Code: ACG, CAG

GCATR Tool

June 4, 2020

```
is_code = code_check_if_code(params$code)
cn_circular <- code_check_if_cn_circular(params$code)
circular <- code_check_if_circular(params$code)

comma_free <- code_check_if_comma_free(params$code)
self_comp <- code_check_if_self_complementary(params$code)
acid <- code_get_acid(params$code)
tuple_l = code_tuple_length(code)
```

1 Prperties

- acid: DNA
- Tuple length $\ell = 3$
- Circular: TRUE
- Comma-Free: TRUE
- C_3 Circular: TRUE
- Self-Complementary: FALSE

```
G <- code_factor_graph(params$code, TRUE, TRUE)
plot(G)
```

```
if(circular) {
  G <- code_factor_longest_path(params$code)
} else {
  G <- code_factor_cycle(params$code)
}
plot(G)
```

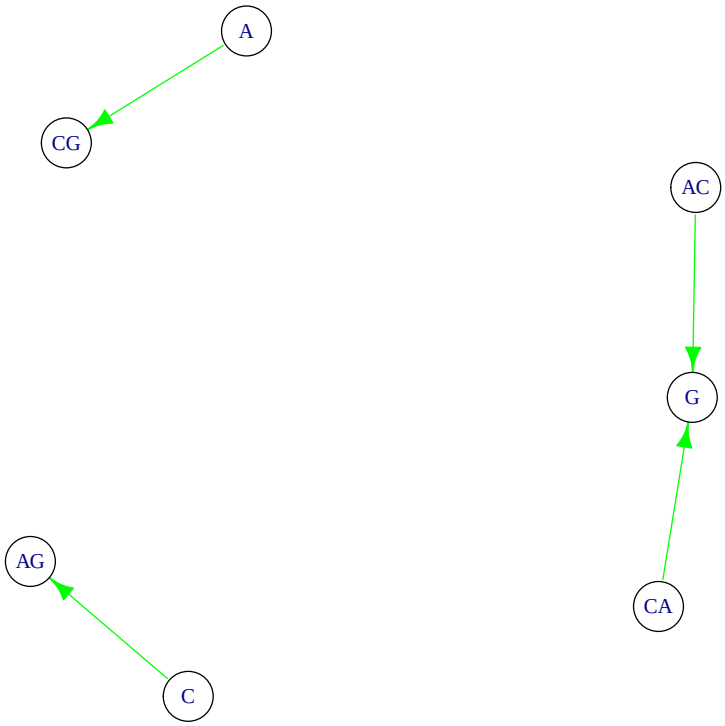

Figure 1: Representing Graph

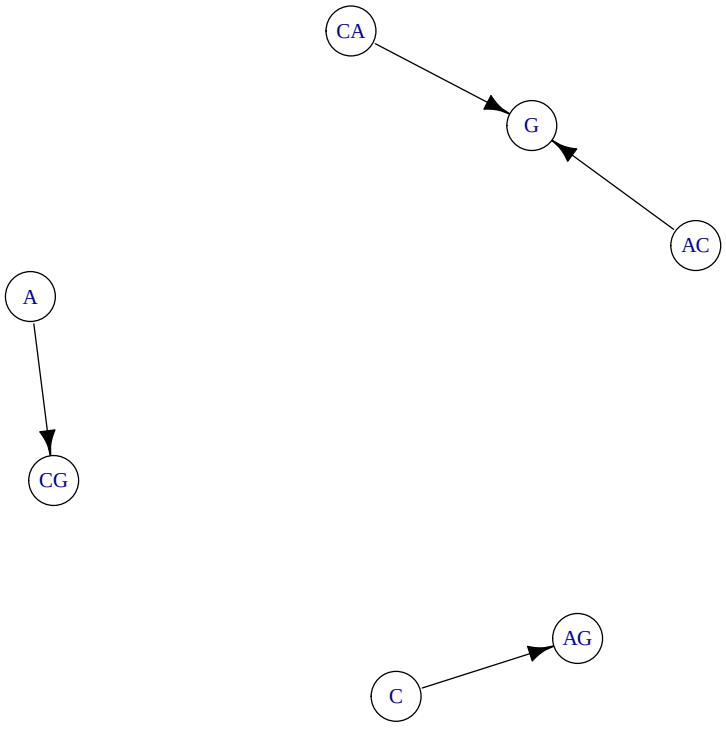

Figure 2: Representing Graph longest path or cycle

	X_U_	X_C_	X_A_	X_G_
U_U	UUU - Phe	UCU - Ser	UAU - Tyr	UGU - Cys
U_C	UUC - Phe	UCC - Ser	UAC - Tyr	UGC - Cys
U_A	UUA - Leu	UCA - Ser	UAA - Stop	UGA - Stop
U_G	UUG - Leu	UCG - Ser	UAG - Stop	UGG - Trp
C_U	CUU - Leu	CCU - Pro	CAU - His	CGU - Arg
C_C	CUC - Leu	CCC - Pro	CAC - His	CGC - Arg
C_A	CUA - Leu	CCA - Pro	CAA - Gln	CGA - Arg
C_G	CUG - Leu	CCG - Pro	CAG - Gln	CGG - Arg
A_U	AUU - Ile	ACU - Thr	AAU - Asn	AGU - Ser
A_C	AUC - Ile	ACC - Thr	AAC - Asn	AGC - Ser
A_A	AUA - Ile	ACA - Thr	AAA - Lys	AGA - Arg
A_G	AUG - Met	ACG - Thr	AAG - Lys	AGG - Arg
G_U	GUU - Val	GCU - Ala	GAU - Asp	GGU - Gly
G_C	GUC - Val	GCC - Ala	GAC - Asp	GGC - Gly
G_A	GUA - Val	GCA - Ala	GAA - Glu	GGA - Gly
G_G	GUG - Val	GCG - Ala	GAG - Glu	GGG - Gly