CSE 4065
Computational Genomics
Programming Assignment 1

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Randomized Motif Search

Results of Randomized Motif Search algorithm for k=9:

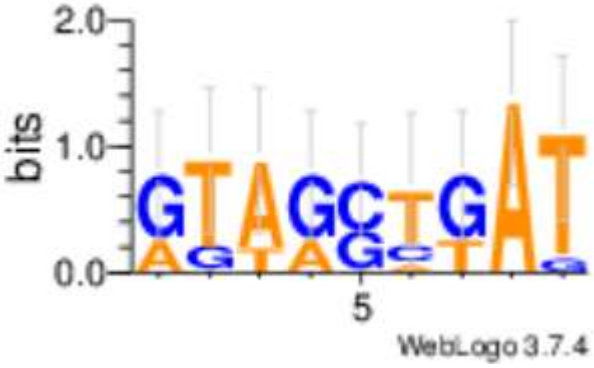

Table for 10 runs of our code for each k value=9:

K=9	Best Score	Worst Score	Average Score	Consensus String
	28	57	28.7	CCATATAGC
	23	49	23.8	GTAGCTGAT
	30	50	30.4	CAGCCAATT
	28	53	28.52	CCAGTATAG
	24	54	24.9	GACGTGACT
	25	51	25.56	GCGGCACTT
	31	49	31.44	AGCCAAGAG
	27	54	27.74	GATTGCCGA
	24	51	24.62	GAGCATGCG
	27	52	28.46	CGCTAGTTG

Results of Randomized Motif Search algorithm for k=10:

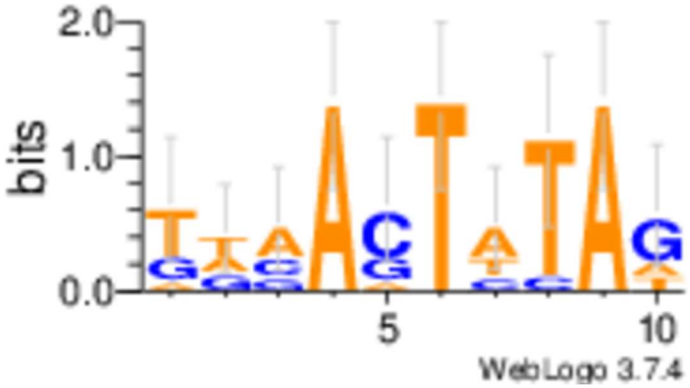

Table for 10 runs of our code for each k value=10:

K=10	Best Score	Worst Score	Average Score	Consensus String
	33	55	33.44	GAAGAACTAA
	30	62	30.98	TCCTAGGGTA
	33	53	33.48	GTACATTAGA
	33	56	33.52	ATAAACATCG
	33	59	34.5	TGATTTATGA
	39	59	39.4	GCATTAGCGC
	32	57	32.8	CGTAGCTCCA
	29	56	29.68	TTAACTATAG
	38	58	38.48	AGGCAACGTC
	38	61	38.46	TGAGCATTGA

Results of Randomized Motif Search algorithm for k=11:

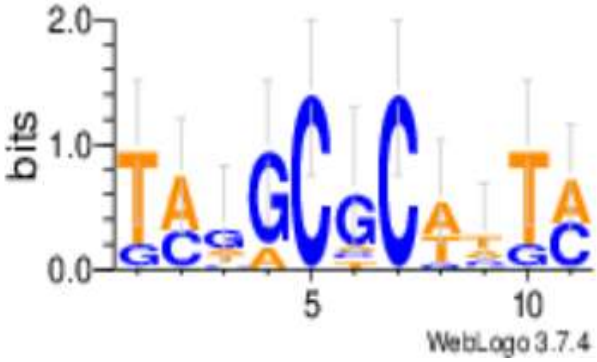

Table for 10 runs of our code for each k value=11:

K=11	Best Score	Worst Score	Average Score	Consensus String
	37	65	37.56	AGTTAGACTGA
	38	67	38.58	TTCTTCCATTC
	34	58	34.62	TAGGCGCATTA
	39	59	39.4	ATAGCTAGCCA
	39	65	39.52	TGTCAGACCGA
	37	58	37.42	TTTGATTGCCT
	41	67	41.52	GCATTAGACGG
	35	65	35.6	TCGGACCATGC
	38	61	38.52	TTCGACTATCC
	37	60	37.46	GTCTTACGTGT

Gibbs Sampler

Results of Gibs Sampler algorithm for k=9:

