

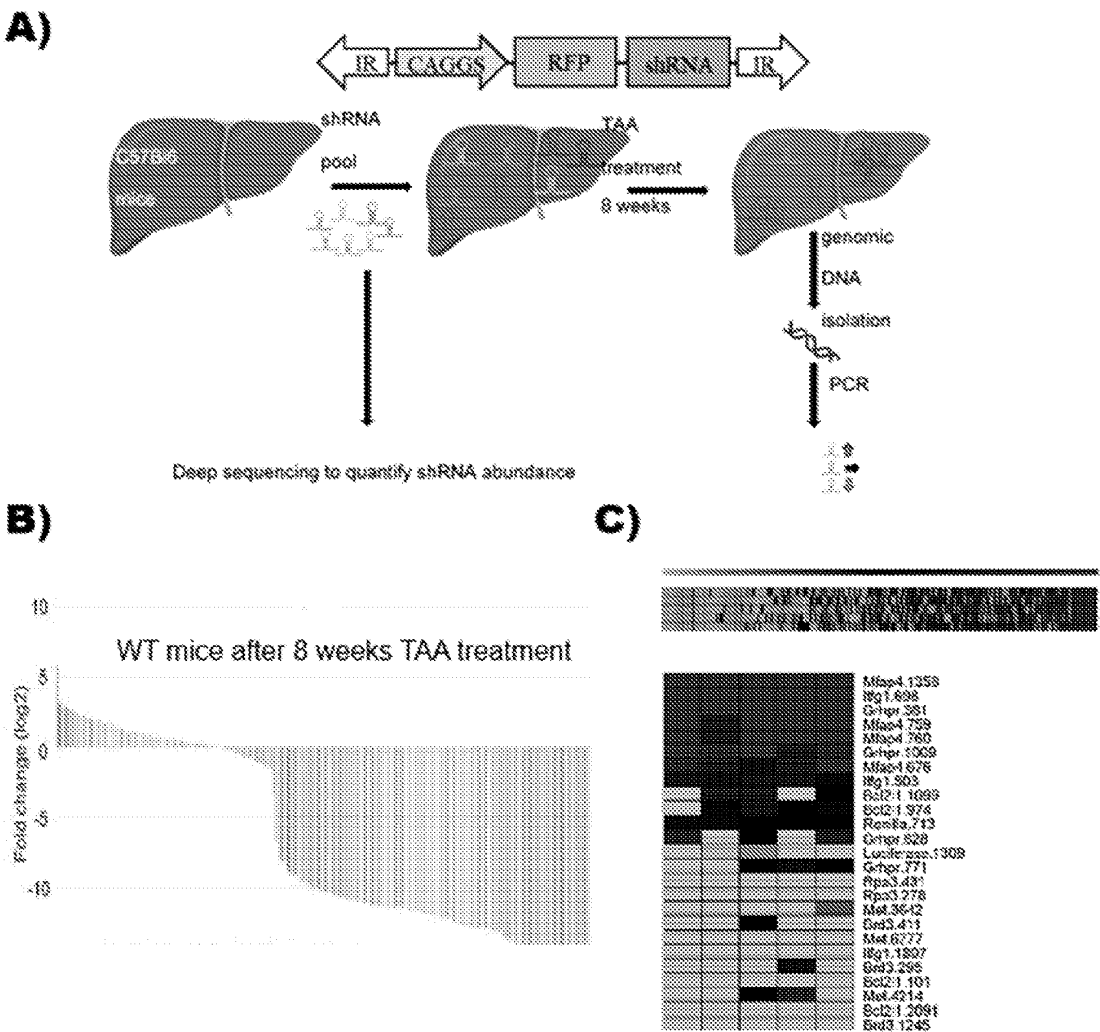


Figure 1(A)-(C) (continued)

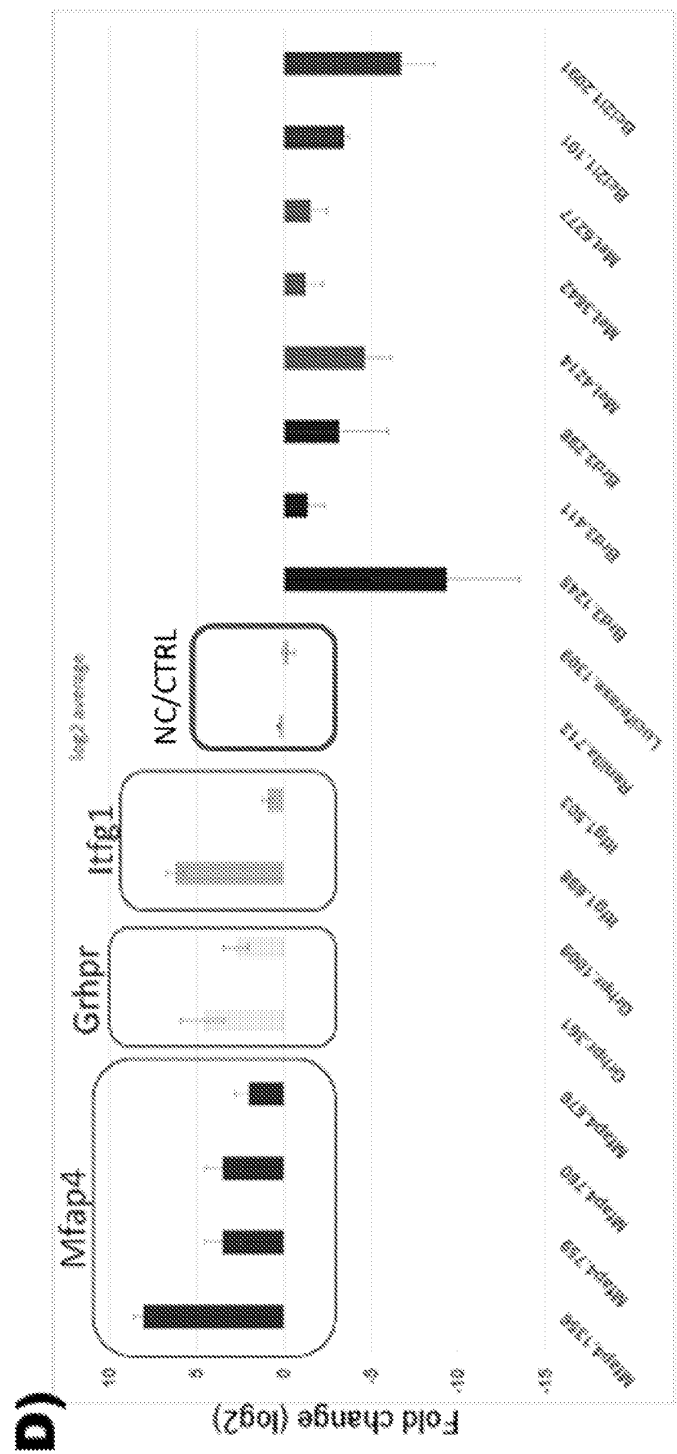


Figure 1(D) (end)

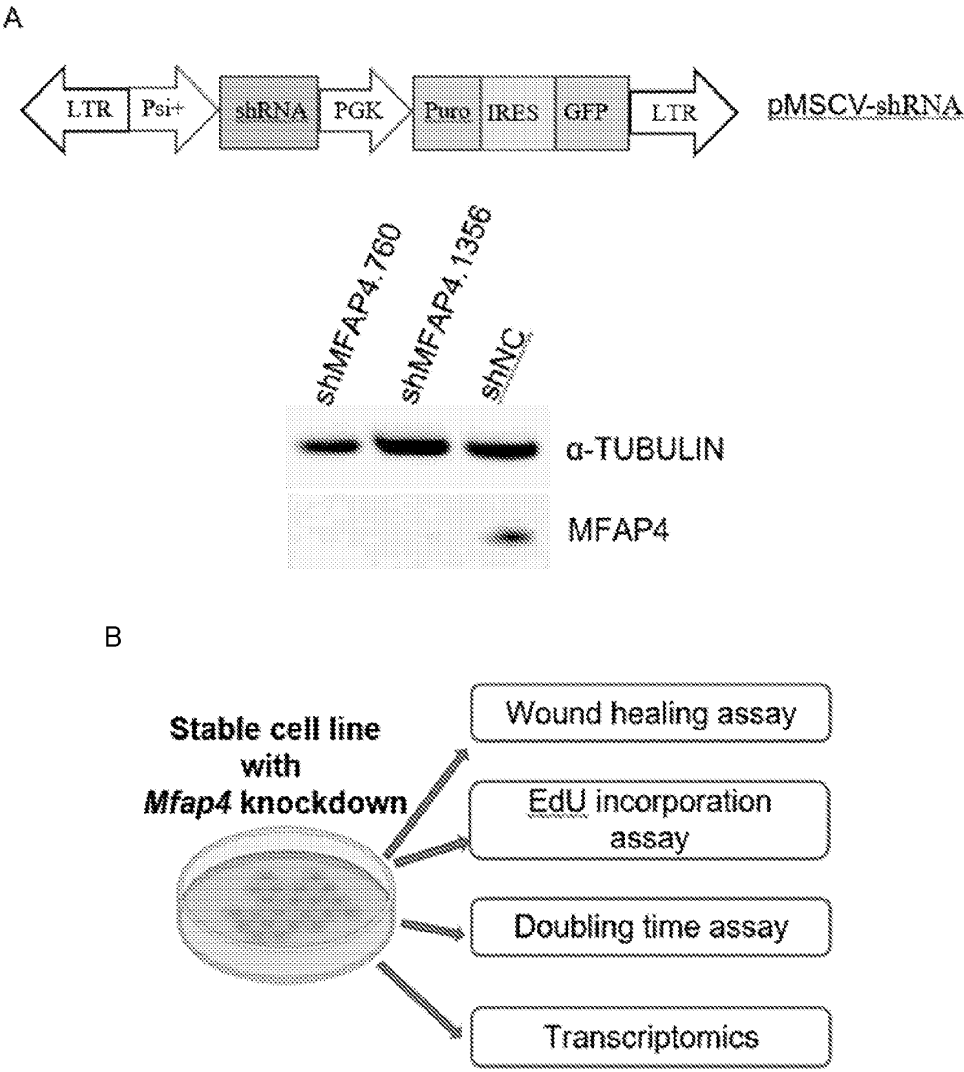


Figure 2 (A)-(B) (continued)

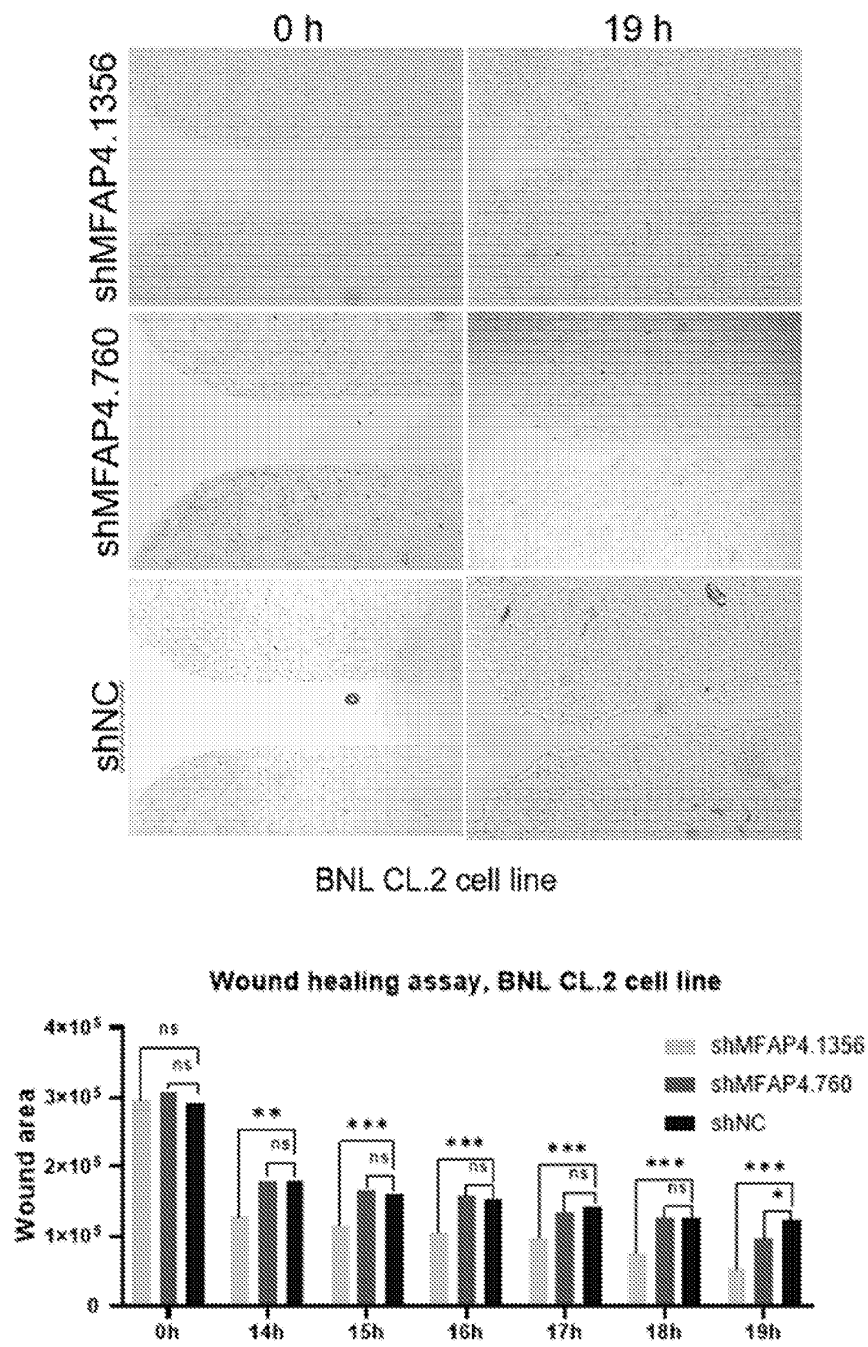
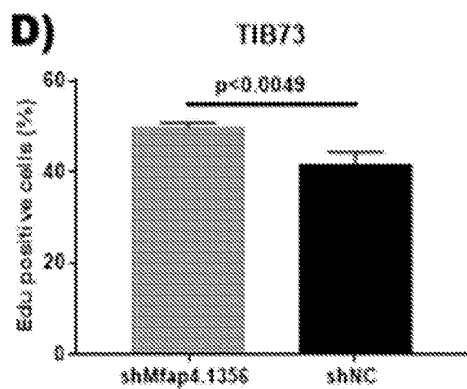


Figure 2 (C) (continued)



E)

shRNA	Doubling time (h)
shMfap4.1356	35.7
shNC	45.5
Published data	45.6

F)

shRNA	G0/G1 phase	S phase	G2 phase
shMFAP4.1356	39.3	15.0	45.6
shMFAP4.760	51.8	10.2	37.9
shNC	56.6	10.7	32.6

Figure 2 (D)-(F) (continued)

G)

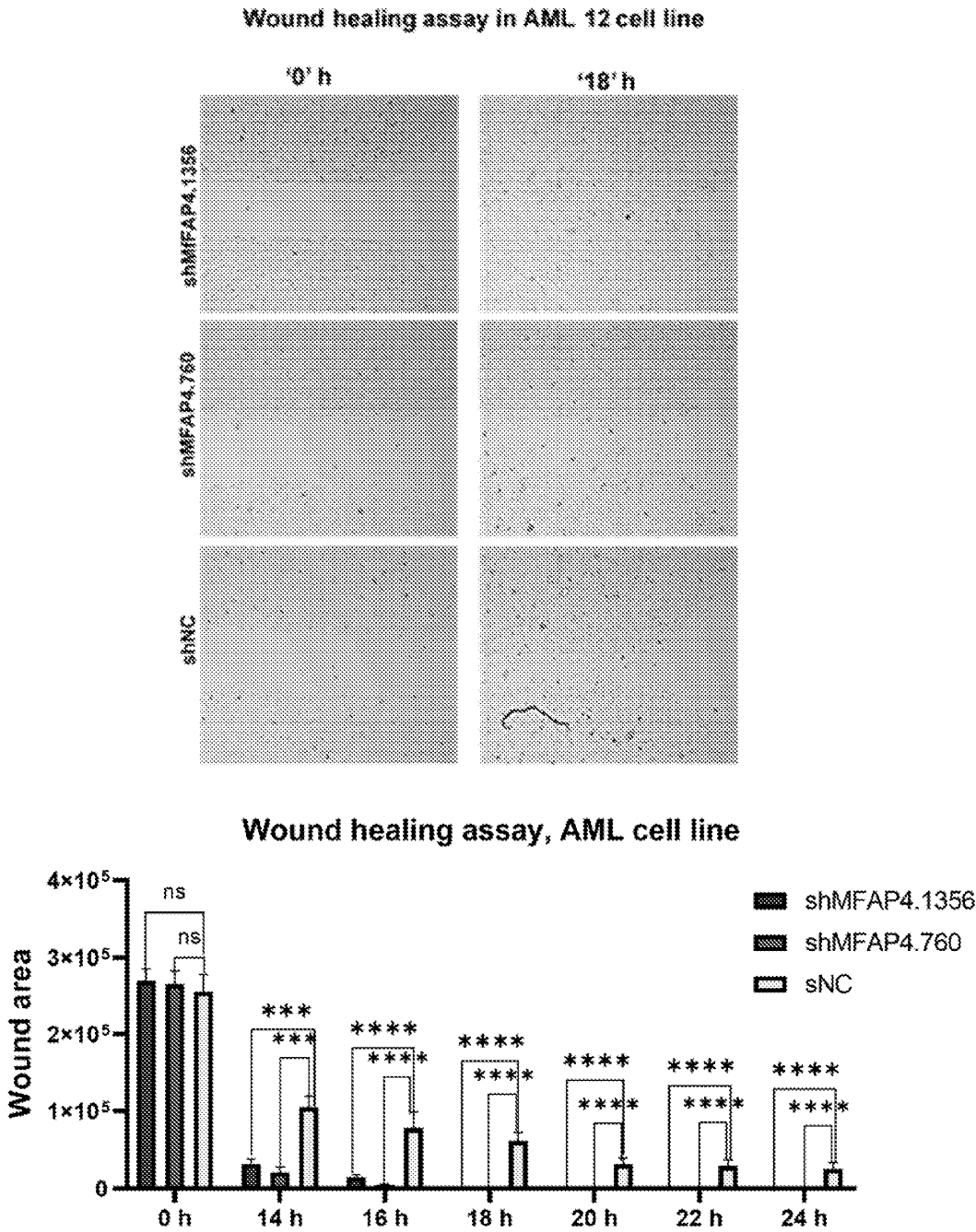


Figure 2 (G) (end)

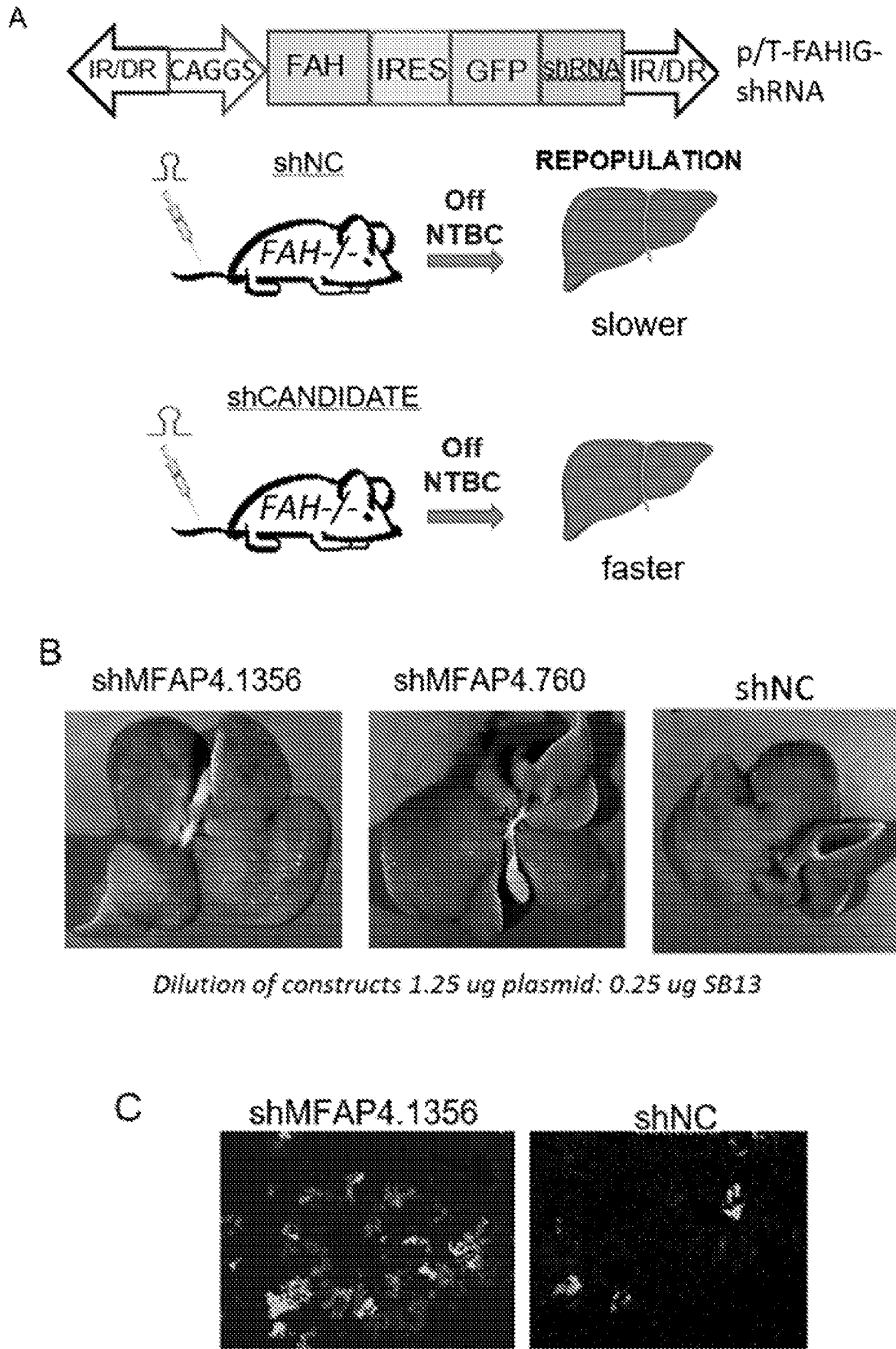
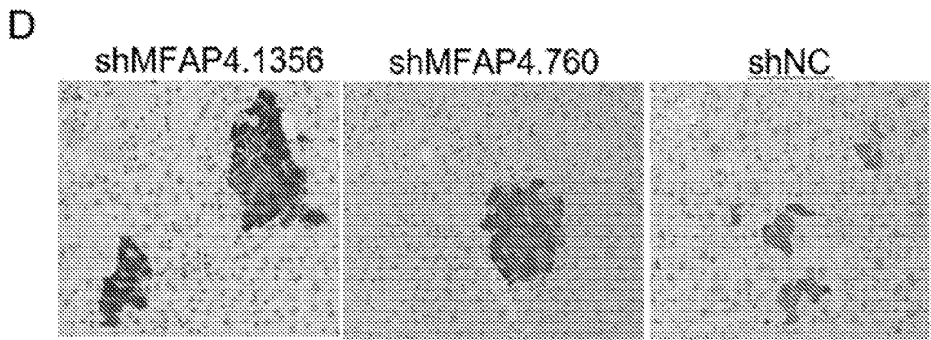
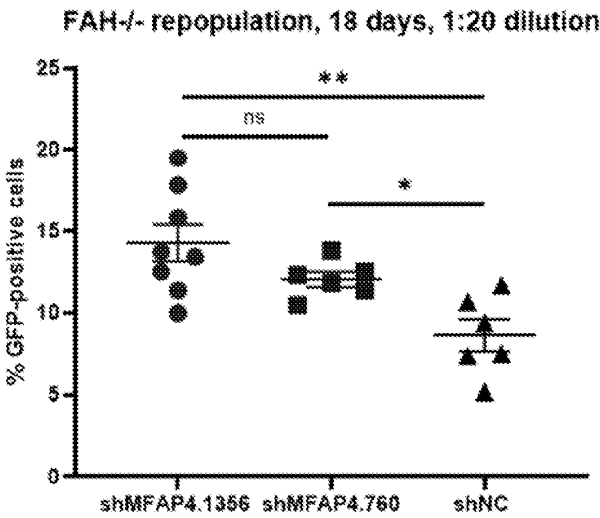


Figure 3 (A)-(C) (continued)



E)



F)

Survival curve at dilution of constructs 1:30

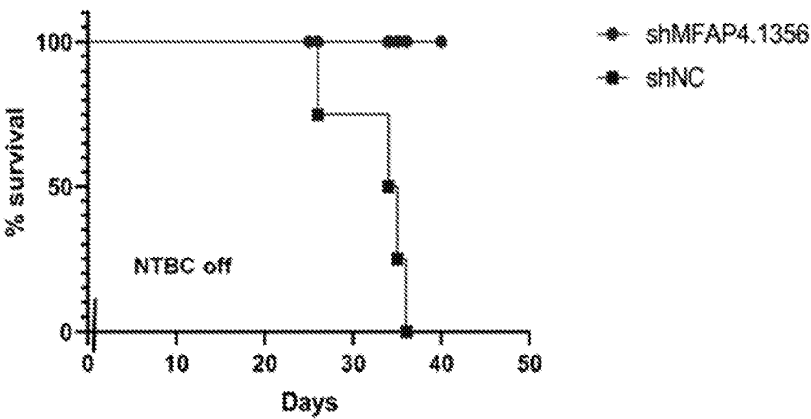


Figure 3 (D)-(F) (end)

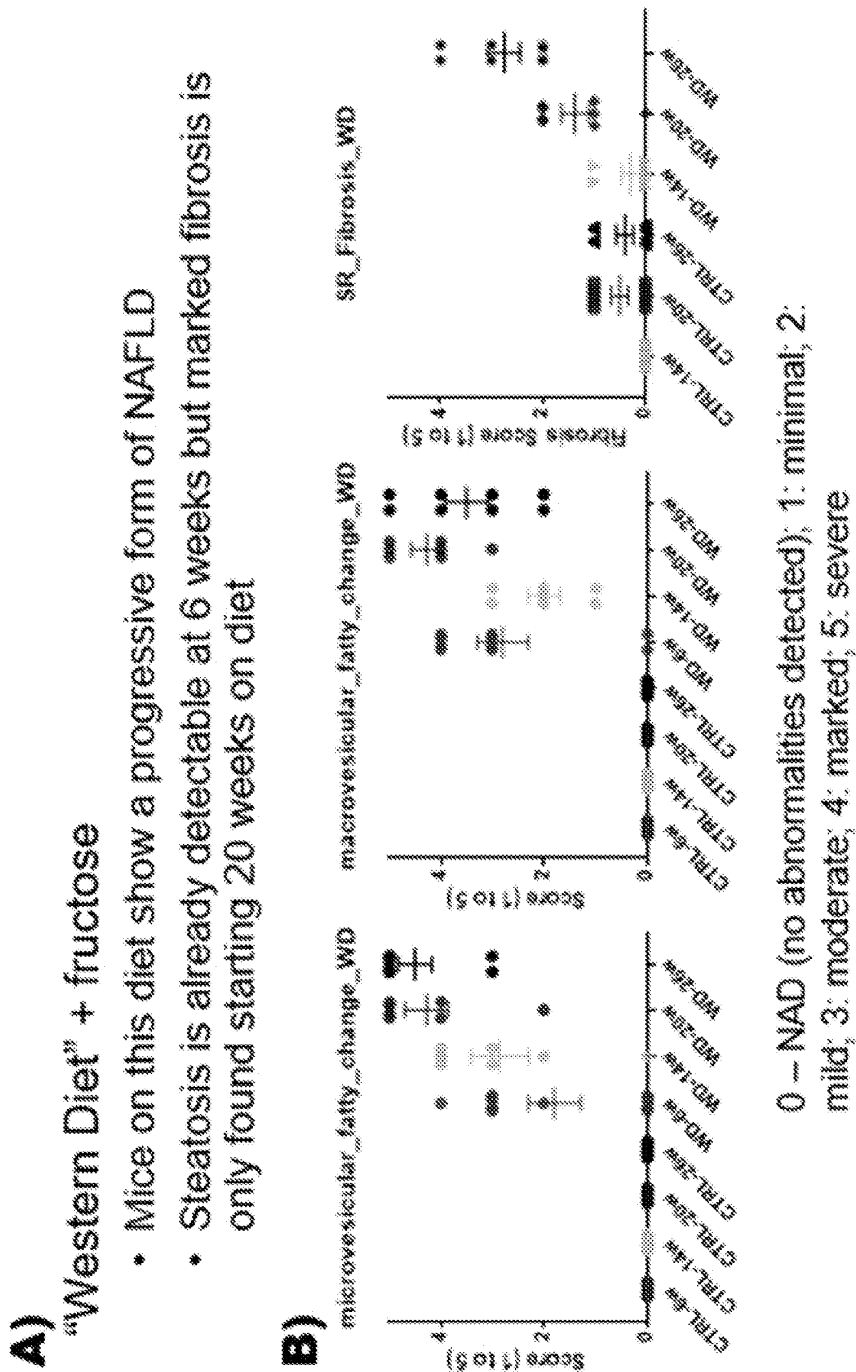


Figure 4 (A)-(B) (continued)

