

RNA Logic Synthesis Summary

April 11, 2013

Table 1: An optimal assignment (AGCU = 00011011) of minterms to amino acids for the Universal Code

Amino Acid	Codon	Code	Minterm
Ala	GCA	011000	m24
	GCG	011001	m25
	GCC	011010	m26
	GCU	011011	m27
Arg	AGA	000100	m4
	AGG	000101	m5
	CGA	100100	m36
	CGG	100101	m37
	CGC	100110	m38
	CGU	100111	m39
Asn	AAC	000010	m2
	AAU	000011	m3
Asp	GAC	010010	m18
	GAU	010011	m19
Cys	UGC	110110	m54
	UGU	110111	m55
Gly	GGA	010100	m20
	GGG	010101	m21
	GGC	010110	m22
	GGU	010111	m23
Gln	CAA	100000	m32
	CAG	100001	m33
Glu	GAA	010000	m16
	GAG	010001	m17
His	CAC	100010	m34
	CAU	100011	m35
Ile	AUA	001100	m12
	AUC	001110	m14
	AUU	001111	m15
Leu	CUA	101100	m44

Amino Acid	Codon	Code	Minterm
	CUG	101101	m45
	CUC	101110	m46
	CUU	101111	m47
	UUA	111100	m60
	UUG	111101	m61
Lys	AAA	000000	m0
	AAG	000001	m1
Met	AUG	001101	m13
Phe	UUC	111110	m62
	UUU	111111	m63
Pro	CCA	101000	m40
	CCG	101001	m41
	CCC	101010	m42
	CCU	101011	m43
Ser	AGC	000110	m6
	AGU	000111	m7
	UCA	111000	m56
	UCG	111001	m57
	UCC	111010	m58
	UCU	111011	m59
Thr	ACA	001000	m8
	ACG	001001	m9
	ACC	001010	m10
	ACU	001011	m11
Trp	UGG	110101	m53
Tyr	UAC	110010	m50
	UAU	110011	m51
Val	GUA	011100	m28
	GUG	011101	m29
	GUC	011110	m30
	GUU	011111	m31
Term	UAA	110000	m48
	UAG	110001	m49
(Sel)	UGA	110100	m52

Table 2: An optimal assignment (AGCU = 00011011) of minterms to amino acids for the Mitochondrial Code

Amino Acid	Codon	Code	Minterm
Ala	GCA	011000	m24
	GCG	011001	m25
	GCC	011010	m26
	GCU	011011	m27
Arg	CGA	100100	m36
	CGG	100101	m37
	CGC	100110	m38
	CGU	100111	m39
Asn	AAC	000010	m2
	AAU	000011	m3
Asp	GAC	010010	m18
	GAU	010011	m19
Cys	UGC	110110	m54
	UGU	110111	m55
Gly	GGA	010100	m20
	GGG	010101	m21
	GGC	010110	m22
	GGU	010111	m23
Gln	CAA	100000	m32
	CAG	100001	m33
Glu	GAA	010000	m16
	GAG	010001	m17
His	CAC	100010	m34
	CAU	100011	m35
Ile	AUC	001110	m14
	AUU	001111	m15
Leu	CUA	101100	m44
	CUG	101101	m45
	CUC	101110	m46
	CUU	101111	m47
	UUA	111100	m60
	UUG	111101	m61
Lys	AAA	000000	m0
	AAG	000001	m1
Met	AUA	001100	m12
	AUG	001101	m13
Phe	UUC	111110	m62
	UUU	111111	m63
Pro	CCA	101000	m40
	CCG	101001	m41
	CCC	101010	m42

Amino Acid	Codon	Code	Minterm
	CCU	101011	m43
Ser	AGC	000110	m6
	AGU	000111	m7
	UCA	111000	m56
	UCG	111001	m57
	UCC	111010	m58
	UCU	111011	m59
Thr	ACA	001000	m8
	ACG	001001	m9
	ACC	001010	m10
	ACU	001011	m11
Trp	UGA	110100	m52
	UGG	110101	m53
Tyr	UAC	110010	m50
	UAU	110011	m51
Val	GUA	011100	m28
	GUG	011101	m29
	GUC	011110	m30
	GUU	011111	m31
Stop	AGA	000100	m4
	AGG	000101	m5
	UAA	110000	m48
	UAG	110001	m49

