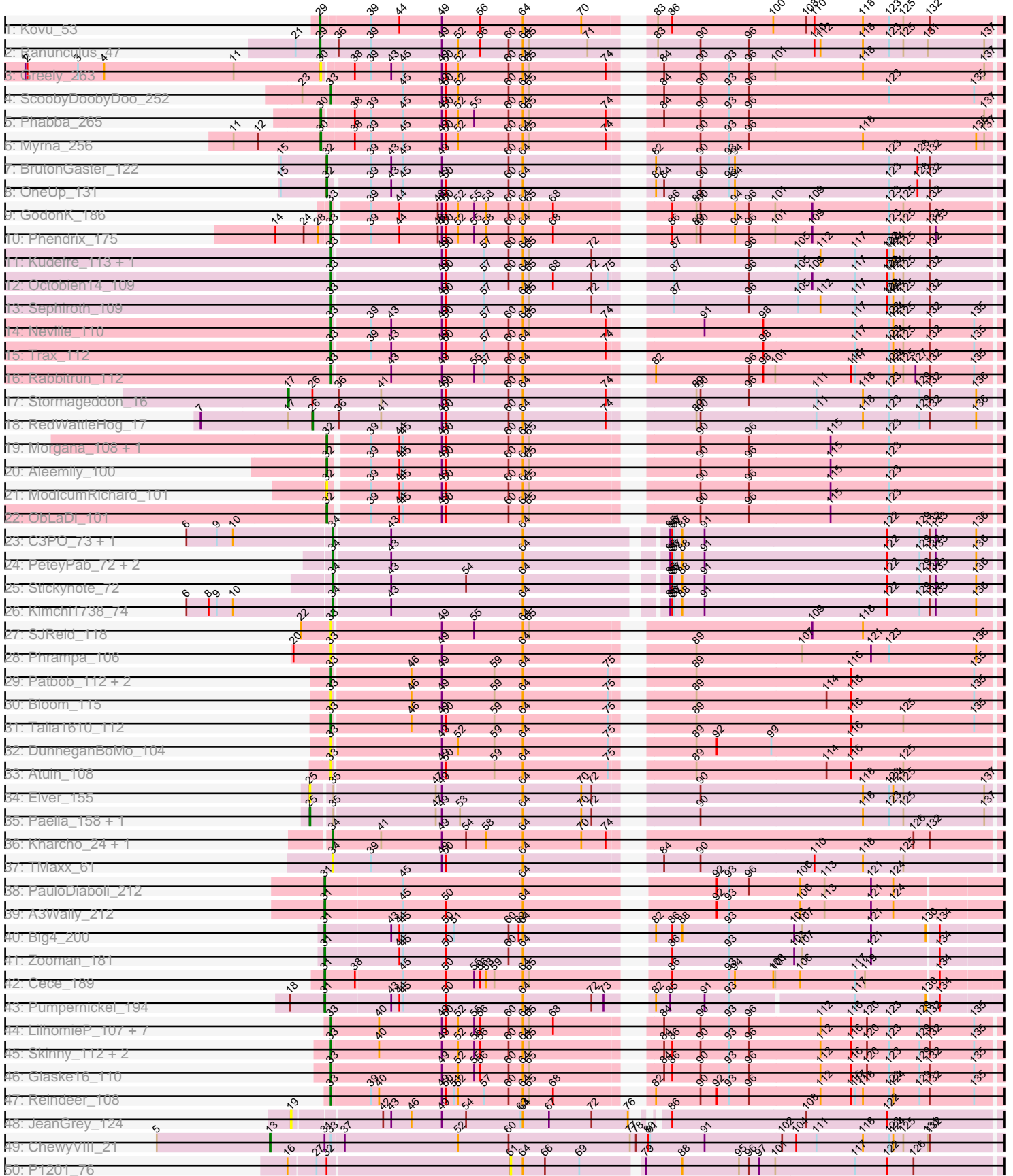


Pham 191282



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 191282 Report

This analysis was run 11/02/24 on database version 579.

Pham number 191282 has 68 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Kovu\_53
- Track 2 : Ranunculus\_47
- Track 3 : Greely\_263
- Track 4 : ScoobyDoobyDoo\_252
- Track 5 : Phabba\_265
- Track 6 : Myrna\_256
- Track 7 : BrutonGaster\_122
- Track 8 : OneUp\_131
- Track 9 : GodonK\_186
- Track 10 : Phendrix\_175
- Track 11 : Kudrefre\_113, Syleon\_114
- Track 12 : Octobien14\_109
- Track 13 : Sephiroth\_109
- Track 14 : Neville\_110
- Track 15 : Trax\_112
- Track 16 : Rabbitrun\_112
- Track 17 : Stormageddon\_16
- Track 18 : RedWattleHog\_17
- Track 19 : Morgana\_108, Cafasso\_102
- Track 20 : Aleemily\_100
- Track 21 : ModicumRichard\_101
- Track 22 : ObLaDi\_101
- Track 23 : C3PO\_73, Cruella\_73
- Track 24 : PeteyPab\_72, PotatoChip\_73, Zion\_73
- Track 25 : Stickynote\_72
- Track 26 : Kimchi1738\_74
- Track 27 : SJReid\_118
- Track 28 : Phrampa\_106
- Track 29 : Patbob\_112, Racecar\_112, Mimi\_117
- Track 30 : Bloom\_115
- Track 31 : Talia1610\_112
- Track 32 : DunneganBoMo\_104
- Track 33 : Atuin\_108
- Track 34 : Elver\_155
- Track 35 : Paella\_158, Qui\_158
- Track 36 : Kharcho\_24, Ottawa\_24
- Track 37 : TMaxx\_61