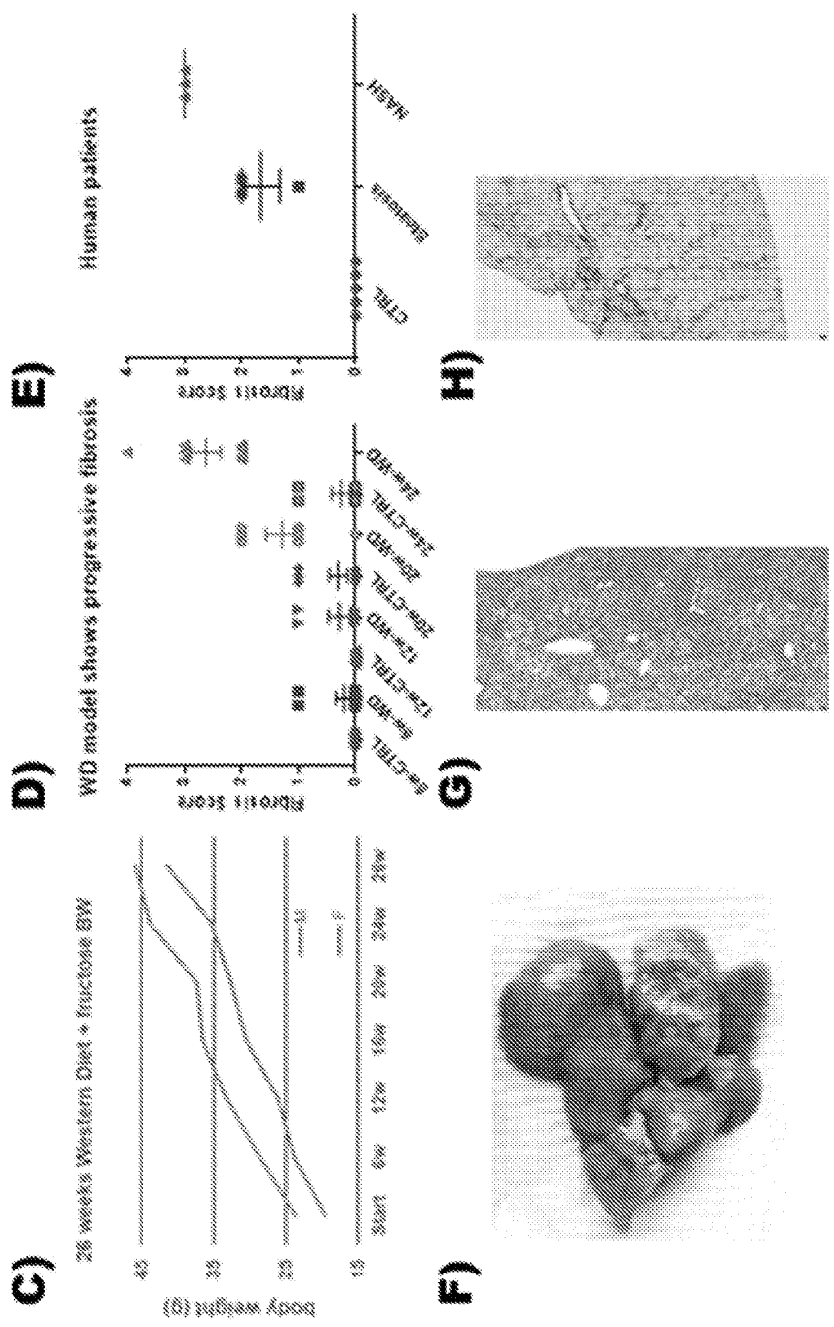


Figure 4 (C)-(F) (end)

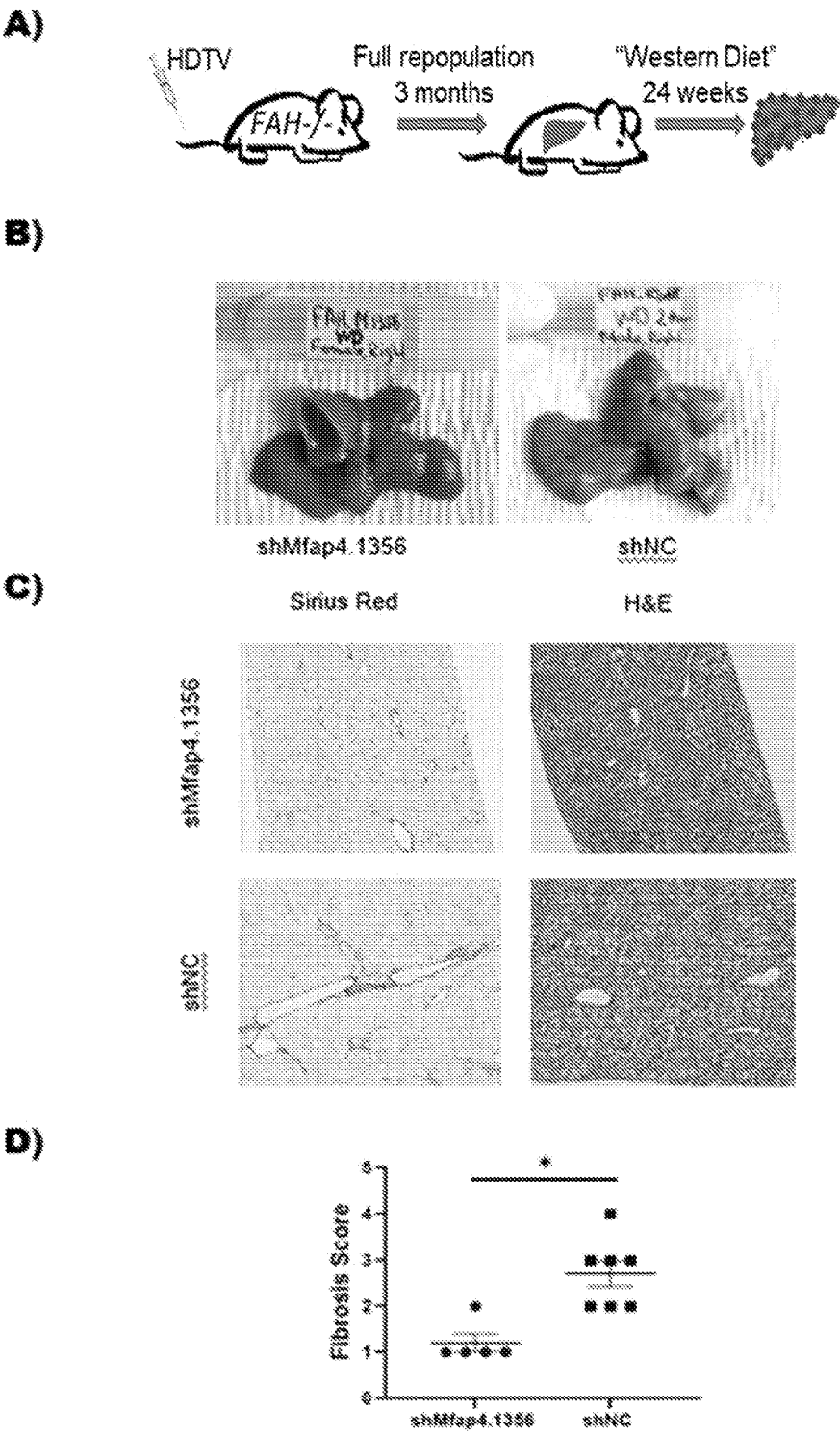


Figure 5 (A)-(D) (continued)

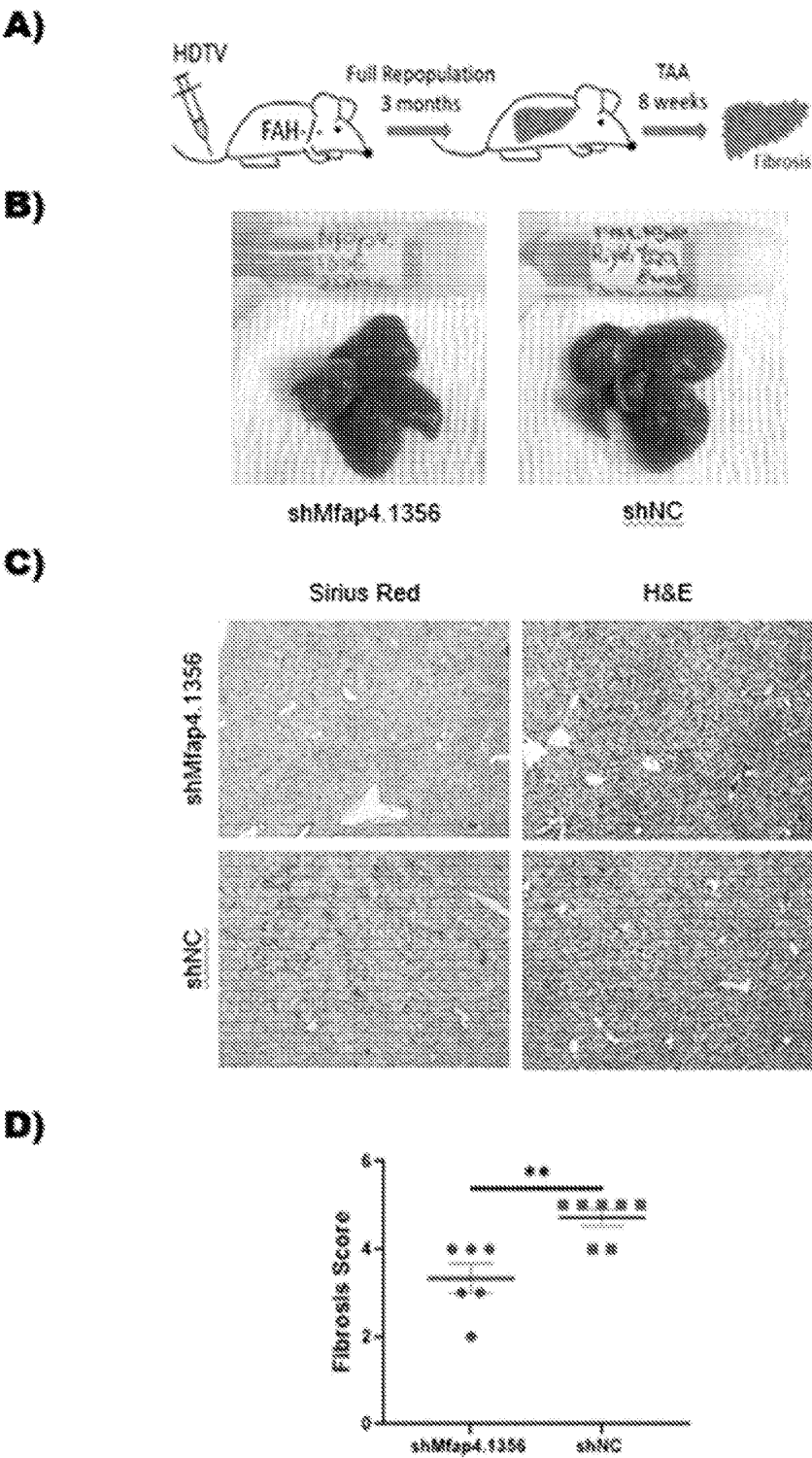


Figure 6

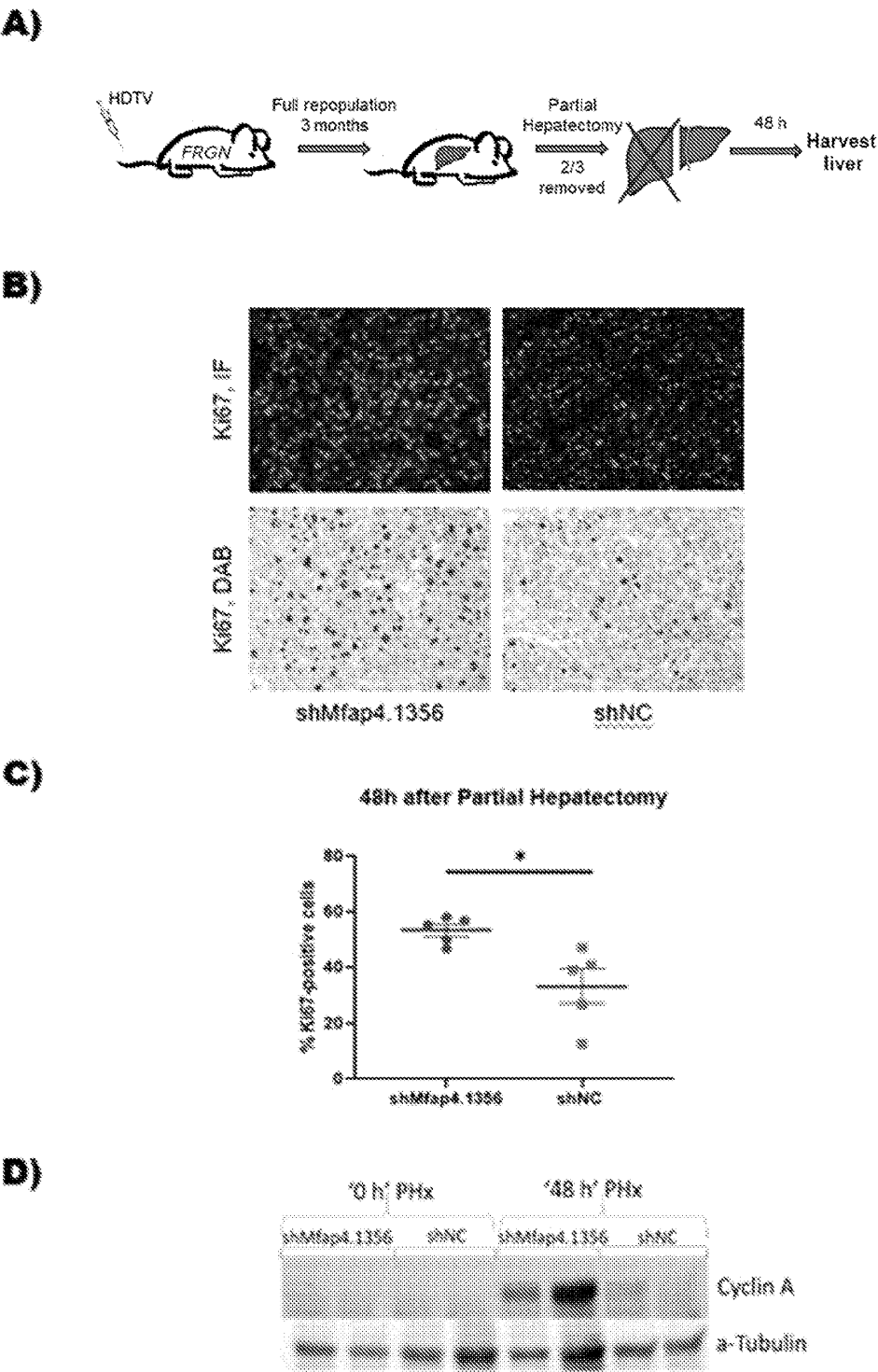


Figure 7 (A)-(D) (continued)

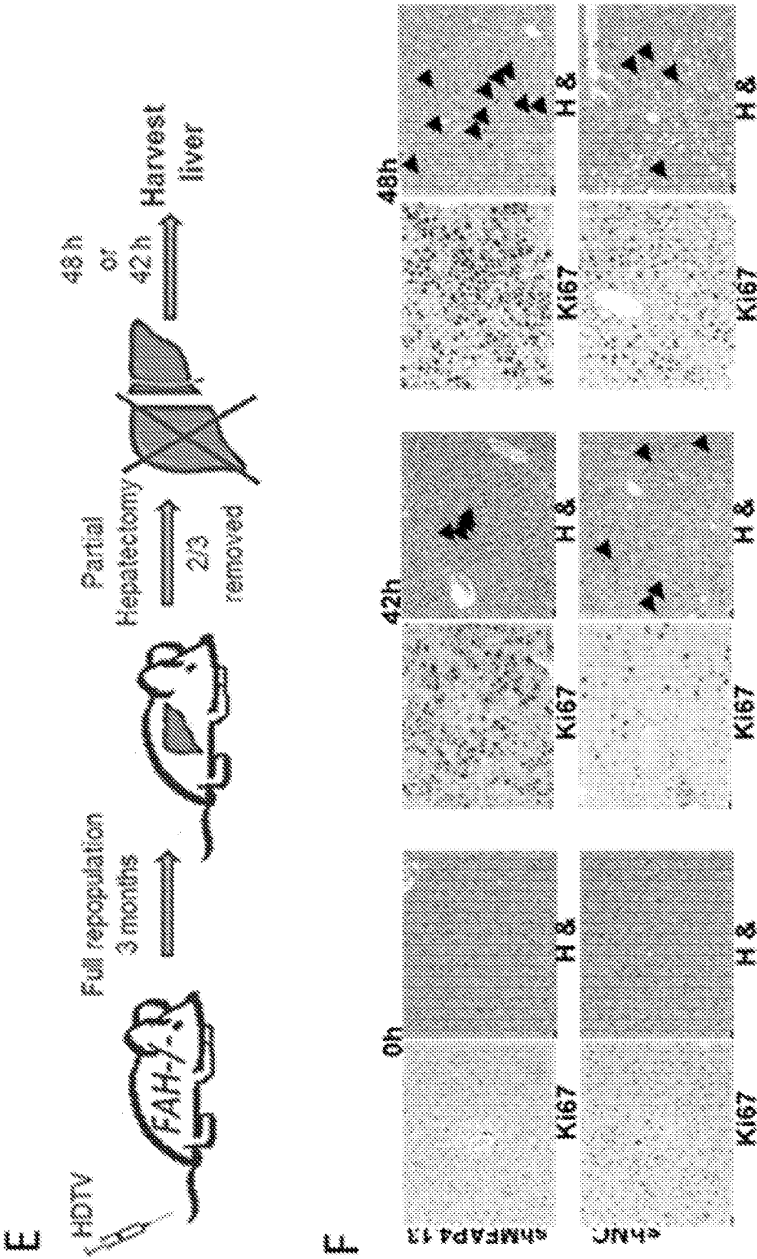


Figure 7 (E)-(F) (continued)

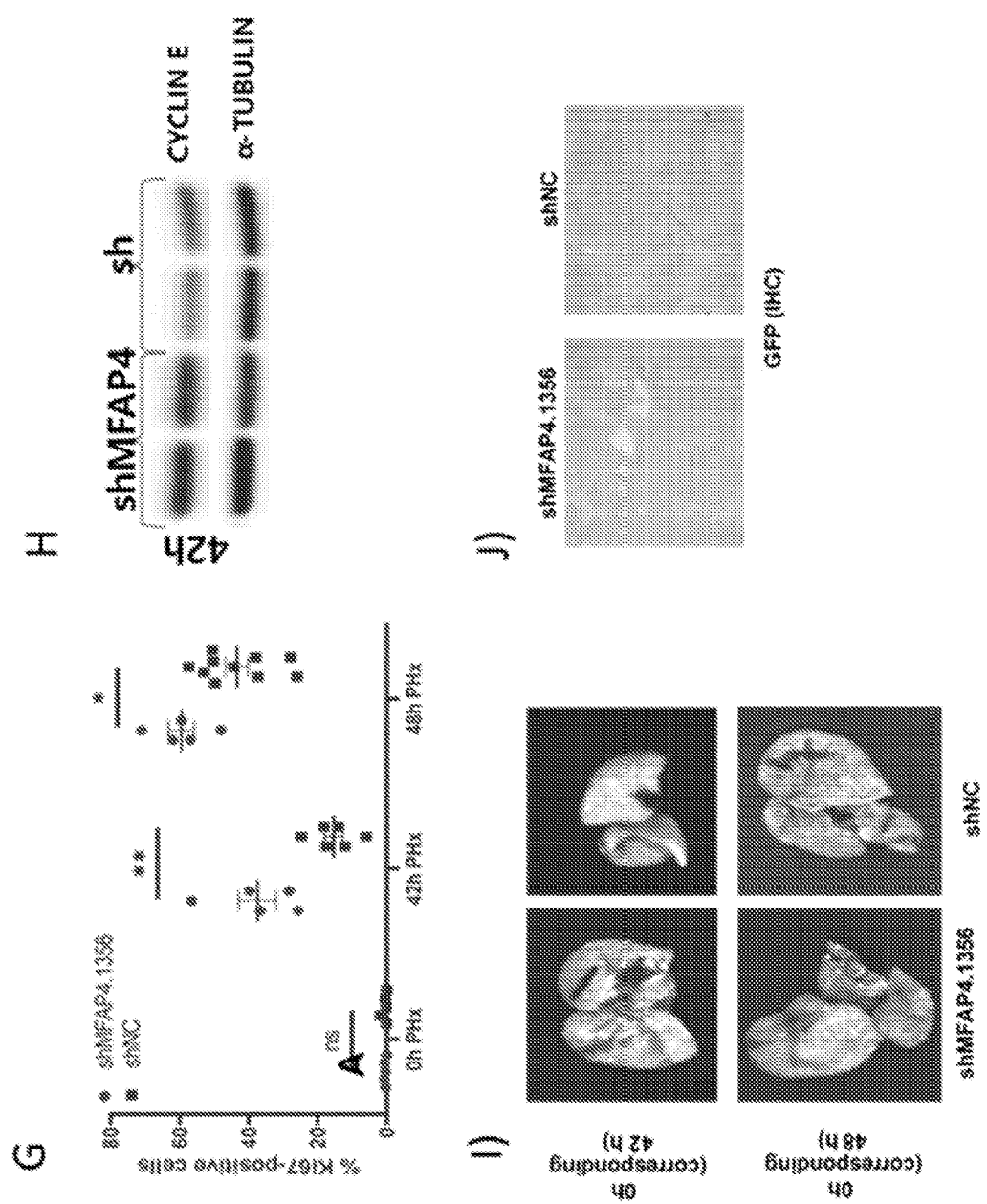
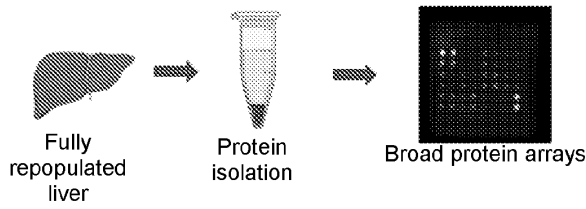
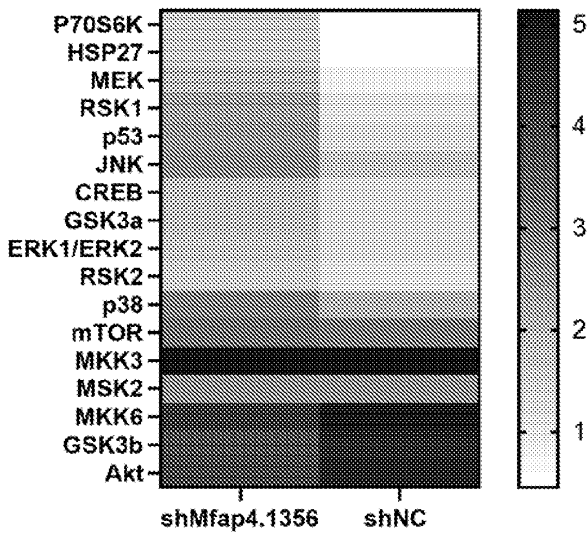


Figure 7 (G)-(J) (end)

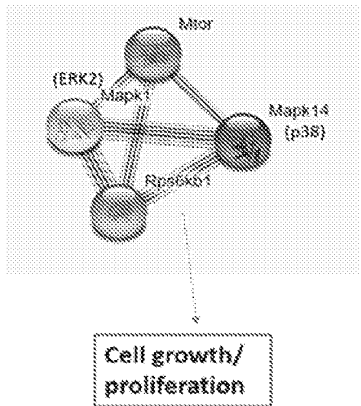
A)



B)



C)



D)

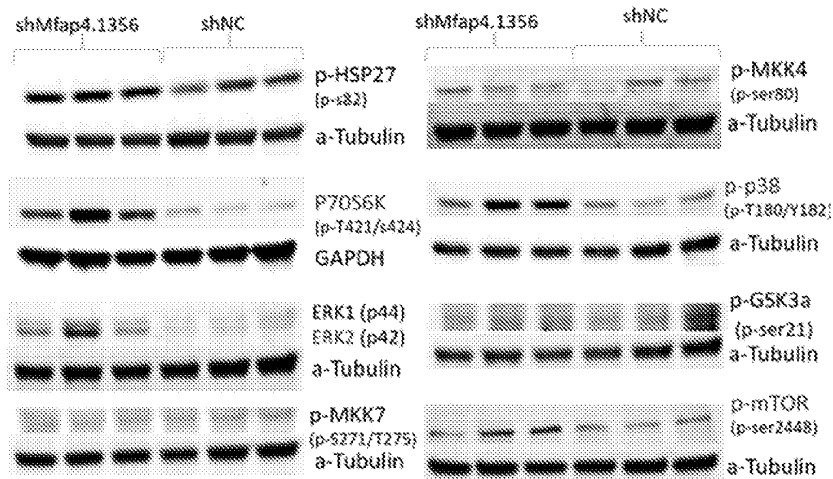
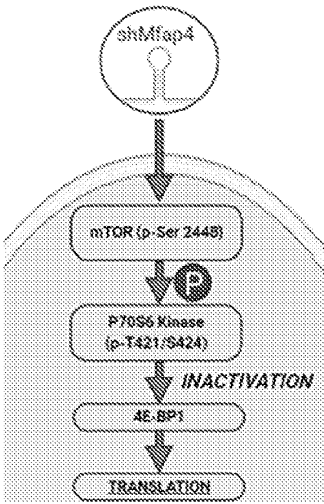
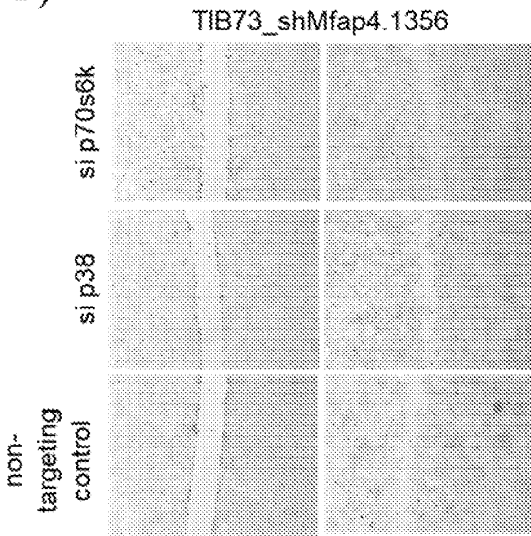


