- 1 -

piece 1, NC_000913, gntP_uxuA+, config: linear, direction: +, begin: 4549290, end: 4549678
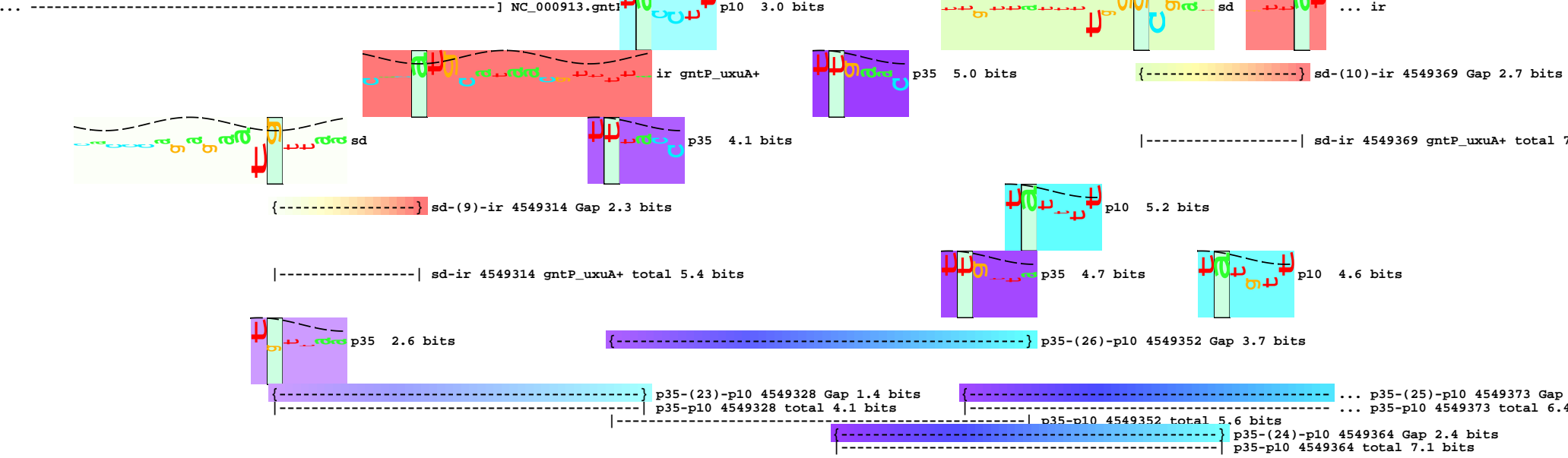
```
     *4549290  *        *4549300  *        *4549310  *        *4549320  *        *4549330  *        *4549340  *        *4549350  *        *4549360  *        *4549370
5' taccaccagagaatgttaagcacatgcataacgttttaccttacctggttgaaccgttgttattttgggcgatatgttat 3'
  - tyr - his - pro - glu - asn - val - lys - his - met - his - asn - val - leu - pro - tyr - leu - val - glu - pro - leu - leu - phe - trp - ala - ile - cys - tyr -
    - thr - thr - gln - arg - met - leu - ser - thr - cys - ile - thr - phe - tyr - leu - thr - trp - leu - asn - arg - cys - tyr - phe - gly - arg - tyr - val - met -
       - pro - pro - arg - glu - cys - ●       - ●        - thr - cys - ●                          - ●                        - fMet - gly - asp - met - leu - cys -
```

... --] NC_000913.gntP   p10   3.0 bits   sd   ... ir

ir gntP_uxuA+   p35   5.0 bits   {-------------------} sd-(10)-ir 4549369 Gap 2.7 bits

sd   p35   4.1 bits |-------------------| sd-ir 4549369 gntP_uxuA+ total 7

{-------------------} sd-(9)-ir 4549314 Gap 2.3 bits   p10   5.2 bits

|-------------------| sd-ir 4549314 gntP_uxuA+ total 5.4 bits   p35   4.7 bits   p10   4.6 bits

p35   2.6 bits   {----------------------------------} p35-(26)-p10 4549352 Gap 3.7 bits