- Track 38 : PauloDiaboli\_212
- Track 39 : A3Wally\_212
- Track 40 : Big4\_200
- Track 41 : Zooman\_181
- Track 42 : Cece\_189
- Track 43 : Pumpernickel\_194
- Track 44 : LilhomieP\_107, IPhone7\_105, Bongo\_107, TyDawg\_103, Bricole\_108, Auspice\_107, Diminimus\_109, Dulcita\_109
- Track 45 : Skinny\_112, SlimJimmy\_109, PegLeg\_110
- Track 46 : Glaske16\_110
- Track 47 : Reindeer\_108
- Track 48 : JeanGrey\_124
- Track 49 : ChewyVIII\_21
- Track 50 : P1201\_76

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

The start number called the most often in the published annotations is 33, it was called in 25 of the 55 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Atuin\_108, Auspice\_107, Bloom\_115, Bongo\_107, Bricole\_108, Diminimus\_109, Dulcita\_109, DunneganBoMo\_104, Glaske16\_110, GodonK\_186, IPhone7\_105, Kudrefre\_113, LilhomieP\_107, Mimi\_117, Neville\_110, Octobien14\_109, Patbob\_112, PegLeg\_110, Phendrix\_175, Phrampa\_106, Rabbitrun\_112, Racecar\_112, Reindeer\_108, SJReid\_118, ScoobyDoobyDoo\_252, Sephiroth\_109, Skinny\_112, SlimJimmy\_109, Syleon\_114, Talia1610\_112, Trax\_112, TyDawg\_103,

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

- ChewyVIII\_21,

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

- A3Wally\_212, Aleemily\_100, Big4\_200, BrutonGaster\_122, C3PO\_73, Cafasso\_102, Cece\_189, Cruella\_73, Elver\_155, Greely\_263, JeanGrey\_124, Kharcho\_24, Kimchi1738\_74, Kovu\_53, ModicumRichard\_101, Morgana\_108, Myrna\_256, ObLaDi\_101, OneUp\_131, Ottawa\_24, P1201\_76, Paella\_158, PauloDiaboli\_212, PeteyPab\_72, Phabba\_265, PotatoChip\_73, Pumpernickel\_194, Qui\_158, Ranunculus\_47, RedWattleHog\_17, Stickynote\_72, Stormageddon\_16, TMaxx\_61, Zion\_73, Zooman\_181,

**Summary by start number:**

Start 13:

- Found in 1 of 68 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ChewyVIII\_21 (singleton),

Start 17:

- Found in 2 of 68 ( 2.9% ) of genes in pham

- Manual Annotations of this start: 1 of 55
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Stormageddon\_16 (DX),

Start 19:

- Found in 1 of 68 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JeanGrey\_124 (singleton),

Start 25:

- Found in 3 of 68 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 2 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elver\_155 (FK), Paella\_158 (FK), Qui\_158 (FK),

Start 26:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 1 of 55
- Called 50.0% of time when present
- Phage (with cluster) where this start called: RedWattleHog\_17 (DX),

Start 29:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 2 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kovu\_53 (AL), Ranunculus\_47 (AP),

Start 30:

- Found in 3 of 68 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 2 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Greely\_263 (C2), Myrna\_256 (C2), Phabba\_265 (C2),

Start 31:

- Found in 7 of 68 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 6 of 55
- Called 85.7% of time when present
- Phage (with cluster) where this start called: A3Wally\_212 (GD1), Big4\_200 (GD2), Cece\_189 (GD3), PauloDiaboli\_212 (GD1), Pumpnickel\_194 (GD4), Zooman\_181 (GD2),

Start 32:

- Found in 8 of 68 ( 11.8% ) of genes in pham
- Manual Annotations of this start: 6 of 55
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Aleemily\_100 (DZ), BrutonGaster\_122 (CQ2), Cafasso\_102 (DZ), ModicumRichard\_101 (DZ), Morgana\_108 (DZ), ObLaDi\_101 (DZ), OneUp\_131 (CQ2),

Start 33:

- Found in 33 of 68 ( 48.5% ) of genes in pham
- Manual Annotations of this start: 25 of 55
- Called 97.0% of time when present
- Phage (with cluster) where this start called: Atuin\_108 (FC), Auspice\_107 (M1), Bloom\_115 (FC), Bongo\_107 (M1), Bricole\_108 (M1), Diminimus\_109 (M1), Dulcita\_109 (M1), DunneganBoMo\_104 (FC), Glaske16\_110 (M1), GodonK\_186 (DK), IPhone7\_105 (M1), Kudrefre\_113 (DU1), LilhomieP\_107 (M1), Mimi\_117 (FC), Neville\_110 (DU2), Octobien14\_109 (DU1), Patbob\_112 (FC), PegLeg\_110 (M1), Phendrix\_175 (DK), Phrampa\_106 (FC), Rabbitrun\_112 (DU2), Racecar\_112 (FC), Reindeer\_108 (M1), SJReid\_118 (FC), ScoobyDoobyDoo\_252 (C2), Sephiroth\_109 (DU1), Skinny\_112 (M1), SlimJimmy\_109 (M1), Syleon\_114 (DU1), Talia1610\_112 (FC), Trax\_112 (DU2), TyDawg\_103 (M1),

#### Start 34:

- Found in 10 of 68 ( 14.7% ) of genes in pham
- Manual Annotations of this start: 9 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: C3PO\_73 (EN), Cruella\_73 (EN), Kharcho\_24 (FM), Kimchi1738\_74 (EN), Ottawa\_24 (FM), PeteyPab\_72 (EN), PotatoChip\_73 (EN), Stickynote\_72 (EN), TMaxx\_61 (FR), Zion\_73 (EN),

#### Start 61:

- Found in 1 of 68 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: P1201\_76 (singleton),

### Summary by clusters:

There are 20 clusters represented in this pham: GD1, singleton, EN, GD4, DK, C2, FR, GD2, AL, DU1, AP, FC, DZ, DX, CQ2, GD3, M1, DU2, FK, FM,

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

- Start number 29 was manually annotated 1 time for cluster AL.