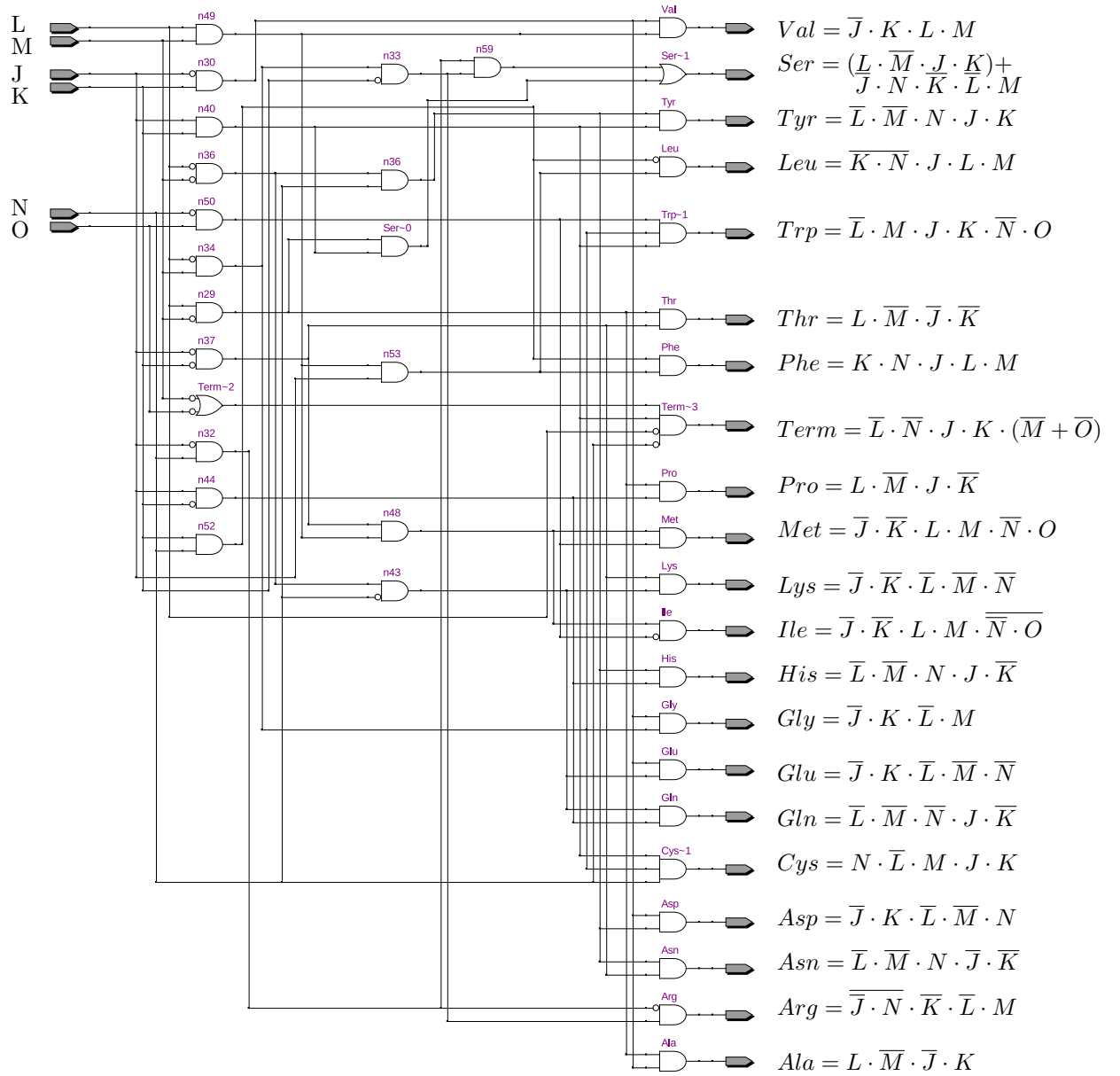


Figure 1: Gate Schematic generated by Quartus for amino acid functions constructing the Universal Code using AGCU = 00011011 assignment.