Figure 8 (A)-(D) (continued)

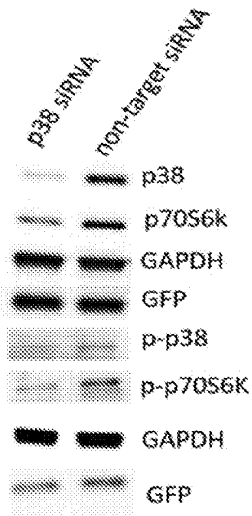
E)



F)



G)



H)

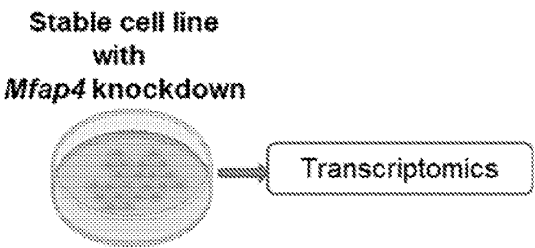


Figure 8 (E)-(H) (continued)

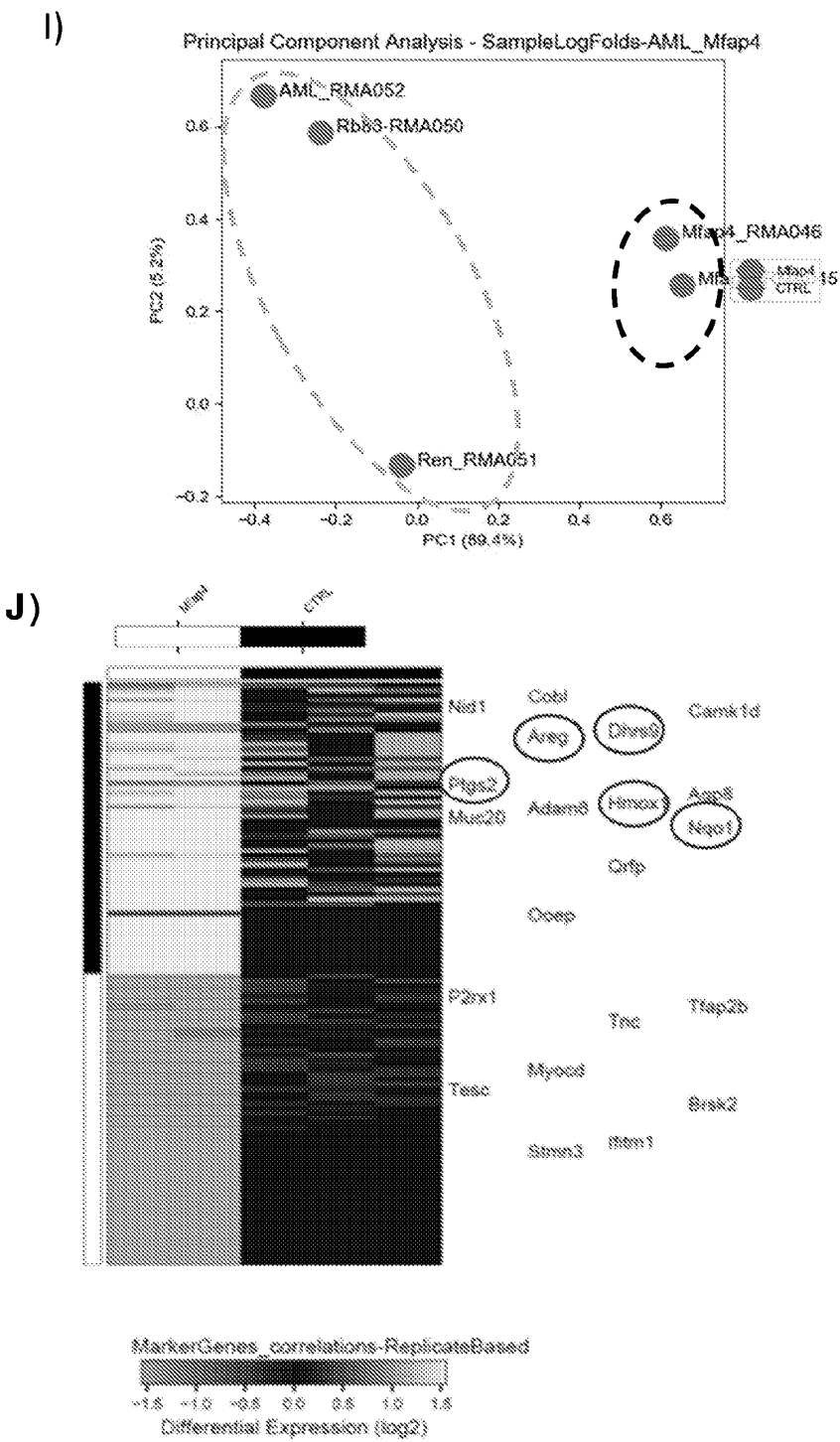


Figure 8 (I)-(J) (continued)

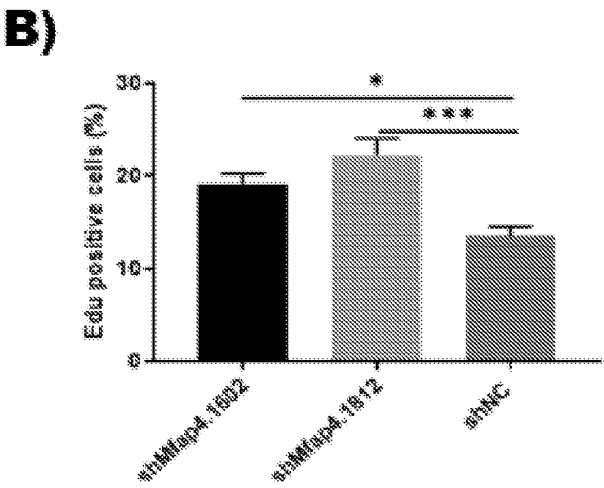
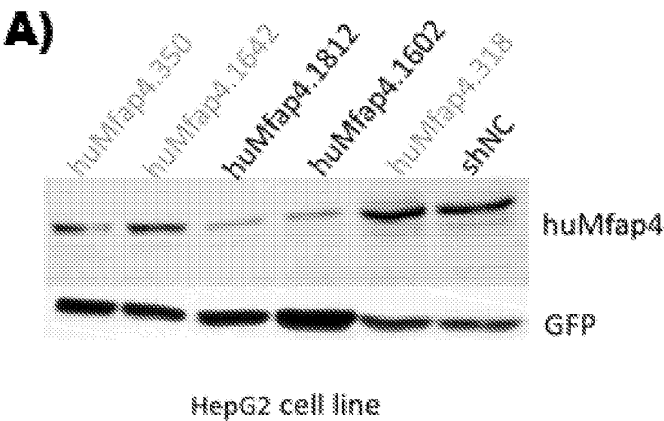


Figure 9(A)-(B) (continued)

MFAP4 - ENSG00000166482 - DESeq2 Results

Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple Steatosis NAFLD	Healthy	downReg	-0.65738	0.02524
diseaseStage	Incomplete NAFLD	Healthy	downReg	-0.19538	0.64618
diseaseStage	NASH Early Fibrosis	Healthy	downReg	-0.21561	0.49226
diseaseStage	NASH Advanced Fibrosis	Healthy	upReg	0.16541	0.50241
diseaseStage	Cirrhosis	Healthy	upReg	0.88823	0.0118
steatosisGroup	Steatosis1	Steatosis0	downReg	-0.44538	0.05958
steatosisGroup	Steatosis2	Steatosis0	downReg	-0.43594	0.21988
steatosisGroup	Steatosis3	Steatosis0	downReg	-0.28024	0.47768
ballooningGroup	Ballooning1	Ballooning0	downReg	-0.0802	0.8563
ballooningGroup	Ballooning2	Ballooning0	upReg	0.10305	0.75647
inflammationGroup	Inflammation1	Inflammation0	downReg	-0.08564	0.79674
inflammationGroup	Inflammation2	Inflammation0	downReg	-0.12357	0.80301
inflammationGroup	Inflammation3	Inflammation0	downReg	-0.17805	0.78264
fibrosisGroup	Fibrosis1	Fibrosis0	downReg	-0.08642	0.80676
fibrosisGroup	Fibrosis2	Fibrosis0	upReg	0.29554	0.37281
fibrosisGroup	Fibrosis3	Fibrosis0	upReg	0.09348	0.81973
fibrosisGroup	Fibrosis4	Fibrosis0	upReg	1.00541	3.378e-06

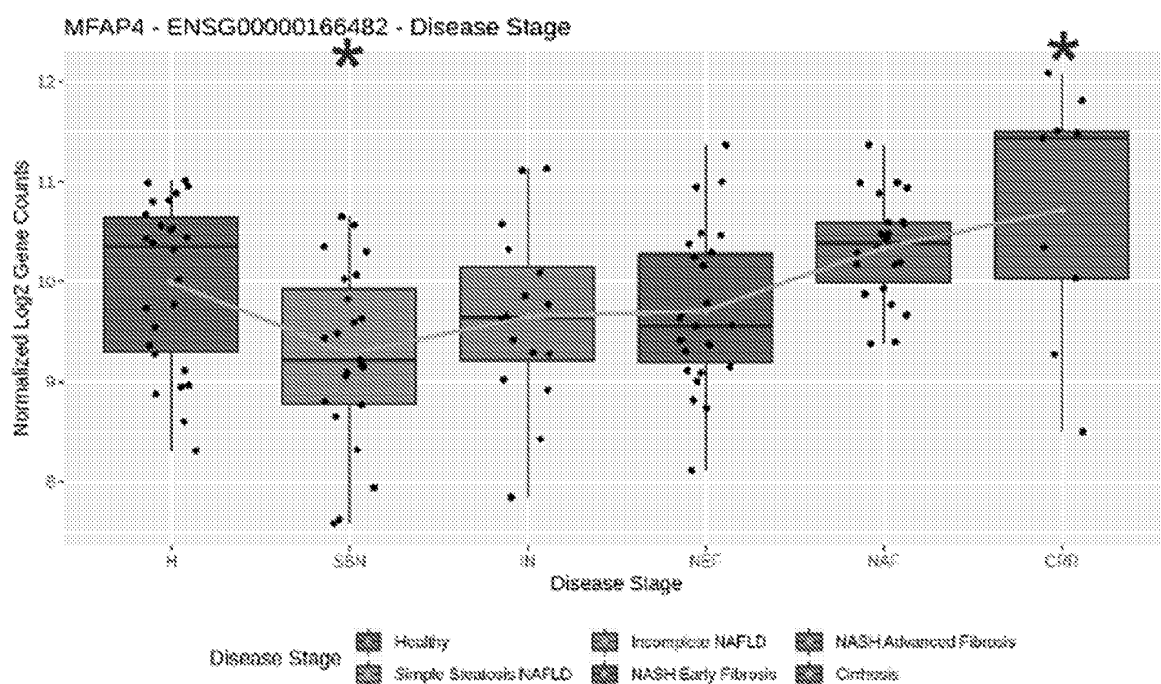


Figure 9(C) (continued)

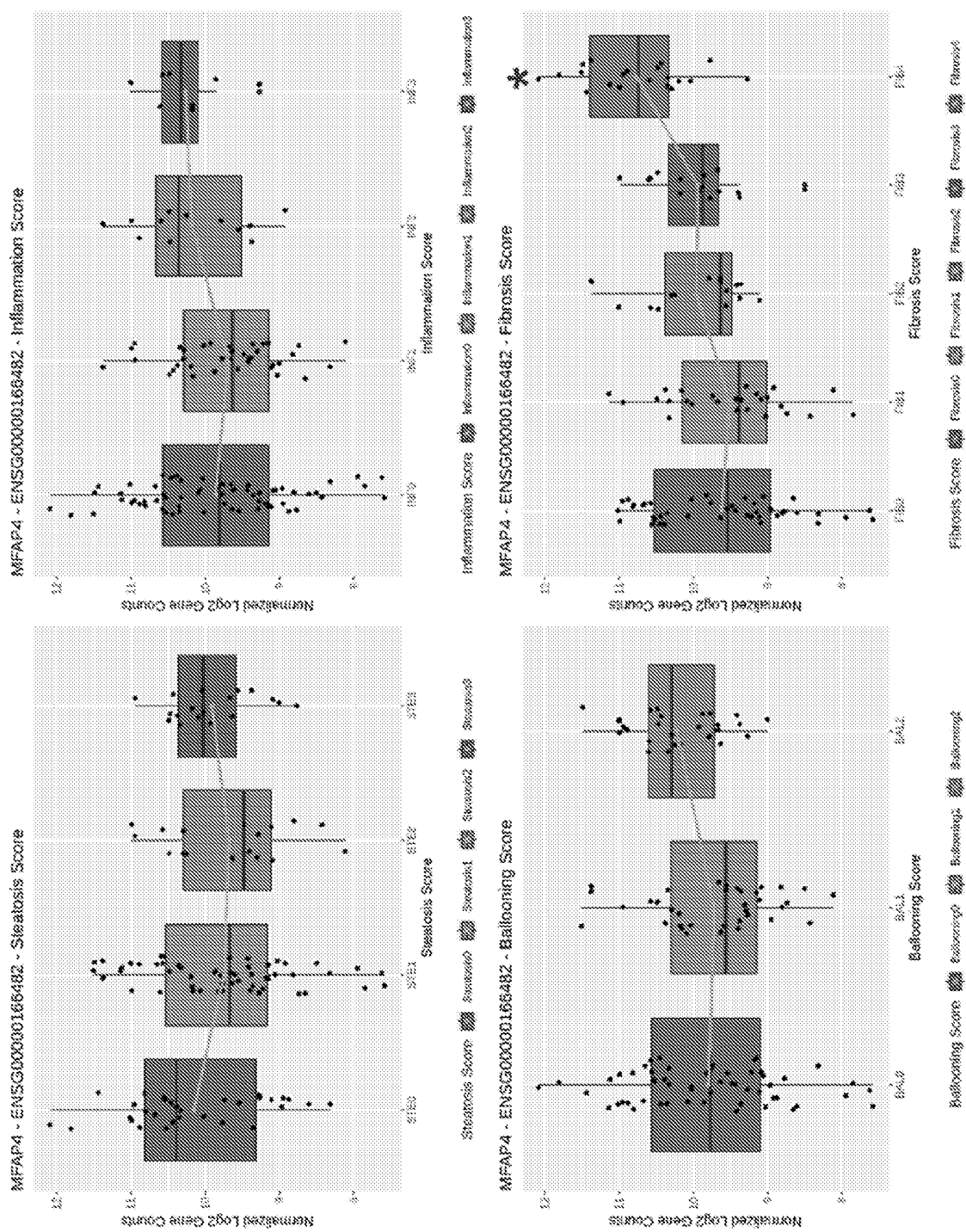


Figure 9(C) (continued)

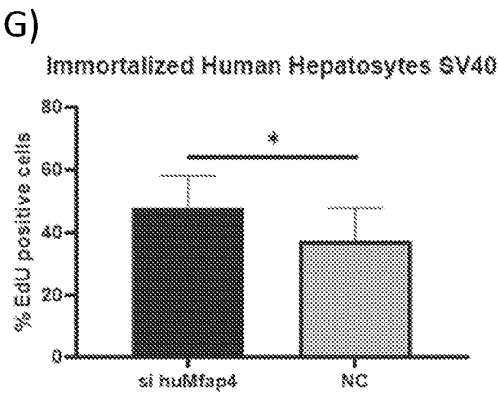
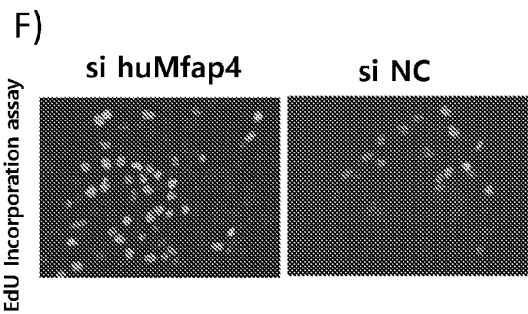
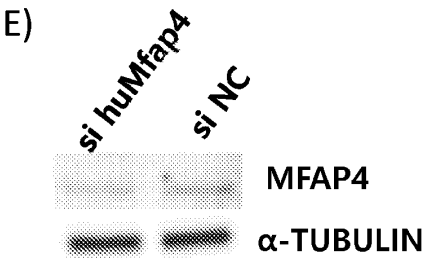
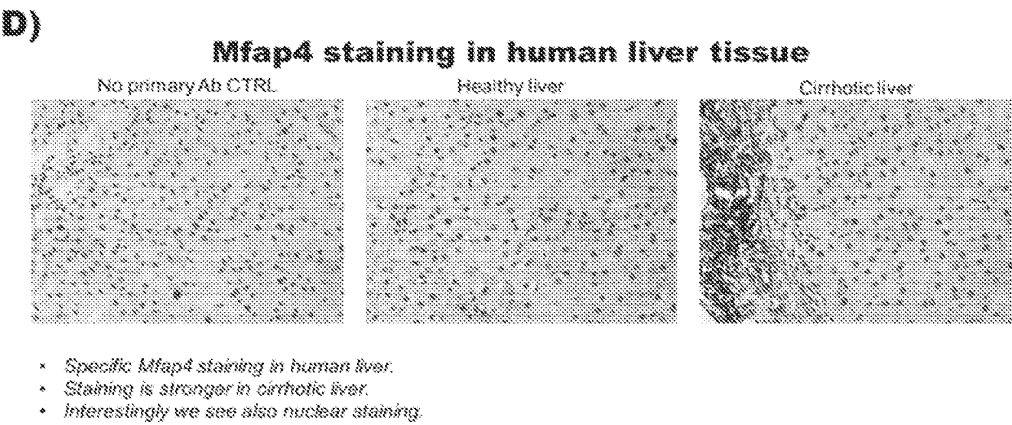


Figure 9(D)-(G) (continued)

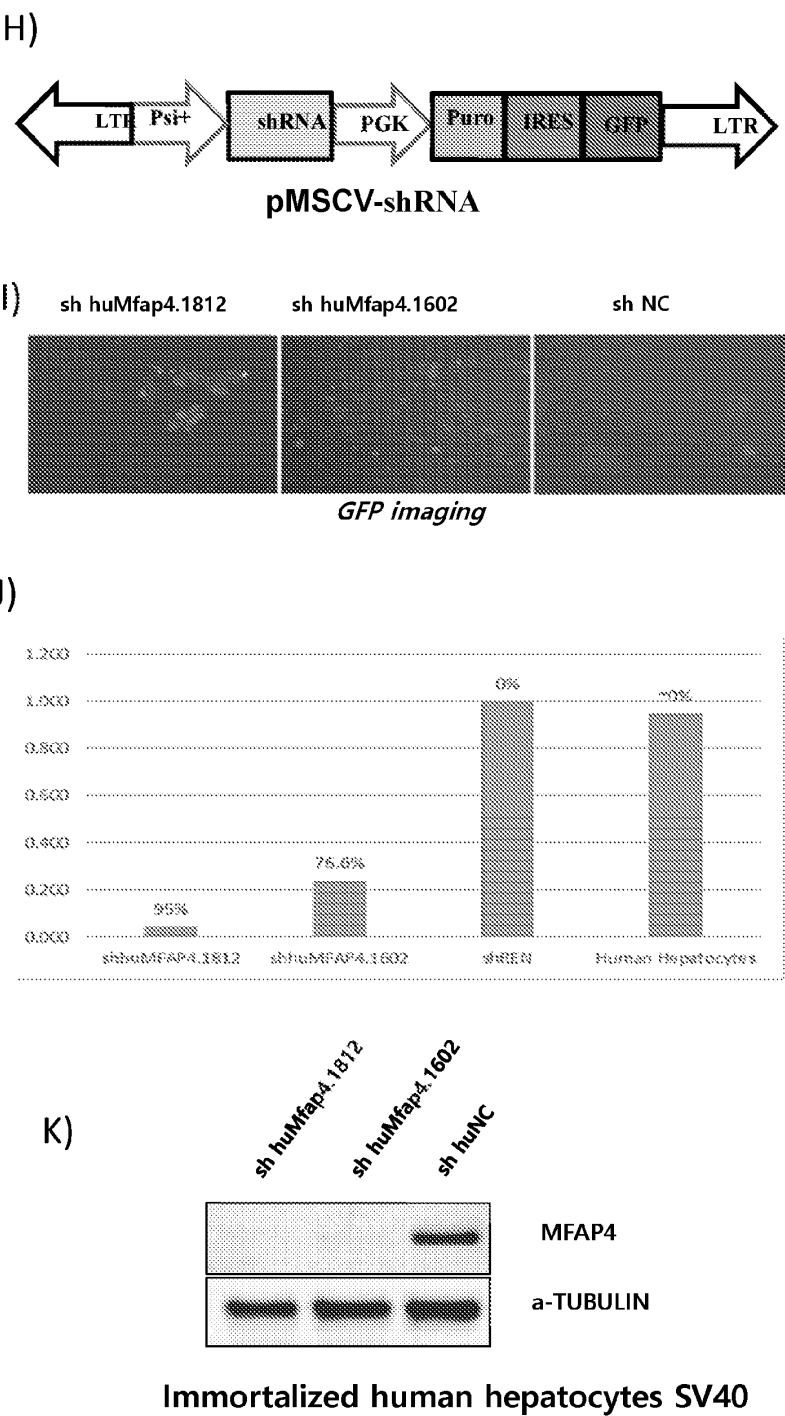
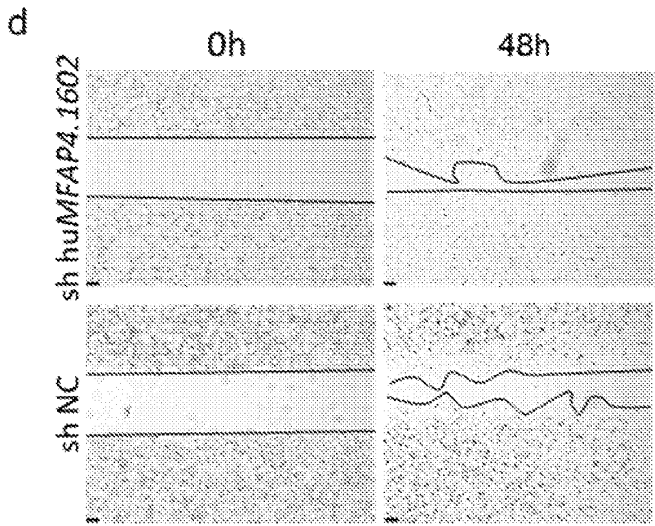


Figure 9 (H)-(K) (continued)

L)



M)

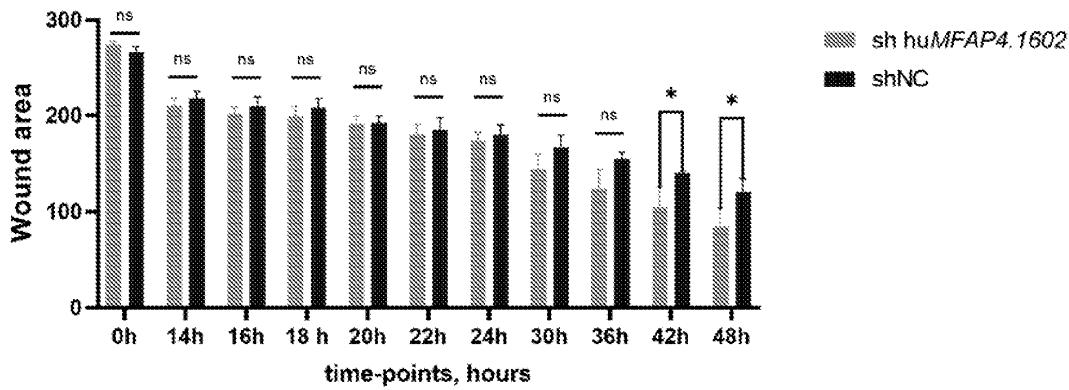


Figure 9 (L)-(M) (end)