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

- Start number 29 was manually annotated 1 time for cluster AP.

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

- Start number 30 was manually annotated 2 times for cluster C2.
- Start number 33 was manually annotated 1 time for cluster C2.

#### Info for manual annotations of cluster CQ2:

- Start number 32 was manually annotated 2 times for cluster CQ2.

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

- Start number 33 was manually annotated 2 times for cluster DK.

#### Info for manual annotations of cluster DU1:

- Start number 33 was manually annotated 4 times for cluster DU1.

#### Info for manual annotations of cluster DU2:

- Start number 33 was manually annotated 3 times for cluster DU2.

Info for manual annotations of cluster DX:

- Start number 17 was manually annotated 1 time for cluster DX.
- Start number 26 was manually annotated 1 time for cluster DX.

Info for manual annotations of cluster DZ:

- Start number 32 was manually annotated 4 times for cluster DZ.

Info for manual annotations of cluster EN:

- Start number 34 was manually annotated 7 times for cluster EN.

Info for manual annotations of cluster FC:

- Start number 33 was manually annotated 2 times for cluster FC.

Info for manual annotations of cluster FK:

- Start number 25 was manually annotated 2 times for cluster FK.

Info for manual annotations of cluster FM:

- Start number 34 was manually annotated 2 times for cluster FM.

Info for manual annotations of cluster GD1:

- Start number 31 was manually annotated 2 times for cluster GD1.

Info for manual annotations of cluster GD2:

- Start number 31 was manually annotated 2 times for cluster GD2.

Info for manual annotations of cluster GD3:

- Start number 31 was manually annotated 1 time for cluster GD3.

Info for manual annotations of cluster GD4:

- Start number 31 was manually annotated 1 time for cluster GD4.

Info for manual annotations of cluster M1:

- Start number 33 was manually annotated 13 times for cluster M1.

### ***Gene Information:***

Gene: A3Wally\_212 Start: 114728, Stop: 113766, Start Num: 31

Candidate Starts for A3Wally\_212:

(Start: 31 @114728 has 6 MA's), (45, 114614), (50, 114551), (64, 114437), (92, 114194), (93, 114176), (106, 114071), (113, 114035), (121, 113966), (124, 113933),

Gene: Aleemily\_100 Start: 57787, Stop: 58737, Start Num: 32

Candidate Starts for Aleemily\_100:

(Start: 32 @57787 has 6 MA's), (39, 57841), (44, 57883), (45, 57889), (49, 57946), (50, 57952), (60, 58045), (64, 58066), (65, 58075), (90, 58285), (96, 58357), (115, 58477), (123, 58564),

Gene: Atuin\_108 Start: 89918, Stop: 90868, Start Num: 33

Candidate Starts for Atuin\_108:

(Start: 33 @89918 has 25 MA's), (49, 90077), (50, 90083), (59, 90155), (64, 90197), (75, 90323), (89, 90410), (114, 90602), (116, 90638), (125, 90716),

Gene: Auspice\_107 Start: 58621, Stop: 59574, Start Num: 33

Candidate Starts for Auspice\_107:

(Start: 33 @58621 has 25 MA's), (40, 58690), (49, 58783), (50, 58789), (52, 58807), (55, 58831), (56, 58840), (60, 58882), (64, 58903), (65, 58912), (68, 58948), (84, 59068), (90, 59122), (93, 59164), (96, 59194), (112, 59299), (116, 59344), (120, 59368), (123, 59401), (129, 59446), (132, 59461), (135, 59527),

Gene: Big4\_200 Start: 111237, Stop: 110275, Start Num: 31

Candidate Starts for Big4\_200:

(Start: 31 @111237 has 6 MA's), (43, 111141), (44, 111129), (45, 111123), (50, 111060), (51, 111048), (60, 110967), (62, 110952), (64, 110946), (82, 110793), (86, 110769), (88, 110754), (93, 110685), (103, 110589), (107, 110577), (121, 110475), (130, 110394), (134, 110379),

Gene: Bloom\_115 Start: 89994, Stop: 90944, Start Num: 33

Candidate Starts for Bloom\_115:

(Start: 33 @89994 has 25 MA's), (46, 90108), (49, 90153), (59, 90231), (64, 90273), (75, 90399), (89, 90486), (114, 90678), (116, 90714), (135, 90897),

Gene: Bongo\_107 Start: 58625, Stop: 59578, Start Num: 33

Candidate Starts for Bongo\_107:

(Start: 33 @58625 has 25 MA's), (40, 58694), (49, 58787), (50, 58793), (52, 58811), (55, 58835), (56, 58844), (60, 58886), (64, 58907), (65, 58916), (68, 58952), (84, 59072), (90, 59126), (93, 59168), (96, 59198), (112, 59303), (116, 59348), (120, 59372), (123, 59405), (129, 59450), (132, 59465), (135, 59531),

