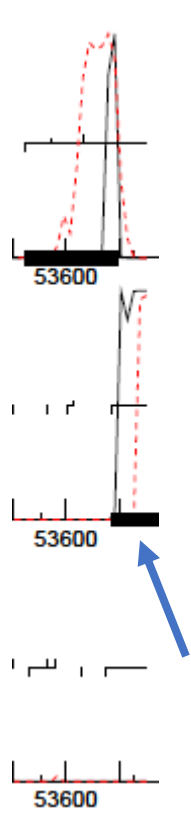
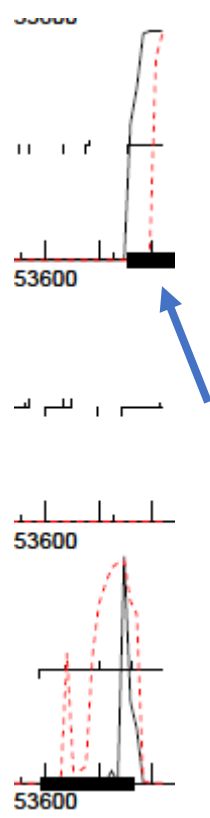


Arrows show location of insertion.

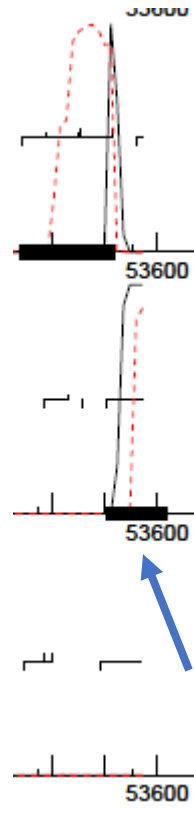
# GenemarkS



CrunchyBoi



PineapplePluto



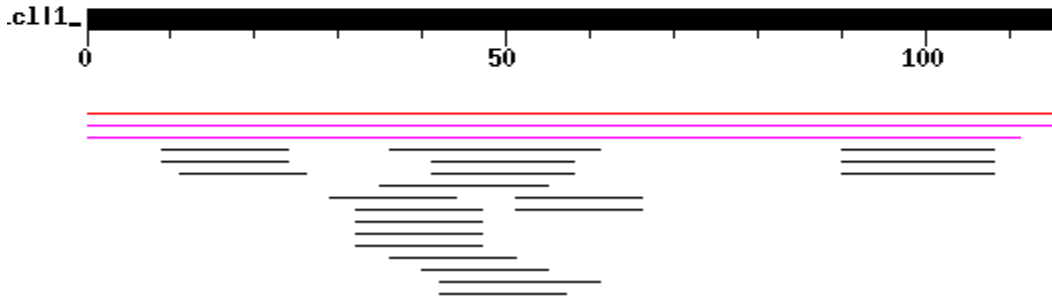
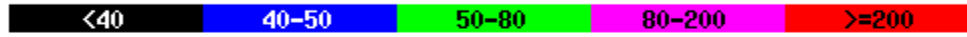
Pabst

**BLASTn** Query is CrunchyBoi 53685-53800 (right end of genome).

## Distribution of 24 Blast Hits on the Query Sequence

Mouse-over to show define and scores. Click to show alignments

### Color Key for Alignment Scores



>Microbacterium phage PineapplePluto complete sequence, 53868 bp,  
circularly permuted, Cluster EK1  
Length = 53868

Score = 190 bits (96), Expect = 8e-48  
Identities = 111/116 (95%)  
Strand = Plus / Plus

```
Query: 1      ttaggccccgccatcttcttctccaatacctcgagctctgcggttccgcctcggtgag 60
             |||
Sbjct: 53753 ttaggccccgccatcttcttctccaatacctcgagctctgcggttccgcctcggtgag 53812
```

```
Query: 61      gtagccccgatccttcttgagccactgcaaccaggcgacggttgctgtctgctc 116
             |||
Sbjct: 53813 ataccaccgattctccttgagccactgcaaccaggcgacggttgctgtctgctc 53868
```

>Microbacterium phage Pabst complete sequence, 53620 bp, circularly  
permuted, Cluster EK1  
Length = 53620

Score = 159 bits (80), Expect = 3e-38  
Identities = 104/112 (92%)  
Strand = Plus / Plus

```
Query: 1      ttaggccccgccatcttcttctccaatacctcgagctctgcggttccgcctcggtgag 60
             |||
Sbjct: 53505 ttaggccccgccatcttcttctccaatacctcgagctcggcagcttctgcctcggtcag 53564
```

```
Query: 61      gtagccccgatccttcttgagccactgcaaccaggcgacggttgctgtct 112
             |||
Sbjct: 53565 atagcctcgatccttcttgagccactgcaaccaggcacgtcggttgctgtct 53616
```

## Reverse complement and align the ORFs to see the codons

CLUSTAL multiple sequence alignment by MUSCLE (3.8)

DNA is reverse complement.

Lowercase DNA is before the wraparound junction (ie, basepair 1-7).

Uppercase DNA is after the junction (ie, at rightmost part of genome)

Green is start codon for ORF under consideration and downstream gene.

Red is stop codon.

Cyan is a DNA or AA mismatch among Pabst, CrunchyBoi, and PineapplePluto.

Codon positions 1,2, or 3 mark the position that is changed.

Amino acids are shown only for codons that have a nt substitution.

wraparound orf:

```

bp coord:          7654321
Pabst              gtggtgagTGTAGACGACAACCGACGTGCCTGGTTGCAGTGGCTCAAGAAGGATCGAGGCTATCTG
crunchyboi        gtggtaaGCGCAGACGACAACCGTCGCGCCTGGTTGCAGTGGCTCAAGAAGGATCGGGGCTACCTC
pineapplepluto    gtggtaaGCGCAGACGACAACCGTCGCGCCTGGTTGCAGTGGCTCAAGGAGAATCGGTGGTATCTC
***** ** * ***** ** ***** ** ***** ** ***** ** ***** **
Codon position     .....3..3.2.....3..3.....1..1....31.3..3..3
AA encoded         ValSerVal          ArgArg          GluAsnArgTrpTyrLeu
AA encoded by alt  ValSerAla          ArgArg          LysAspArgGlyTyrLeu
  
```

```

unphazed          -gacgtgacgttctaaTGGCAGGACCAAGGAT
pabst             ACCGAGGCAGAAGCTTGCCTGAGCTCGAGGTATTGGAGGAAGAAGATGGCGGGGCCTAAGGAT
crunchyboi       ACCGAGGCAGGAAGCCGCGAGAGCTCGAGGTATTGGAGGAAGAAGATGGCGGGGCCTAAGGAC
pineapplepluto   ACCGAGGCAGGAAGCCGCGAGAGCTCGAGGTATTGGAGGAAGAAGATGGCGGGGCCTAAGGAC
***** ** * ***** ** ***** ** ***** ** ***** **
Codon position     .....3.....3..3.....
AA encoded         Ala   AlaAla
AA encoded by alt  Ala   AlaAla
  
```