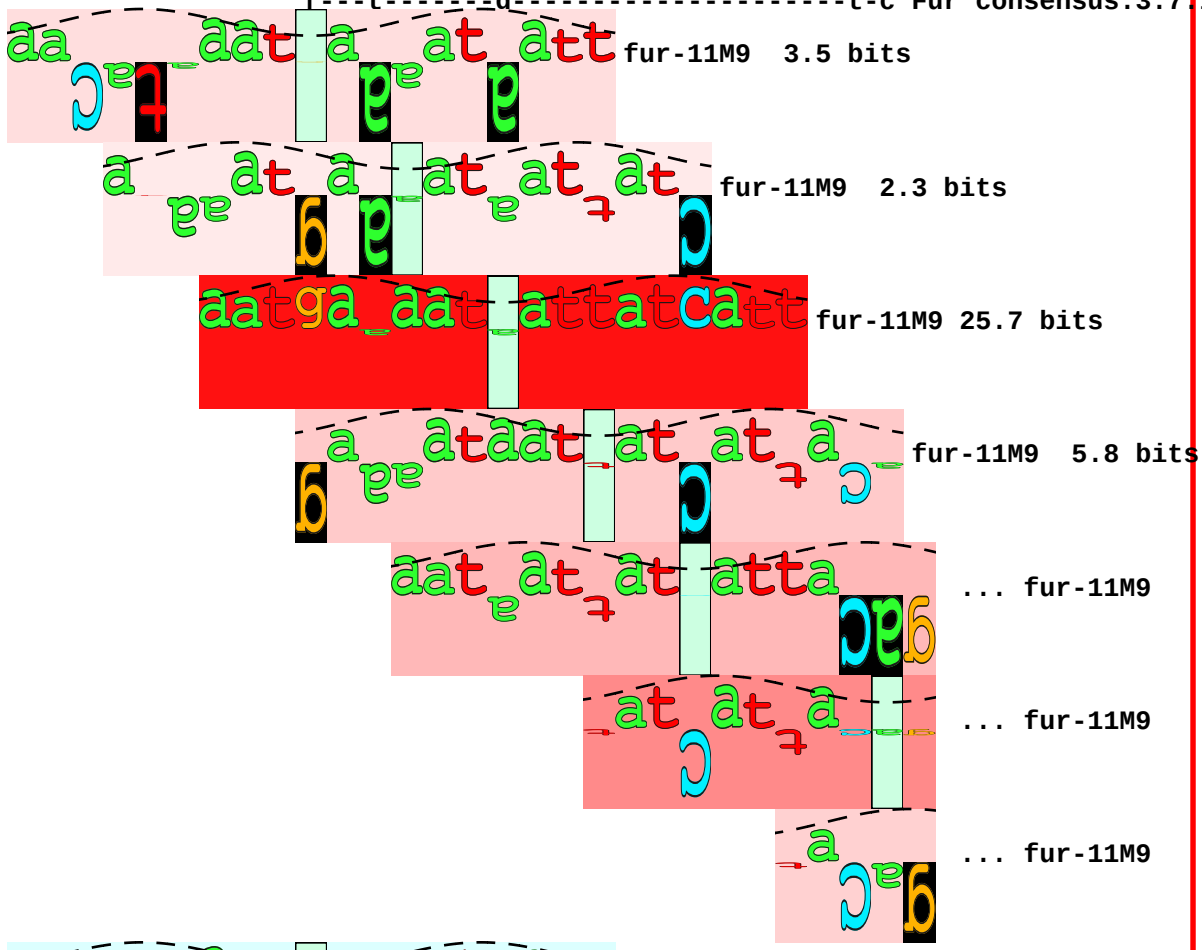
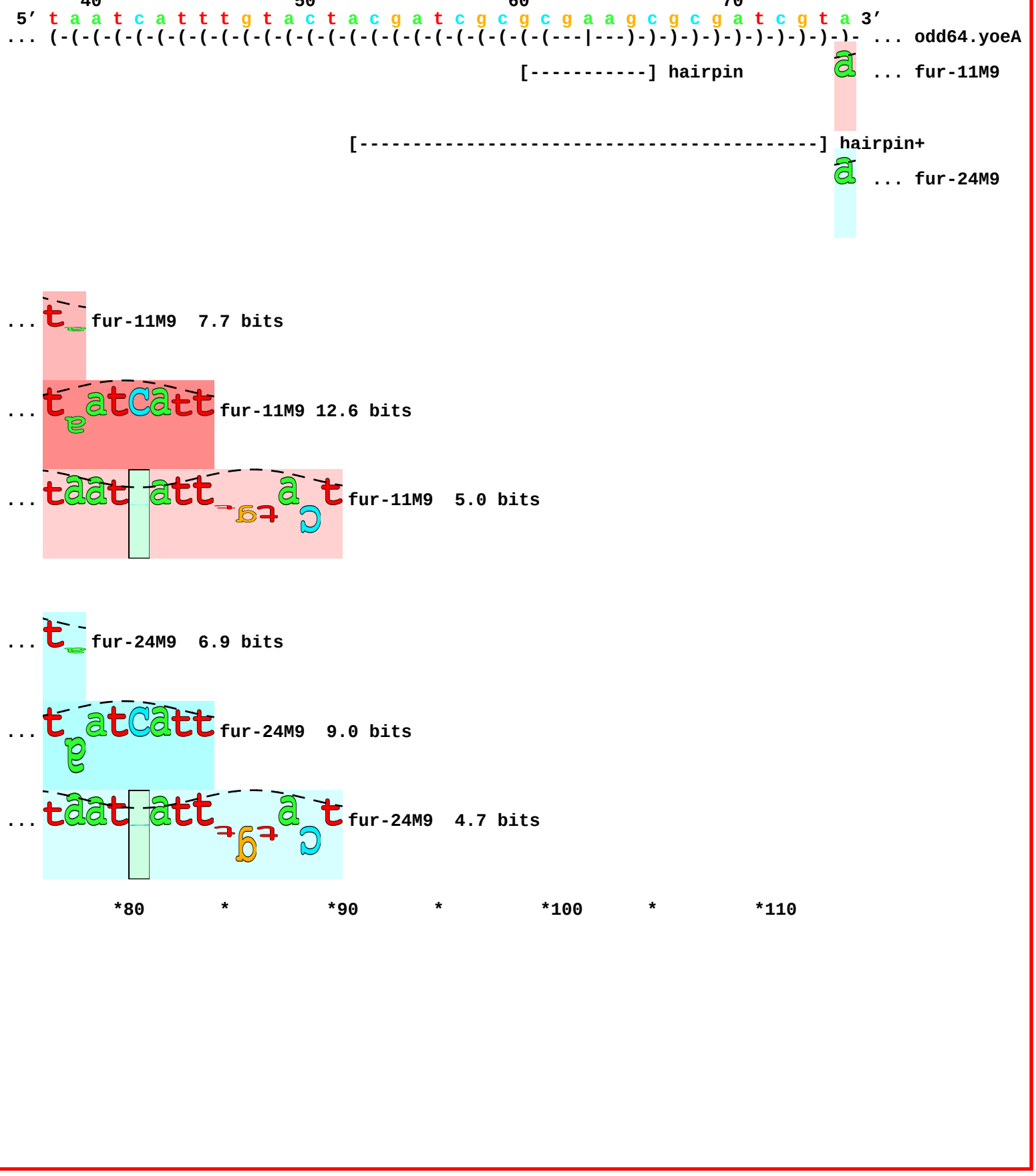
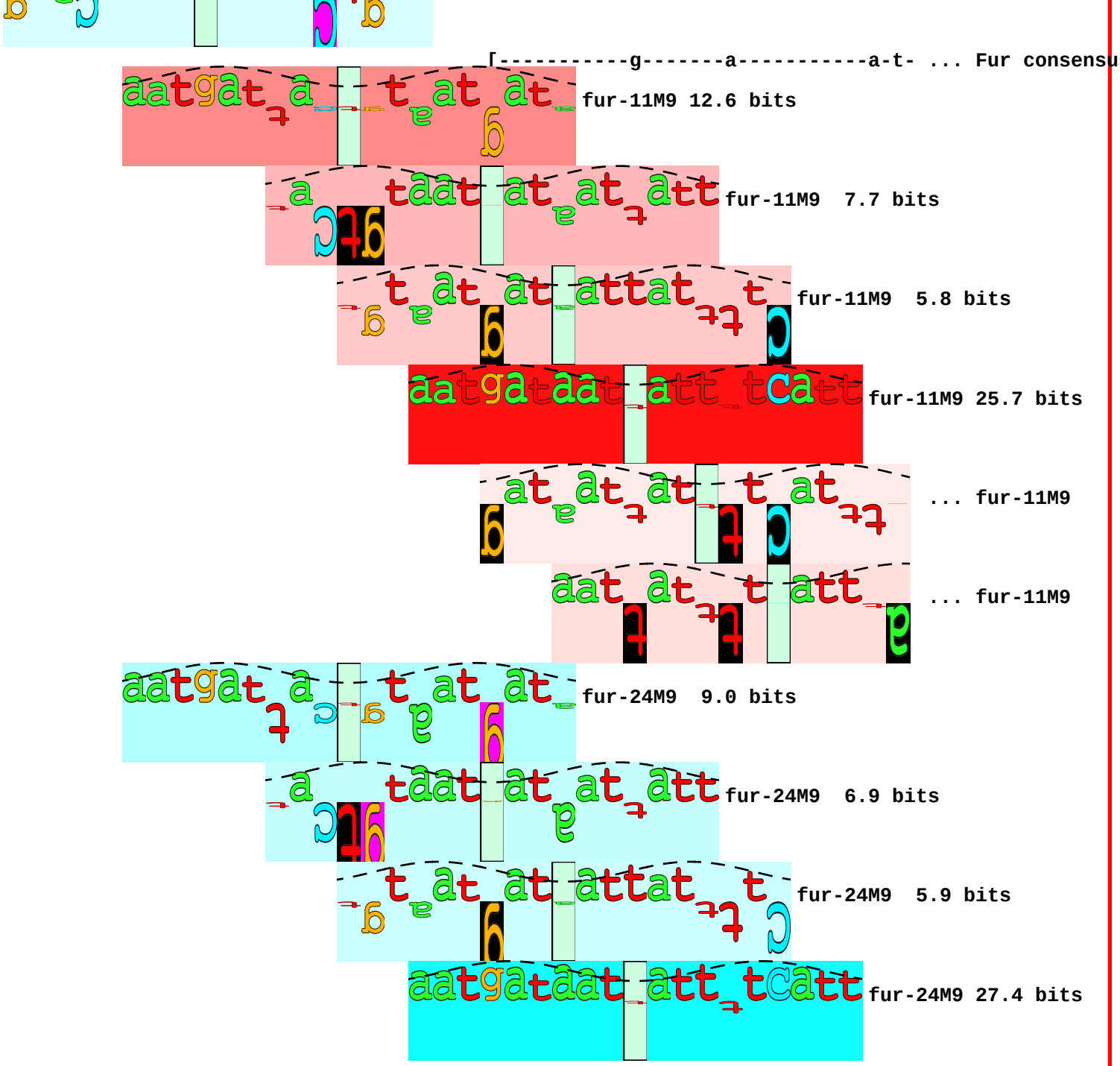
piece 1, yoeA, yoeA, config: linear, direction: +, begin: 1, end: 123

```
          *         *10       *         *20       *         *30       *
5’ g c t a t c g c g a a c a t a a a t g a a a a t a a t t a t c a t t a c a g 3’
          (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(- ... odd64.yoeA
                          g-a-t----------t-t-----c----------] Fur consensus.1.2.3.9.10.13
                                    [---t------a--------------------t-c Fur consensus.3.7.18.19
```




40
50
60
70
5′ t a a t c a t t t g t a c t a c g a t c g c g c g a a g c g c g a t c g t a 3′
... (---|---)-)-)-)-)-)-)-)-)-)-)- ... odd64.yoeA
[----------] hairpin ... fur-11M9
[----------] hairpin+ ... fur-24M9
... fur-11M9 7.7 bits
... fur-11M9 12.6 bits
... fur-11M9 5.0 bits
... fur-24M9 6.9 bits
... fur-24M9 9.0 bits
... fur-24M9 4.7 bits
*80
*90
*100
*110

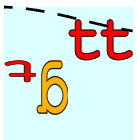

[----------g-------a----------a-t- ... Fur consensus.7.11.17.18.
fur-11M9 12.6 bits
fur-11M9 7.7 bits
fur-11M9 5.8 bits
fur-11M9 25.7 bits
... fur-11M9
... fur-11M9
fur-24M9 9.0 bits
fur-24M9 6.9 bits
fur-24M9 5.9 bits
fur-24M9 27.4 bits