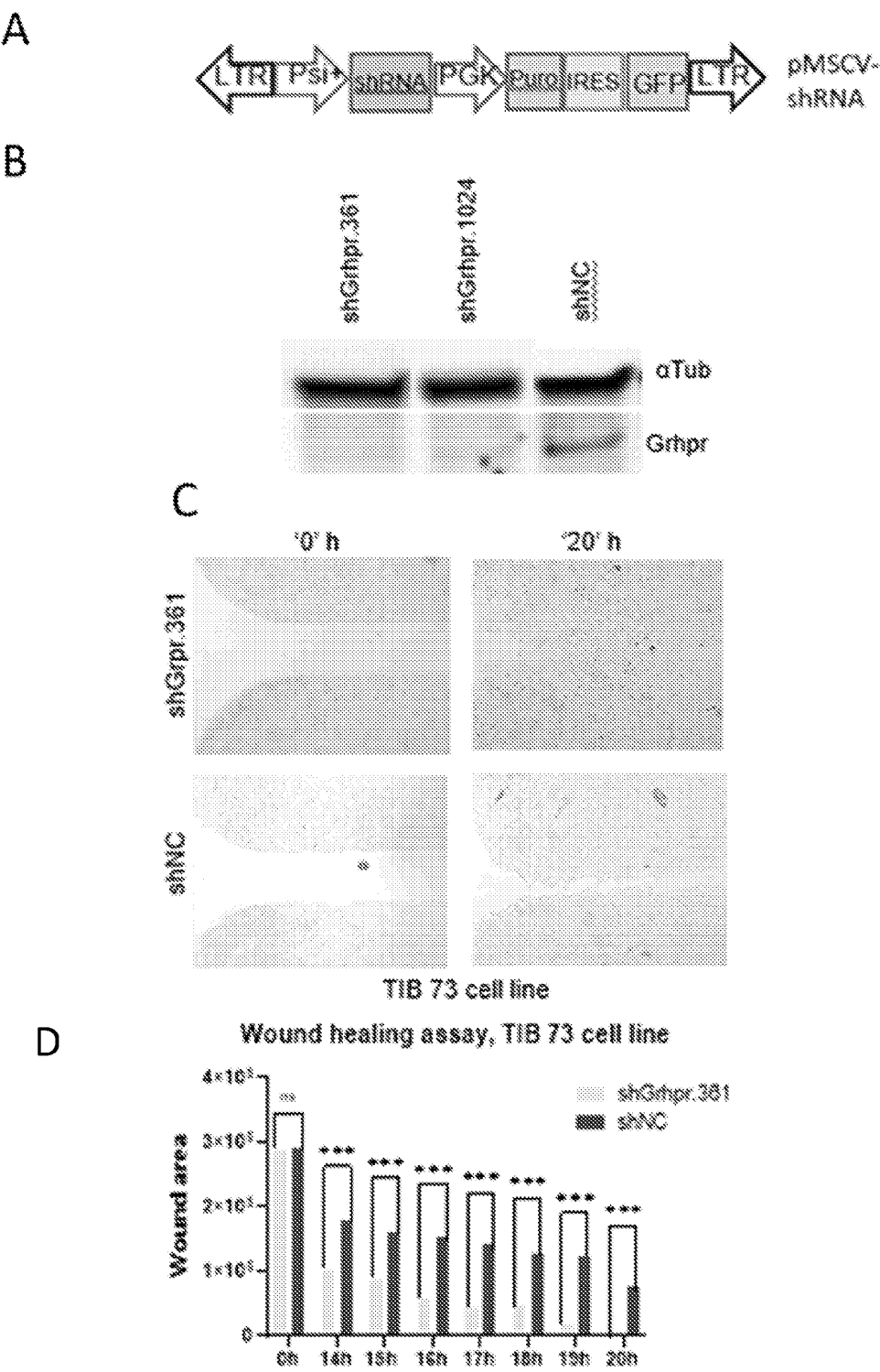


Figure 10

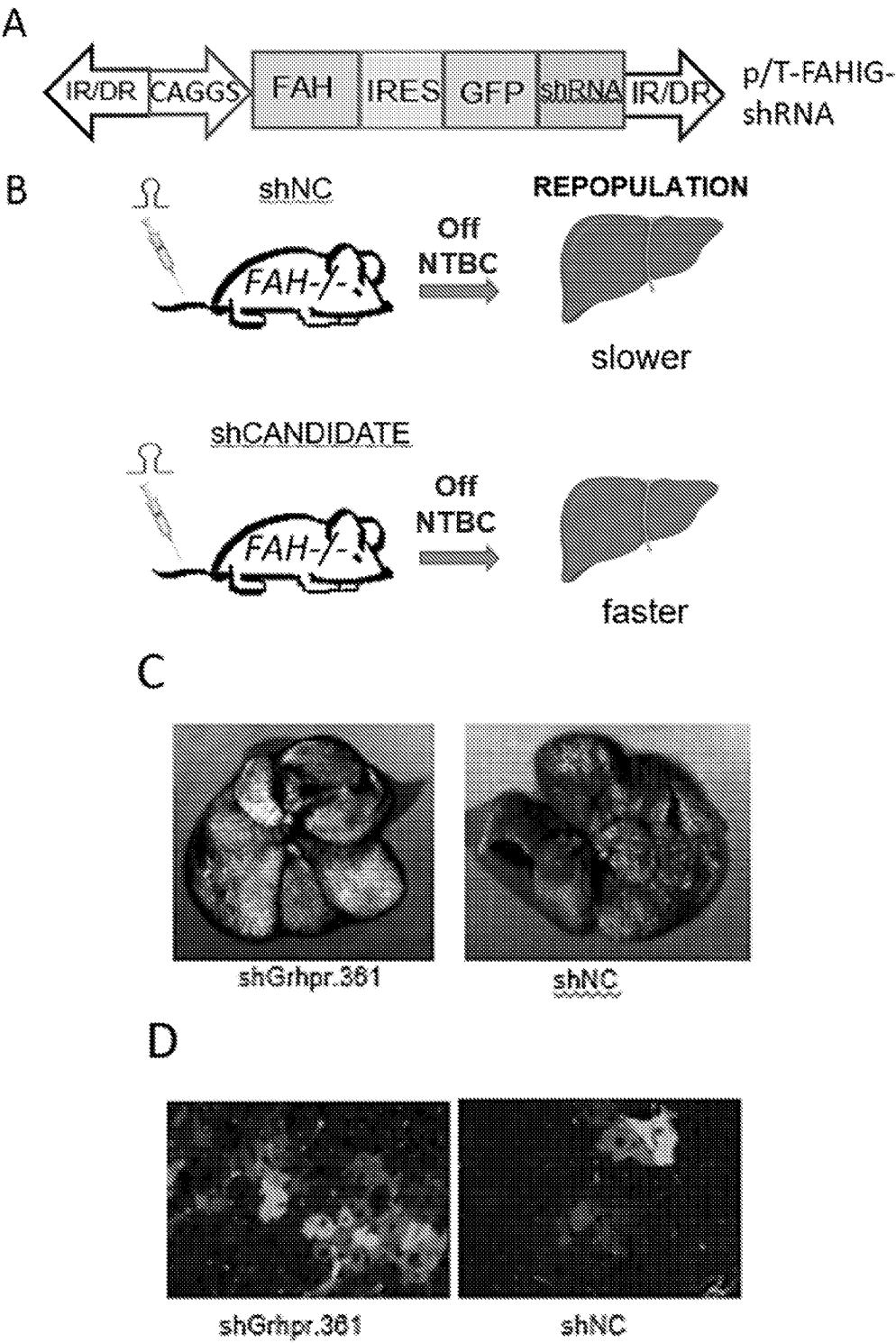
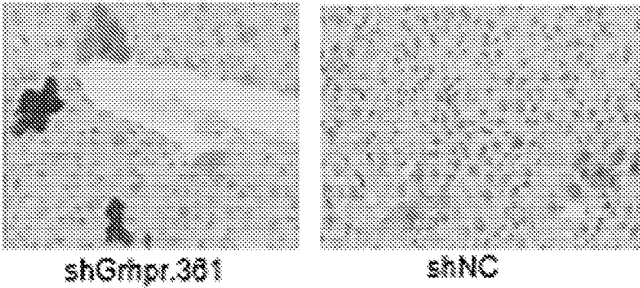
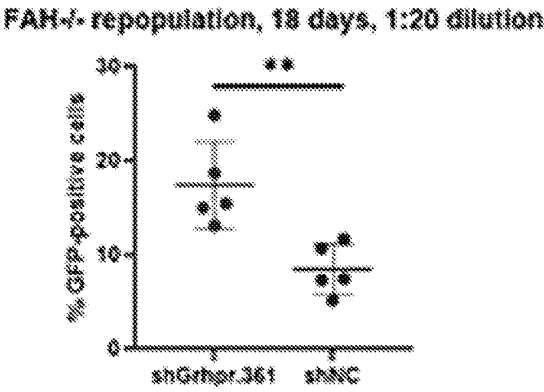


Figure 11 (A)-(D) (continued)

E



F



G)

Survival curve at dilution of constructs 1:30

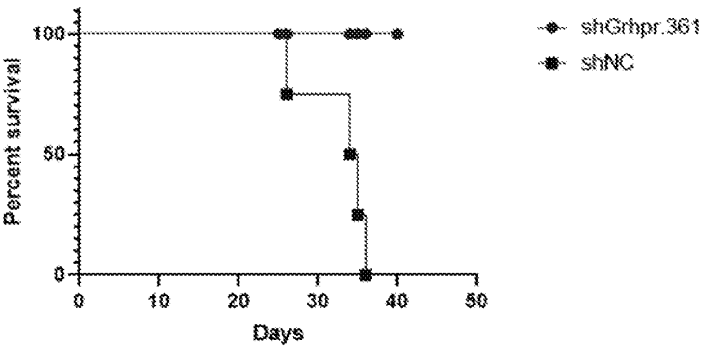


Figure 11 (E)-(G) (end)

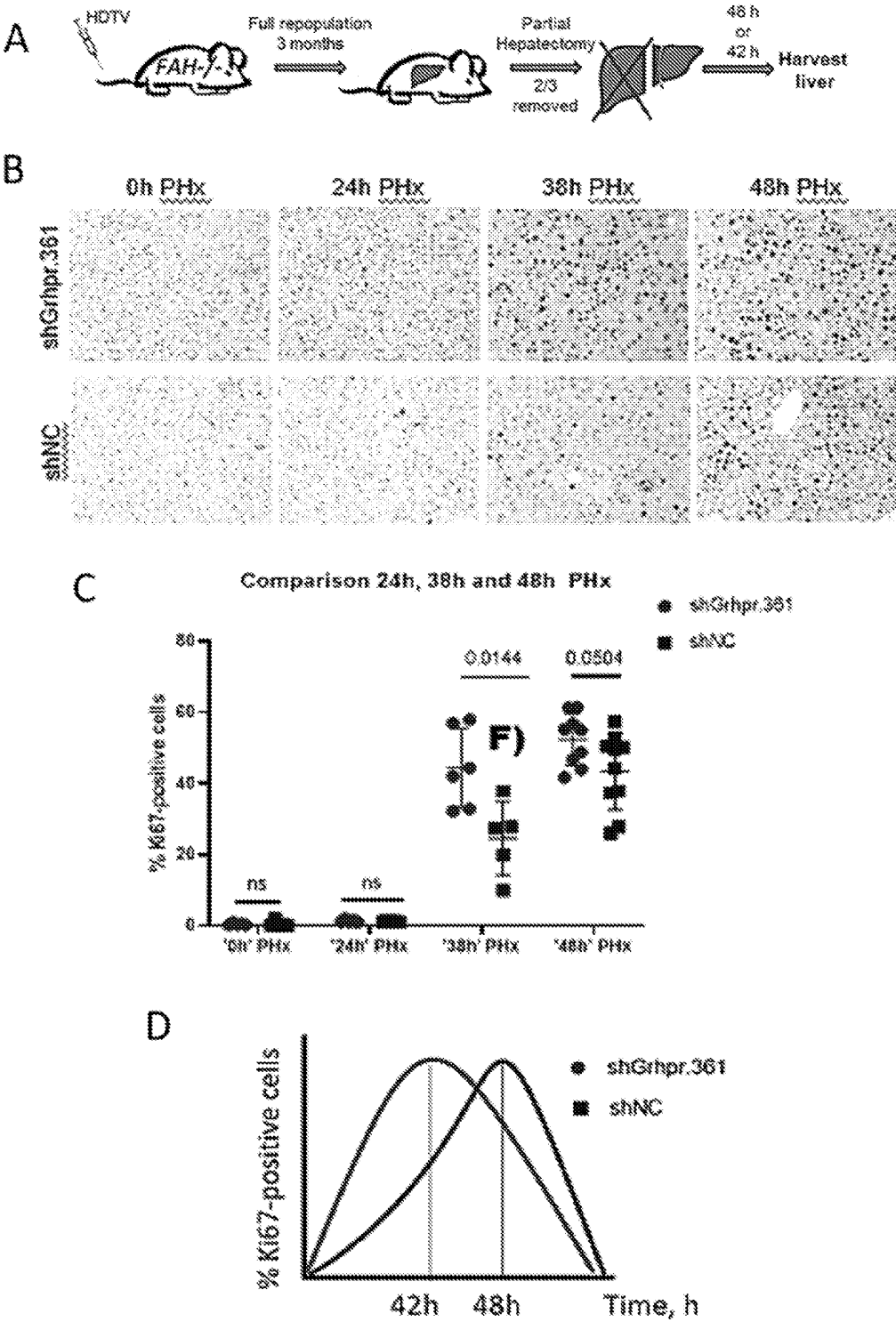


Figure 12

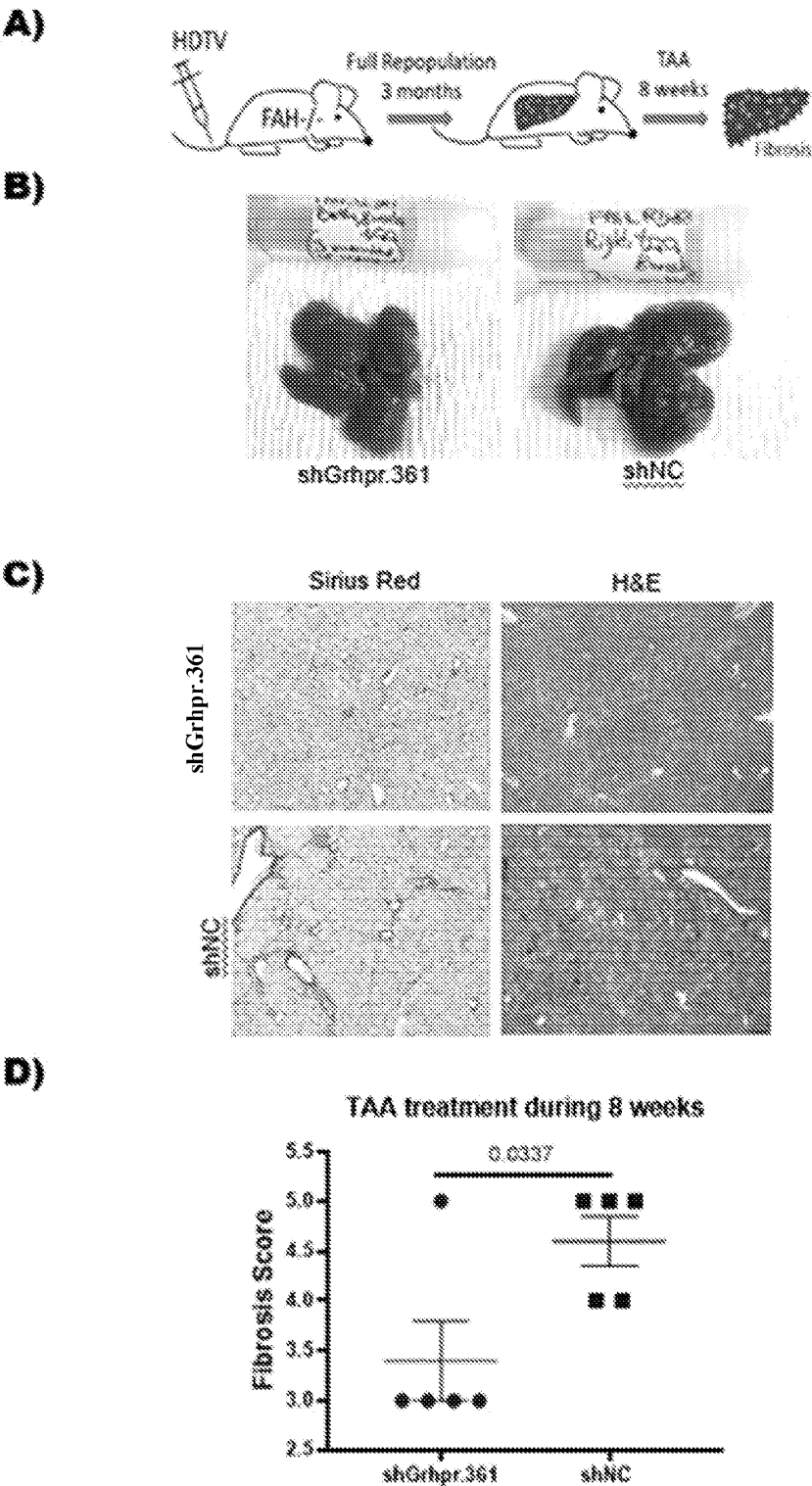


Figure 13

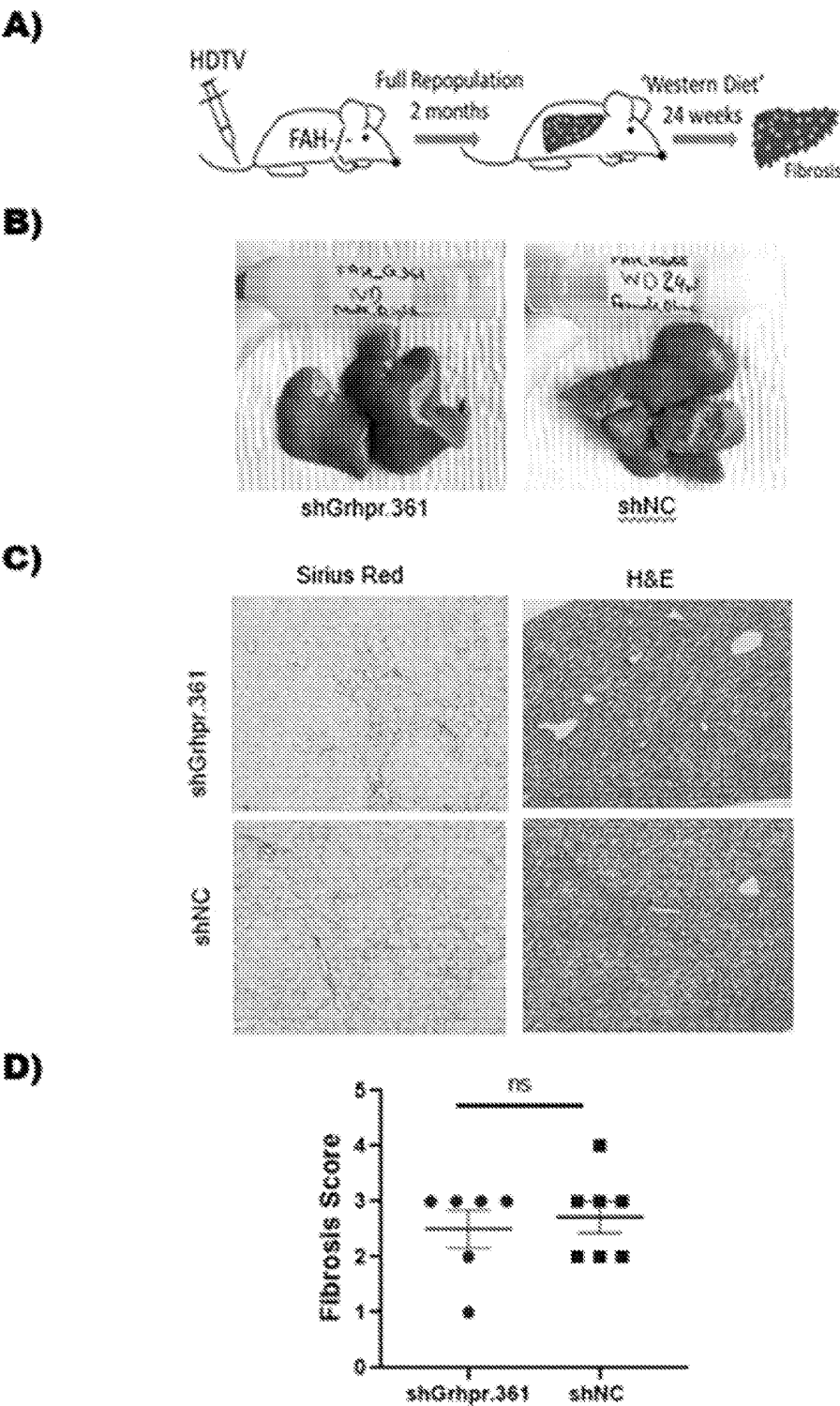


Figure 14

GRHPR - ENSG00000137106 - DESeq2 Results

Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple_Steatosis_NAFLD	Healthy	downReg	-0.07756	0.74212
diseaseStage	Incomplete_NAFLD	Healthy	downReg	-0.2226	0.236
diseaseStage	NASH_Early_Fibrosis	Healthy	downReg	-0.12171	0.47047
diseaseStage	NASH_Advanced_Fibrosis	Healthy	downReg	-0.55533	1.272e-05
diseaseStage	Cirrhosis	Healthy	downReg	-0.41341	0.03565
steatosisGroup	Steatosis1	Steatosis0	downReg	-0.16201	0.24255
steatosisGroup	Steatosis2	Steatosis0	downReg	-0.03488	0.90046
steatosisGroup	Steatosis3	Steatosis0	downReg	-0.28299	0.12262
ballooningGroup	Ballooning1	Ballooning0	downReg	-0.05693	0.79197
ballooningGroup	Ballooning2	Ballooning0	downReg	-0.28321	0.0232
inflammationGroup	Inflammation1	Inflammation0	downReg	-0.08329	0.59634
inflammationGroup	Inflammation2	Inflammation0	downReg	-0.2518	0.19708
inflammationGroup	Inflammation3	Inflammation0	downReg	-0.32229	0.19893
fibrosisGroup	Fibrosis1	Fibrosis0	downReg	-0.01972	0.9242
fibrosisGroup	Fibrosis2	Fibrosis0	downReg	-0.23604	0.15306
fibrosisGroup	Fibrosis3	Fibrosis0	downReg	-0.33703	0.02634
fibrosisGroup	Fibrosis4	Fibrosis0	downReg	-0.54181	3.345e-06

GRHPR - ENSG00000137106 - Disease Stage

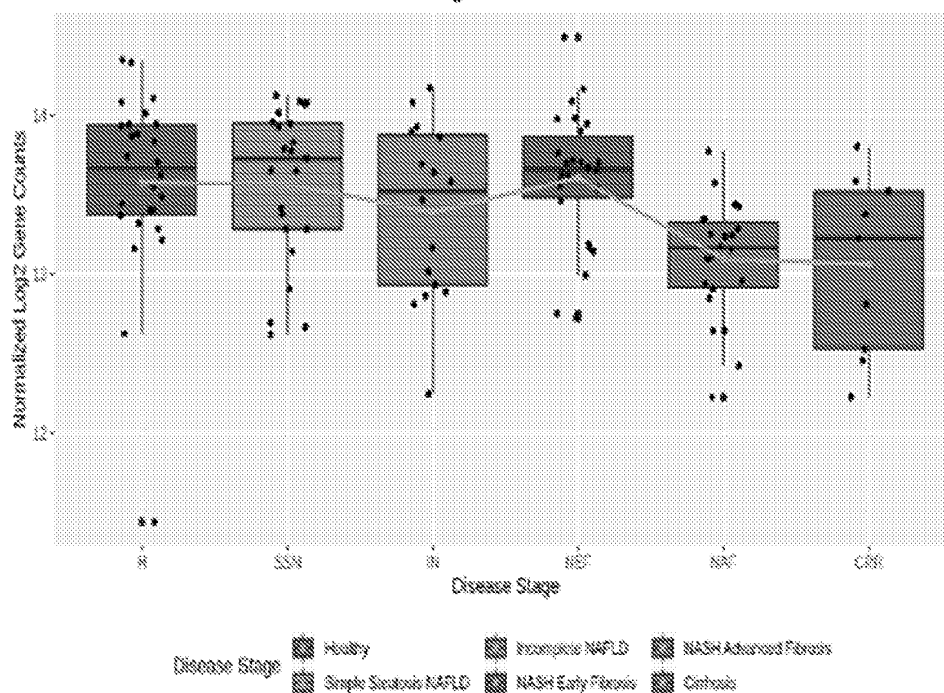


Figure 15 (continued)

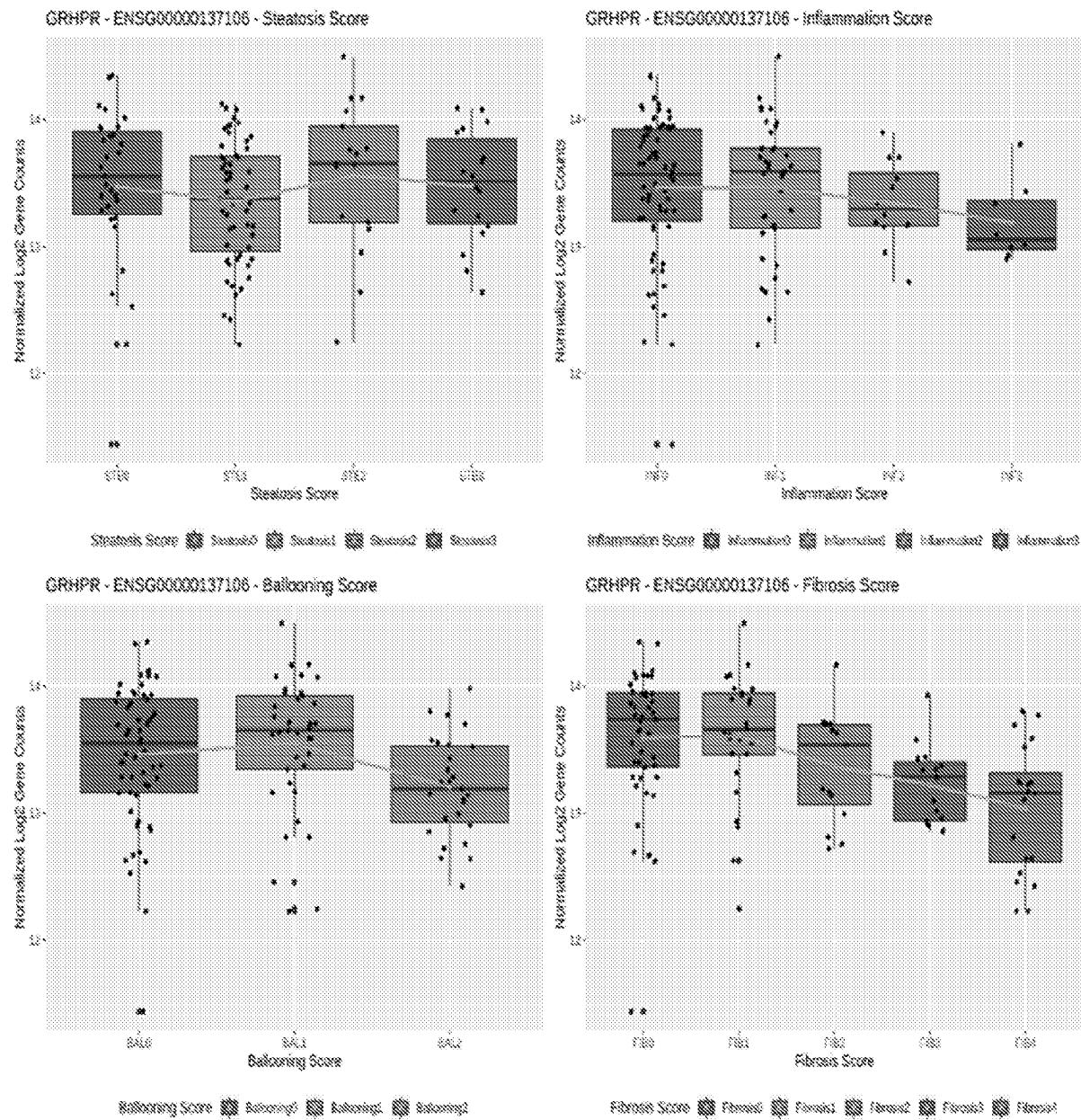


Figure 15 (end)

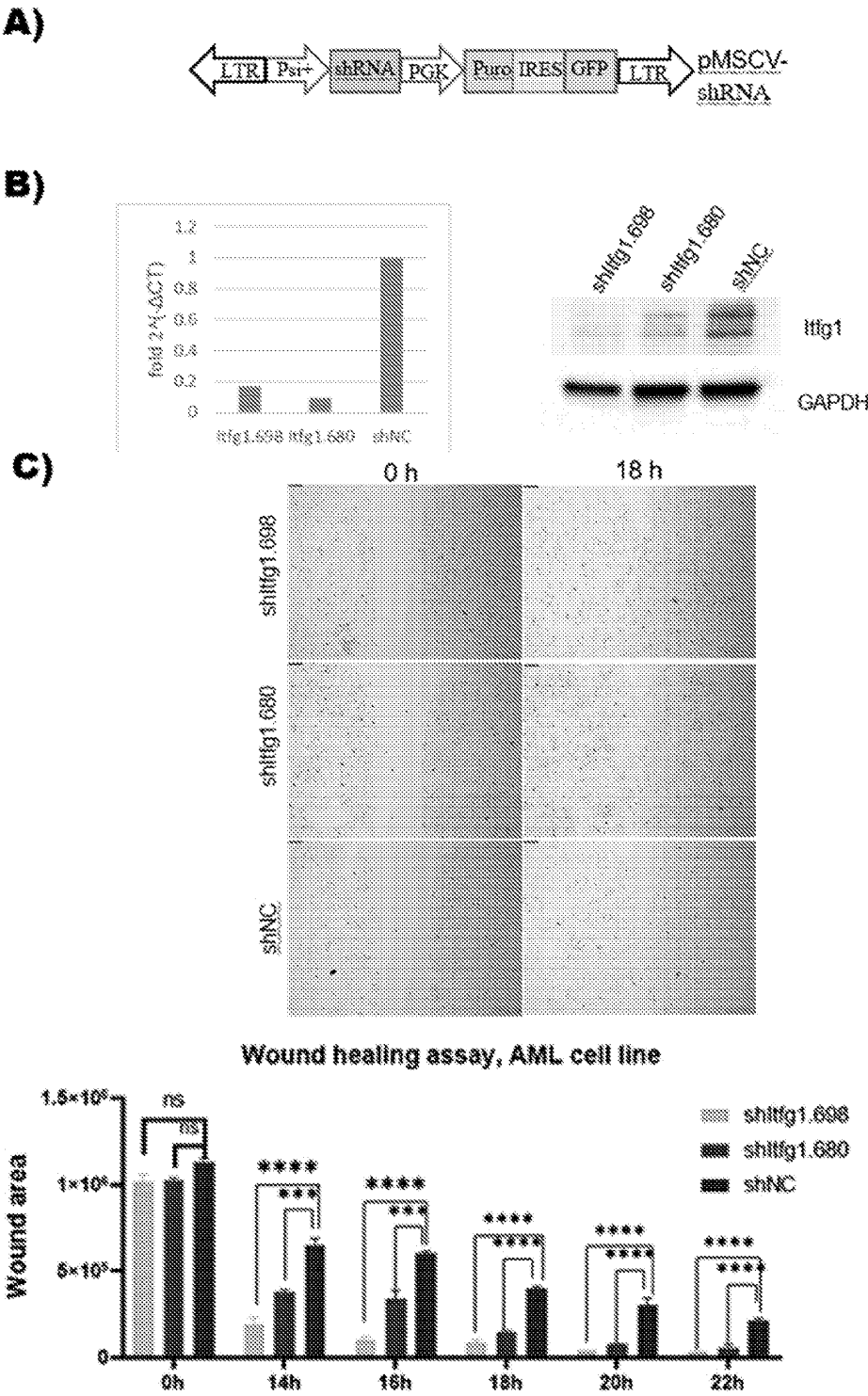


Figure 16 (A)-(C) (continued)