Gene: Bricole\_108 Start: 58773, Stop: 59726, Start Num: 33

Candidate Starts for Bricole\_108:

(Start: 33 @58773 has 25 MA's), (40, 58842), (49, 58935), (50, 58941), (52, 58959), (55, 58983), (56, 58992), (60, 59034), (64, 59055), (65, 59064), (68, 59100), (84, 59220), (90, 59274), (93, 59316), (96, 59346), (112, 59451), (116, 59496), (120, 59520), (123, 59553), (129, 59598), (132, 59613), (135, 59679),

Gene: BrutonGaster\_122 Start: 73686, Stop: 74648, Start Num: 32

Candidate Starts for BrutonGaster\_122:

(15, 73620), (Start: 32 @73686 has 6 MA's), (39, 73752), (43, 73782), (45, 73800), (49, 73857), (60, 73956), (64, 73977), (82, 74130), (90, 74196), (93, 74238), (94, 74247), (123, 74475), (128, 74517), (132, 74535),

Gene: C3PO\_73 Start: 53685, Stop: 52726, Start Num: 34

Candidate Starts for C3PO\_73:

(6, 53898), (9, 53853), (10, 53829), (Start: 34 @53685 has 9 MA's), (43, 53604), (64, 53409), (85, 53220), (86, 53217), (87, 53214), (88, 53202), (91, 53169), (122, 52899), (129, 52851), (132, 52836), (133, 52827), (136, 52767),

Gene: Cafasso\_102 Start: 58338, Stop: 59288, Start Num: 32

Candidate Starts for Cafasso\_102:

(Start: 32 @58338 has 6 MA's), (39, 58392), (44, 58434), (45, 58440), (49, 58497), (50, 58503), (60, 58596), (64, 58617), (65, 58626), (90, 58836), (96, 58908), (115, 59028), (123, 59115),

Gene: Cece\_189 Start: 115210, Stop: 114251, Start Num: 31

Candidate Starts for Cece\_189:

(Start: 31 @115210 has 6 MA's), (38, 115165), (45, 115096), (50, 115033), (55, 114991), (56, 114982), (58, 114973), (59, 114961), (64, 114919), (65, 114910), (86, 114742), (93, 114658), (94, 114649), (100, 114592), (101, 114589), (106, 114553), (117, 114472), (119, 114457), (134, 114352),

Gene: ChewyVIII\_21 Start: 10098, Stop: 11186, Start Num: 13

Candidate Starts for ChewyVIII\_21:

(5, 9930), (Start: 13 @10098 has 1 MA's), (Start: 31 @10179 has 6 MA's), (Start: 33 @10188 has 25 MA's), (37, 10206), (52, 10374), (60, 10449), (77, 10629), (78, 10638), (80, 10656), (81, 10659), (91, 10740), (102, 10854), (104, 10875), (111, 10905), (118, 10974), (123, 11013), (124, 11019), (125, 11034), (131, 11070), (132, 11073),

Gene: Cruella\_73 Start: 53685, Stop: 52726, Start Num: 34

Candidate Starts for Cruella\_73:

(6, 53898), (9, 53853), (10, 53829), (Start: 34 @53685 has 9 MA's), (43, 53604), (64, 53409), (85, 53220), (86, 53217), (87, 53214), (88, 53202), (91, 53169), (122, 52899), (129, 52851), (132, 52836), (133, 52827), (136, 52767),

Gene: Diminimus\_109 Start: 58620, Stop: 59573, Start Num: 33

Candidate Starts for Diminimus\_109:

(Start: 33 @58620 has 25 MA's), (40, 58689), (49, 58782), (50, 58788), (52, 58806), (55, 58830), (56, 58839), (60, 58881), (64, 58902), (65, 58911), (68, 58947), (84, 59067), (90, 59121), (93, 59163), (96, 59193), (112, 59298), (116, 59343), (120, 59367), (123, 59400), (129, 59445), (132, 59460), (135, 59526),

Gene: Dulcita\_109 Start: 58621, Stop: 59574, Start Num: 33

Candidate Starts for Dulcita\_109:

(Start: 33 @58621 has 25 MA's), (40, 58690), (49, 58783), (50, 58789), (52, 58807), (55, 58831), (56, 58840), (60, 58882), (64, 58903), (65, 58912), (68, 58948), (84, 59068), (90, 59122), (93, 59164), (96, 59194), (112, 59299), (116, 59344), (120, 59368), (123, 59401), (129, 59446), (132, 59461), (135, 59527),

Gene: DunneganBoMo\_104 Start: 85794, Stop: 86744, Start Num: 33

Candidate Starts for DunneganBoMo\_104:

(Start: 33 @85794 has 25 MA's), (49, 85953), (52, 85977), (59, 86031), (64, 86073), (75, 86199), (89, 86286), (92, 86316), (99, 86397), (116, 86514),

Gene: Elver\_155 Start: 79480, Stop: 80454, Start Num: 25

Candidate Starts for Elver\_155:

(Start: 25 @79480 has 2 MA's), (35, 79507), (47, 79654), (49, 79663), (64, 79783), (70, 79870), (72, 79885), (90, 80002), (118, 80242), (123, 80281), (124, 80287), (125, 80302), (137, 80422),

Gene: Glaske16\_110 Start: 59202, Stop: 60155, Start Num: 33

Candidate Starts for Glaske16\_110:

(Start: 33 @59202 has 25 MA's), (49, 59364), (52, 59388), (55, 59412), (56, 59421), (60, 59463), (64, 59484), (65, 59493), (84, 59649), (86, 59661), (90, 59703), (93, 59745), (96, 59775), (112, 59880), (116, 59925), (120, 59949), (123, 59982), (129, 60027), (132, 60042), (135, 60108),