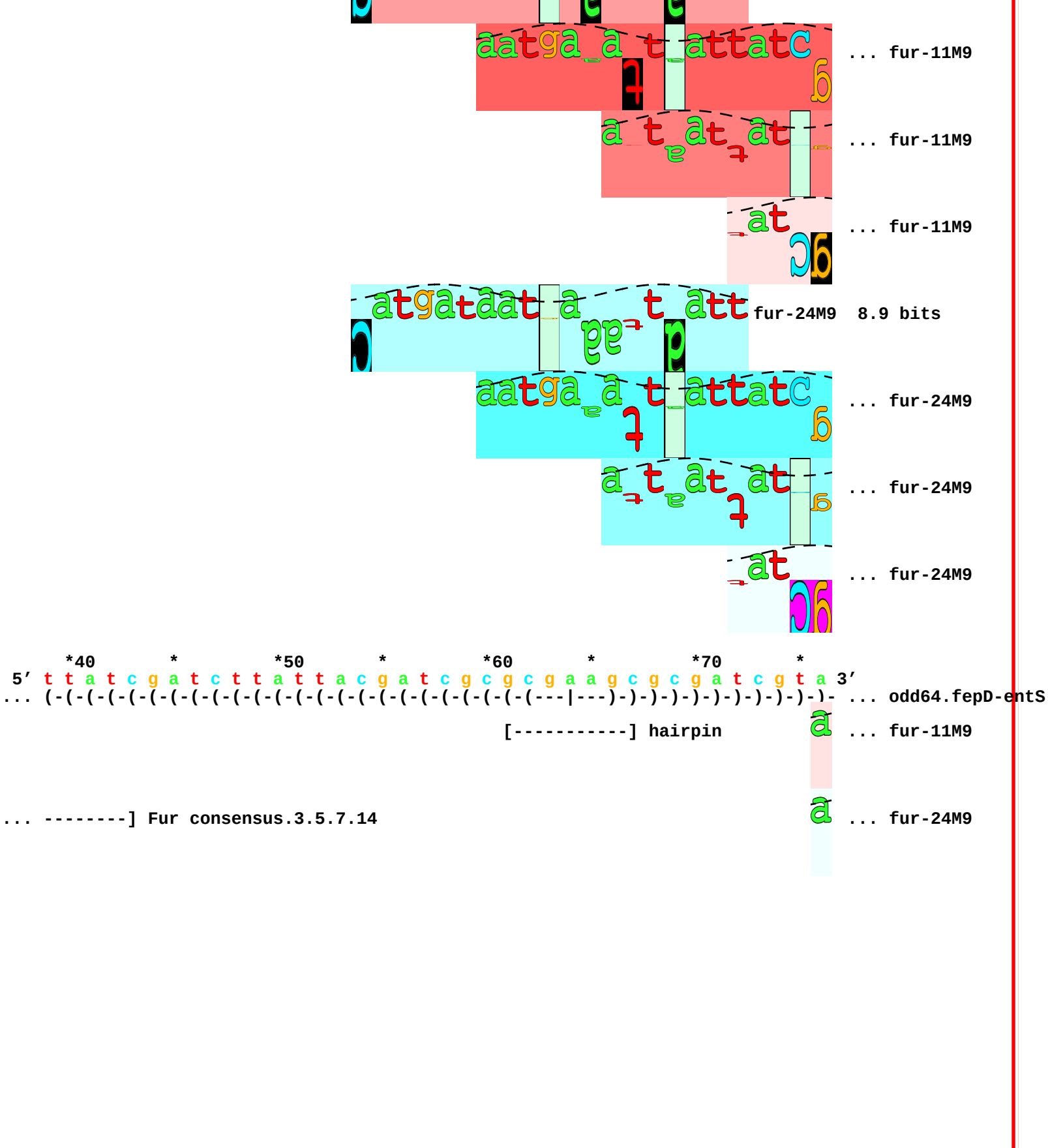
...)-)-)-)-)-)-)-)-) odd64.yoeA 86.5 bits

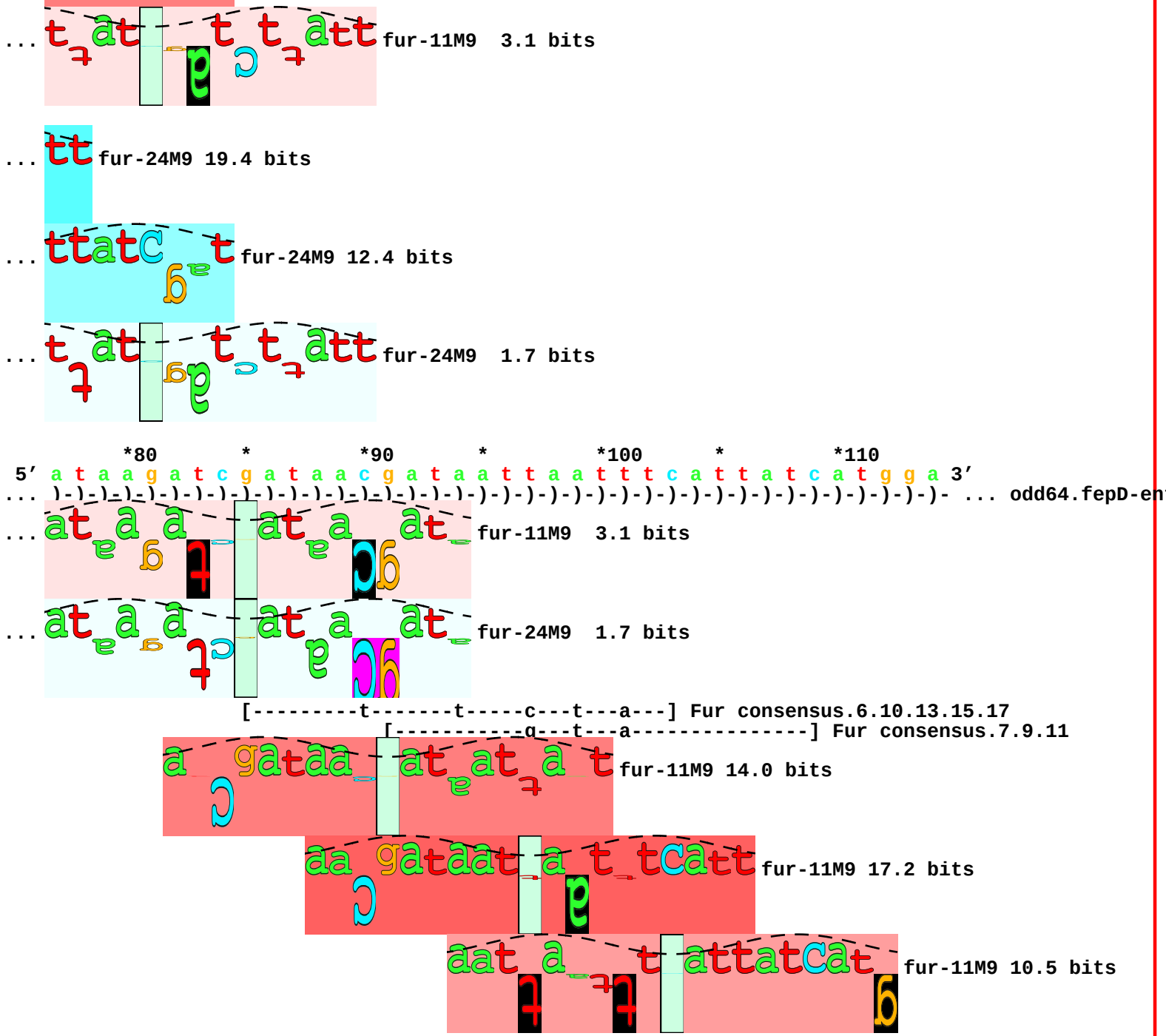
... c Fur consensus.7.11.17.18.19

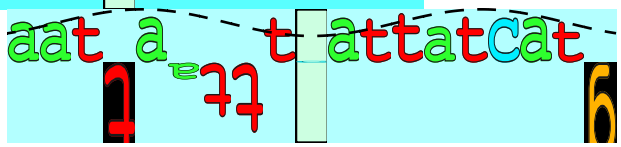
... fur-11M9 2.3 bits

... fur-11M9 3.5 bits

...  fur-24M9 4.0 bits

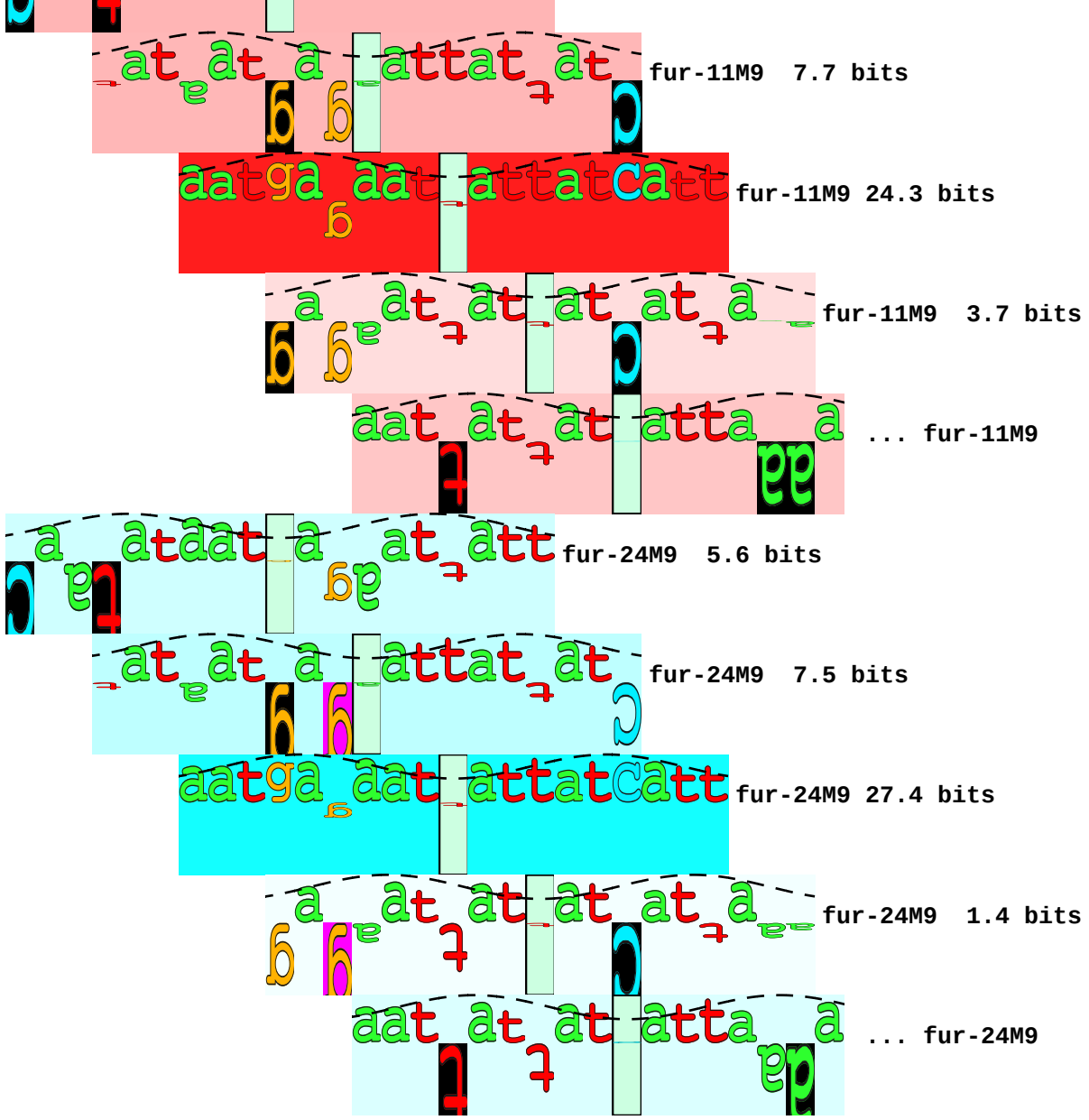

... fur-11M9
... fur-11M9
... fur-11M9
fur-24M9 8.9 bits
... fur-24M9
... fur-24M9
... fur-24M9
*40 * *50 * *60 * *70 *
5’ t t a t c g a t c t t a t t a c g a t c g c g c g a a g c g c g a t c g t a 3’
... (---|---)-)-)-)-)-)-)-)-)-)-)-)- ... odd64.fepD-entS
[----------] hairpin
... fur-11M9
... --------] Fur consensus.3.5.7.14
... fur-24M9


... fur-11M9 3.1 bits
... fur-24M9 19.4 bits
... fur-24M9 12.4 bits
... fur-24M9 1.7 bits
*80 * *90 * *100 * *110
5′ a t a a g a t c g a t a a c g a t a a t t a a t t t c a t t a t c a t g g a 3′
... odd64.fepD-entS
... fur-11M9 3.1 bits
... fur-24M9 1.7 bits
[---------t-------t-----c---t---a---] Fur consensus.6.10.13.15.17
[-----------g---t---a---------------] Fur consensus.7.9.11
fur-11M9 14.0 bits
fur-11M9 17.2 bits
fur-11M9 10.5 bits