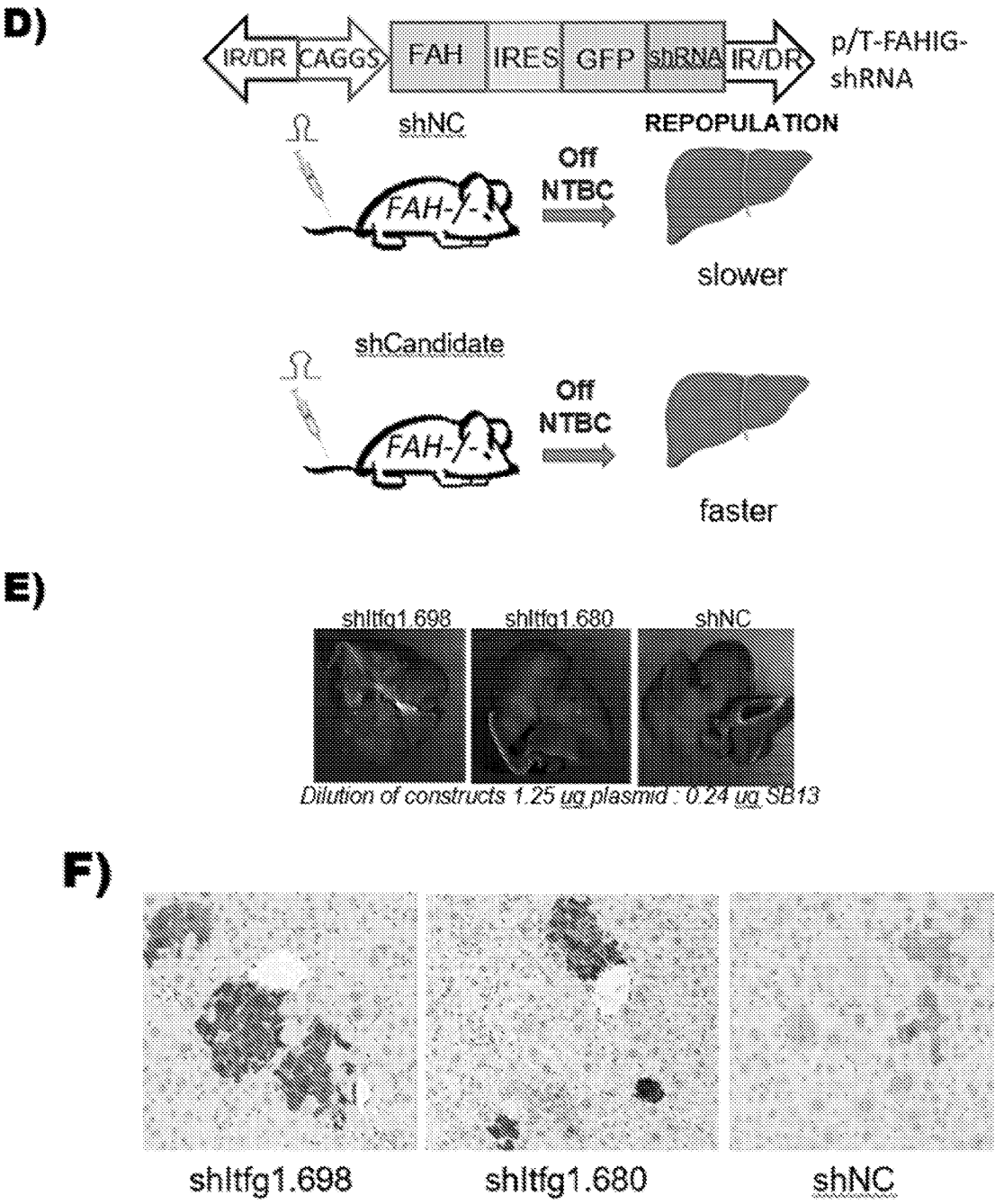


Figure 16 (D)-(F) (continued)

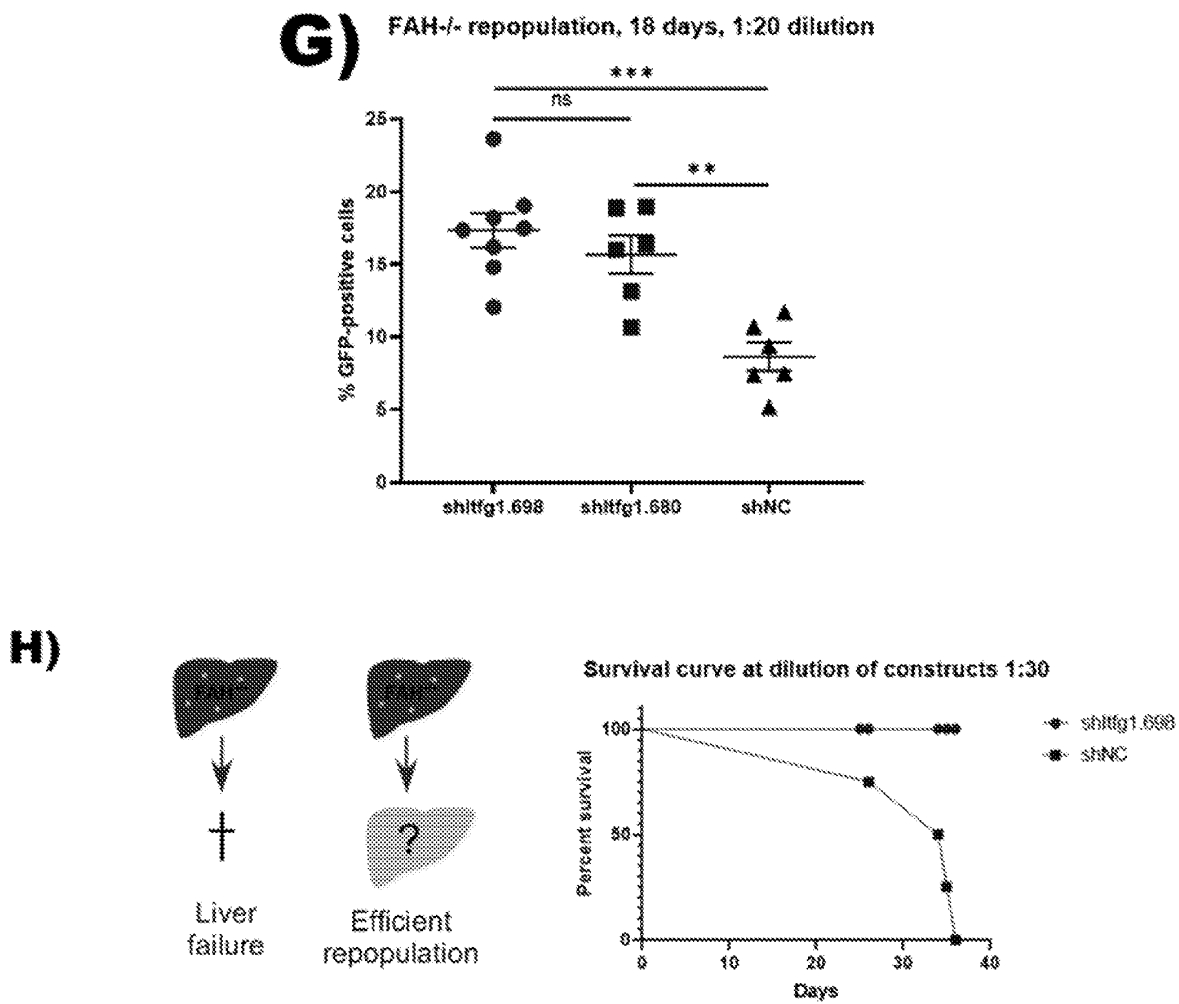


Figure 16 (G)-(H) (end)

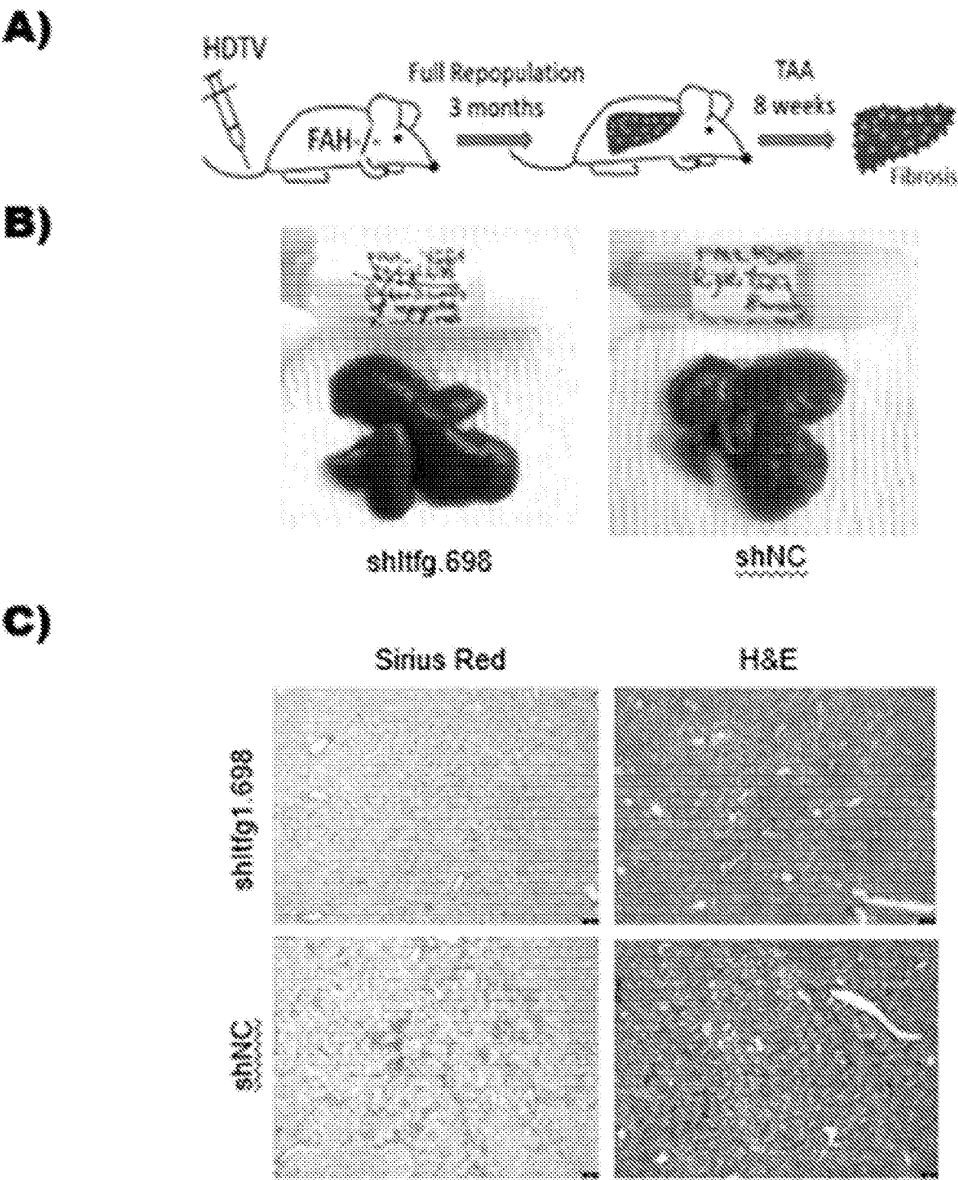
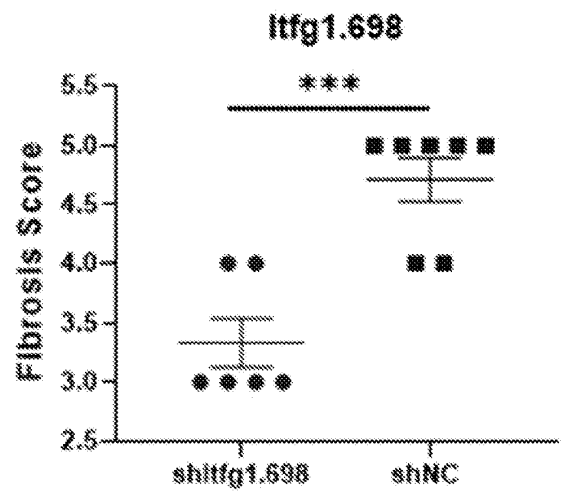


Figure 17 (A)-(C) (continued)

D)



E)

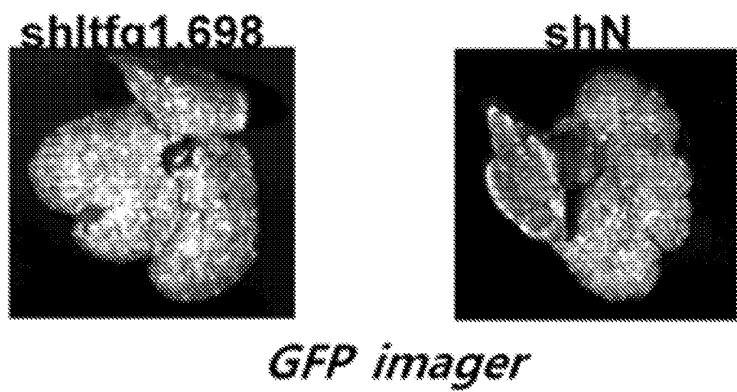


Figure 17 (D)-(E) (end)

A) Fah^{-/-} repopulated mouse liver 6 month after Western Diet

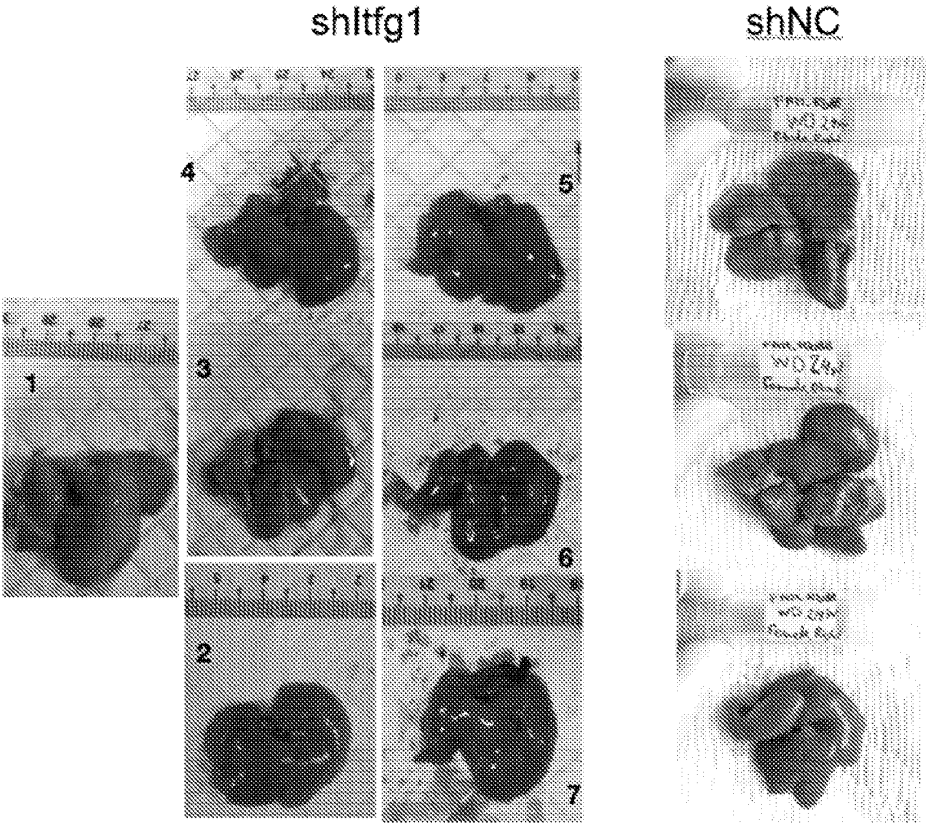


Figure 18(A) (continued)

ITFG1 - ENSG00000129636 - DESeq2 Results					
Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple Steatosis NAFLD	Healthy	upReg	0.14418	0.36633
diseaseStage	Incomplete NAFLD	Healthy	upReg	0.02081	0.93103
diseaseStage	NASH Early Fibrosis	Healthy	upReg	0.0405	0.80014
diseaseStage	NASH Advanced Fibrosis	Healthy	downReg	-0.04956	0.74318
diseaseStage	Cirrhosis	Healthy	upReg	0.03485	0.98494
steatosisGroup	Steatosis1	Steatosis0	upReg	0.05017	0.69477
steatosisGroup	Steatosis2	Steatosis0	upReg	0.16766	0.25128
steatosisGroup	Steatosis3	Steatosis0	upReg	0.09268	0.58054
ballooningGroup	Ballooning1	Ballooning0	upReg	0.10344	0.42485
ballooningGroup	Ballooning2	Ballooning0	downReg	-0.04851	0.70435
inflammationGroup	Inflammation1	Inflammation0	upReg	0.06393	0.58538
inflammationGroup	Inflammation2	Inflammation0	downReg	-0.05675	0.76298
inflammationGroup	Inflammation3	Inflammation0	downReg	-0.26781	0.1435
fibrosisGroup	Fibrosis1	Fibrosis0	downReg	-0.10001	0.44571
fibrosisGroup	Fibrosis2	Fibrosis0	downReg	-0.11816	0.44046
fibrosisGroup	Fibrosis3	Fibrosis0	downReg	-0.1251	0.40393
fibrosisGroup	Fibrosis4	Fibrosis0	downReg	-0.11509	0.34234

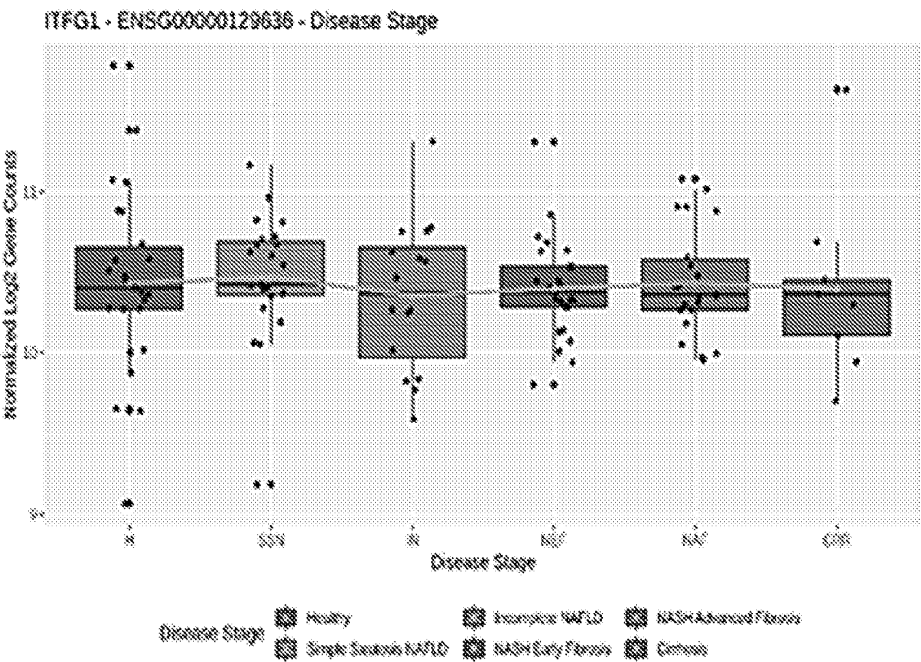


Figure 18(B) (continued)

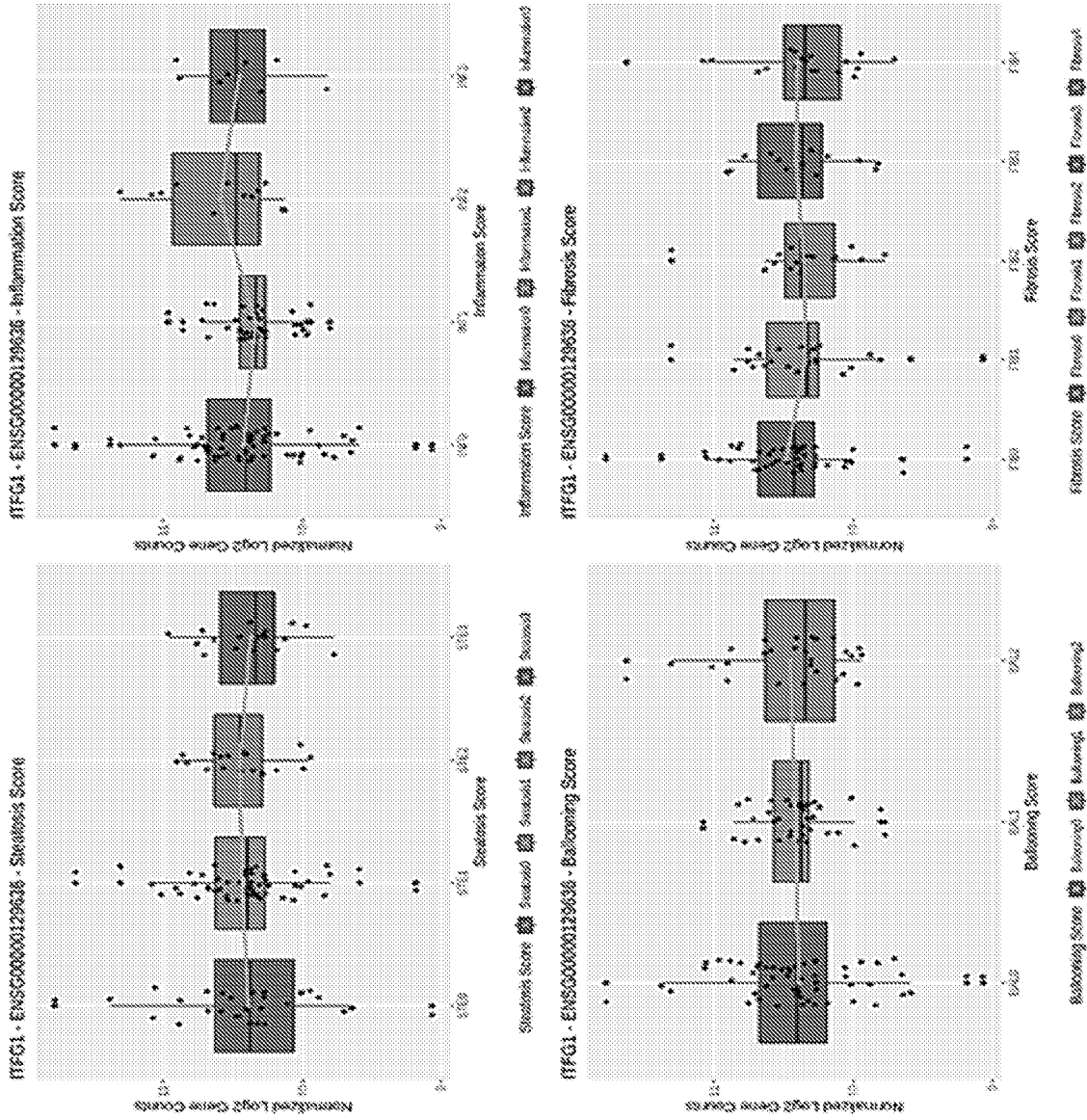
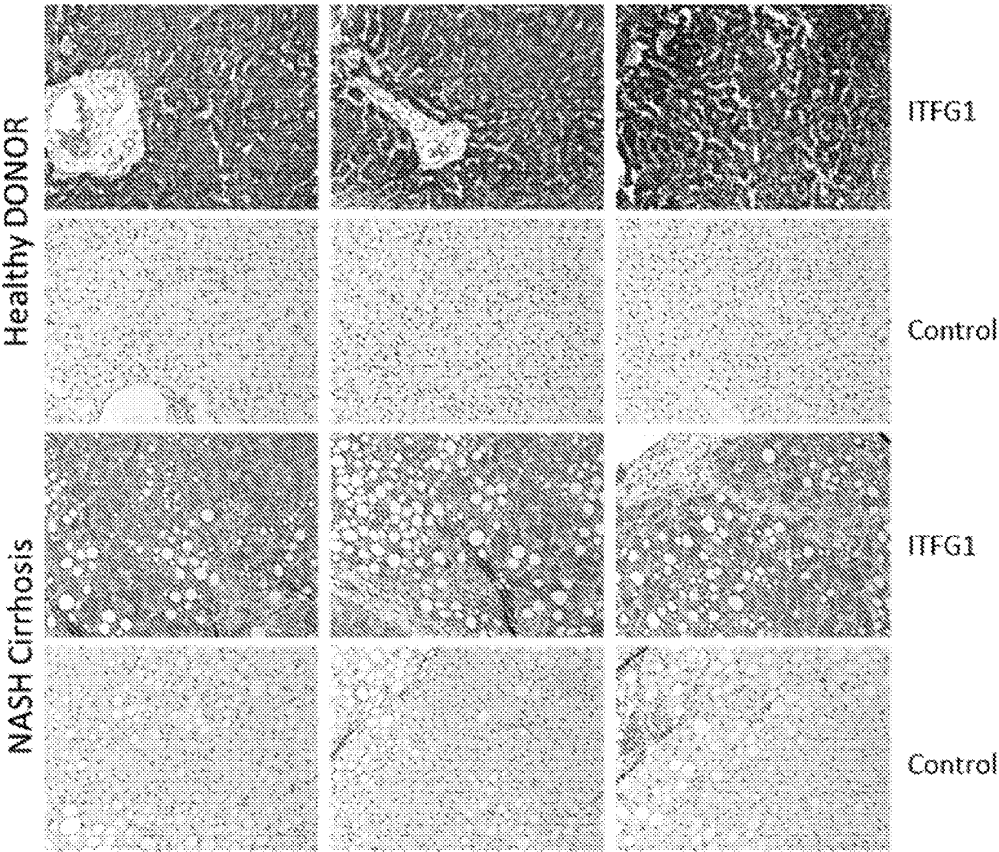


Figure 18(B) (continued)