{---------------------} p35-(23)-p10 4549328 Gap 1.4 bits   {------------------------------ ... p35-(25)-p10 4549373 Gap
|----------------------| p35-p10 4549328 total 4.1 bits |------------------------------ ... p35-p10 4549373 total 6.4
   |----------------------------| p35-p10 4549352 total 5.6 bits
                                  {------------------------------} p35-(24)-p10 4549364 Gap 2.4 bits
                                  |------------------------------| p35-p10 4549364 total 7.1 bits

```
     *        *4549380  *        *4549390  *        *4549400  *        *4549410  *        *4549420  *        *4549430  *        *4549440  *        *4549450
5' gtaaattggtcaaccattgttgcgatgagttgtcacatcctgatcaataaccattaccctttgctgcaatttgcag 3'
  - val - asn - trp - ser - thr - ile - val - ala - met - asn - val - thr - ser - ser - asp - gln -   -    -    -    -    -    -    - fMet - gln -
     - ●            -    -    - fMet - leu - arg -  ●   - fMet - ser - his - pro - leu - ile - asn - asn - his - arg - leu - pro - phe - ala - ala - ile - cys - ser -
        - lys - leu - val - asn - his - cys - cys - asp - glu - cys - his - ile - leu -  ●                                       - fMet - leu - gln - phe - ala - ala -
```
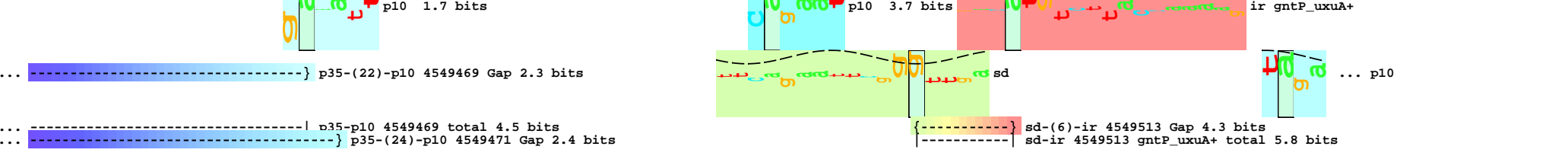
... ir gntP_uxuA+   [###> orf 36 codons   p35   5.2 bits

[###> orf 2 codons   {----------- ... p35-(22)-p10 4549469 Gap
p10   5.7 bits |----------- ... p35-p10 4549469 total 4.5

                                                                                                            {--------- ... p35-(24)-p10 4549471 Gap
                                                                                                            |--------- ... p35-p10 4549471 total 4.9

... ----} p35-(25)-p10 4549373 Gap 4.0 bits
... ----| p35-p10 4549373 total 6.4 bits

```
     *        *4549460  *        *4549470  *        *4549480  *        *4549490  *        *4549500  *        *4549510  *        *4549520  *        *4549530
5' caacaaccatgagagtgaaattcttctgtgatgtggttaaccaatttcagaattcggttgacatgtcttacaaaaggtaga 3'
  - gln - gln - pro -  ●   -    -    -    -    -    -    - fMet - val - asn - gln - phe - gln - asn - ser - gly -  ●   -    -    -    -    -    -    -    -
    - asn - asn - his - glu - ser - glu - ile - leu - val - met - trp - leu - thr - asn - phe - arg - ile - arg - val - asp - met - ser - tyr - gln - lys - val - glu -
       - thr - thr - met - arg - val - lys - phe - leu -  ●    -    -    -    -    -    -    -    - fMet - thr - cys - leu - thr - lys - arg -  ●
```
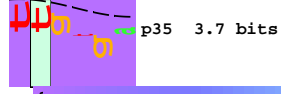
p10   1.7 bits   p10   3.7 bits   ir gntP_uxuA+

... -------------------- } p35-(22)-p10 4549469 Gap 2.3 bits   sd   ... p10

... -------------------| p35-p10 4549469 total 4.5 bits   {-------------------} sd-(6)-ir 4549513 Gap 4.3 bits
... -------------------} p35-(24)-p10 4549471 Gap 2.4 bits |-------------------| sd-ir 4549513 gntP_uxuA+ total 5.8 bits