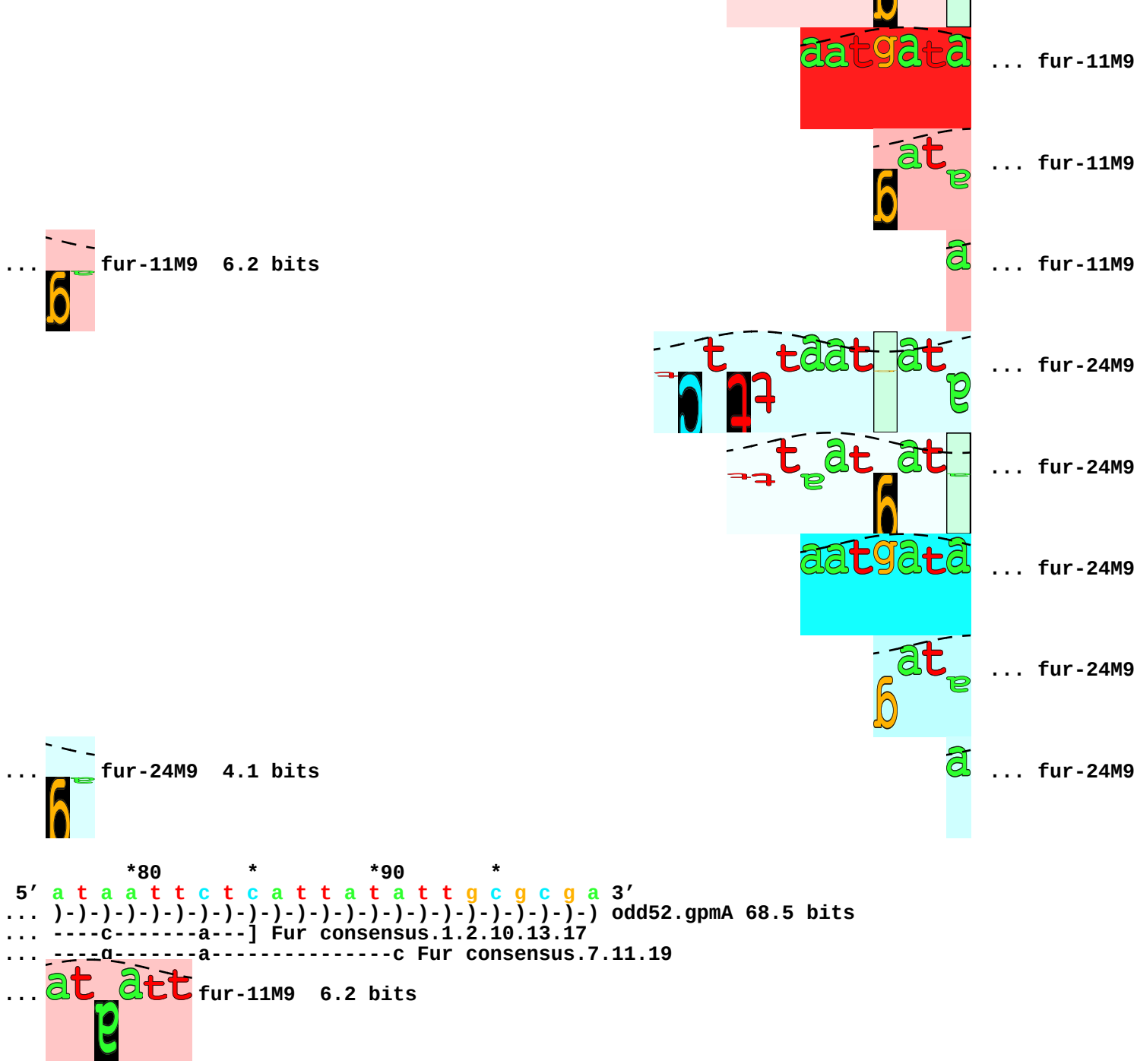


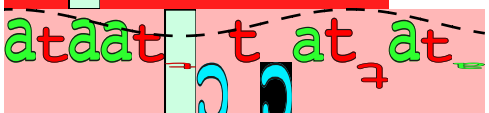
fur-24M9 8.9 bits

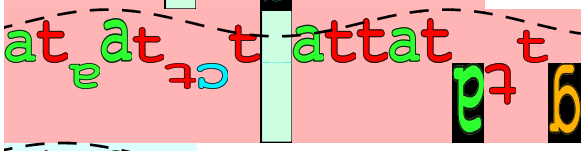
```
    *         *120
 5’ a g t t c g c g a 3’
... )-)-)-)-)-)-)-)-) odd64.fepD-entS 86.5 bits
```




```
     *40       *        *50       *        *60       *        *70       *
 5’ g a a c g a t c g c g c g a a g c g c g a t c g t t c t t t t a a t g a t a 3’
... (-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd52.gpmA
```


... fur-11M9
... fur-11M9
... fur-11M9
... fur-11M9 6.2 bits
... fur-24M9
... fur-24M9
... fur-24M9
... fur-24M9
... fur-24M9
... fur-24M9 4.1 bits
*80 * *90 *
5' a t a a t t c t c a t t a t a t t g c g c g a 3'
...)-) odd52.gpmA 68.5 bits
... ----c-------a---] Fur consensus.1.2.10.13.17
... ----g-------a---------------c Fur consensus.7.11.19
... fur-11M9 6.2 bits

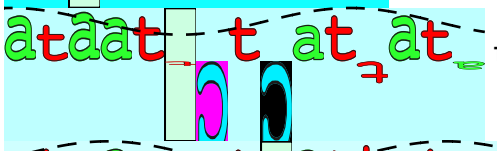

... fur-11M9 7.7 bits

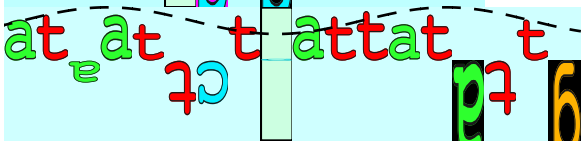

... fur-11M9 8.0 bits

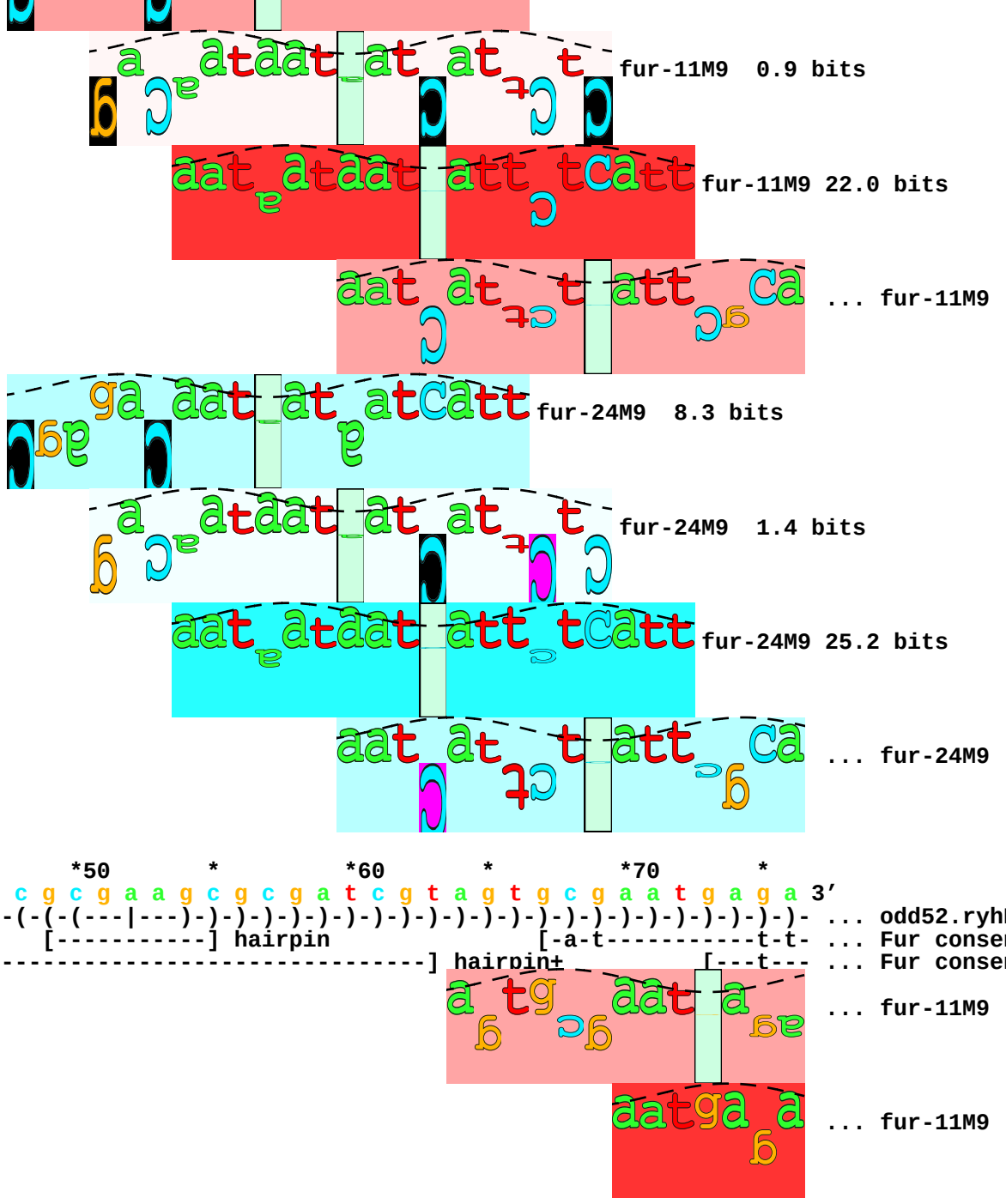
... fur-24M9 4.1 bits

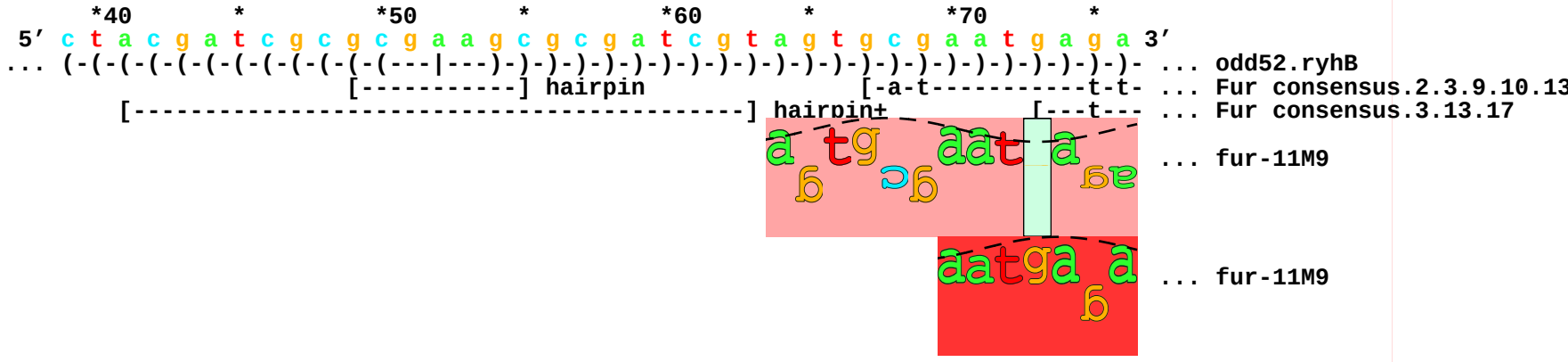
... fur-24M9 1.4 bits

... fur-24M9 27.4 bits


... fur-24M9 7.5 bits

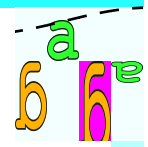

... fur-24M9 5.6 bits


fur-11M9 0.9 bits
fur-11M9 22.0 bits
... fur-11M9
fur-24M9 8.3 bits
fur-24M9 1.4 bits
fur-24M9 25.2 bits
... fur-24M9


*40 * *50 * *60 * *70 *
5′ c t a c g a t c g c g c g a a g c g c g a t c g t a g t g c g a a t g a g a 3′
... (-(-(-(-(-(-(-(-(-(-(---|---)- ... odd52.ryhB
[----------] hairpin [-a-t----------t-t- ... Fur consensus.2.3.9.10.13
[----------] hairpin+ [---t--- ... Fur consensus.3.13.17
... fur-11M9
... fur-11M9