Gene: GodonK\_186 Start: 95205, Stop: 94261, Start Num: 33

Candidate Starts for GodonK\_186:

(Start: 33 @95205 has 25 MA's), (39, 95157), (44, 95115), (48, 95058), (49, 95052), (50, 95046), (52, 95028), (55, 95004), (58, 94986), (60, 94953), (64, 94932), (65, 94923), (68, 94887), (86, 94755), (89, 94719), (90, 94713), (94, 94662), (96, 94641), (101, 94602), (109, 94548), (123, 94434), (125, 94413),



(132, 94374),

Gene: Greely\_263 Start: 155363, Stop: 156325, Start Num: 30

Candidate Starts for Greely\_263:

(1, 154928), (2, 154931), (3, 155006), (4, 155045), (11, 155237), (Start: 30 @155363 has 2 MA's), (38, 155405), (39, 155429), (43, 155459), (45, 155477), (49, 155534), (50, 155540), (52, 155558), (60, 155633), (64, 155654), (65, 155663), (74, 155777), (84, 155819), (90, 155873), (93, 155915), (96, 155945), (101, 155984), (118, 156113), (137, 156293),

Gene: IPhone7\_105 Start: 58625, Stop: 59578, Start Num: 33

Candidate Starts for IPhone7\_105:

(Start: 33 @58625 has 25 MA's), (40, 58694), (49, 58787), (50, 58793), (52, 58811), (55, 58835), (56, 58844), (60, 58886), (64, 58907), (65, 58916), (68, 58952), (84, 59072), (90, 59126), (93, 59168), (96, 59198), (112, 59303), (116, 59348), (120, 59372), (123, 59405), (129, 59450), (132, 59465), (135, 59531),

Gene: JeanGrey\_124 Start: 92133, Stop: 93134, Start Num: 19

Candidate Starts for JeanGrey\_124:

(19, 92133), (42, 92256), (43, 92268), (46, 92298), (49, 92343), (54, 92379), (63, 92460), (64, 92463), (67, 92502), (72, 92565), (76, 92619), (86, 92640), (108, 92838), (122, 92958),

Gene: Kharcho\_24 Start: 7684, Stop: 8634, Start Num: 34

Candidate Starts for Kharcho\_24:

(Start: 34 @7684 has 9 MA's), (41, 7753), (49, 7843), (54, 7879), (58, 7909), (64, 7963), (70, 8050), (74, 8086), (126, 8497), (132, 8521),

Gene: Kimchi1738\_74 Start: 53661, Stop: 52702, Start Num: 34

Candidate Starts for Kimchi1738\_74:

(6, 53874), (8, 53841), (9, 53829), (10, 53805), (Start: 34 @53661 has 9 MA's), (43, 53580), (64, 53385), (85, 53196), (86, 53193), (87, 53190), (88, 53178), (91, 53145), (122, 52875), (129, 52827), (132, 52812), (133, 52803), (136, 52743),

Gene: Kovu\_53 Start: 30579, Stop: 31544, Start Num: 29

Candidate Starts for Kovu\_53:

(Start: 29 @30579 has 2 MA's), (39, 30648), (44, 30690), (49, 30753), (56, 30810), (64, 30873), (70, 30960), (83, 31029), (86, 31050), (100, 31200), (108, 31248), (110, 31260), (118, 31332), (123, 31371), (125, 31392), (132, 31431),

Gene: Kudrefre\_113 Start: 62054, Stop: 63004, Start Num: 33

Candidate Starts for Kudrefre\_113:

(Start: 33 @62054 has 25 MA's), (49, 62213), (50, 62219), (57, 62276), (60, 62312), (64, 62333), (65, 62342), (72, 62435), (87, 62513), (96, 62624), (105, 62696), (112, 62729), (117, 62780), (122, 62828), (123, 62831), (124, 62837), (125, 62852), (132, 62891),

Gene: LilhomieP\_107 Start: 59515, Stop: 60468, Start Num: 33

Candidate Starts for LilhomieP\_107:

(Start: 33 @59515 has 25 MA's), (40, 59584), (49, 59677), (50, 59683), (52, 59701), (55, 59725), (56, 59734), (60, 59776), (64, 59797), (65, 59806), (68, 59842), (84, 59962), (90, 60016), (93, 60058), (96, 60088), (112, 60193), (116, 60238), (120, 60262), (123, 60295), (129, 60340), (132, 60355), (135, 60421),

Gene: Mimi\_117 Start: 89341, Stop: 90291, Start Num: 33

Candidate Starts for Mimi\_117:

(Start: 33 @89341 has 25 MA's), (46, 89455), (49, 89500), (59, 89578), (64, 89620), (75, 89746), (89, 89833), (116, 90061), (135, 90244),

Gene: ModicumRichard\_101 Start: 57979, Stop: 58929, Start Num: 32

Candidate Starts for ModicumRichard\_101:

(Start: 32 @57979 has 6 MA's), (39, 58033), (44, 58075), (45, 58081), (49, 58138), (50, 58144), (60, 58237), (64, 58258), (65, 58267), (90, 58477), (96, 58549), (115, 58669), (123, 58756),

Gene: Morgana\_108 Start: 60190, Stop: 61140, Start Num: 32

Candidate Starts for Morgana\_108:

