Title: Systems studies uncover miR-146a as a target in *Leishmania major* infection model

Supplementary Material

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Algorithm : S1

KMP algorithm:

```python
# Python program for KMP Algorithm
import sys

fileNameGenome = "Genome.txt" # Name of the genome file

fileNamePrefix = "chr" #Name of chromosome files without number
startIndex = 1 # Start number of chromosome file
EndIndex = 36 # End number of chromosome file

#Read genome from file
fGenome = open(fileNameGenome, 'r')
txt = fGenome.readline()
#print(txt)
fGenome.close()

EndIndex += 1 # Increment the end index by 1 to cover last index
for x in range(startIndex, EndIndex):
    inputFileName = fileNamePrefix + str(x) + ".txt"
    #print("Input file name : " + inputFileName)
    fInput = open(inputFileName, 'r')
    searchHeader = fInput.readline()
    searchString = fInput.readline()
    fInput.close()
    #print("Input search String : " + searchString)
    #print(searchString)
    pat = searchString

    outputFileName = "SequenceFoundFor-" +  inputFileName
    #print("Output file name : " + outputFileName)

    f = open(outputFileName,'w')

    # write the search string in output file
    f.write("Found pattern for - \n" + searchHeader + "\n")

    def KMPSearch(pat, txt):
        M = len(pat)
        N = len(txt)

        # create lps[] that will hold the longest prefix suffix
```

```python
        # values for pattern
        lps = [0]*M
        j = 0 # index for pat[]

        # Preprocess the pattern (calculate lps[] array)
        computeLPSArray(pat, M, lps)

        i = 0 # index for txt[]
        while i < N:
            if pat[j] == txt[i]:
                i += 1
                j += 1

            if j == M:
                #print >> f, "Found pattern AAAGTGCA at index " +
str(i-j)
                f.write("at index " + str(i-j) + "\n")
                j = lps[j-1]

            # mismatch after j matches
            elif i < N and pat[j] != txt[i]:
                # Do not match lps[0..lps[j-1]] characters,
                # they will match anyway
                if j != 0:
                    j = lps[j-1]
                else:
                    i += 1

    def computeLPSArray(pat, M, lps):
        len = 0 # length of the previous longest prefix suffix

        lps[0] # lps[0] is always 0
        i = 1

        # the loop calculates lps[i] for i = 1 to M-1
        while i < M:
            if pat[i]==pat[len]:
                len += 1
                lps[i] = len
                i += 1
            else:
                # This is tricky. Consider the example.
                # AAACAAAA and i = 7. The idea is similar
                # to search step.
                if len != 0:
                    len = lps[len-1]

                    # Also, note that we do not increment i here
                else:
                    lps[i] = 0
                    i += 1

    KMPSearch(pat, txt)
    f.close()
#
```

Table : S1

Differential Expression data:

Read count matrix for miRNAs

ID	Sample_0Hr	Sample_3Hr	Sample_6Hr	Sample_12Hr	Sample_24Hr
hsa-miR-21-5p	139567	83365	10791	140569	40939
hsa-miR-16-5p	91852	77356	22838	103197	42125
hsa-miR-30e-3p	78807	57710	663	3212	33020
hsa-miR-30e-5p	78322	67048	9081	96582	37005
hsa-miR-155-5p	74470	58280	21399	80473	32658
hsa-miR-92a-3p	70898	76564	39430	94433	34342
hsa-miR-191-5p	60036	61070	30493	78539	23170
hsa-let-7b-5p	44540	35588	24437	41350	22005
hsa-miR-9-5p	37604	34197	4338	47971	22051
hsa-miR-101-3p	26644	16255	1036	17038	8600
hsa-miR-25-3p	24015	21850	8212	29140	9853
hsa-let-7i-5p	23033	18090	4156	30599	9350
hsa-miR-142-3p	22318	14794	1091	23044	9172
hsa-miR-30d-5p	19994	20724	7445	26122	7881
hsa-miR-342-3p	18664	17461	8036	13081	7132
hsa-miR-146b-5p	18363	20009	5893	21887	8119
hsa-miR-29a-3p	17737	29684	7069	42442	15152
hsa-miR-103b	15389	12780	3456	10240	5588
hsa-miR-146a-5p	9982	10076	5409	39883	10807
hsa-miR-30c-5p	9977	7062	3715	11516	4595
hsa-miR-28-3p	7922	7192	4737	6947	3010
hsa-miR-26b-5p	7543	5383	1205	2546	2930
hsa-miR-148b-3p	6772	4036	1096	7430	2213
hsa-miR-151a-3p	6707	5839	1987	8645	2292
hsa-miR-425-5p	6686	5327	2987	7972	2706
hsa-miR-99b-5p	6159	7394	6530	15804	2398
hsa-miR-26a-5p	6033	5161	1294	6910	2821
hsa-miR-221-3p	5564	10806	4337	10411	3761
hsa-miR-30a-5p	5313	3732	1190	19336	588
hsa-miR-378a-3p	5128	5234	1349	4637	2118
hsa-miR-23a-3p	4823	1833	1883	5632	1229
hsa-miR-140-3p	4813	5555	2733	4596	2607
hsa-miR-4662a-5p	4520	3876	18	5376	1222
hsa-miR-132-3p	3829	3138	3684	3200	1371
hsa-miR-532-5p	3638	3191	1248	4772	1350
hsa-miR-181a-5p	3484	2858	623	2619	1120
hsa-miR-125a-5p	3362	4312	3084	7068	1321
hsa-miR-340-5p	3240	1730	12	2751	954
hsa-miR-221-5p	3048	2723	1604	3366	826
hsa-miR-100-5p	2917	1729	917	4448	389
hsa-let-7a-3p	59	52	2	89	38
hsa-miR-145-5p	2	1	0	3	3
hsa-miR-146a-3p	28	41	11	117	44
hsa-miR-155-3p	4	1	0	1	0
hsa-miR-20a-3p	16	9	1	5	6
hsa-miR-21-3p	179	167	19	296	109
hsa-miR-30a-3p	721	10	10	37	77
hsa-miR-9-3p	74	60	5	84	28