... fur-24M9

... fur-24M9


... fur-24M9

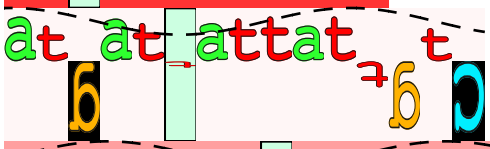
... fur-24M9 8.2 bits

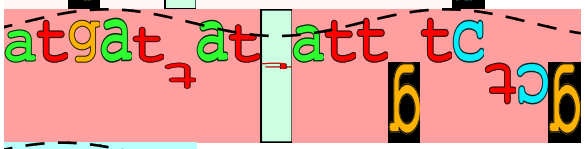
... fur-24M9

```
          *80       *         *90       *
 5’ a t g a t t a t t a t t g t c t c g c g c g a 3’
... )-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-) odd52.ryhB 68.5 bits
... ----c-----------c Fur consensus.2.3.9.10.13.19
... ----------------c-------a---] Fur consensus.3.13.17
```

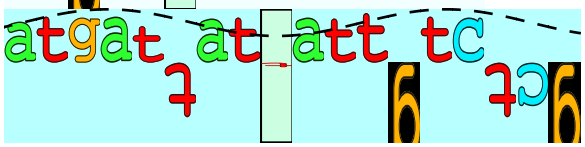
... fur-11M9 9.7 bits

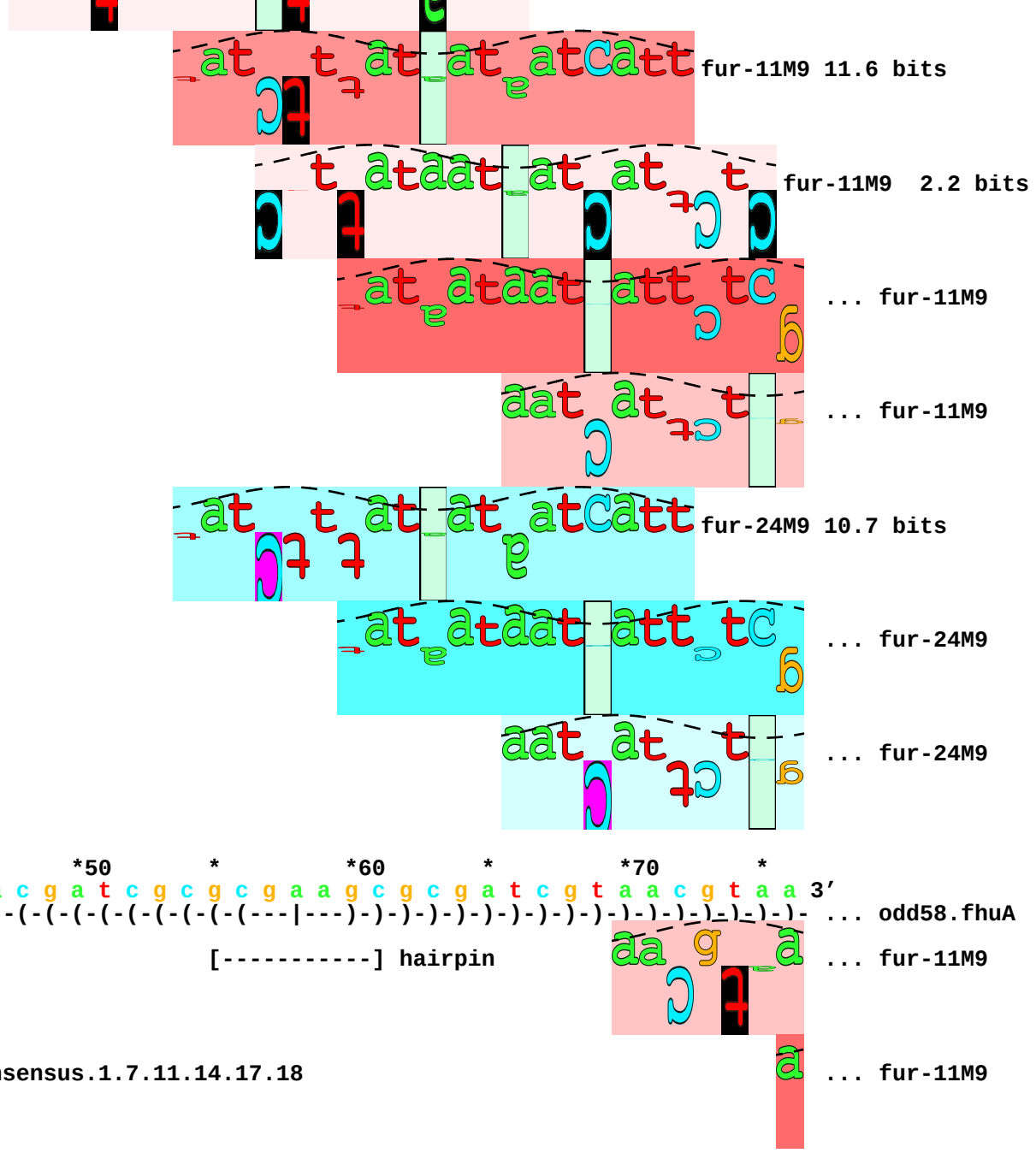
... fur-11M9 22.0 bits

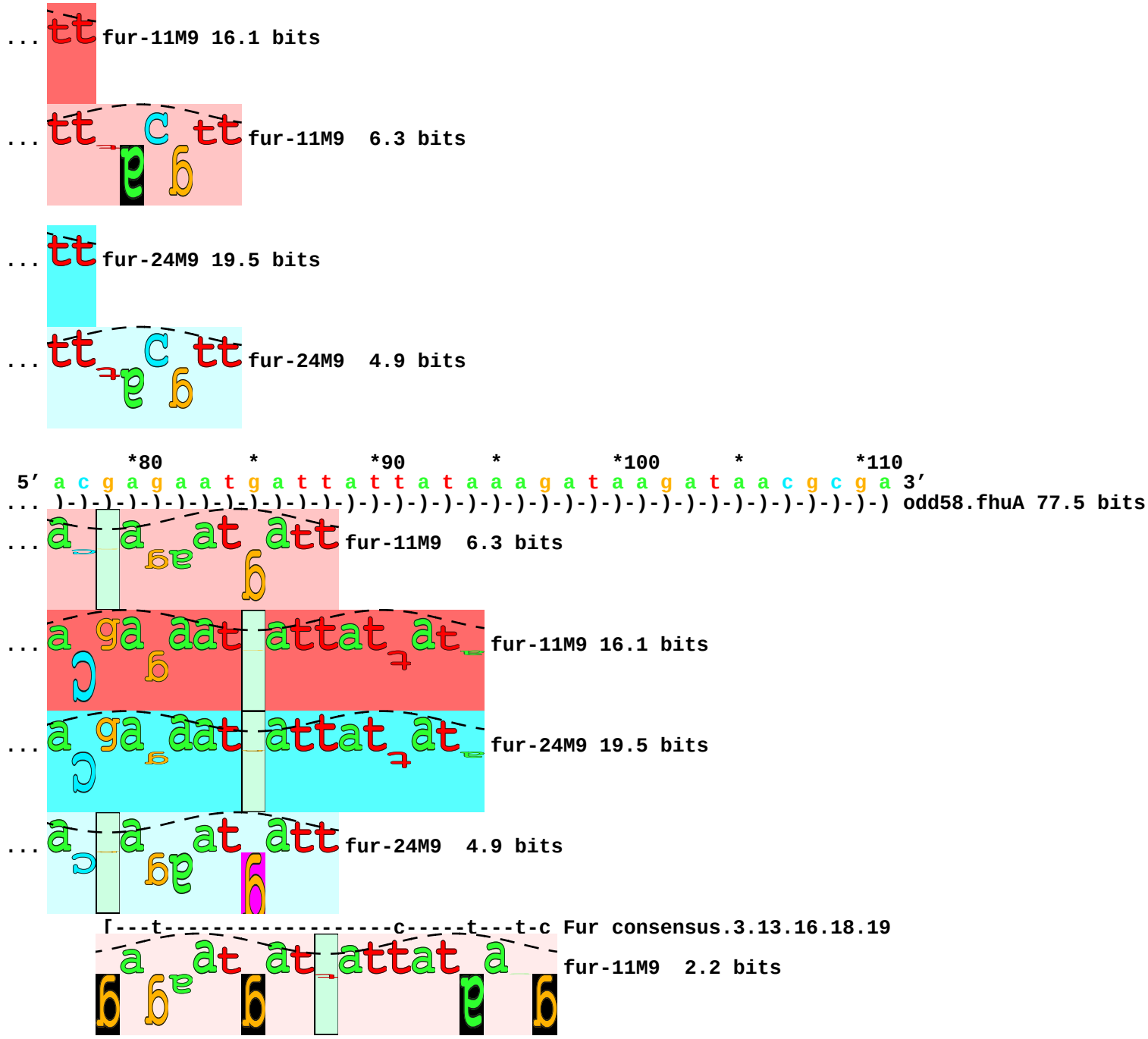

... fur-11M9 0.9 bits

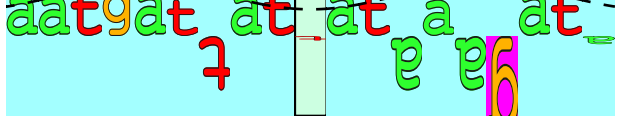

... fur-11M9 10.4 bits

... fur-24M9 8.2 bits

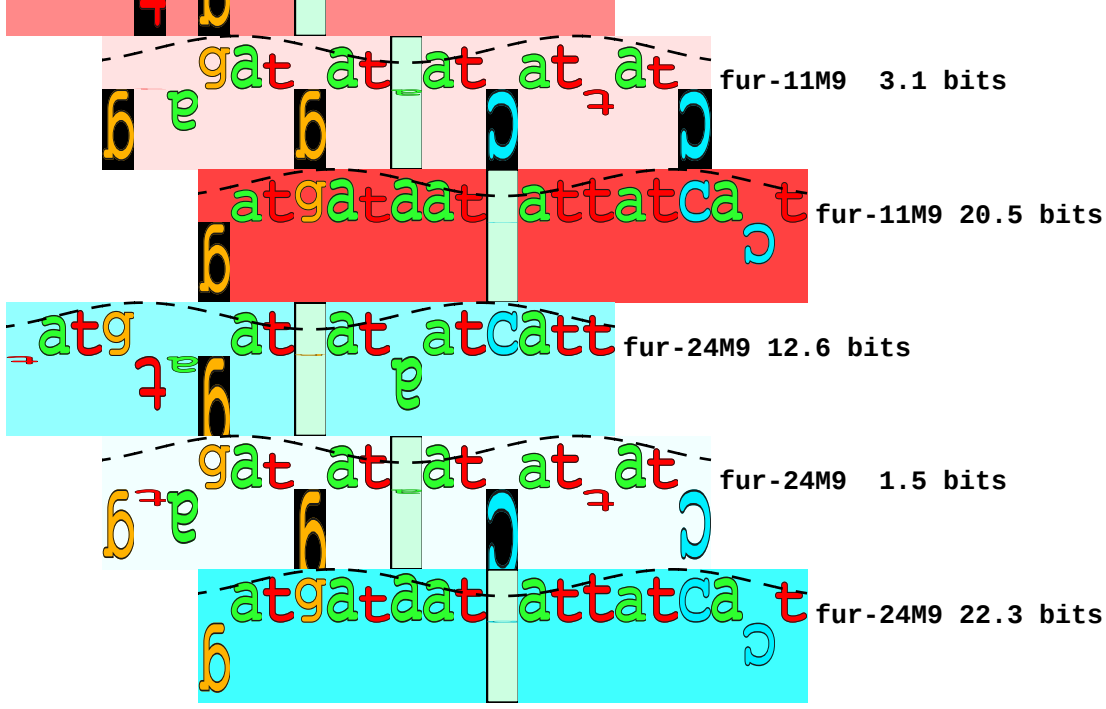
...  fur-24M9 8.3 bits


fur-11M9 11.6 bits
fur-11M9 2.2 bits
... fur-11M9
... fur-11M9
fur-24M9 10.7 bits
... fur-24M9
... fur-24M9
*40 * *50 * *60 * *70 *
5′ t t t a c g t t a c g a t c g c g c g a a g c g c g a t c g t a a c g t a a 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd58.fhuA
[----------] hairpin
... fur-11M9
... ----a-t-] Fur consensus.1.7.11.14.17.18
... fur-11M9

