- 1 -

piece 1, NC_000913, hlyE_umuD+, config: linear, direction: +, begin: 1229588, end: 1230009

```
      *1229590  *        *1229600  *        *1229610  *        *1229620  *        *1229630  *        *1229640  *        *1229650  *        *1229660  *
5' t a c c g t t t t a t c t g c a a c g a t t t c a g t c a t a a t c a t t c g c c t c t t t a a a t a t a t a a t t g t a a t g a a c t c c t g t t t t a c a 3'
   - tyr - arg - phe - ile - cys - asn - asp - phe - ser - his - asn - his - ser - pro - leu -   -   -   -   -   -   - fMet -   -   -   - thr - pro - val - leu - gln -
   - thr - val - leu - ser - ala - thr - ile - ser - val - ile - ile - ile - arg - leu - phe - lys - tyr - ile - asn - cys - asn - glu - thr - pro - val - leu -
   - pro - phe - tyr - leu - gln - arg - phe - gln - ser -   -   -   -   -   -   -   -   -   -   - fMet - lys - leu - leu - phe - tyr - asn -

... ----------------------------------------------------------] NC_000913.hlyE                                                                     ... p10
```

p10   3.7 bits
p10   2.4 bits

p35   4.8 bits
p10   5.5 bits
p35   5.6 bits
p35   5.5 bits

{---] p35-(22)-p10 1229616 Gap 2.3 bits
|---| p35-p10 1229616 total 7.9 bits

{--} p35-(23)-p10 1229669 Gap
{--} p35-(21)-p10 1229653 Gap 3.3 bits
|--| p35-p10 1229653 total 4.7 bits

p35   4.3 bits

{--------------------------------------} p35-(24)-p10 1229633 Gap 2.4 bits
|--------------------------------------| p35-p10 1229633 total 5.6 bits
--------------------------------------- ... p35-p10 1229669 total 6.0

```
      *1229670  *        *1229680  *        *1229690  *        *1229700  *        *1229710  *        *1229720  *        *1229730  *        *1229740  *
5' a c t a t t a a t a a a t t t t a c t t c a t c t a a t t c a t a g t t a g c c g g g c g g g a t g c g t c a a t g t c t t t a t t t c t a t t a a t a t g a t a 3'
   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   - fMet - ser - leu - phe - leu - leu - ile -   - fMet - ile -
   - leu - leu - ile - asn - phe - thr - ser - ser - asn - ser -   -   -   -   - fMet - arg - gln - cys - leu - tyr - phe - tyr -   -   -   -
   -   -   - tyr -   -   -   -   -   -   -   -   -   -   -   -   -   -   -
```

... p10   1.9 bits   p35   1.3 bits   ... sd

p35   4.4 bits {-------- ... sd-(15)-ir 1229761 Gap

... } p35-(23)-p10 1229669 Gap 1.4 bits |------- ... sd-ir 1229761 hlyE_umuD+

p10   6.3 bits

{-----------------------------------} p35-(24)-p10 1229741 Gap 2.4 bits
|-----------------------------------| p35-p10 1229741 total 5.1 bits
{-----------------------------} ... p35-(24)-p10 1229758 Gap
... | p35-p10 1229669 total 6.0 bits |-----------------------------| ... p35-p10 1229758 total 5.1

```
   *1229750  *        *1229760  *        *1229770  *        *1229780  *        *1229790  *        *1229800  *        *1229810  *        *1229820  *        *1229830
5' a a t a t c a a a c a a t g t c a t t g c g a a t g g c g a a t g c t t c a t t c t a t t t t t a g c c g g g t g a t a t t t t t c a t t c t g c t g 3'
   - asn - ile - lys - gln - cys - leu - met - ser - leu - trp - arg - met - leu - leu - phe - tyr - phe - leu - ala - gly -   -
   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -
   - fMet - phe - asn - val - ile - met - ala - asn - ala - ser - ile - leu - phe - phe - ser - arg - val - ile - phe - phe - ile - ser - ala - gly -
```

