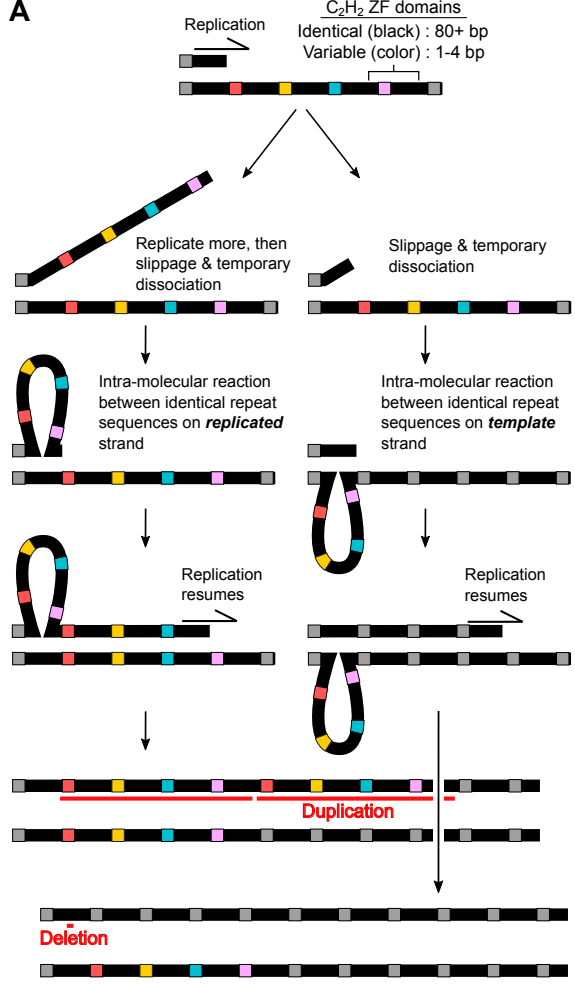

B. Template switching algorithm to derive $Prdm9_N$ from $Prdm9_A$

```
Prdm9A (parent/template)   :A:B:C:D:D:E:C:F:G:H:F:I:J
Prdm9N (progeny/query)     :A:B:C:D:D:E:C:F:G:H|d:J
```

ZF	CIGAR String
:F	15M**A**55M**T**12M
:I	15M**C**55M**C**12M
|d	15M**A**55M**C**12M

1. Find longest match between the LHS of the query and template

```
                          Maximal 5' match
                                        ATCC
Prdm9A (parent/template): A B C D D E C F G H F I J
Prdm9N (progeny/query):   A B C D D E C F G H d J
                                        AC
```

2. Truncate query allele

```
Truncated query: d J
                 C
```

3. Find the longest match to the LHS of truncated query allele (does not have to be on the LHS of template)

```
                                        ATCC
Prdm9A (parent/template): A B C D D E C F G H F I J
Truncated query:                          d J
                                          C
```

4. Repeat until truncated query matches RHS

Result:
- Replicate 10.5 ZFs
- (TS1): Skip 1 ZF
- Replicate 1.5 ZFs

Schematic of events:

```
A-B-C-D-D-E-C-F-G-H-d-J
A-B-C-D-D-E-C-F-G-H-F,I-J
```

One template switch can create $Prdm9_N$ from $Prdm9_A$

C. Template switching algorithm to derive $Prdm9_{L4}$ from $Prdm9_C$

```
Prdm9C  (parent/template)  :A:B:C:D:D:C:C:F:K:H:L:H:I:J
Prdm9L4 (progeny/query)    :A:B:C:D:D:C:C:C:D:D:C:F:K:H:L:H:I:J
```

1. Find longest match between the LHS of the query and template

```
                           Maximal 5' match
Prdm9C  (parent/template)  A B C D D C C F K H L H I J
Prdm9L4 (progeny/query)    A B C D D C C C D D C F K H L H I J
```

2a. Truncate query allele

```
Truncated query: C D D C F K H L H I J
```

3a. Find the longest match to the LHS of truncated query allele

```
Prdm9C (parent/template): A B C D D C C F K H L H I J
Truncated query:          C D D C F K H L H I J
```

2b. Truncate query allele

```
Truncated query: F K H L H I J
```

3b. Find the longest match to the LHS of truncated query allele

```
Prdm9C (parent/template): A B C D D C C F K H L H I J
Truncated query:                        F K H L H I J
```

Result:
- Replicate 7 ZFs
- (TS 1): Re-replicate 4 ZFs
- (TS 2): Skip 1 ZF
- Replicate 7 ZFs

Schematic of events:

```
A-B-C-D-D-C-F-K-H-L-H-I-J
A-B-C-D-D-C-C-F-K-H-L-H-I-J
```

Two template switches can create $Prdm9_{L4}$ from $Prdm9_C$