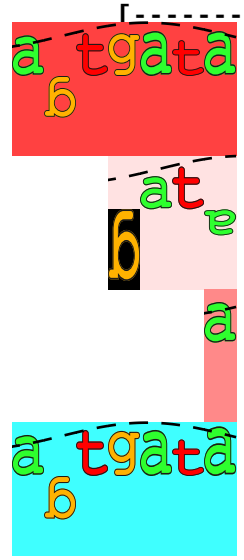

fur-11M9 16.1 bits
fur-11M9 6.3 bits
fur-24M9 19.5 bits
fur-24M9 4.9 bits
*80 * *90 * *100 * *110
5′ a c g a g a a t g a t t a t t a t a a a g a t a a g a t a a c g c g a 3′
odd58.fhuA 77.5 bits
fur-11M9 6.3 bits
fur-11M9 16.1 bits
fur-24M9 19.5 bits
fur-24M9 4.9 bits
Fur consensus.3.13.16.18.19
fur-11M9 2.2 bits



fur-24M9 10.7 bits

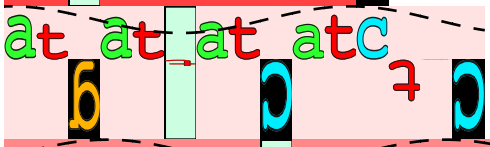



```
     *40       *         *50       *         *60       *         *70       *
 5’ g g a c g a t c g c g c g a a g c g c g a t c g t c c g t a a a g t g a t a 3’
... (-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd52.nohA
                      [-----------] hairpin              g---t---a---------t- ... Fur consensus.1.3.5.10.13
        [-------------------------------------------] hairpin+         [------- ... Fur consensus.16.17.18
```

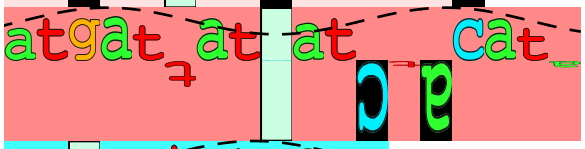


```
         *80       *         *90       *
 5′ a t g a t t a t c a t c t a c a t a c g c g a 3′
... )-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-) odd52.nohA 68.5 bits
... ----c----------] Fur consensus.1.3.5.10.13
... ---------------------t-a-t-] Fur consensus.16.17.18
```

... fur-11M9 20.5 bits

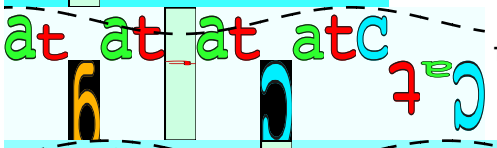


... fur-11M9 3.1 bits

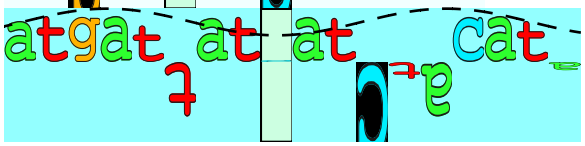


... fur-11M9 12.8 bits

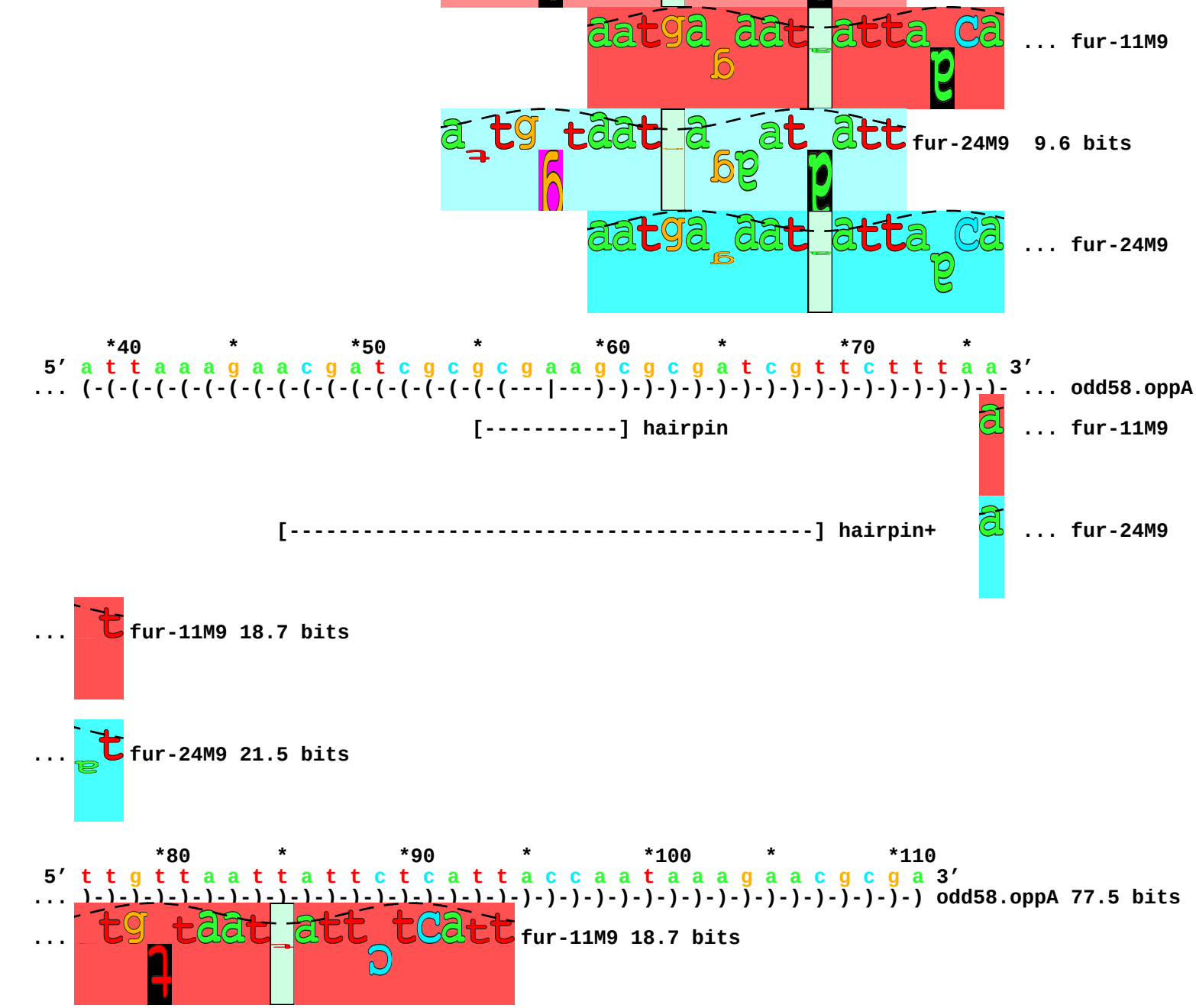
... fur-24M9 22.3 bits

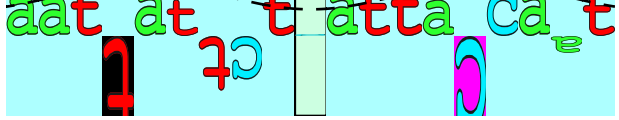


... fur-24M9 1.5 bits

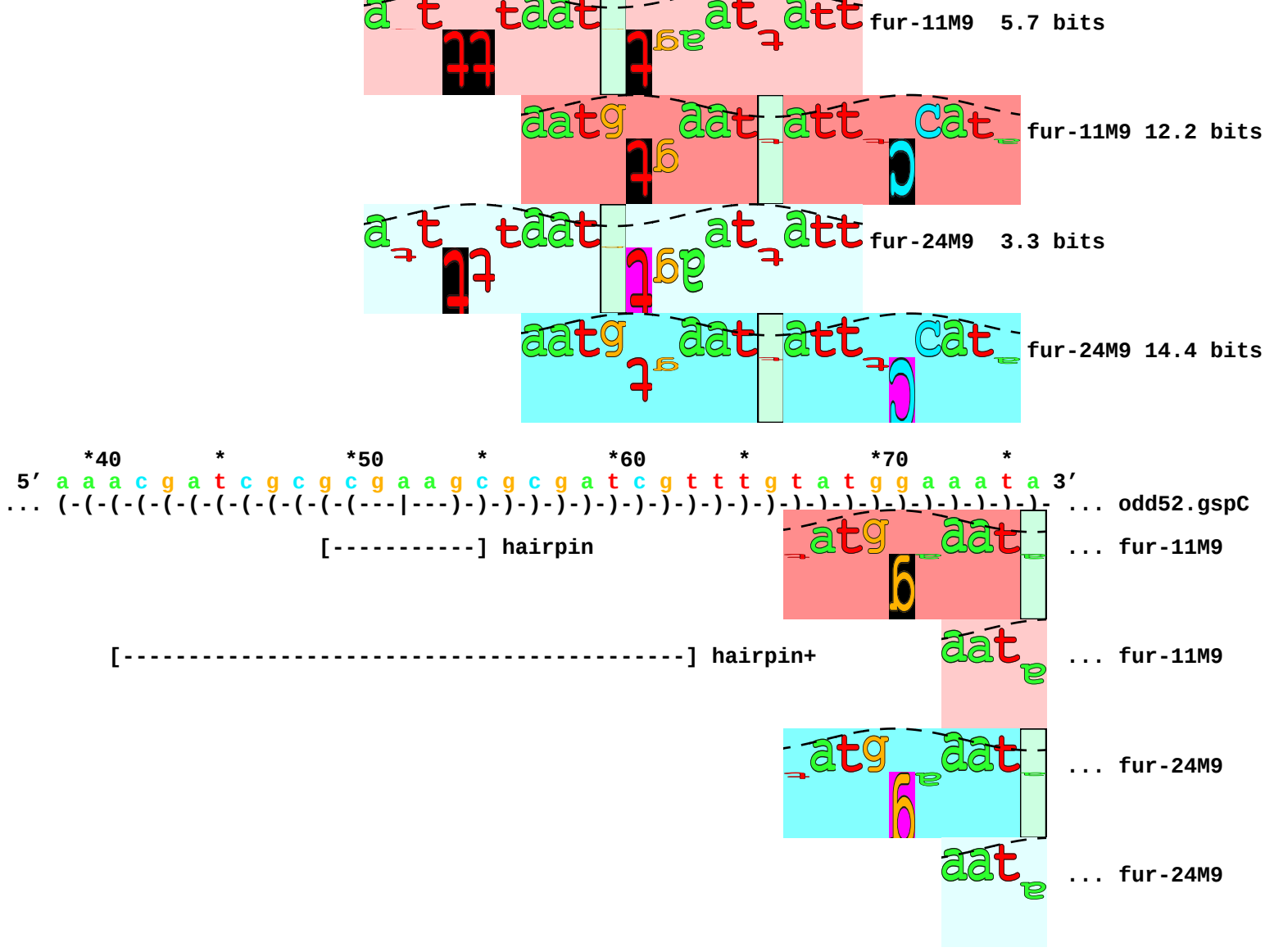


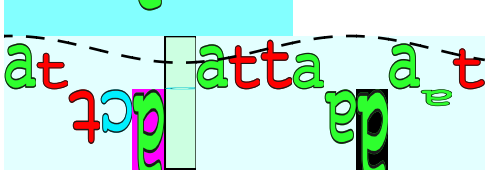
... fur-24M9 12.6 bits


... fur-11M9
fur-24M9 9.6 bits
... fur-24M9
*40 * *50 * *60 * *70 *
5′ a t t a a a g a a c g a t c g c g c g a a g c g c g a t c g t t c t t t a a 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd58.oppA
[----------] hairpin
... fur-11M9
[----------] hairpin+
... fur-24M9
... fur-11M9 18.7 bits
... fur-24M9 21.5 bits
*80 * *90 * *100 * *110
5′ t t g t t a a t t a t t c t c a t t a c c a a t a a a g a a c g c g a 3′
...)-) odd58.oppA 77.5 bits
... fur-11M9 18.7 bits