... ◁ sd   ir hlyE_umuD+   p10   1.7 bits   p10   5.2 bits

... {------------------} sd-(15)-ir 1229761 Gap 6.0 bits   p10   6.0 bits

... -------------------| sd-ir 1229761 hlyE_umuD+ total 6.1 bits   p10   5.2 bits

sd

ir hlyE_umuD+

{--------------------} sd-(13)-ir 1229776 Gap 4.6 bits
|--------------------| sd-ir 1229776 hlyE_umuD+ total 5.9 bits

```
...  ------------------}  p35-(24)-p10 1229758 Gap 2.4 bits                                                    - 2     p35   0.6 bits

...  ---------------|  p35-p10 1229758 total 5.1 bits                                          {----------------------------------}  p35-(23)-p10 1229814 Gap 1.4 bits

                          p10   3.2 bits   {----------------------------------------}  p35-(26)-p10 1229796 Gap 3.7 bits

                              p35   5.7 bits                                        |----------------------------------------------|  p35-p10 1229814 total 4.4 bits

                                      {--------------------------------}  p35-(23)-p10 1229788 Gap 1.4 bits
                                      |--------------------------------|  p35-p10 1229788 total 6.0 bits
                                      {----------------------------------}  p35-(26)-p10 1229791 Gap 3.7 bits
                                      |----------------------------------|  p35-p10 1229791 total 7.9 bits

                                  p35   3.2 bits

                                      |----------------------------------------|  p35-p10 1229796 total 4.7 bits
```

```
         *        *1229840    *        *1229850    *        *1229860    *        *1229870    *        *1229880    *        *1229890    *        *1229900    *        *1229910
5' g a t g a g c g t c g t c g c c a g a a g g c c a c g t g a g c a c a a g a t a a g a g a a c g a a a a a t c a g c a g c c t a t g c a g c g a c a a a t a t t g 3'
     -fMet - ser - val - val - ala - arg - arg - pro - arg - glu - his - lys - ile - arg - glu - arg - lys - ile - ser - ser - leu - cys - ser - asp - lys - tyr -
                                                         -fMet - ser - thr - arg -
   [###> orf 25 codons
```

```
         *        *1229920    *        *1229930    *        *1229940    *        *1229950    *        *1229960    *        *1229970    *        *1229980    *        *1229990
5' a t a g c c t g a a t c a g t a t t g a t c t g c t g g c a a g a a c a g a c t a c t g t a t a a a a a c a g t a t a a c t t c a g g c a g a t t a t t a t g 3'
   - ile - ala -                                                                                                                                       -fMet -
                   -fMet - ile - cys - trp - gln - glu - gln - thr - thr - val - tyr - lys - asn - ser - ile - thr - ser - gly - arg - leu - leu - cys -
                                            p35   4.2 bits                              p10   3.1 bits                           sd          [----- ... NC_000913.umuD

                                      {--------------------------------------------}  p35-(23)-p10 1229952 Gap 1.4 bits                                        ... ir

                                      |--------------------------------------------|  p35-p10 1229952 total 5.9 bits                        {----------------}  sd-(10)-ir 1229990 Gap 2.7 bits
                                                                                                                                           |----------------|  sd-ir 1229990 hlyE_umuD+ total 8.4
```
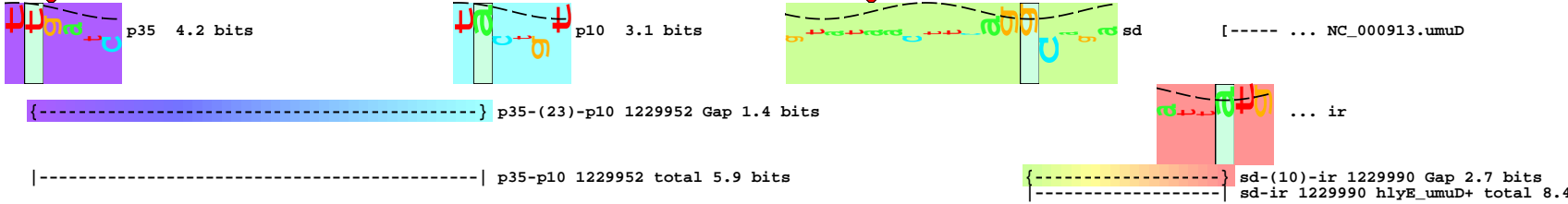
```
         *        *1230000    *
5' t t g t t t a t c a a g c c t g c 3'
   - leu - phe - ile - lys - pro -
   - cys - leu - ser - ser - leu -
...  --------------------------------- ... NC_000913.umuD

...                                  ir hlyE_umuD+
```