C



D

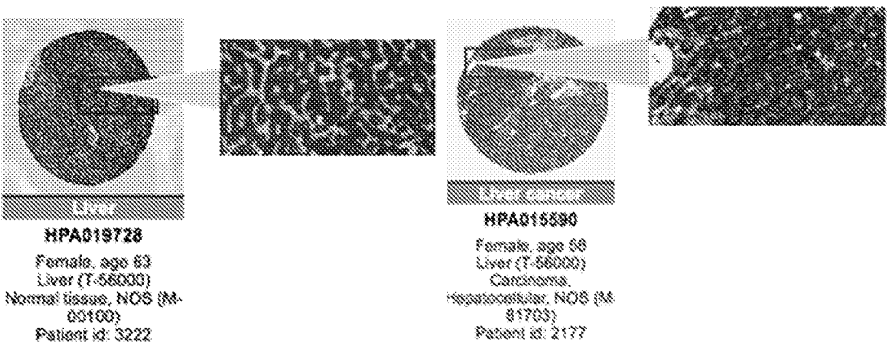
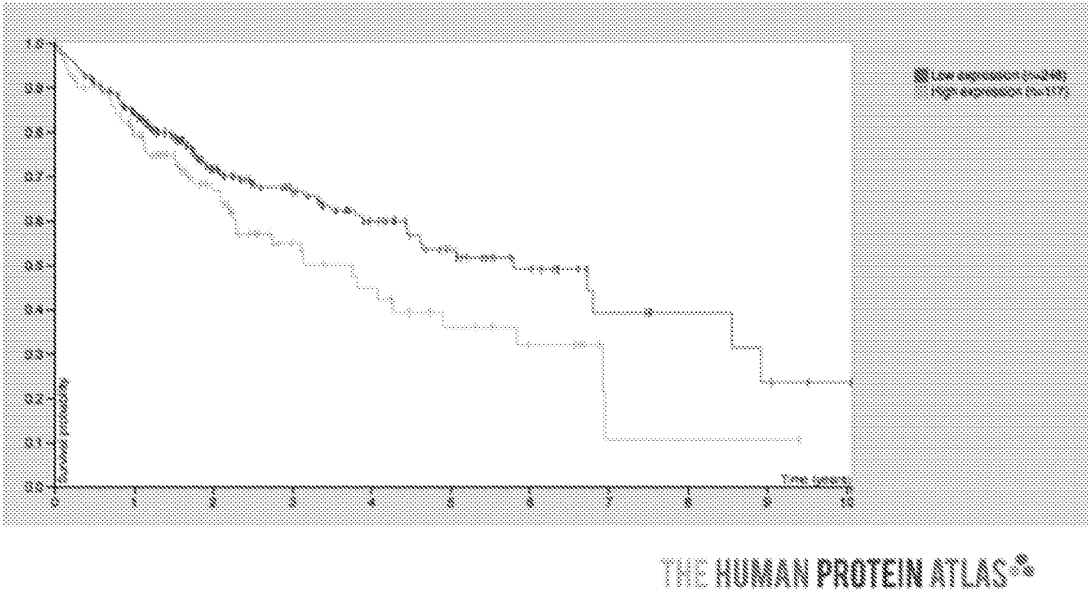
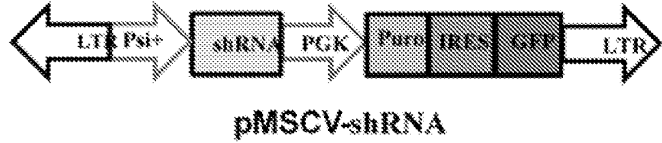


Figure 18 (C)-(D) (continued)

E



F)



G)

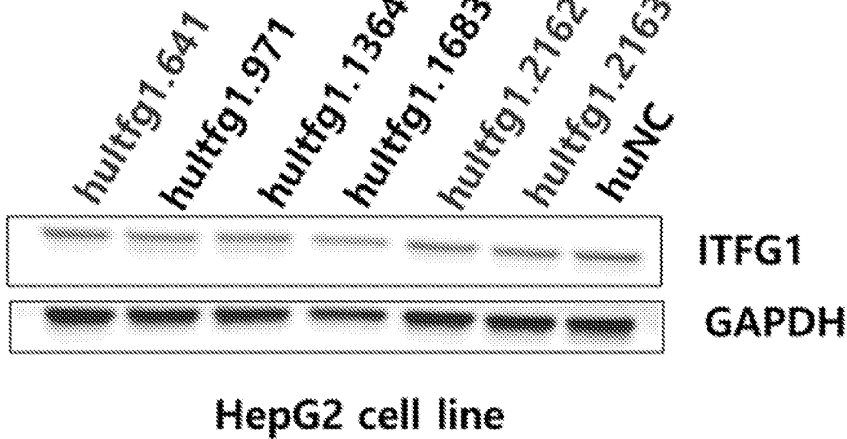


Figure 18 (E)-(G) (end)

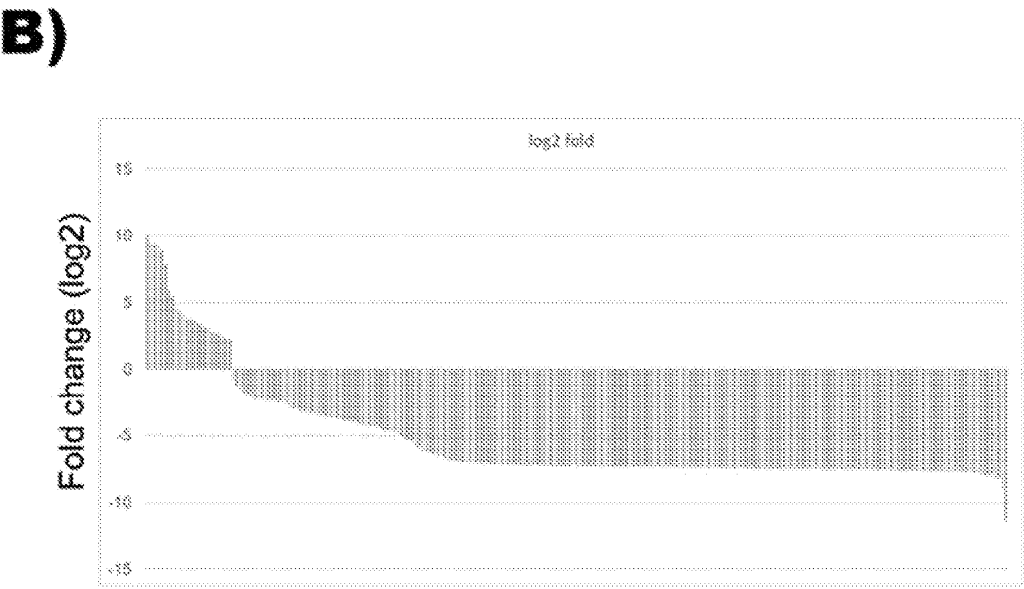
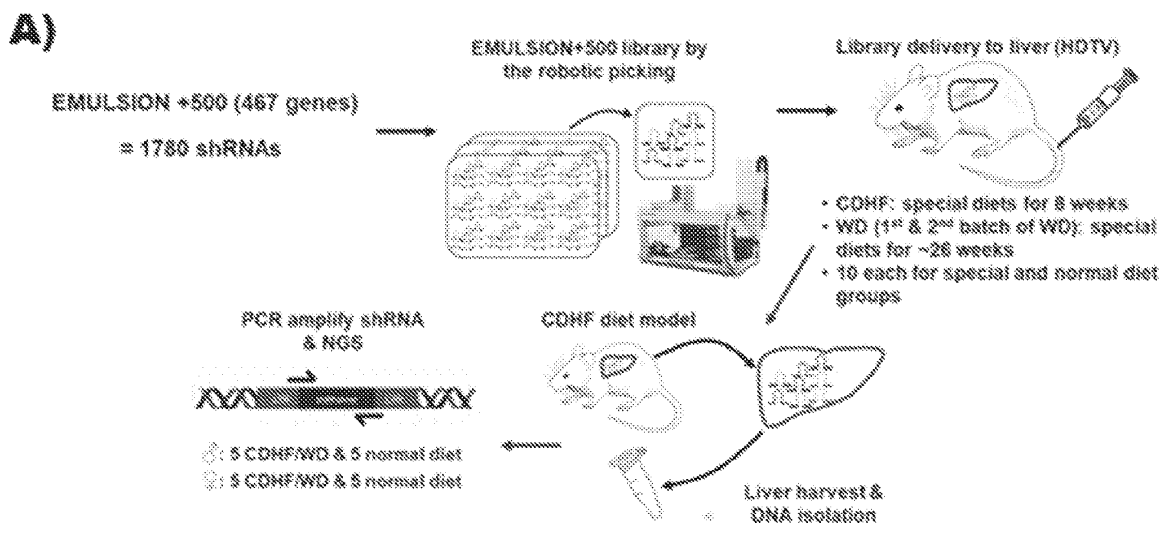


Figure 19(A)-(B) (continued)

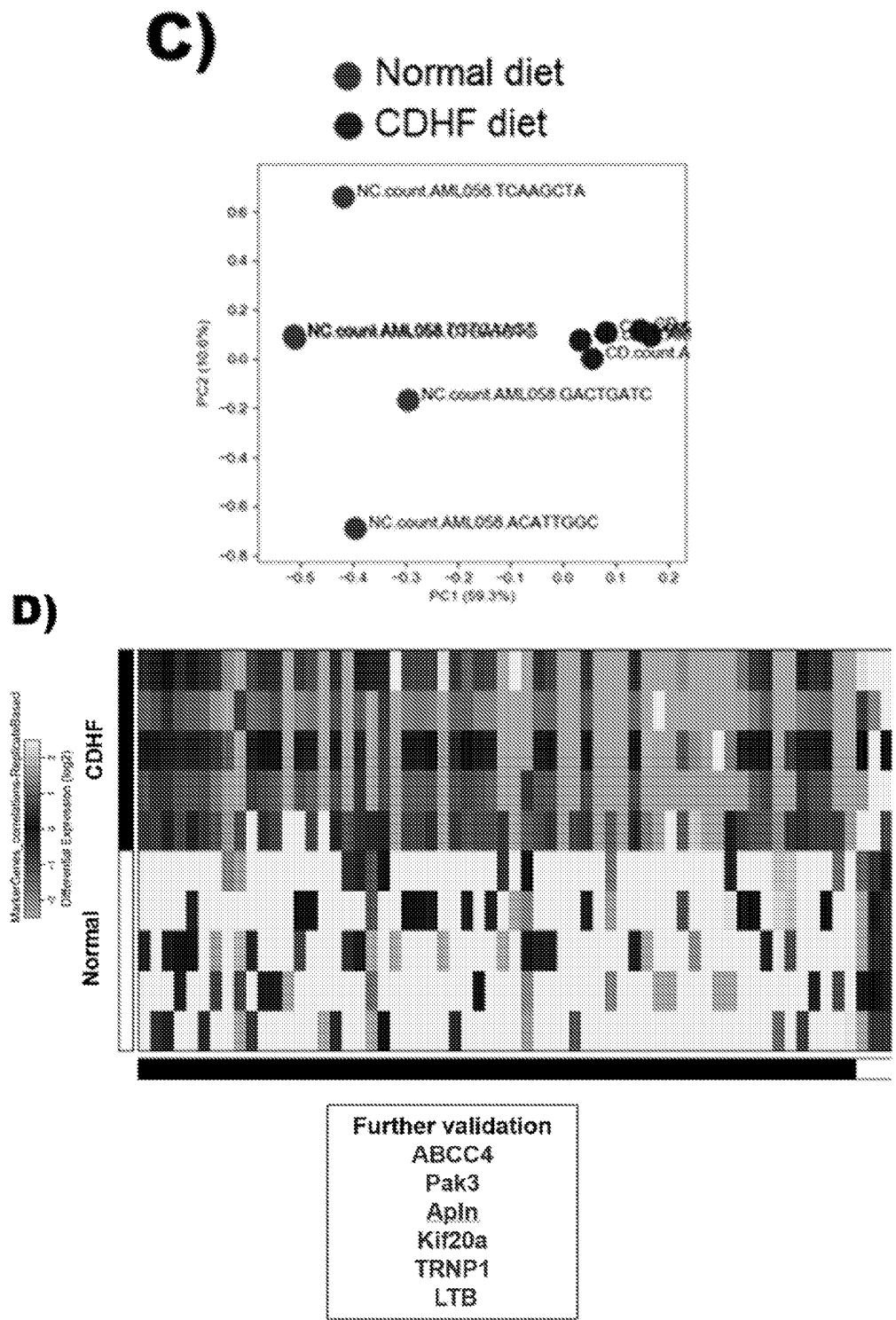


Figure 19 (C)-(D) (end)

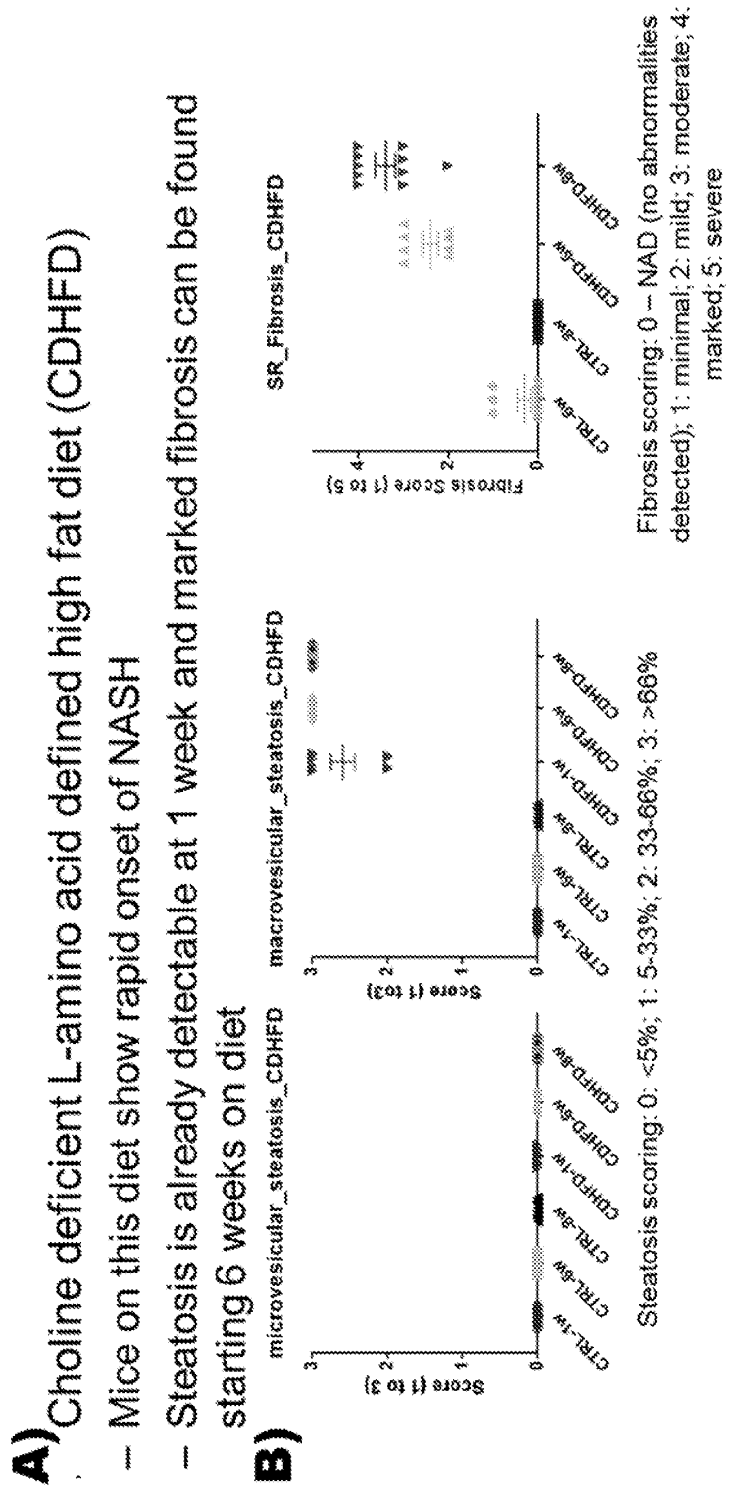


Figure 20

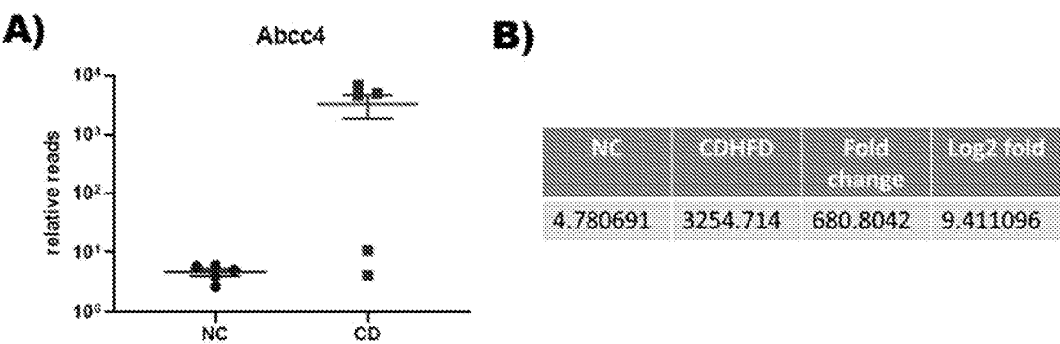


Figure 21(A)-(B) (continued)

ABCC4 - ENSG00000125257 - DESeq2 Results					
Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple Steatosis NAFLD	Healthy	upReg	0.02529	0.94176
diseaseStage	Incomplete NAFLD	Healthy	upReg	0.35973	0.25699
diseaseStage	NASH Early Fibrosis	Healthy	upReg	0.39334	0.10876
diseaseStage	NASH Advanced Fibrosis	Healthy	upReg	1.05661	4.654e-07
diseaseStage	Cirrhosis	Healthy	upReg	1.25399	2.054e-05
steatosisGroup	Steatosis1	Steatosis0	upReg	0.13063	0.66783
steatosisGroup	Steatosis2	Steatosis0	upReg	0.26221	0.50863
steatosisGroup	Steatosis3	Steatosis0	upReg	0.37656	0.29659
ballooningGroup	Ballooning1	Ballooning0	upReg	0.14645	0.67577
ballooningGroup	Ballooning2	Ballooning0	upReg	0.65781	0.00178
inflammationGroup	Inflammation1	Inflammation0	upReg	0.27564	0.26112
inflammationGroup	Inflammation2	Inflammation0	upReg	0.68904	0.03106
inflammationGroup	Inflammation3	Inflammation0	upReg	0.66608	0.11873
fibrosisGroup	Fibrosis1	Fibrosis0	upReg	0.14675	0.60152
fibrosisGroup	Fibrosis2	Fibrosis0	upReg	0.45237	0.08889
fibrosisGroup	Fibrosis3	Fibrosis0	upReg	0.82423	0.00046
fibrosisGroup	Fibrosis4	Fibrosis0	upReg	1.21599	6.43e-11

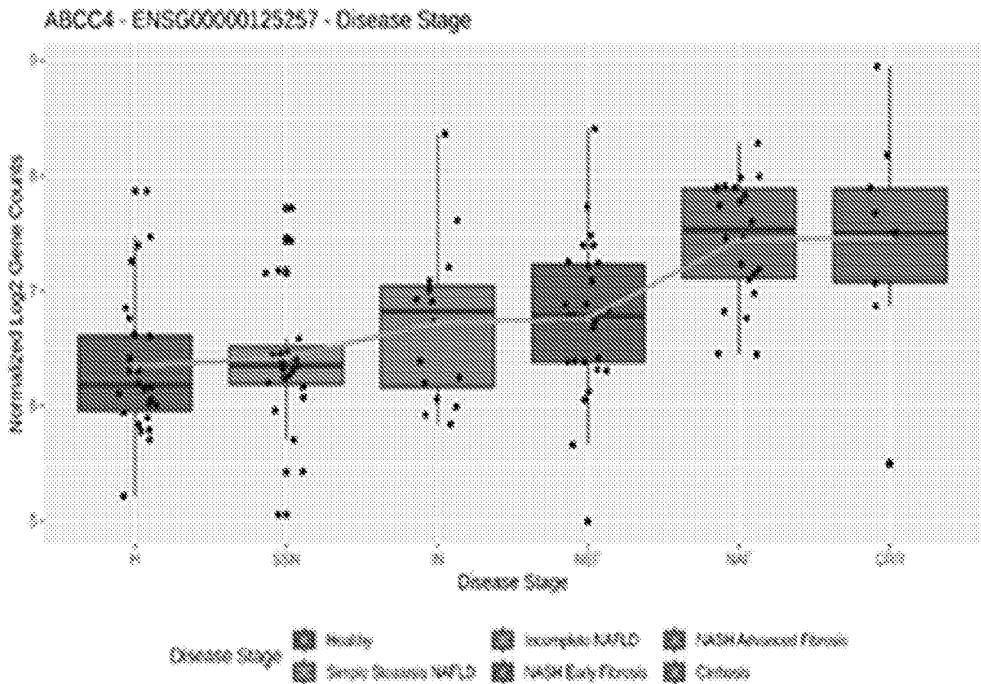


Figure 21(C) (continued)

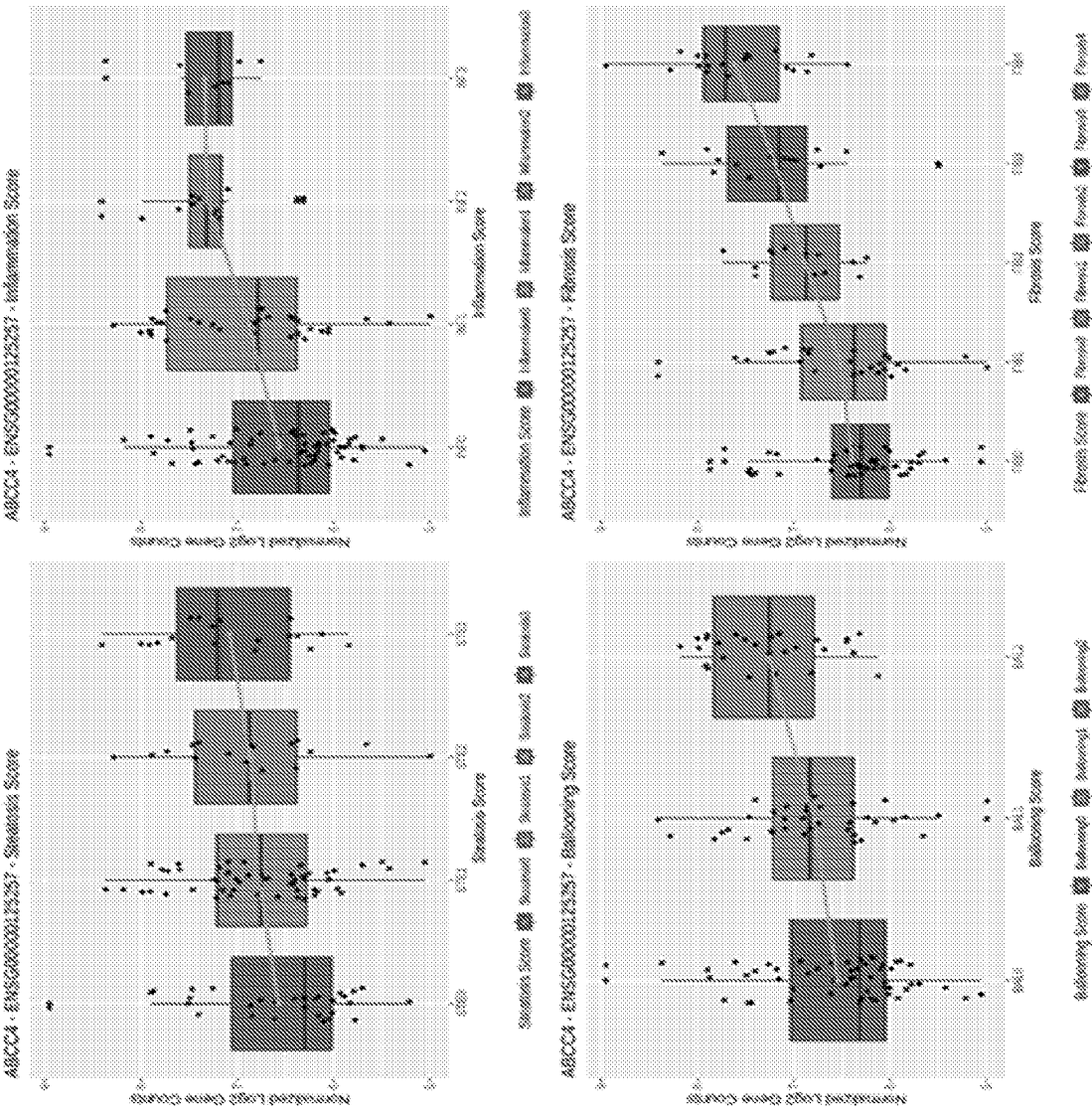


Figure 21(C) (end)

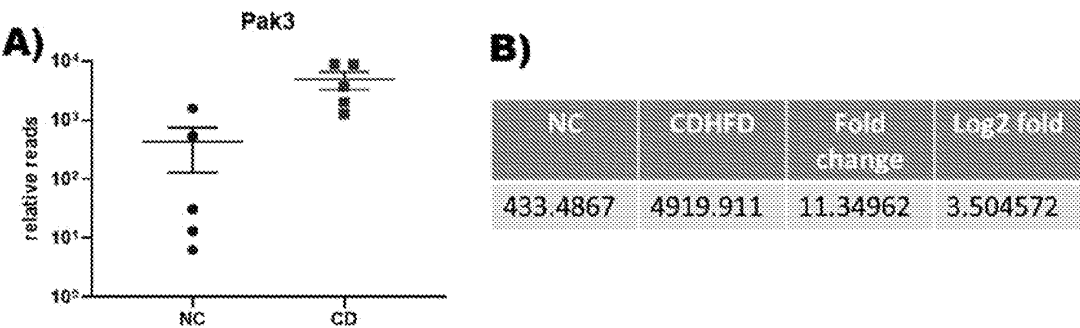


Figure 22(A)-(B) (continued)

PAK3 - ENSG00000077264 - DESeq2 Results					
Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple Steatosis NAFLD	Healthy	downReg	-0.18368	0.84582
diseaseStage	Incomplete NAFLD	Healthy	downReg	-0.12792	0.88807
diseaseStage	NASH Early Fibrosis	Healthy	upReg	0.14499	0.82063
diseaseStage	NASH Advanced Fibrosis	Healthy	upReg	0.95831	0.05391
diseaseStage	Cirrhosis	Healthy	upReg	1.46315	0.01432
steatosisGroup	Steatosis1	Steatosis0	downReg	-0.43411	0.33616
steatosisGroup	Steatosis2	Steatosis0	downReg	-0.22978	0.78018
steatosisGroup	Steatosis3	Steatosis0	downReg	-0.22464	0.76615
ballooningGroup	Ballooning1	Ballooning0	downReg	-0.03007	0.97209
ballooningGroup	Ballooning2	Ballooning0	upReg	0.46121	0.29905
inflammationGroup	Inflammation1	Inflammation0	upReg	0.33696	0.47722
inflammationGroup	Inflammation2	Inflammation0	downReg	-0.07474	0.93477
inflammationGroup	Inflammation3	Inflammation0	upReg	0.21088	0.85307
fibrosisGroup	Fibrosis1	Fibrosis0	upReg	0.03772	0.95066
fibrosisGroup	Fibrosis2	Fibrosis0	upReg	0.39764	0.51875
fibrosisGroup	Fibrosis3	Fibrosis0	upReg	0.40919	0.43218
fibrosisGroup	Fibrosis4	Fibrosis0	upReg	1.29034	0.00075

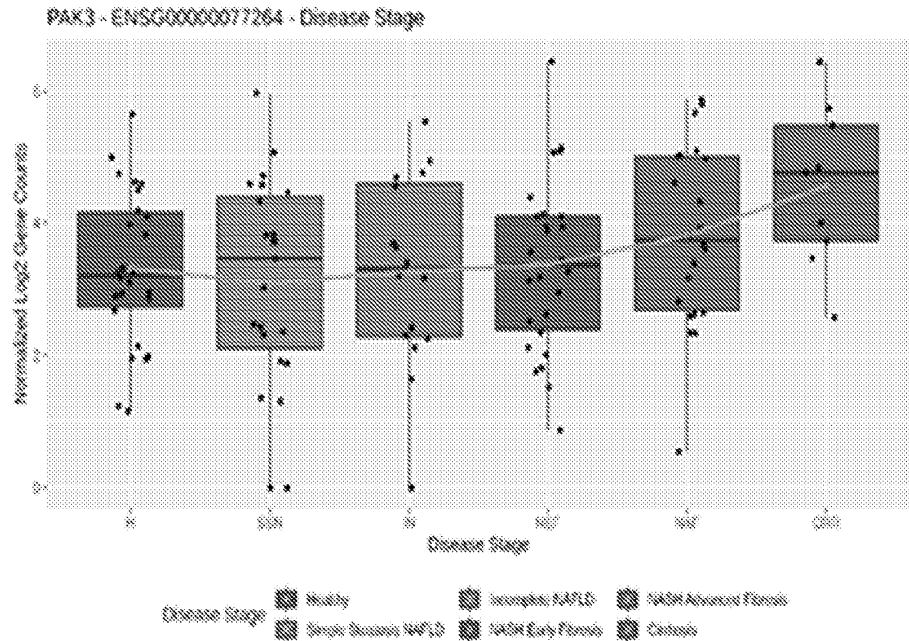


Figure 22(C) (continued)