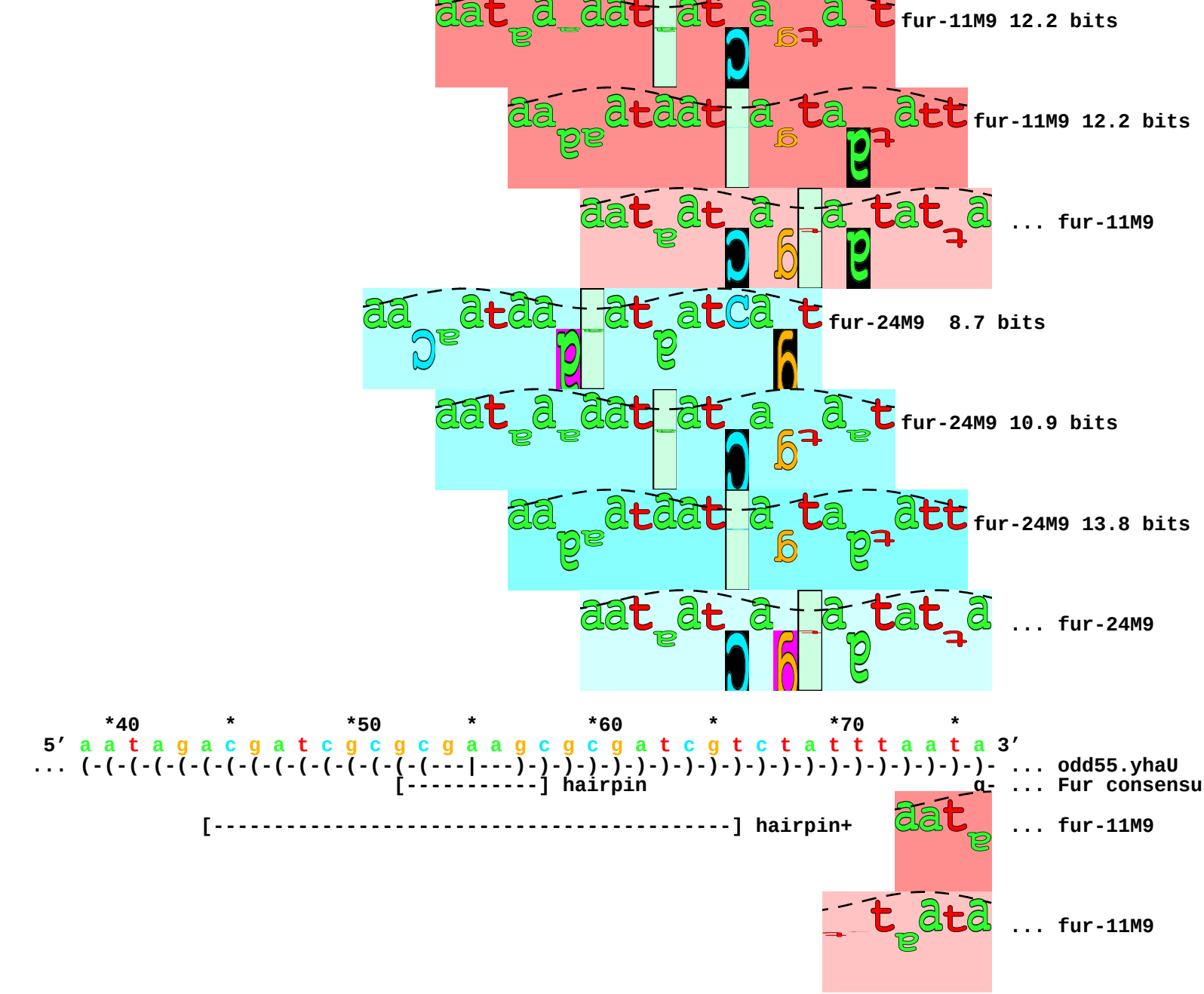


fur-24M9 9.6 bits

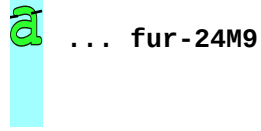

fur-11M9 5.7 bits
fur-11M9 12.2 bits
fur-24M9 3.3 bits
fur-24M9 14.4 bits
*40 * *50 * *60 * *70 *
5′ a a a c g a t c g c g c g a a g c g c g a t c g t t t g t a t g g a a a t a 3′
... (-(-(-(-(-(-(-(-(-(-(-(---|---)- ... odd52.gspC
[----------] hairpin ... fur-11M9
[--] hairpin+ ... fur-11M9
... fur-24M9
... fur-24M9
*80 * *90 *
5′ a t t c a c a t t a a a a a t a a t c g c g a 3′
...)-) odd52.gspC 68.5 bits
... fur-11M9 12.2 bits



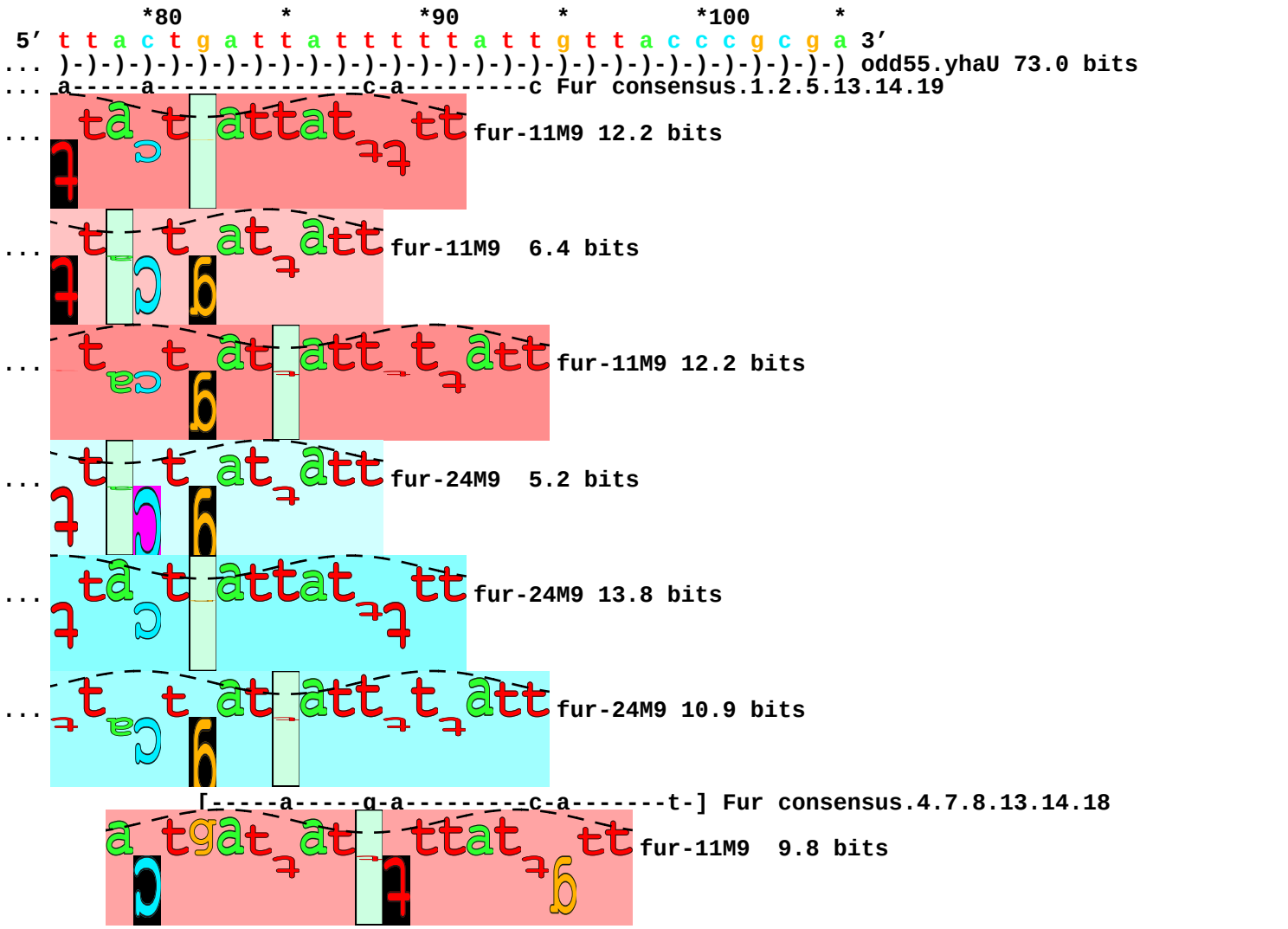
... fur-24M9 3.3 bits

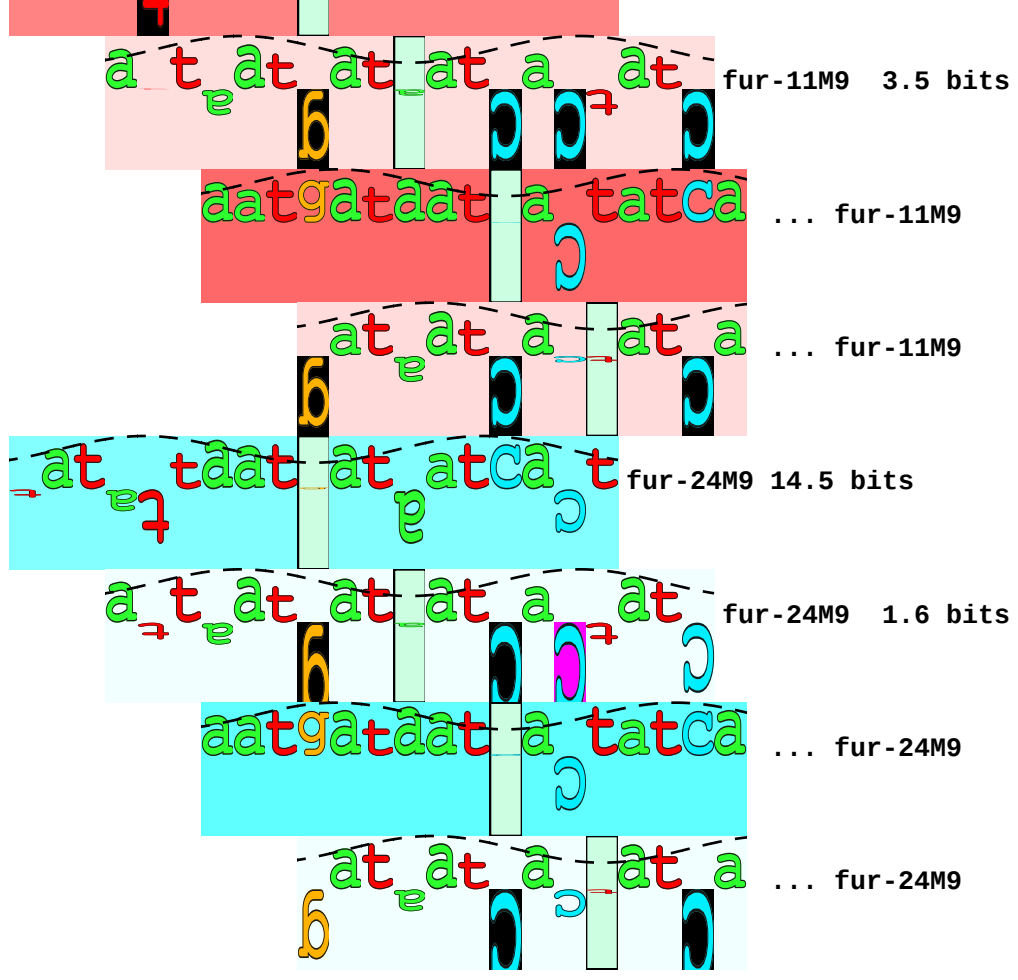

fur-11M9 12.2 bits
fur-11M9 12.2 bits
... fur-11M9
fur-24M9 8.7 bits
fur-24M9 10.9 bits
fur-24M9 13.8 bits
... fur-24M9
*40 * *50 * *60 * *70 *
5′ a a t a g a c g a t c g c g c g a a g c g c g a t c g t c t a t t t a a t a 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd55.yhaU
[----------] hairpin a- ... Fur consensus.1.2.5.13.14
[----------] hairpin+ ... fur-11M9
... fur-11M9

