
Candidate Starts for Pepe25\_2:  
(30, 1533), (65, 1392), (66, 1389), (Start: 69 @1383 has 33 MA's), (77, 1353), (124, 1176), (129, 1161),  
(132, 1155),

Gene: Pepe25\_7 Start: 2337, Stop: 2095, Start Num: 73  
Candidate Starts for Pepe25\_7:  
(44, 2448), (60, 2388), (64, 2364), (Start: 73 @2337 has 14 MA's), (94, 2253), (98, 2241), (111, 2181),  
(123, 2133),

Gene: Phabba\_209 Start: 115965, Stop: 116249, Start Num: 52  
Candidate Starts for Phabba\_209:  
(Start: 52 @115965 has 2 MA's), (Start: 62 @116001 has 1 MA's), (75, 116043), (100, 116130),

Gene: Phabia\_6 Start: 1993, Stop: 1736, Start Num: 69  
Candidate Starts for Phabia\_6:  
(Start: 69 @1993 has 33 MA's), (77, 1963), (88, 1924), (111, 1831), (137, 1753),

Gene: Porcelain\_114 Start: 63137, Stop: 63412, Start Num: 68  
Candidate Starts for Porcelain\_114:  
(Start: 68 @63137 has 25 MA's), (95, 63236), (108, 63284), (113, 63311),

Gene: RobinRose\_8 Start: 2080, Stop: 1838, Start Num: 73  
Candidate Starts for RobinRose\_8:  
(Start: 73 @2080 has 14 MA's), (94, 1996), (123, 1876),

Gene: RobinRose\_3 Start: 1102, Stop: 839, Start Num: 69  
Candidate Starts for RobinRose\_3:  
(3, 1555), (6, 1462), (10, 1396), (34, 1237), (39, 1207), (65, 1111), (Start: 69 @1102 has 33 MA's), (77, 1072), (85, 1045), (98, 994), (103, 973), (104, 970), (111, 943), (134, 868), (136, 862),

Gene: Romm\_2 Start: 1102, Stop: 839, Start Num: 69  
Candidate Starts for Romm\_2:  
(3, 1555), (6, 1462), (10, 1396), (34, 1237), (39, 1207), (65, 1111), (Start: 69 @1102 has 33 MA's), (77, 1072), (85, 1045), (98, 994), (103, 973), (104, 970), (111, 943), (134, 868), (136, 862),

Gene: Romm\_8 Start: 2080, Stop: 1838, Start Num: 73  
Candidate Starts for Romm\_8:  
(Start: 73 @2080 has 14 MA's), (94, 1996), (123, 1876),

Gene: RubyRalph\_6 Start: 2129, Stop: 1869, Start Num: 133  
Candidate Starts for RubyRalph\_6:  
(86, 2306), (87, 2300), (101, 2249), (102, 2243), (119, 2177), (Start: 133 @2129 has 1 MA's), (134, 2123), (Start: 135 @2120 has 1 MA's), (139, 2099), (142, 2033), (143, 1913), (144, 1898), (145, 1895),

Gene: RubyRalph\_2 Start: 1080, Stop: 841, Start Num: 69  
Candidate Starts for RubyRalph\_2:  
(14, 1230), (25, 1173), (Start: 69 @1080 has 33 MA's), (71, 1071), (77, 1050), (120, 909), (131, 873), (Start: 135 @861 has 1 MA's), (138, 852),

Gene: RubyRalph\_7 Start: 2353, Stop: 2120, Start Num: 73  
Candidate Starts for RubyRalph\_7:  
(57, 2416), (58, 2413), (72, 2356), (Start: 73 @2353 has 14 MA's), (76, 2341), (90, 2293), (93, 2275), (105, 2233), (107, 2227),

Gene: SadLad\_6 Start: 2142, Stop: 1909, Start Num: 73  
Candidate Starts for SadLad\_6:  
(28, 2304), (67, 2160), (Start: 73 @2142 has 14 MA's), (76, 2130), (90, 2082), (98, 2049), (105, 2022), (107, 2016),

Gene: SadLad\_3 Start: 1311, Stop: 1072, Start Num: 69  
Candidate Starts for SadLad\_3:  
(14, 1542), (24, 1488), (49, 1377), (61, 1338), (Start: 69 @1311 has 33 MA's), (71, 1302), (77, 1281), (120, 1140), (126, 1119), (136, 1089), (137, 1086),

Gene: SallyK\_7 Start: 2695, Stop: 2438, Start Num: 69  
Candidate Starts for SallyK\_7:  
(16, 2902), (35, 2818), (Start: 69 @2695 has 33 MA's), (77, 2665), (111, 2533), (137, 2455),

Gene: Schatzie\_114 Start: 65656, Stop: 65931, Start Num: 68

Candidate Starts for Schatzie\_114:

(Start: 68 @65656 has 25 MA's), (95, 65755), (108, 65803), (113, 65830),

Gene: ScoobyDoobyDoo\_197 Start: 114195, Stop: 114464, Start Num: 51

Candidate Starts for ScoobyDoobyDoo\_197:

(41, 114153), (Start: 51 @114195 has 1 MA's), (78, 114279), (80, 114288), (99, 114345),