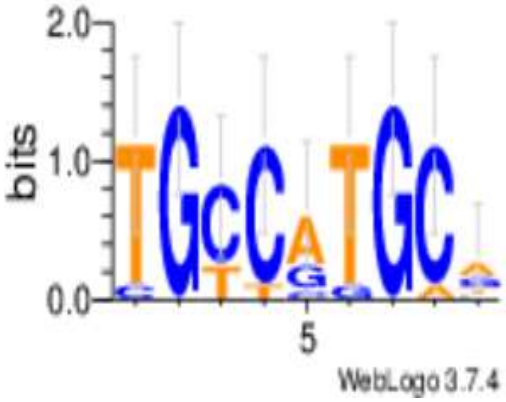

Table for 10 runs of our code for each k value=9:

K=9	Best Score	Worst Score	Average Score	Consensus String
	22	52	29.94	CGAATTCAG
	22	47	26.88	CATGTGAGA
	22	52	26.98	TCCAAAACC
	21	53	28.02	GTCGGGAAC
	19	55	28.88	TGACGTGAC
	27	54	32.36	GCGTTATAT
	19	52	27.14	CCAATTGTA
	17	53	22.84	TGCCATGCA
	25	48	29.04	CAATTTAAG
	22	51	26.46	GACACGTGA

Results of Gibs Sampler algorithm for k=10:

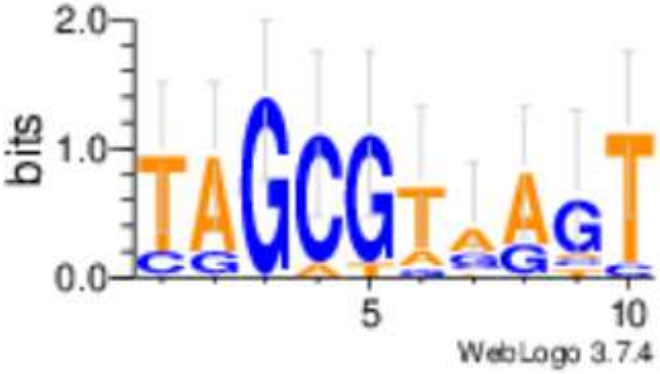

Table for 10 runs of our code for each k value=10:

K=10	Best Score	Worst Score	Average Score	Consensus String
	27	57	33.04	CAACTGTAGC
	27	56	31.58	CAGAATGCGG
	28	55	33.98	TCGCGAGATT
	21	59	28.84	TAGCGTAAGT
	23	54	30.08	ACCAATAGGC
	22	55	27.96	AATTTAGCCC
	32	65	36.6	CTGGGATCGT
	30	56	34.4	TCAATCGTTT
	24	58	32.32	CTAGGCGAGT
	24	56	31.46	AAATGTCGCT

Results of Gibs Sampler algorithm for k=11:

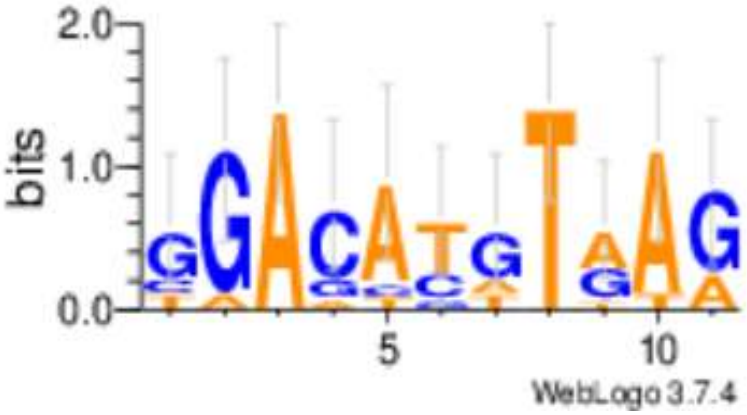

Table for 10 runs of our code for each k value=11:

K=11	Best Score	Worst Score	Average Score	Consensus String
	27	67	36.66	GGACATGTAAG
	31	65	39.34	CCATCCAATTC
	32	64	39.24	GCTGAGGGCAG
	31	65	36.28	AGCAATACGCG
	29	63	36.98	GGAGAGTCATA
	31	61	36.12	TAAACAACTAG
	32	65	38.26	GATTCATACCA
	36	58	41.24	CGTACATAAGCT
	28	62	34.64	TAGCTAAAGTTT
	30	64	36.54	GCGCATTCGTT

Conclusion

As a result, we noticed that the Gibs algorithm works better than Random Motif Search. When the k value increases, the score increases in both algorithms. Both of algorithms run time is close each other.