... fur-24M9


... fur-24M9

... fur-24M9 5.2 bits

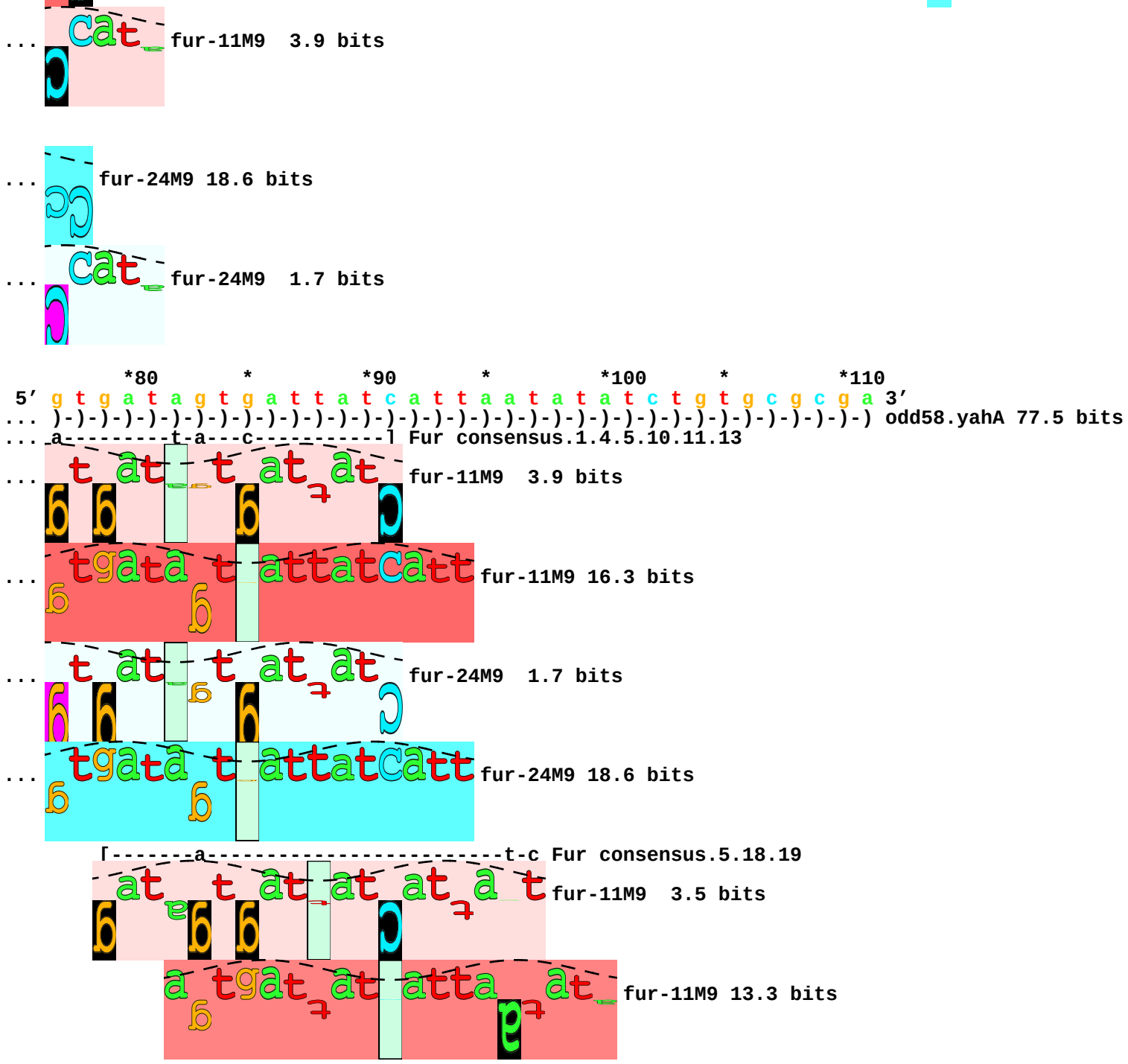

*80
*90
*100
5′ t t a c t g a t t a t t t t t a t t g t t a c c c g c g a 3′
...)-) odd55.yhaU 73.0 bits
... a-----a-------------c-a---------c Fur consensus.1.2.5.13.14.19
... fur-11M9 12.2 bits
... fur-11M9 6.4 bits
... fur-11M9 12.2 bits
... fur-24M9 5.2 bits
... fur-24M9 13.8 bits
... fur-24M9 10.9 bits
[-----a-----g-a---------c-a-------t-] Fur consensus.4.7.8.13.14.18
fur-11M9 9.8 bits

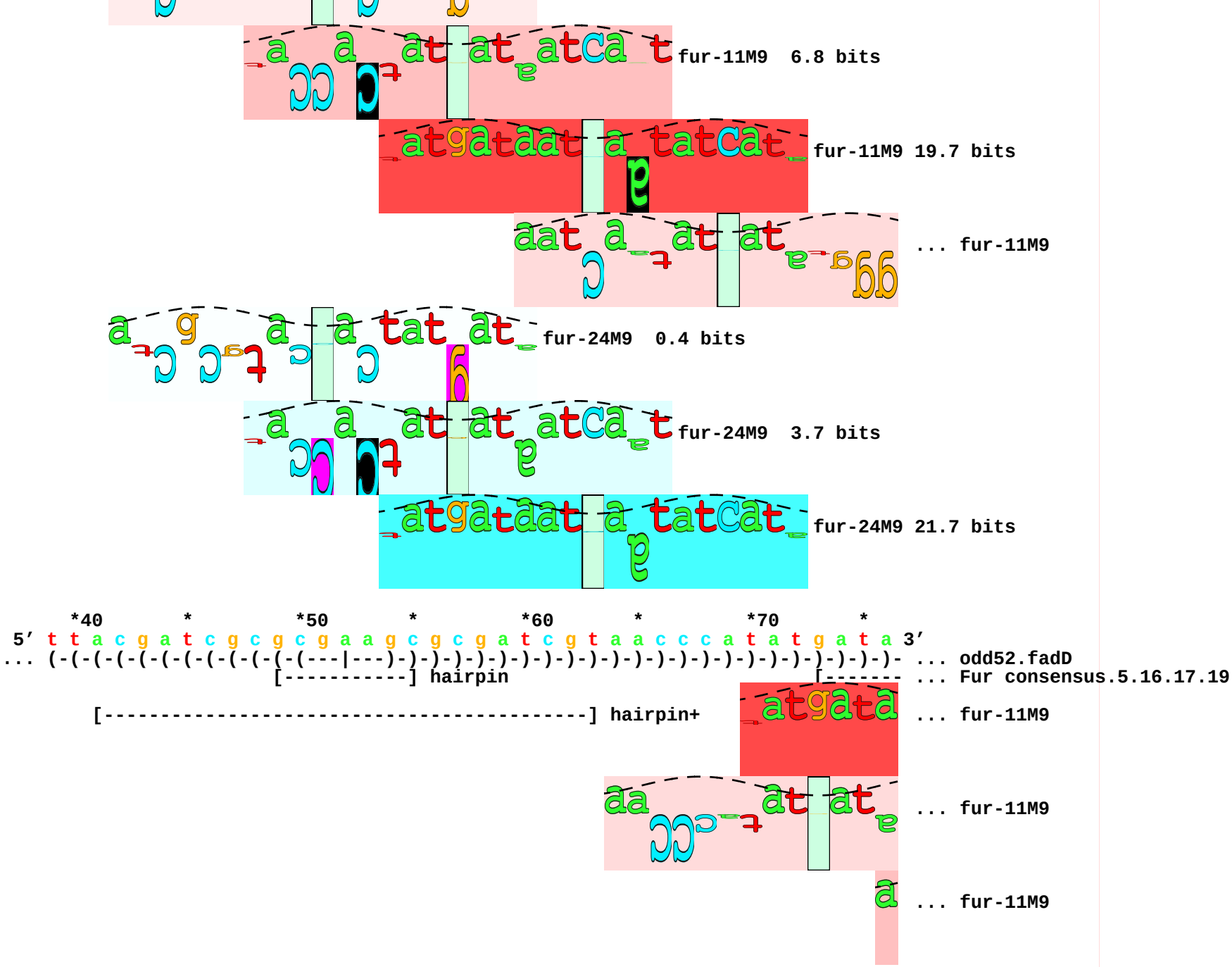



```
     *40       *         *50       *         *60       *         *70       *
 5’ c c a t a t c g a c g a t c g c g c g a a g c g c g a t c g t c g a t a t g 3’
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd58.yahA
                                  [-----------] hairpin                 g-----a- ... Fur consensus.1.4.5.10.11

... t-t-----c Fur consensus.7.9.15.16.19                                          ... fur-11M9

                  [-----------------------------------------] hairpin+            ... fur-11M9
```

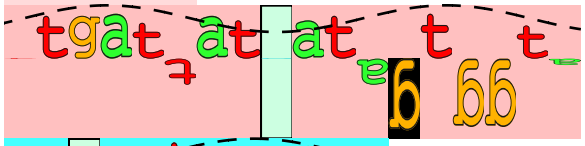

fur-11M9 3.9 bits
fur-24M9 18.6 bits
fur-24M9 1.7 bits
*80 * *90 * *100 * *110
5′ g t g a t a g t g a t t a t c a t t a a t a t a t c t g t g c g c g a 3′
)-) odd58.yahA 77.5 bits
a---------t-a---c----------] Fur consensus.1.4.5.10.11.13
fur-11M9 3.9 bits
fur-11M9 16.3 bits
fur-24M9 1.7 bits
fur-24M9 18.6 bits
[------a-----------------------t-c Fur consensus.5.18.19
fur-11M9 3.5 bits
fur-11M9 13.3 bits


fur-11M9 6.8 bits
fur-11M9 19.7 bits
... fur-11M9
fur-24M9 0.4 bits
fur-24M9 3.7 bits
fur-24M9 21.7 bits
*40 * *50 * *60 * *70 *
5’ t t a c g a t c g c g c g a a g c g c g a t c g t a a c c c a t a t g a t a 3’
... (-(-(-(-(-(-(-(-(-(-(---|---)- ... odd52.fadD
[----------] hairpin
[------- ... Fur consensus.5.16.17.19
[----------] hairpin+
... fur-11M9
... fur-11M9
... fur-11M9

```
        *80       *         *90       *
 5’ t t g a t t a t c a t a g t g g t a c g c g a 3’
... )-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-) odd52.fadD 68.5 bits
... a--------------------t-a---c Fur consensus.5.16.17.19
```

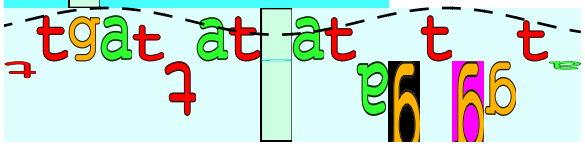
```
... fur-11M9 19.7 bits
```

```
... fur-11M9  3.8 bits
```