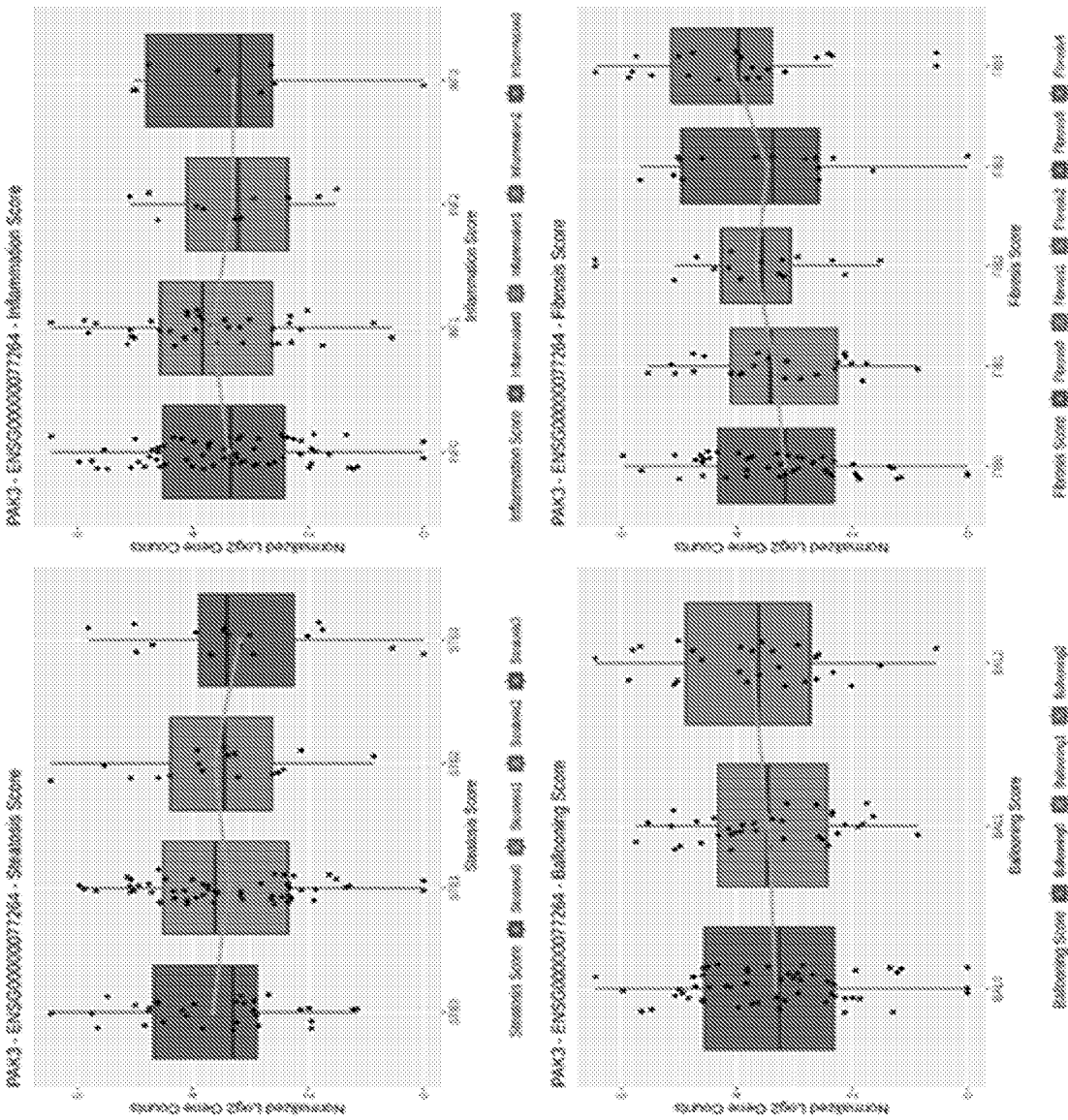


Figure 22(C) (end)

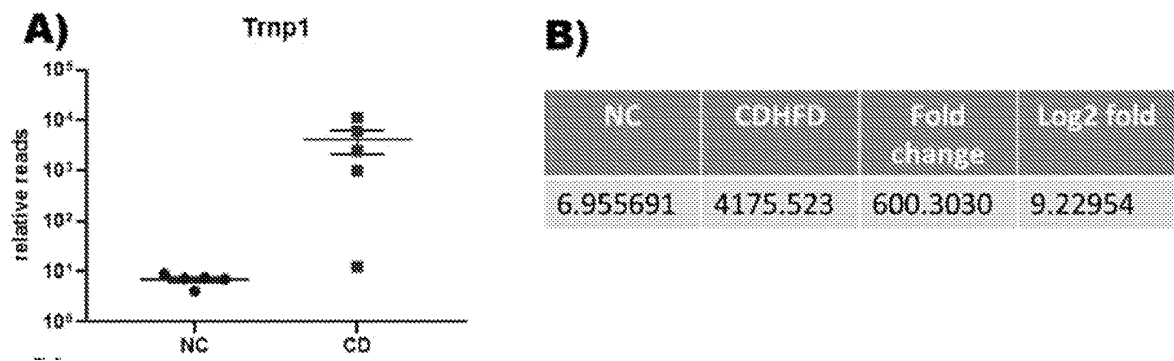


Figure 23(A)-(B) (continued)

TRNP1 - ENSG00000253368 - DESeq2 Results					
Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple_Steatosis_NAFLD	Healthy	downReg	-0.64863	0.07497
diseaseStage	Incomplete_NAFLD	Healthy	downReg	-0.35404	0.42503
diseaseStage	NASH_Early_Fibrosis	Healthy	downReg	-1.2282	0.00006
diseaseStage	NASH_Advanced_Fibrosis	Healthy	downReg	-0.90903	0.38301
diseaseStage	Cirrhosis	Healthy	upReg	1.44143	0.00019
steatosisGroup	Steatosis1	Steatosis0	downReg	-0.78595	0.00389
steatosisGroup	Steatosis2	Steatosis0	downReg	-1.35003	0.00014
steatosisGroup	Steatosis3	Steatosis0	downReg	-1.29131	0.00053
ballooningGroup	Ballooning1	Ballooning0	downReg	-0.28977	0.52188
ballooningGroup	Ballooning2	Ballooning0	downReg	-0.50652	0.1056
inflammationGroup	Inflammation1	Inflammation0	downReg	-0.8874	0.0017
inflammationGroup	Inflammation2	Inflammation0	downReg	-0.89481	0.03614
inflammationGroup	Inflammation3	Inflammation0	downReg	-0.92611	0.1057
fibrosisGroup	Fibrosis1	Fibrosis0	downReg	-0.5369	0.09211
fibrosisGroup	Fibrosis2	Fibrosis0	downReg	-0.73535	0.04614
fibrosisGroup	Fibrosis3	Fibrosis0	downReg	-0.21506	0.64405
fibrosisGroup	Fibrosis4	Fibrosis0	upReg	1.17441	1.49e-05

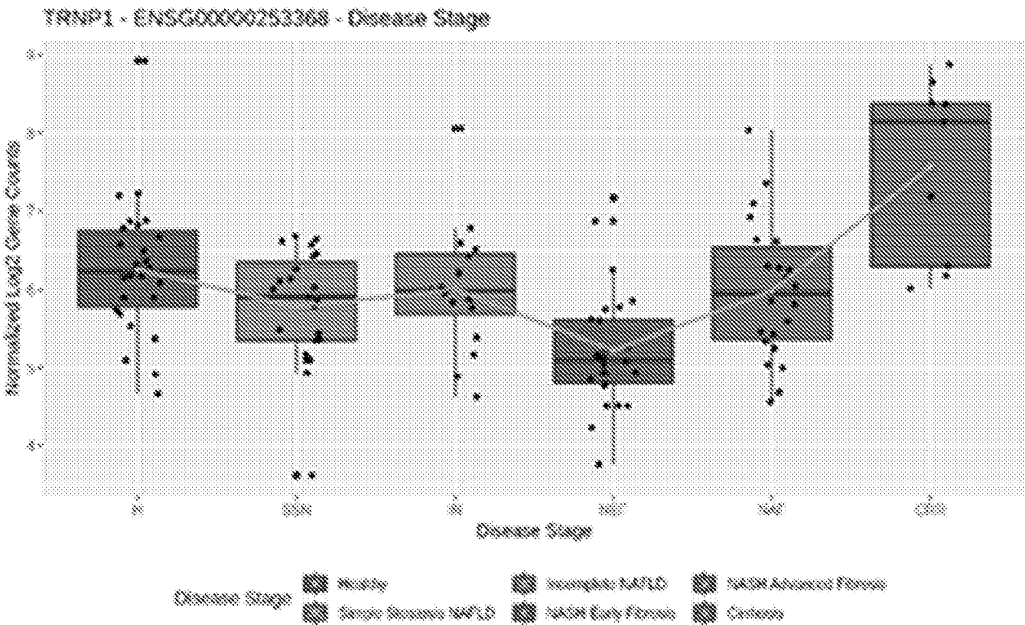


Figure 23(C) (continued)

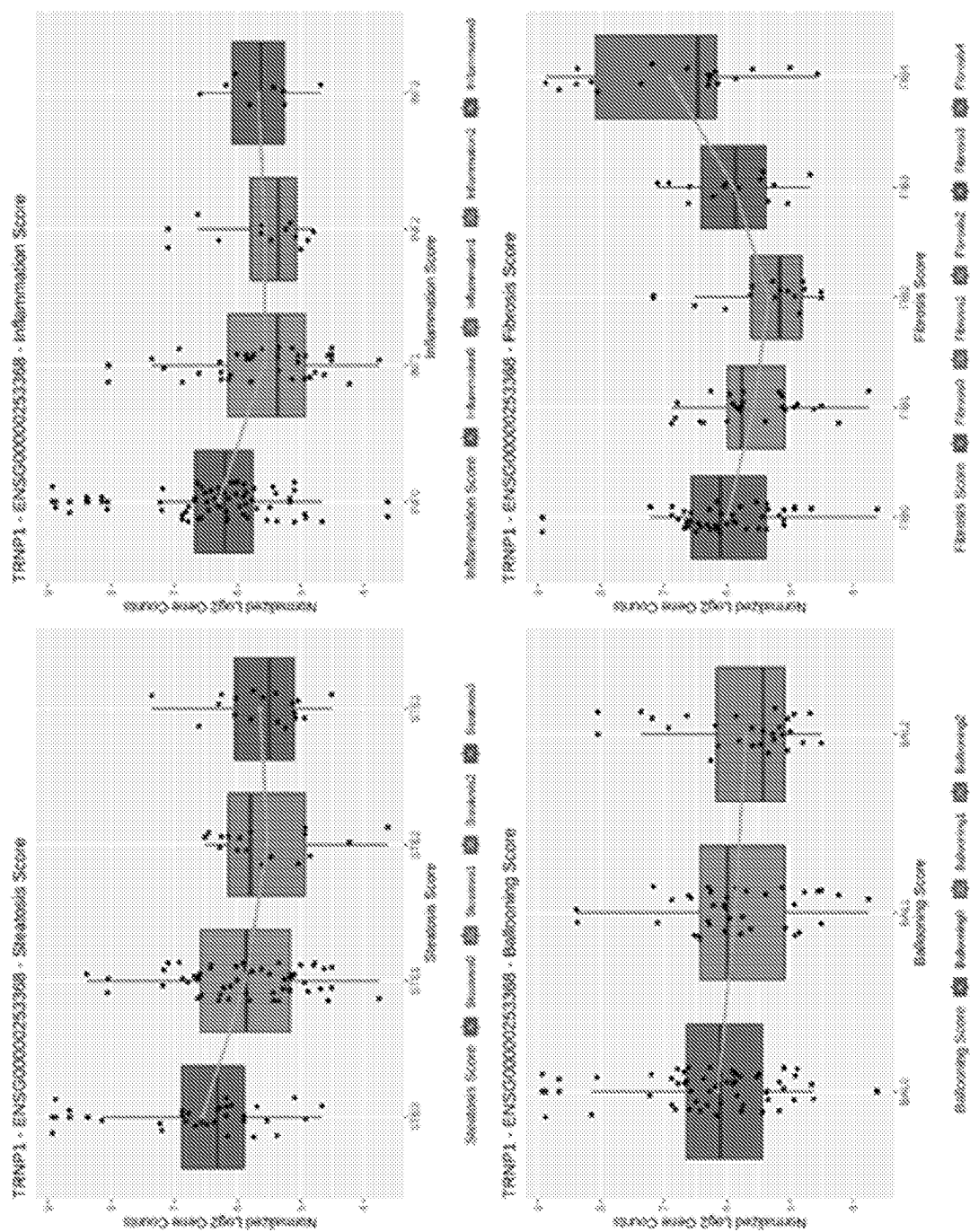


Figure 23(C) (end)

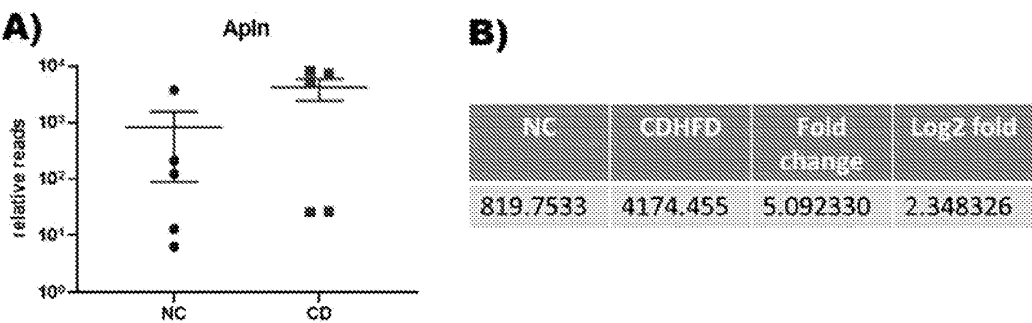


Figure 24(A)-(B) (continued)

APLN - ENSG00000171368 - DESeq2 Results					
Analysis	Condition	Reference	Type	log2FC	Padj
diseaseStage	Simple Steatosis_NAFLD	Healthy	downReg	-0.42061	0.51014
diseaseStage	Incomplete_NAFLD	Healthy	upReg	0.10152	0.90618
diseaseStage	NASH_Early_Fibrosis	Healthy	downReg	-0.19591	0.73029
diseaseStage	NASH_Advanced_Fibrosis	Healthy	downReg	-0.12957	0.82404
diseaseStage	Cirrhosis	Healthy	upReg	2.30940	6.399e-06
steatosisGroup	Steatosis1	Steatosis0	downReg	-0.61394	0.14837
steatosisGroup	Steatosis2	Steatosis0	downReg	-0.34948	0.63534
steatosisGroup	Steatosis3	Steatosis0	downReg	-0.65674	0.29672
ballooningGroup	Ballooning1	Ballooning0	upReg	0.251	0.7092
ballooningGroup	Ballooning2	Ballooning0	upReg	0.03859	0.95026
inflammationGroup	Inflammation1	Inflammation0	downReg	-0.50195	0.24597
inflammationGroup	Inflammation2	Inflammation0	downReg	-1.30571	0.01819
inflammationGroup	Inflammation3	Inflammation0	downReg	-1.2991	0.08982
fibrosisGroup	Fibrosis1	Fibrosis0	downReg	-0.17699	0.76801
fibrosisGroup	Fibrosis2	Fibrosis0	upReg	0.31572	0.61136
fibrosisGroup	Fibrosis3	Fibrosis0	downReg	-0.28593	0.6619
fibrosisGroup	Fibrosis4	Fibrosis0	upReg	1.63457	6.599e-06

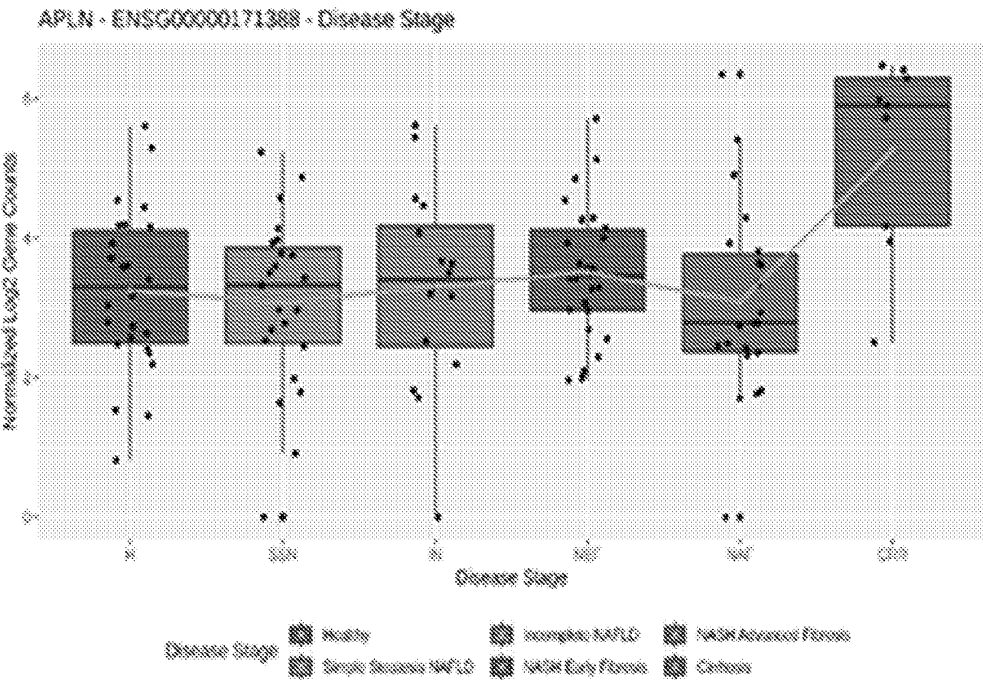


Figure 24(C) (continued)

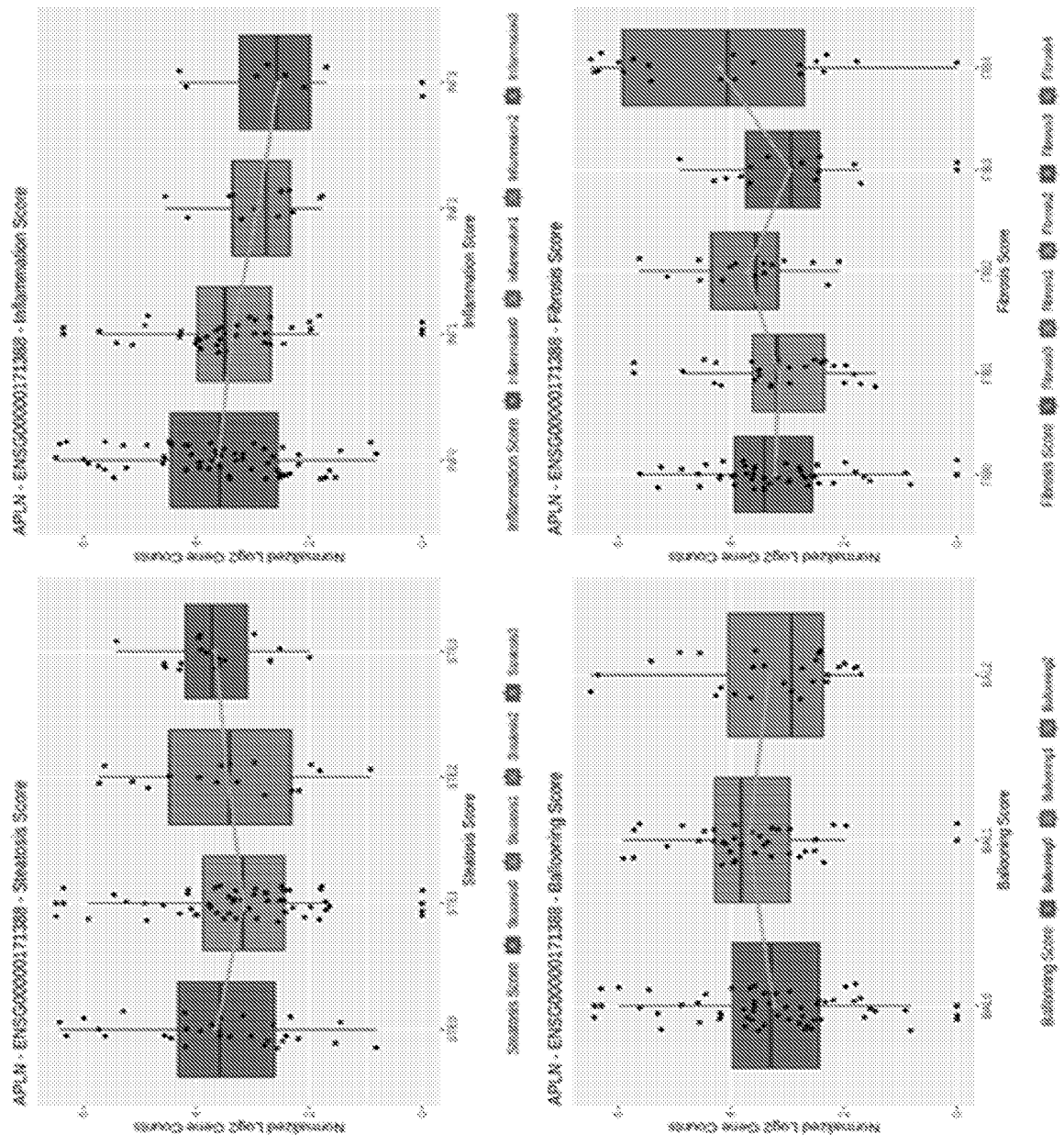


Figure 24(C) (end)

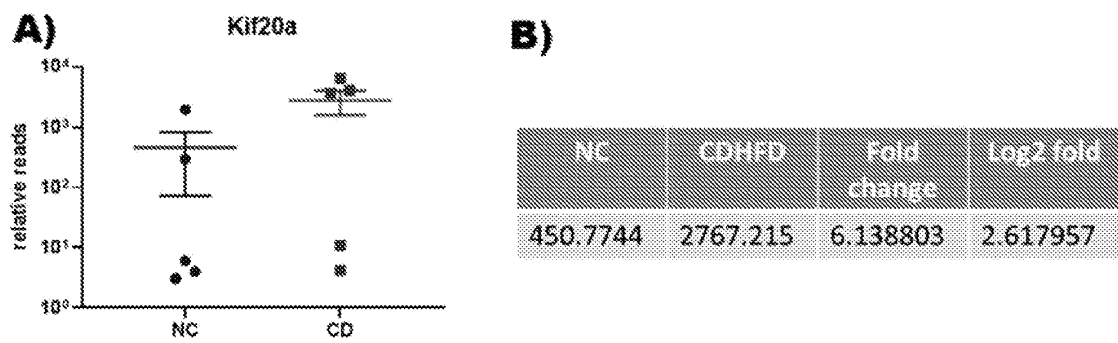


Figure 25(A)-(B) (continued)

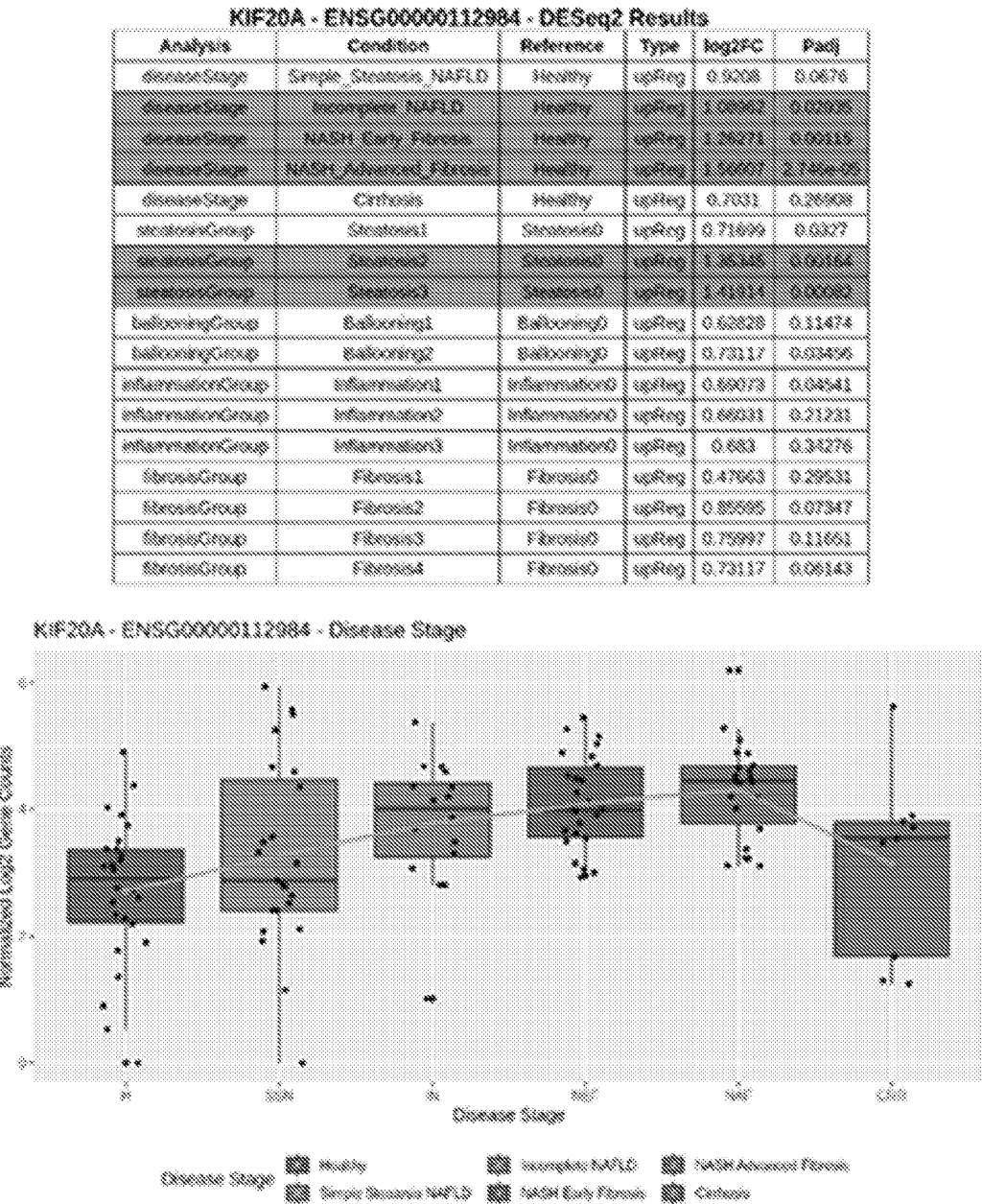


Figure 25(C) (continued)