... -------------------------------------| p35-p10 4549471 total 4.9 bits

p35 6.4 bits

p10 2.2 bits
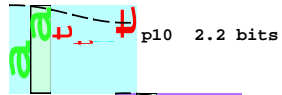
{- -} p35-(21)-p10 4549530 Gap 3.3 bits

p35 3.7 bits

|---| p35-p10 4549530 total 5.4 bits

{- -} p35-(22)-p10 4549498 Gap 2.3 bits
|--| p35-p10 4549498 total 5.1 bits

```
         *        *4549540  *        *4549550  *        *4549560  *        *4549570  *        *4549580  *        *4549590  *        *4549600  *        *4549610
5' a c t t a t a c g c c a t c t c a t c c g a t g c a a c g c c a c g g c t g c g g t c t g g t t g t t c a t c c g g a t a c c t a a a c a a c t c c a g g g t t c 3'
     -     -     -     -     -     -  -fMet - gln - arg - his - leu - ile - arg - cys - asn - ala - thr - ala - ala - val - trp - leu - phe - ile - arg - ile - pro - asp - thr -  ●  -     -     -
   leu - ile - arg - his - leu - ile - arg - cys - asn - ala - thr - ala - ala - val - trp - leu - phe - ile - arg - ile - pro - asp - thr -  ●  -     -     -     -
     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -     -
```
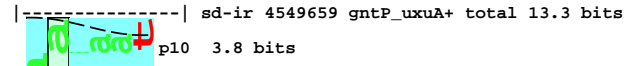
... p10 2.3 bits

```
         *        *4549620  *        *4549630  *        *4549640  *        *4549650  *        *4549660  *        *4549670  *
5' c g c g t c t c t t t g c t g t g g a a c c c a c c t a t g t g a a a g a g g a a a a a t c a t g g a a c a g a c c t g g c t g 3'
     -     -     -     -  -fMet - leu - trp - asn - pro - leu - cys - glu - arg - gly - lys - ile - met - glu - gln - thr - trp - arg -
   ala - ser - leu - cys - cys - gly - thr - his - tyr - val - lys - glu - glu - lys - ser - trp - asn - arg - pro - gly - ala -
     -     -     - -fMet - glu - pro - thr - met -  ●  -     -     -     -     -     -     -     -     -     -     -     -
```

sd

[###> orf 2 codons   [------------------------------------- ... NC_000913.uxuA

ir gntP_uxuA+

{-----------------} sd-(9)-ir 4549640 Gap 2.3 bits   ir gntP_uxuA+

|-----------------| sd-ir 4549640 gntP_uxuA+ total 8.5 bits

ir gntP_uxuA+

{-----------------} sd-(11)-ir 4549642 Gap 3.0 bits
|-------------------| sd-ir 4549642 gntP_uxuA+ total 6.2 bits

sd
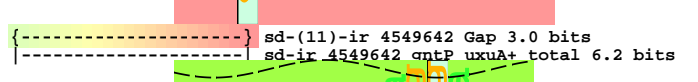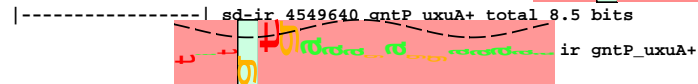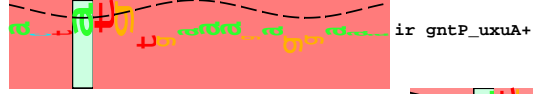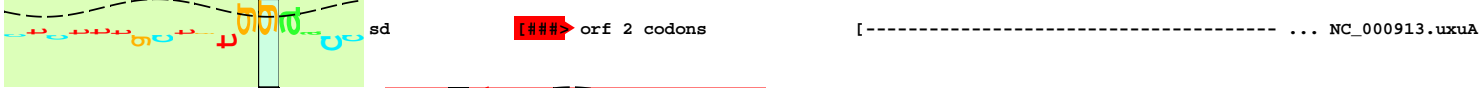
p35 2.9 bits   {-----------------} sd-(8)-ir 4549659 Gap 2.4 bits

|-----------------| sd-ir 4549659 gntP_uxuA+ total 13.3 bits

p10 3.8 bits

{- -} p35-(23)-p10 4549653 Gap 1.4 bits
|--| p35-p10 4549653 total 5.3 bits