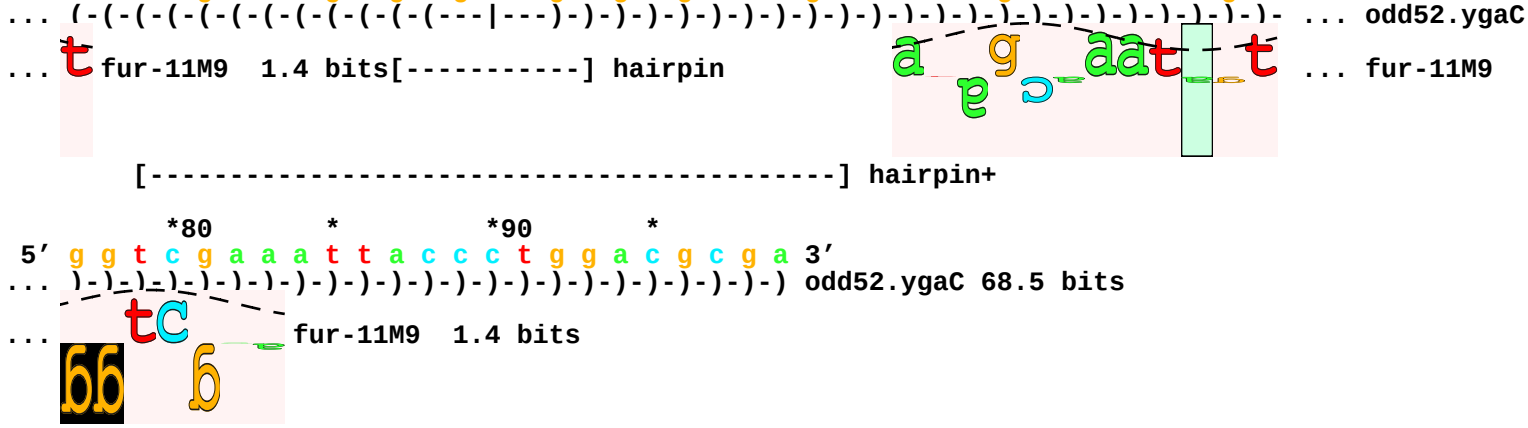


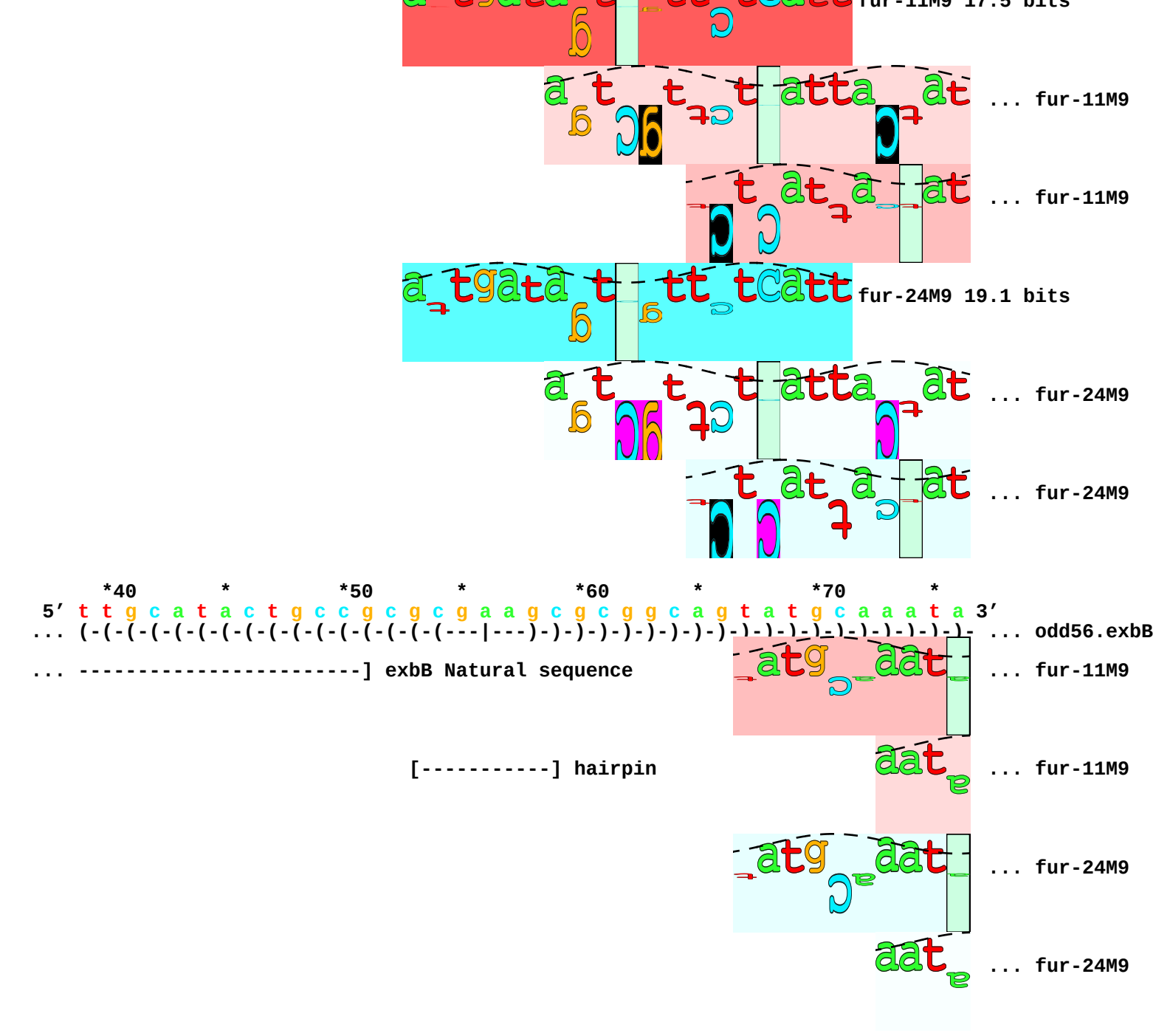
```
... fur-11M9  6.8 bits
```

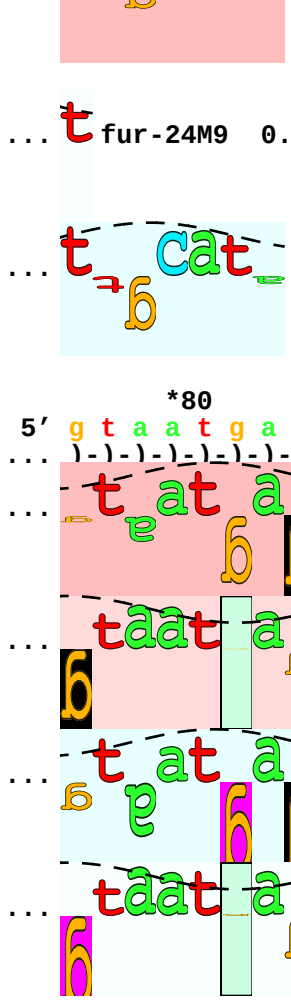
```
... fur-24M9 21.7 bits
```

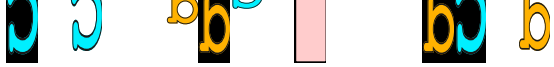


```
... fur-24M9  3.7 bits
```


*40 * *50 * *60 * *70 *
5′ t a a c g a t c g c g c g a a g c g c g a t c g t t a t a g c a a a t a g t 3′
... (-(-(-(-(-(-(-(-(-(-(---|---)- ... odd52.ygaC
... fur-11M9 1.4 bits[----------] hairpin ... fur-11M9
[----------] hairpin+
*80 * *90 *
5′ g g t c g a a a t t a c c c t g g a c g c g a 3′
...)-) odd52.ygaC 68.5 bits
... fur-11M9 1.4 bits

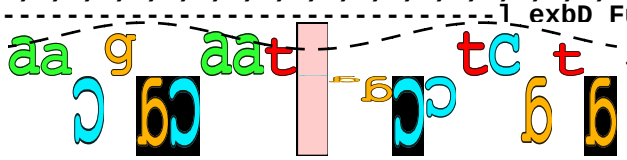

fur-11M9 17.5 bits
... fur-11M9
... fur-11M9
fur-24M9 19.1 bits
... fur-24M9
... fur-24M9
*40 * *50 * *60 * *70 *
5′ t t g c a t a c t g c c g c g c g a a g c g c g g c a g t a t g c a a a t a 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd56.exbB
... ----------] exbB Natural sequence
... fur-11M9
[----------] hairpin
... fur-11M9
... fur-24M9
... fur-24M9


... fur-24M9 0.8 bits
... fur-24M9 2.8 bits
*80 * *90 * *100 *
5′ g t a a t g a g a a c g a c t a t c a a t t c g a c g t c g t 3′
... odd56.exbB 74.5 bits
... fur-11M9 7.0 bits
... fur-11M9 4.0 bits
... fur-24M9 2.8 bits
... fur-24M9 0.8 bits
[] exbB Fur consensus marked on Eick-Helmerich/Braun figure 1
fur-11M9 17.5 bits
fur-24M9 19.1 bits

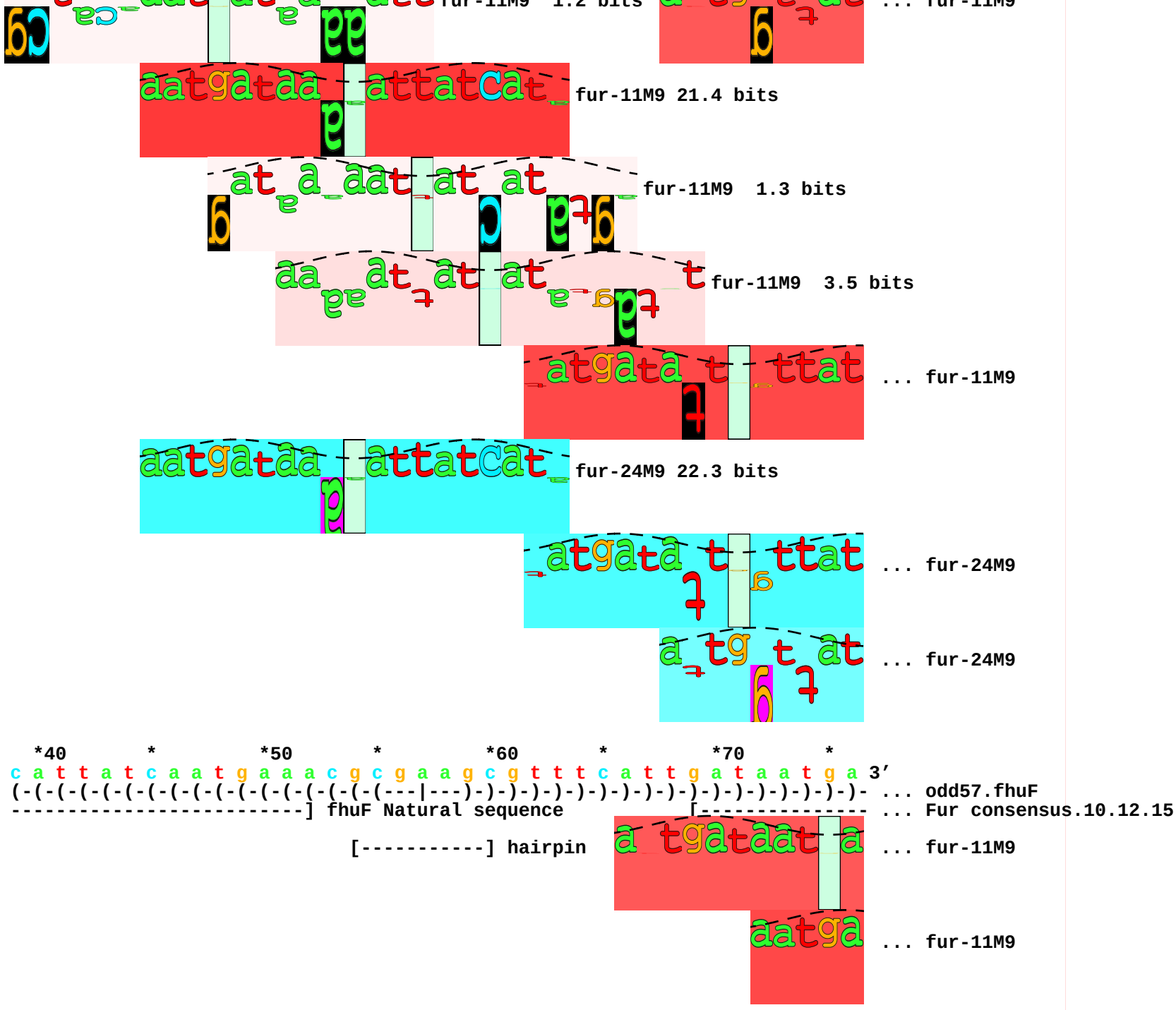


```
     *40       *         *50       *         *60       *         *70       *
 5′ a g a g c t t c t g c g a c g c g a a g c g t c g c a g a a g c t c t g t t 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd56.exbD
... ------------------------] exbD Natural sequence
                               [-----------] hairpin
                                           [------------------------------ ... exbD Natural sequence

         *80       *         *90       *         *100      *
 5′ a g c a a c g g c a a t c g g c c t c g t g g c a g c g a t t 3′
... )-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-)-) odd56.exbD 74.5 bits
    [-----------------------------------] exbD Fur consensus marked on Eick-Helmerich/Braun figure 1
```



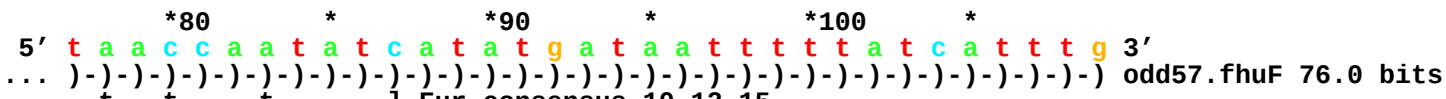
```
                                                fur-11M9 -5.0 bits
... ----------------------------------------------------------] exbD Natural sequence
```

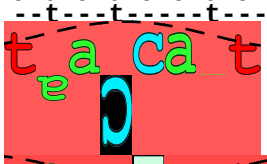

fur-11M9 21.4 bits
fur-11M9 1.3 bits
fur-11M9 3.5 bits
... fur-11M9
fur-24M9 22.3 bits
... fur-24M9
... fur-24M9
*40 * *50 * *60 * *70 *
5′ c a t t a t c a a t g a a a c g c g a a g c g t t t c a t t g a t a a t g a 3′
... (-(-(-(-(-(-(-(-(-(-(-(-(-(-(-(---|---)-)-)-)-)-)-)-)-)-)-)-)-)-)-)- ... odd57.fhuF
... ------------------------] fhuF Natural sequence [--------------- ... Fur consensus.10.12.15
[----------] hairpin
... fur-11M9
... fur-11M9

...
fur-11M9 19.8 bits

...
fur-24M9 20.8 bits

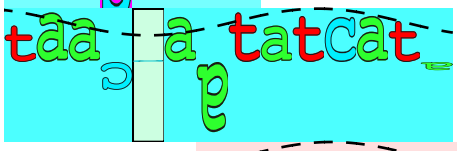
...
fur-24M9 16.1 bits

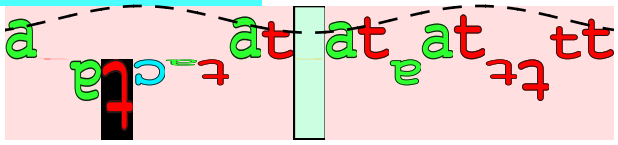

*80
*
*90
*
*100
*
5′ t a a c c a a t a t c a t a t g a t a a t t t t t a t c a t t t g 3′
...)-) odd57.fhuF 76.0 bits
... --t---t-----t-------] Fur consensus.10.12.15

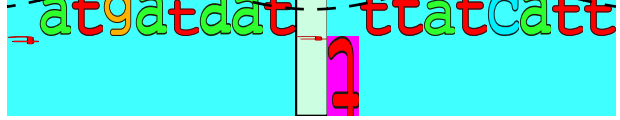

...
fur-11M9 18.0 bits

...
fur-11M9 19.8 bits

...
fur-24M9 16.1 bits


...
fur-24M9 20.8 bits


fur-11M9 3.5 bits



fur-24M9 22.3 bits