Table S2:

Normalized_Value_Matrix

miRNA_ID	Sample_0Hr	Sample_3Hr	Sample_6Hr	Sample_12Hr	Sample_24Hr
hsa-miR-21-5p	88647.63365	61625.474	25873.29013	77524.35312	60476.78643
hsa-miR-16-5p	58340.88607	57183.47228	54758.05765	56913.549	62228.79475
hsa-miR-30e-3p	50055.19976	42660.6622	1589.657248	1771.430559	48778.51164
hsa-miR-30e-5p	49747.14627	49563.54322	21773.26918	53265.35063	54665.31869
hsa-miR-155-5p	47300.50283	43082.02033	51307.80609	44381.17415	48243.75024
hsa-miR-92a-3p	45031.70471	56598.00625	94540.24928	52080.16873	50731.42479
hsa-miR-191-5p	38132.57671	45144.45747	73112.24502	43314.56559	34227.68367
hsa-let-7b-5p	28290.10871	26307.53156	58591.93689	22804.68668	32506.69741
hsa-miR-9-5p	23884.62614	25279.26989	10401.10579	26456.19407	32574.65052
hsa-miR-101-3p	16923.25228	12016.09884	2483.989304	9396.523618	12704.2762
hsa-miR-25-3p	15253.41178	16152.0615	19689.69128	16070.82394	14555.2597
hsa-let-7i-5p	14629.68285	13372.57632	9964.729292	16875.46814	13812.20726
hsa-miR-142-3p	14175.54213	10936.09143	2615.861323	12708.8561	13549.25829
hsa-miR-30d-5p	12699.42599	15319.69439	17850.67603	14406.38514	11642.13962
hsa-miR-342-3p	11854.66073	12907.60393	19267.70082	7214.222646	10535.6858
hsa-miR-146b-5p	11663.47702	14791.14867	14129.48742	12070.76608	11993.72308
hsa-miR-29a-3p	11265.8657	21943.14845	16949.15095	23406.92895	22383.16197
hsa-miR-103b	9774.50568	9447.292721	8286.358141	5647.400038	8254.825046
hsa-miR-146a-5p	6340.185568	7448.428909	12969.01365	21995.63044	15964.54801
hsa-miR-30c-5p	6337.009758	5220.405415	8907.355467	6351.119027	6787.924318
hsa-miR-28-3p	5031.75216	5316.504636	11357.77735	3831.297663	4446.496669
hsa-miR-26b-5p	4791.02582	3979.247005	2889.196053	1404.128955	4328.317356
hsa-miR-148b-3p	4301.316035	2983.511223	2627.849688	4097.674051	3269.135259
hsa-miR-151a-3p	4260.030515	4316.333506	4764.176396	4767.751302	3385.837331
hsa-miR-425-5p	4246.692116	3937.850417	7161.84947	4396.58917	3997.415278
hsa-miR-99b-5p	3911.961822	5465.828042	15656.80517	8715.967793	3542.424921
hsa-miR-26a-5p	3831.931429	3815.139103	3102.588957	3810.892018	4167.298041
hsa-miR-221-3p	3534.040523	7988.063001	10398.70812	5741.707207	5555.904975
hsa-miR-30a-5p	3374.614899	2758.786889	2853.230957	10663.8796	868.617954
hsa-miR-378a-3p	3257.109957	3869.102512	3234.460976	2557.323631	3128.797324
hsa-miR-23a-3p	3063.385593	1354.999026	4514.818397	3106.070021	1815.529703
hsa-miR-140-3p	3057.033975	4106.393667	6552.840509	2534.71197	3851.168378
hsa-miR-4662a-5p	2870.931553	2865.235257	43.15811532	2964.88502	1805.189013
hsa-miR-132-3p	2432.034716	2319.687368	8833.027602	1764.812512	2025.297985
hsa-miR-532-5p	2310.718803	2358.866281	2992.295995	2631.776658	1994.275915
hsa-miR-181a-5p	2212.903879	2112.704429	1493.750325	1444.38874	1654.510389
hsa-miR-125a-5p	2135.414133	3187.537263	7394.423758	3898.029636	1951.435914
hsa-miR-340-5p	2057.924388	1278.858874	28.77207688	1517.187256	1409.288313
hsa-miR-221-5p	1935.973313	2012.909083	3845.867609	1856.362161	1220.201412
hsa-miR-100-5p	1852.767111	1278.119649	2198.666208	2453.089392	574.6469118
hsa-let-7a-3p	37.47454904	38.43968869	4.795346146	49.08384799	56.1351739
hsa-miR-145-5p	1.270323696	0.739224783	0	1.65451173	4.431724255
hsa-miR-146a-3p	17.78453175	30.30821609	26.37440381	64.52595747	64.99862241
hsa-miR-155-3p	2.540647392	0.739224783	0	0.55150391	0
hsa-miR-20a-3p	10.16258957	6.653023043	2.397673073	2.75751955	8.863448511
hsa-miR-21-3p	113.6939708	123.4505387	45.55578839	163.2451574	161.0193146
hsa-miR-30a-3p	457.9516925	7.392247826	23.97673073	20.40564467	113.7475892
hsa-miR-9-3p	47.00197676	44.35348696	11.98836537	46.32632844	41.36275972