(Start: 32 @60190 has 6 MA's), (39, 60244), (44, 60286), (45, 60292), (49, 60349), (50, 60355), (60, 60448), (64, 60469), (65, 60478), (90, 60688), (96, 60760), (115, 60880), (123, 60967),

Gene: Myrna\_256 Start: 155905, Stop: 156873, Start Num: 30

Candidate Starts for Myrna\_256:

(11, 155779), (12, 155815), (Start: 30 @155905 has 2 MA's), (38, 155953), (39, 155977), (45, 156025), (49, 156082), (50, 156088), (52, 156106), (60, 156181), (64, 156202), (65, 156211), (74, 156325), (90, 156421), (93, 156463), (96, 156493), (118, 156661), (136, 156829), (137, 156841),

Gene: Neville\_110 Start: 62934, Stop: 63884, Start Num: 33

Candidate Starts for Neville\_110:

(Start: 33 @62934 has 25 MA's), (39, 62988), (43, 63018), (49, 63093), (50, 63099), (57, 63156), (60, 63192), (64, 63213), (65, 63222), (74, 63336), (91, 63438), (98, 63525), (117, 63660), (123, 63711), (124, 63717), (125, 63732), (132, 63771), (135, 63837),

Gene: ObLaDi\_101 Start: 58022, Stop: 58972, Start Num: 32

Candidate Starts for ObLaDi\_101:

(Start: 32 @58022 has 6 MA's), (39, 58076), (44, 58118), (45, 58124), (49, 58181), (50, 58187), (60, 58280), (64, 58301), (65, 58310), (90, 58520), (96, 58592), (115, 58712), (123, 58799),

Gene: Octobien14\_109 Start: 60846, Stop: 61796, Start Num: 33

Candidate Starts for Octobien14\_109:

(Start: 33 @60846 has 25 MA's), (49, 61005), (50, 61011), (57, 61068), (60, 61104), (64, 61125), (65, 61134), (68, 61170), (72, 61227), (75, 61251), (87, 61305), (96, 61416), (105, 61488), (109, 61509), (117, 61572), (122, 61620), (123, 61623), (124, 61629), (125, 61644), (132, 61683),

Gene: OneUp\_131 Start: 78206, Stop: 79159, Start Num: 32

Candidate Starts for OneUp\_131:

(15, 78140), (Start: 32 @78206 has 6 MA's), (39, 78263), (43, 78293), (45, 78311), (49, 78368), (50, 78374), (60, 78467), (64, 78488), (82, 78641), (84, 78653), (90, 78707), (93, 78749), (94, 78758), (123, 78986), (128, 79028), (132, 79046),

Gene: Ottawa\_24 Start: 7684, Stop: 8634, Start Num: 34

Candidate Starts for Ottawa\_24:

(Start: 34 @7684 has 9 MA's), (41, 7753), (49, 7843), (54, 7879), (58, 7909), (64, 7963), (70, 8050), (74, 8086), (126, 8497), (132, 8521),

Gene: P1201\_76 Start: 57750, Stop: 57037, Start Num: 61

Candidate Starts for P1201\_76:

(16, 58071), (27, 58032), (Start: 32 @58017 has 6 MA's), (61, 57750), (64, 57732), (66, 57699), (69, 57648), (79, 57567), (88, 57513), (95, 57429), (96, 57414), (97, 57399), (101, 57375), (117, 57258), (122, 57210), (126, 57171),

Gene: Paella\_158 Start: 80347, Stop: 81321, Start Num: 25

Candidate Starts for Paella\_158:

(Start: 25 @80347 has 2 MA's), (35, 80374), (47, 80521), (49, 80530), (53, 80557), (64, 80650), (70, 80737), (72, 80752), (90, 80869), (118, 81109), (123, 81148), (125, 81169), (137, 81289),

Gene: Patbob\_112 Start: 90076, Stop: 91026, Start Num: 33

Candidate Starts for Patbob\_112:

(Start: 33 @90076 has 25 MA's), (46, 90190), (49, 90235), (59, 90313), (64, 90355), (75, 90481), (89, 90568), (116, 90796), (135, 90979),

Gene: PauloDiaboli\_212 Start: 112941, Stop: 111979, Start Num: 31

Candidate Starts for PauloDiaboli\_212:

(Start: 31 @112941 has 6 MA's), (45, 112827), (64, 112650), (92, 112407), (93, 112389), (96, 112359), (106, 112284), (113, 112248), (121, 112179), (124, 112146),

Gene: PegLeg\_110 Start: 59251, Stop: 60204, Start Num: 33

Candidate Starts for PegLeg\_110:

(Start: 33 @59251 has 25 MA's), (40, 59320), (49, 59413), (52, 59437), (55, 59461), (56, 59470), (60, 59512), (64, 59533), (65, 59542), (84, 59698), (86, 59710), (90, 59752), (93, 59794), (96, 59824), (112, 59929), (116, 59974), (120, 59998), (123, 60031), (129, 60076), (132, 60091), (135, 60157),

Gene: PeteyPab\_72 Start: 53470, Stop: 52511, Start Num: 34

Candidate Starts for PeteyPab\_72:

(Start: 34 @53470 has 9 MA's), (43, 53389), (64, 53194), (85, 53005), (86, 53002), (87, 52999), (88, 52987), (91, 52954), (122, 52684), (129, 52636), (132, 52621), (133, 52612), (136, 52552),

Gene: Phabba\_265 Start: 154752, Stop: 155714, Start Num: 30

Candidate Starts for Phabba\_265:

(Start: 30 @154752 has 2 MA's), (38, 154794), (39, 154818), (45, 154866), (49, 154923), (50, 154929), (52, 154947), (55, 154971), (60, 155022), (64, 155043), (65, 155052), (74, 155166), (84, 155208), (90, 155262), (93, 155304), (96, 155334), (137, 155682),

Gene: Phendrix\_175 Start: 94333, Stop: 93389, Start Num: 33

Candidate Starts for Phendrix\_175:

(14, 94411), (24, 94369), (28, 94348), (Start: 33 @94333 has 25 MA's), (39, 94285), (44, 94243), (48, 94186), (49, 94180), (50, 94174), (52, 94156), (55, 94132), (58, 94114), (60, 94081), (64, 94060), (68, 94015), (86, 93883), (89, 93847), (90, 93841), (94, 93790), (96, 93769), (101, 93730), (109, 93676), (123, 93562), (125, 93541), (132, 93502), (133, 93493),

Gene: Phrampa\_106 Start: 91460, Stop: 92410, Start Num: 33

Candidate Starts for Phrampa\_106:

(20, 91406), (Start: 33 @91460 has 25 MA's), (49, 91619), (64, 91739), (89, 91952), (107, 92108), (121, 92210), (123, 92237), (136, 92366),

Gene: PotatoChip\_73 Start: 53472, Stop: 52513, Start Num: 34

Candidate Starts for PotatoChip\_73:

(Start: 34 @53472 has 9 MA's), (43, 53391), (64, 53196), (85, 53007), (86, 53004), (87, 53001), (88, 52989), (91, 52956), (122, 52686), (129, 52638), (132, 52623), (133, 52614), (136, 52554),

Gene: Pumpernickel\_194 Start: 111571, Stop: 110621, Start Num: 31

Candidate Starts for Pumpernickel\_194:

(18, 111622), (Start: 31 @111571 has 6 MA's), (43, 111475), (44, 111463), (45, 111457), (50, 111394), (64, 111280), (72, 111178), (73, 111160), (82, 111127), (85, 111106), (91, 111055), (93,

111019), (117, 110842), (130, 110737), (134, 110722),

Gene: Qui\_158 Start: 80347, Stop: 81321, Start Num: 25

Candidate Starts for Qui\_158:

(Start: 25 @80347 has 2 MA's), (35, 80374), (47, 80521), (49, 80530), (53, 80557), (64, 80650), (70, 80737), (72, 80752), (90, 80869), (118, 81109), (123, 81148), (125, 81169), (137, 81289),

Gene: Rabbitrun\_112 Start: 64014, Stop: 64964, Start Num: 33

Candidate Starts for Rabbitrun\_112:

(Start: 33 @64014 has 25 MA's), (43, 64098), (49, 64173), (55, 64221), (57, 64236), (60, 64272), (64, 64293), (82, 64446), (96, 64584), (98, 64605), (101, 64623), (116, 64734), (117, 64740), (123, 64791), (124, 64797), (125, 64812), (127, 64830), (132, 64851), (135, 64917),

Gene: Racecar\_112 Start: 89994, Stop: 90944, Start Num: 33

Candidate Starts for Racecar\_112:

(Start: 33 @89994 has 25 MA's), (46, 90108), (49, 90153), (59, 90231), (64, 90273), (75, 90399), (89, 90486), (116, 90714), (135, 90897),

Gene: Ranunculus\_47 Start: 41478, Stop: 40504, Start Num: 29

Candidate Starts for Ranunculus\_47:

(21, 41514), (Start: 29 @41478 has 2 MA's), (36, 41454), (39, 41406), (49, 41301), (52, 41277), (56, 41244), (60, 41202), (64, 41181), (65, 41172), (71, 41085), (83, 41022), (90, 40959), (96, 40887), (110, 40791), (112, 40782), (118, 40719), (123, 40680), (125, 40659), (131, 40623), (137, 40539),

Gene: RedWattleHog\_17 Start: 20861, Stop: 21844, Start Num: 26

Candidate Starts for RedWattleHog\_17:

(7, 20696), (Start: 17 @20825 has 1 MA's), (Start: 26 @20861 has 1 MA's), (36, 20900), (41, 20963), (49, 21053), (50, 21059), (60, 21152), (64, 21173), (74, 21296), (89, 21386), (90, 21392), (111, 21563), (118, 21632), (123, 21671), (129, 21716), (132, 21731), (136, 21800),

Gene: Reindeer\_108 Start: 60129, Stop: 61082, Start Num: 33

Candidate Starts for Reindeer\_108:

(Start: 33 @60129 has 25 MA's), (39, 60186), (40, 60198), (49, 60291), (50, 60297), (51, 60309), (52, 60315), (57, 60354), (60, 60390), (64, 60411), (65, 60420), (68, 60456), (82, 60564), (90, 60630), (92, 60654), (93, 60672), (96, 60702), (112, 60807), (116, 60852), (117, 60858), (118, 60870), (123, 60909), (124, 60915), (129, 60954), (132, 60969), (135, 61035),

Gene: SJReid\_118 Start: 82220, Stop: 83170, Start Num: 33

Candidate Starts for SJReid\_118:

(22, 82178), (Start: 33 @82220 has 25 MA's), (49, 82379), (55, 82427), (64, 82499), (65, 82508), (109, 82883), (118, 82958),

Gene: ScoobyDoobyDoo\_252 Start: 151751, Stop: 152704, Start Num: 33

Candidate Starts for ScoobyDoobyDoo\_252:

(23, 151709), (Start: 33 @151751 has 25 MA's), (45, 151856), (49, 151913), (50, 151919), (52, 151937), (60, 152012), (64, 152033), (65, 152042), (84, 152198), (90, 152252), (93, 152294), (96, 152324), (123, 152531), (135, 152657),