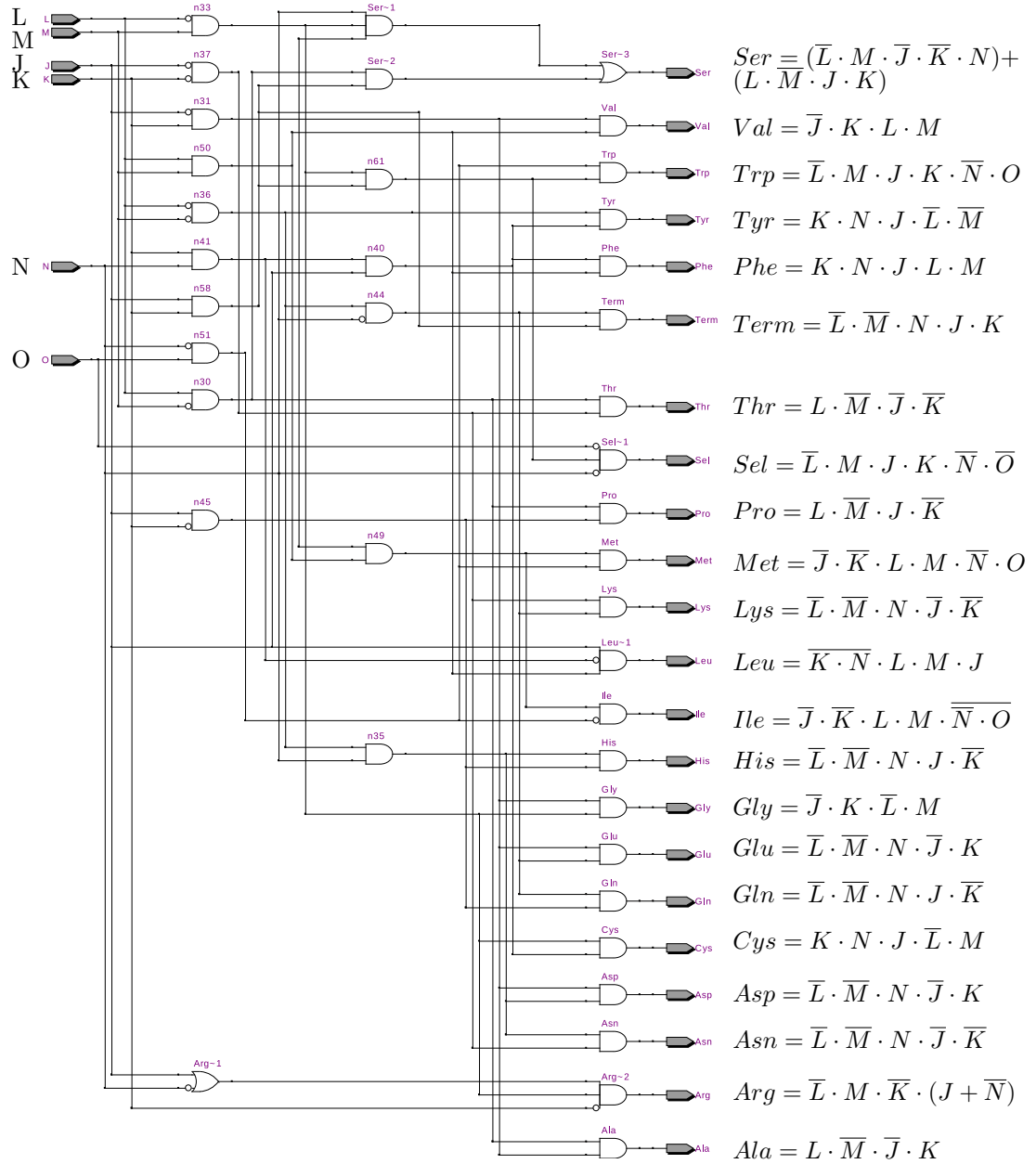


Figure 2: Gate Schematic generated by Quartus for amino acid functions constructing the Universal Code with Selenium using AGCU = 00011011 assignment.