Gene: Shaboozey\_112 Start: 62660, Stop: 62935, Start Num: 68

Candidate Starts for Shaboozey\_112:

(Start: 68 @62660 has 25 MA's), (95, 62759), (108, 62807), (113, 62834),

Gene: SlySloth\_6 Start: 2096, Stop: 1860, Start Num: 69

Candidate Starts for SlySloth\_6:

(Start: 69 @2096 has 33 MA's), (71, 2087), (77, 2066), (96, 2012), (106, 1973), (127, 1901), (136, 1877), (137, 1874), (138, 1871),

Gene: Squash\_6 Start: 1928, Stop: 1671, Start Num: 69

Candidate Starts for Squash\_6:

(13, 2171), (26, 2087), (Start: 69 @1928 has 33 MA's), (71, 1919), (77, 1898), (111, 1766), (137, 1688),

Gene: Squash\_5 Start: 1671, Stop: 1429, Start Num: 140

Candidate Starts for Squash\_5:

(15, 2142), (86, 1869), (92, 1842), (97, 1824), (101, 1812), (102, 1806), (103, 1800), (122, 1734), (125, 1725), (Start: 140 @1671 has 1 MA's), (141, 1641), (146, 1458),

Gene: Squash\_4 Start: 1432, Stop: 1184, Start Num: 69

Candidate Starts for Squash\_4:

(23, 1597), (34, 1555), (56, 1483), (Start: 69 @1432 has 33 MA's), (71, 1423), (77, 1402), (128, 1222), (129, 1219), (136, 1201), (137, 1198), (138, 1195),

Gene: Squint\_112 Start: 62941, Stop: 63216, Start Num: 68

Candidate Starts for Squint\_112:

(Start: 68 @62941 has 25 MA's), (95, 63040), (108, 63088), (113, 63115),

Gene: Superphikiman\_111 Start: 62032, Stop: 62307, Start Num: 68

Candidate Starts for Superphikiman\_111:

(Start: 68 @62032 has 25 MA's), (95, 62131), (108, 62179), (113, 62206),

Gene: Teehee\_8 Start: 2791, Stop: 2534, Start Num: 69

Candidate Starts for Teehee\_8:

(42, 2881), (45, 2875), (Start: 69 @2791 has 33 MA's), (77, 2761), (88, 2722), (111, 2629), (137, 2551),

Gene: Tempo\_3 Start: 1126, Stop: 878, Start Num: 69

Candidate Starts for Tempo\_3:

(38, 1210), (Start: 69 @1126 has 33 MA's), (77, 1096), (128, 916), (129, 913), (136, 895), (137, 892), (138, 889),

Gene: Tempo\_7 Start: 2272, Stop: 2030, Start Num: 73

Candidate Starts for Tempo\_7:

(Start: 73 @2272 has 14 MA's), (94, 2188), (123, 2068),

Gene: ThreeRngTarjay\_115 Start: 67538, Stop: 67813, Start Num: 68

Candidate Starts for ThreeRngTarjay\_115:

(27, 67376), (40, 67433), (Start: 68 @67538 has 25 MA's), (74, 67562), (95, 67637), (108, 67685), (114, 67721), (117, 67730), (121, 67742), (130, 67775),

Gene: Wanda\_119 Start: 64940, Stop: 65215, Start Num: 68

Candidate Starts for Wanda\_119:

(27, 64778), (40, 64835), (Start: 68 @64940 has 25 MA's), (74, 64964), (95, 65039), (108, 65087), (114, 65123), (117, 65132), (121, 65144), (130, 65177),

Gene: Wilca\_3 Start: 1383, Stop: 1120, Start Num: 69

Candidate Starts for Wilca\_3:

(30, 1533), (65, 1392), (66, 1389), (Start: 69 @1383 has 33 MA's), (77, 1353), (124, 1176), (129, 1161), (132, 1155),

Gene: Wilca\_8 Start: 2337, Stop: 2095, Start Num: 73

Candidate Starts for Wilca\_8:

(44, 2448), (60, 2388), (64, 2364), (Start: 73 @2337 has 14 MA's), (94, 2253), (98, 2241), (111, 2181), (123, 2133),

Gene: Yeet\_110 Start: 64594, Stop: 64869, Start Num: 68

Candidate Starts for Yeet\_110:

(Start: 68 @64594 has 25 MA's), (95, 64693), (108, 64741), (113, 64768),

Gene: Zagie\_6 Start: 2057, Stop: 1818, Start Num: 69

Candidate Starts for Zagie\_6:

(37, 2180), (Start: 69 @2057 has 33 MA's), (71, 2048), (77, 2027), (109, 1919), (110, 1907),

Gene: Zelink\_114 Start: 67485, Stop: 67760, Start Num: 68

Candidate Starts for Zelink\_114:

(27, 67323), (40, 67380), (Start: 68 @67485 has 25 MA's), (74, 67509), (95, 67584), (108, 67632), (114, 67668), (117, 67677), (121, 67689), (130, 67722),

Gene: Zhafia\_7 Start: 2076, Stop: 1840, Start Num: 69

Candidate Starts for Zhafia\_7:

(Start: 69 @2076 has 33 MA's), (96, 1992), (106, 1953), (127, 1881), (136, 1857), (137, 1854), (138, 1851),