Gene: Sephiroth\_109 Start: 61809, Stop: 62759, Start Num: 33

Candidate Starts for Sephiroth\_109:

(Start: 33 @61809 has 25 MA's), (49, 61968), (50, 61974), (57, 62031), (64, 62088), (65, 62097), (72, 62190), (87, 62268), (96, 62379), (105, 62451), (112, 62484), (117, 62535), (122, 62583), (123, 62586), (124, 62592), (125, 62607), (132, 62646),

Gene: Skinny\_112 Start: 59970, Stop: 60923, Start Num: 33

Candidate Starts for Skinny\_112:

(Start: 33 @59970 has 25 MA's), (40, 60039), (49, 60132), (52, 60156), (55, 60180), (56, 60189), (60, 60231), (64, 60252), (65, 60261), (84, 60417), (86, 60429), (90, 60471), (93, 60513), (96, 60543), (112, 60648), (116, 60693), (120, 60717), (123, 60750), (129, 60795), (132, 60810), (135, 60876),

Gene: SlimJimmy\_109 Start: 60181, Stop: 61134, Start Num: 33

Candidate Starts for SlimJimmy\_109:

(Start: 33 @60181 has 25 MA's), (40, 60250), (49, 60343), (52, 60367), (55, 60391), (56, 60400), (60, 60442), (64, 60463), (65, 60472), (84, 60628), (86, 60640), (90, 60682), (93, 60724), (96, 60754), (112, 60859), (116, 60904), (120, 60928), (123, 60961), (129, 61006), (132, 61021), (135, 61087),

Gene: Stickynote\_72 Start: 53673, Stop: 52714, Start Num: 34

Candidate Starts for Stickynote\_72:

(Start: 34 @53673 has 9 MA's), (43, 53592), (54, 53481), (64, 53397), (85, 53208), (86, 53205), (87, 53202), (88, 53190), (91, 53157), (122, 52887), (129, 52839), (132, 52824), (133, 52815), (136, 52755),

Gene: Stormageddon\_16 Start: 20070, Stop: 21089, Start Num: 17

Candidate Starts for Stormageddon\_16:

(Start: 17 @20070 has 1 MA's), (Start: 26 @20106 has 1 MA's), (36, 20145), (41, 20208), (49, 20298), (50, 20304), (60, 20397), (64, 20418), (74, 20541), (89, 20631), (90, 20637), (96, 20709), (111, 20808), (118, 20877), (123, 20916), (129, 20961), (132, 20976), (136, 21045),

Gene: Syleon\_114 Start: 62591, Stop: 63541, Start Num: 33

Candidate Starts for Syleon\_114:

(Start: 33 @62591 has 25 MA's), (49, 62750), (50, 62756), (57, 62813), (60, 62849), (64, 62870), (65, 62879), (72, 62972), (87, 63050), (96, 63161), (105, 63233), (112, 63266), (117, 63317), (122, 63365), (123, 63368), (124, 63374), (125, 63389), (132, 63428),

Gene: TMaxx\_61 Start: 36737, Stop: 35784, Start Num: 34

Candidate Starts for TMaxx\_61:

(Start: 34 @36737 has 9 MA's), (39, 36680), (49, 36575), (50, 36569), (64, 36455), (84, 36290), (90, 36236), (110, 36068), (118, 35996), (125, 35936),

Gene: Talia1610\_112 Start: 89968, Stop: 90918, Start Num: 33

Candidate Starts for Talia1610\_112:

(Start: 33 @89968 has 25 MA's), (46, 90082), (49, 90127), (50, 90133), (59, 90205), (64, 90247), (75, 90373), (89, 90460), (116, 90688), (125, 90766), (135, 90871),

Gene: Trax\_112 Start: 63929, Stop: 64879, Start Num: 33

Candidate Starts for Trax\_112:

(Start: 33 @63929 has 25 MA's), (39, 63983), (43, 64013), (49, 64088), (50, 64094), (57, 64151), (60, 64187), (64, 64208), (74, 64331), (98, 64520), (117, 64655), (123, 64706), (124, 64712), (125, 64727), (132, 64766), (135, 64832),

Gene: TyDawg\_103 Start: 58628, Stop: 59581, Start Num: 33

Candidate Starts for TyDawg\_103:

(Start: 33 @58628 has 25 MA's), (40, 58697), (49, 58790), (50, 58796), (52, 58814), (55, 58838), (56, 58847), (60, 58889), (64, 58910), (65, 58919), (68, 58955), (84, 59075), (90, 59129), (93, 59171), (96, 59201), (112, 59306), (116, 59351), (120, 59375), (123, 59408), (129, 59453), (132, 59468), (135, 59534),

Gene: Zion\_73 Start: 53470, Stop: 52511, Start Num: 34

Candidate Starts for Zion\_73:

(Start: 34 @53470 has 9 MA's), (43, 53389), (64, 53194), (85, 53005), (86, 53002), (87, 52999), (88, 52987), (91, 52954), (122, 52684), (129, 52636), (132, 52621), (133, 52612), (136, 52552),

Gene: Zooman\_181 Start: 107460, Stop: 106501, Start Num: 31

Candidate Starts for Zooman\_181:

(Start: 31 @107460 has 6 MA's), (44, 107352), (45, 107346), (50, 107283), (60, 107190), (64, 107169), (86, 106992), (93, 106908), (103, 106812), (107, 106800), (121, 106698), (134, 106602),