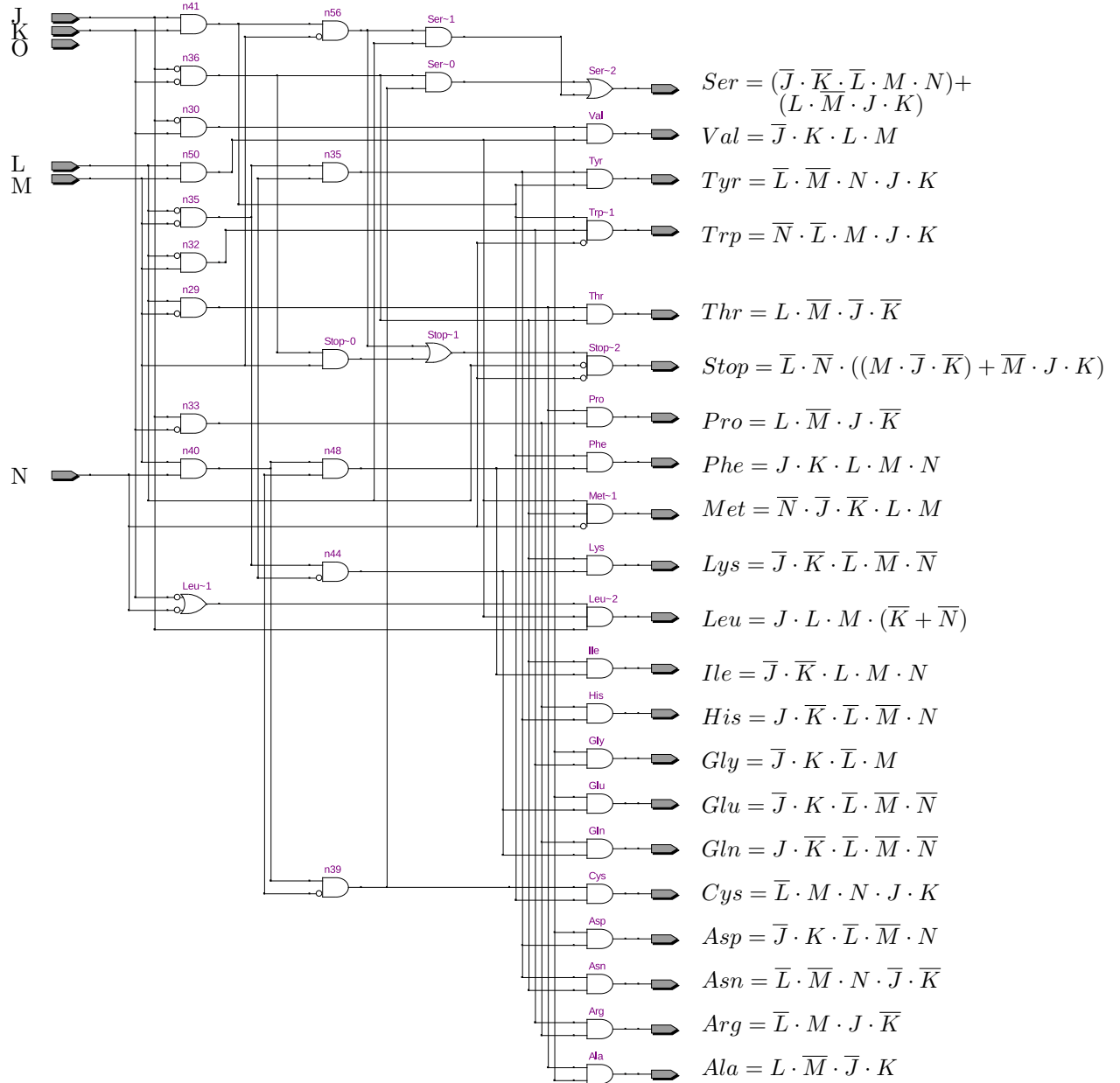


Figure 3: Gate Schematic generated by Quartus for amino acid functions constructing the Mitochondrial Code using AGCU = 00011011 assignment.