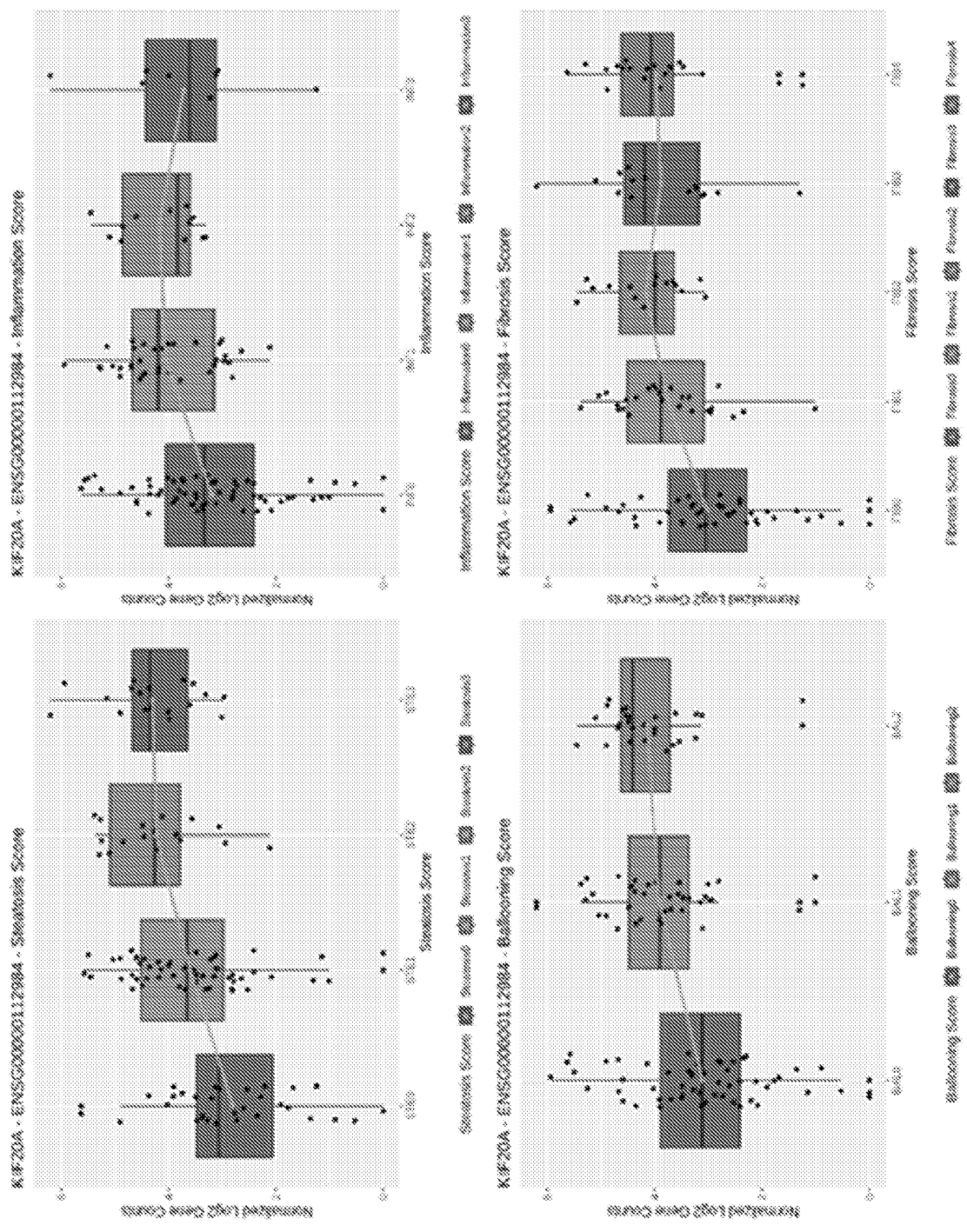


Figure 25(C) (end)

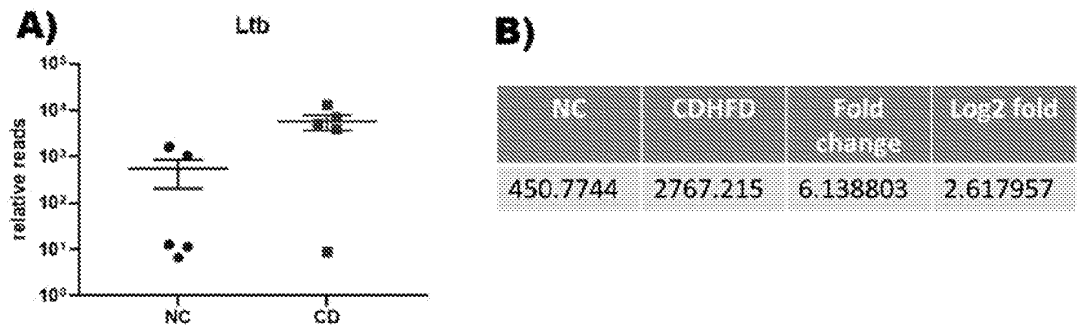


Figure 26(A)-(B) (continued)

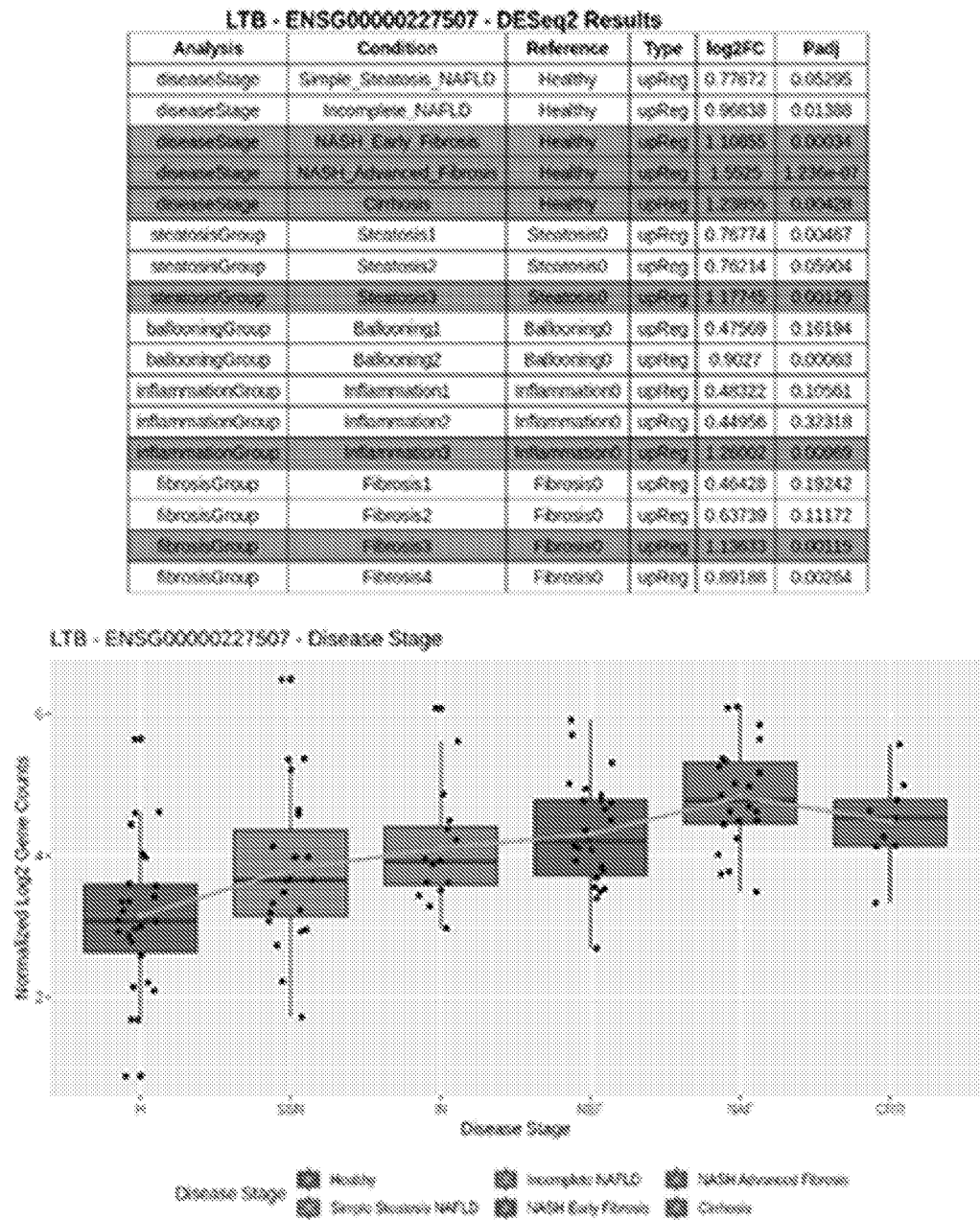


Figure 26(C) (continued)

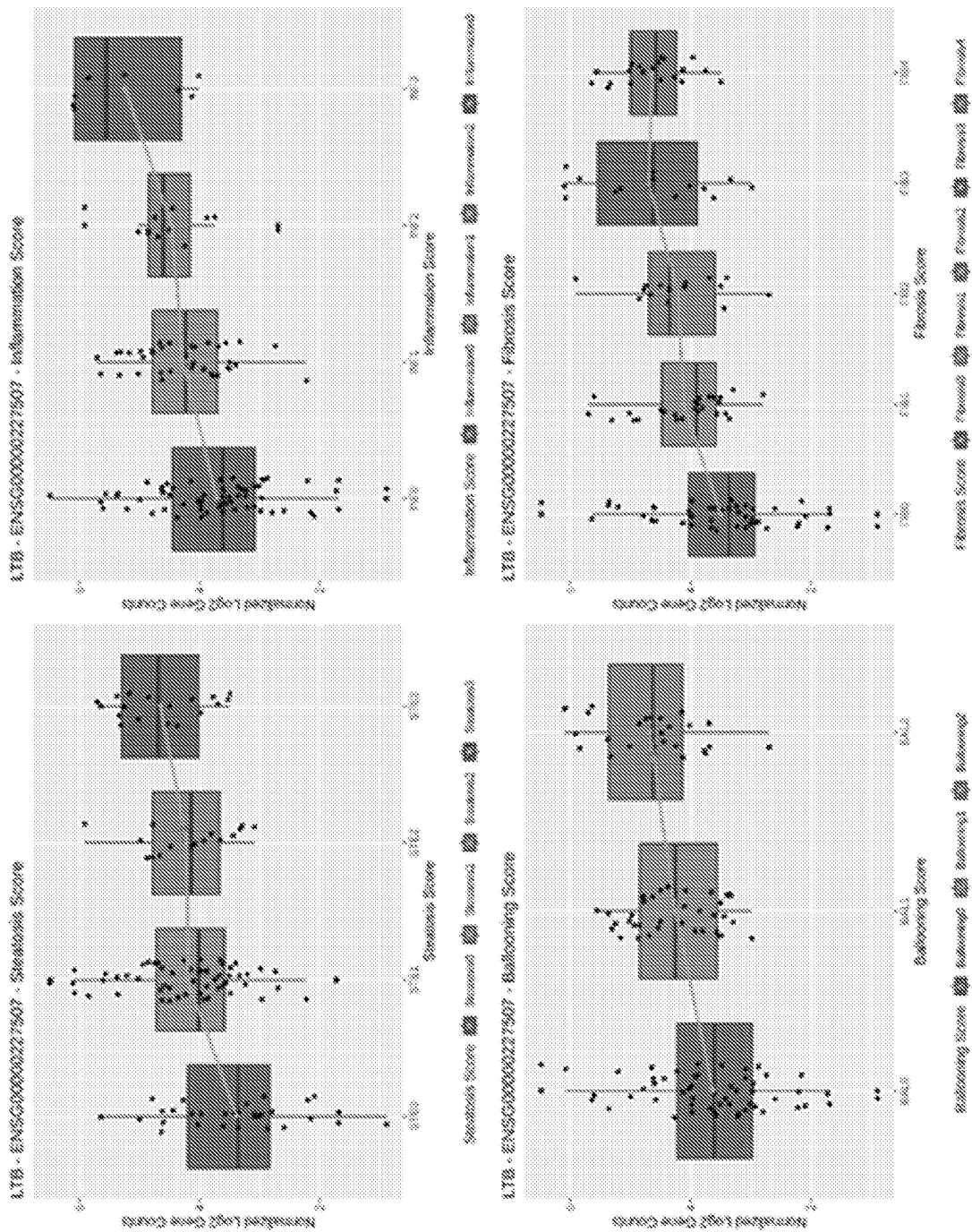


Figure 26(C) (end)

A)

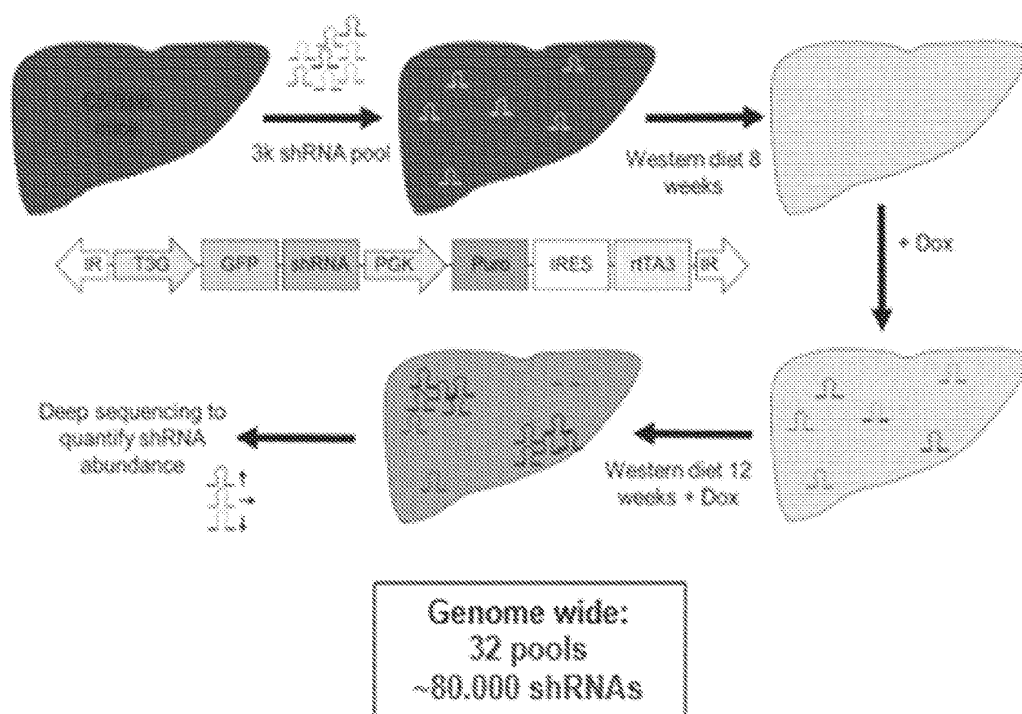
***In vivo* functional genomics – Disease interception**

Figure 27

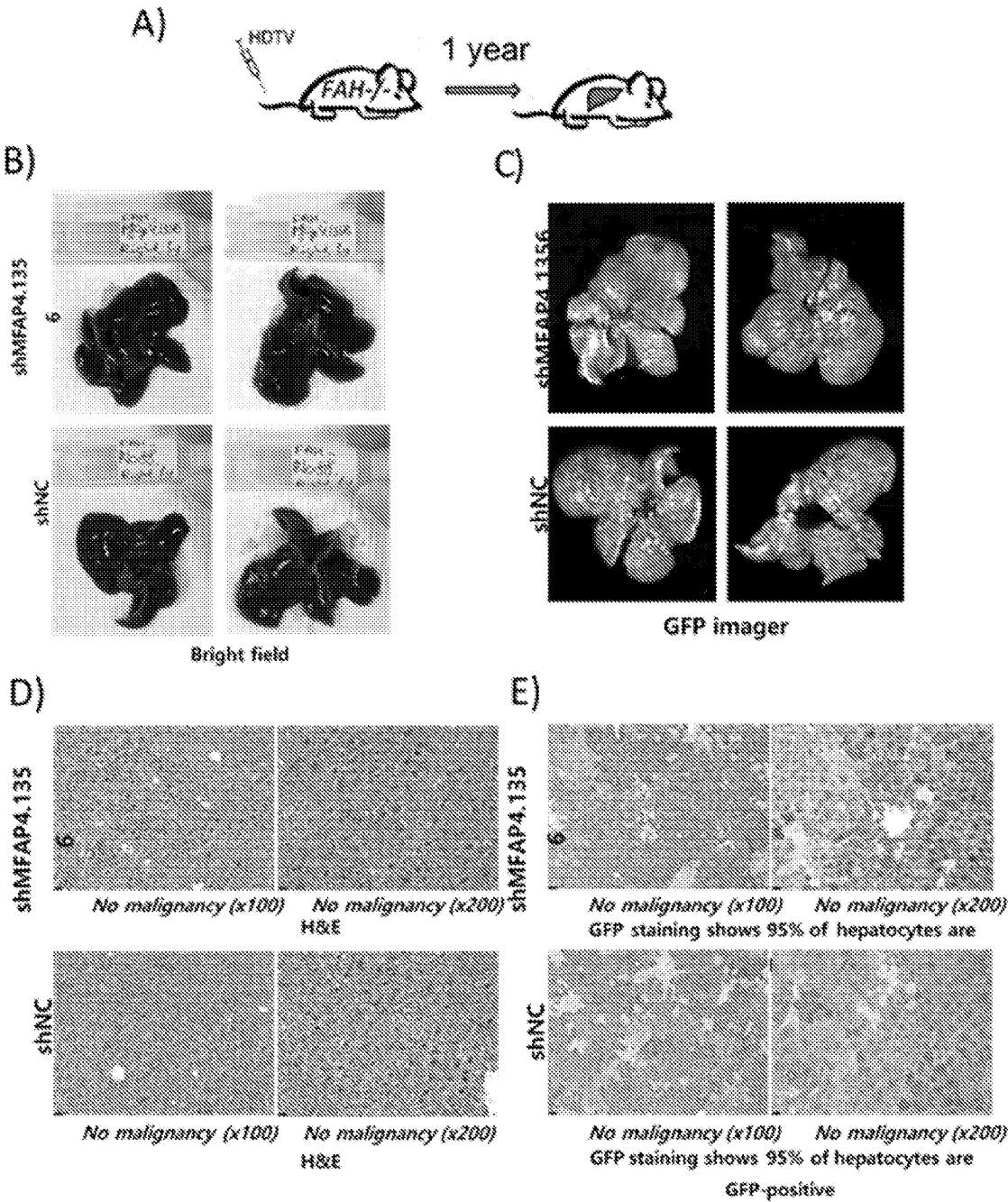
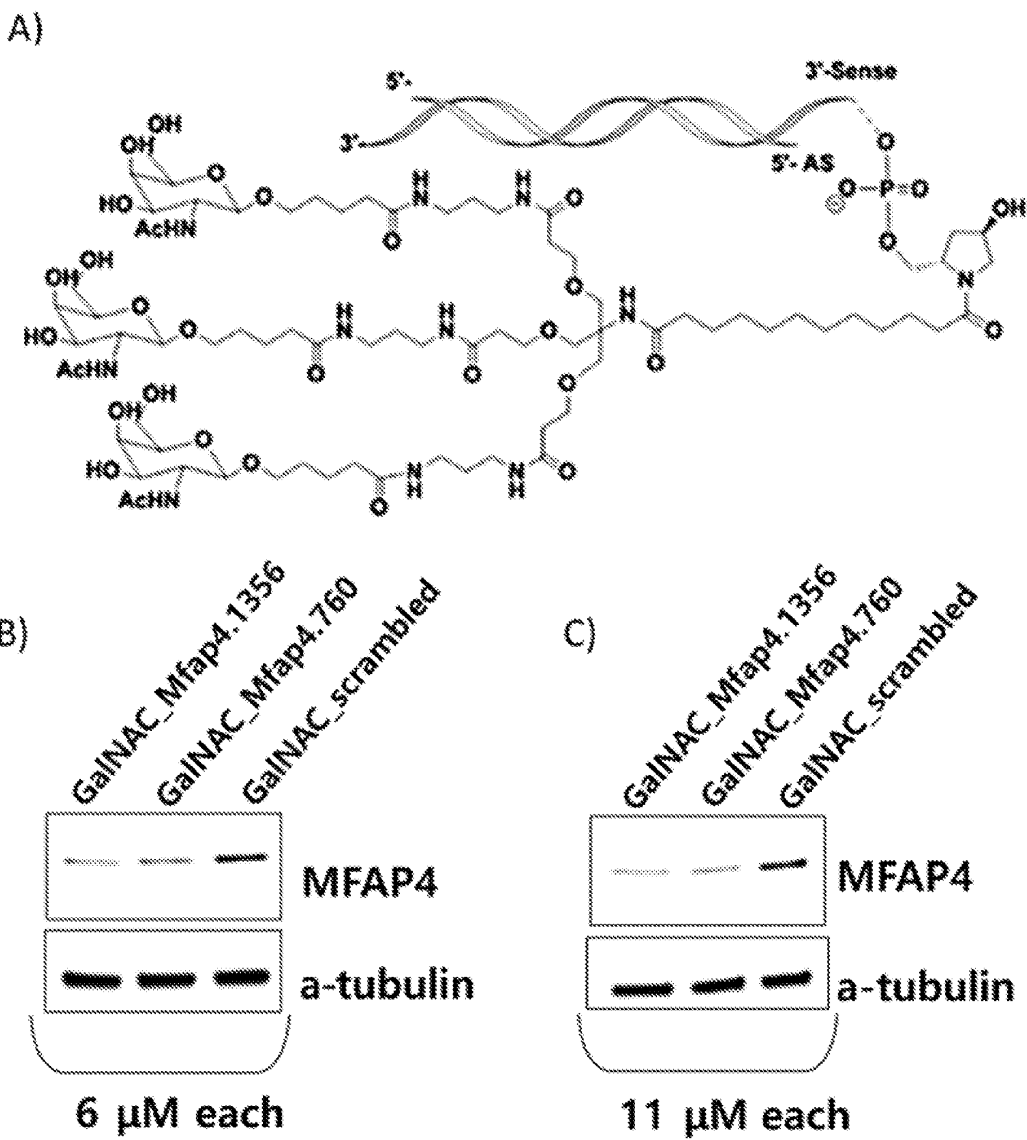


Figure 28



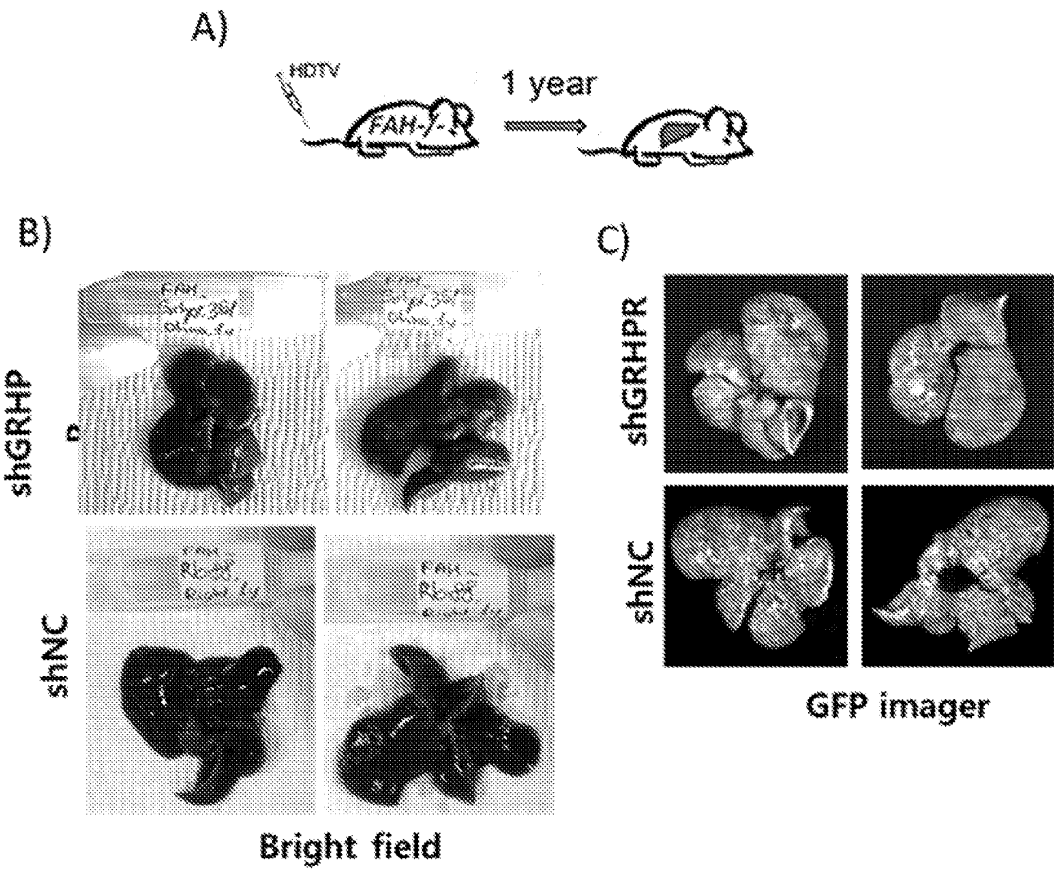


Figure 30

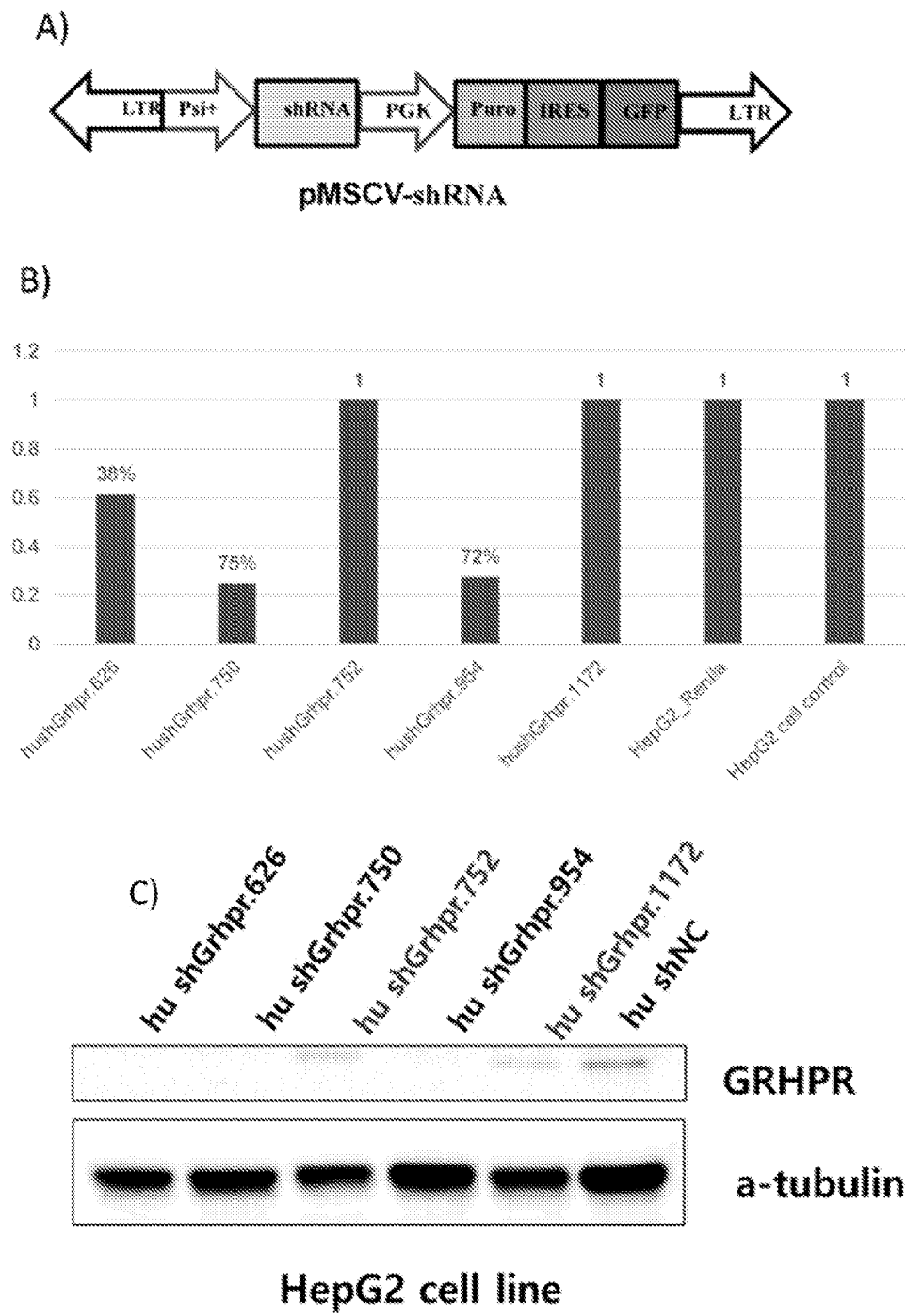


Figure 31

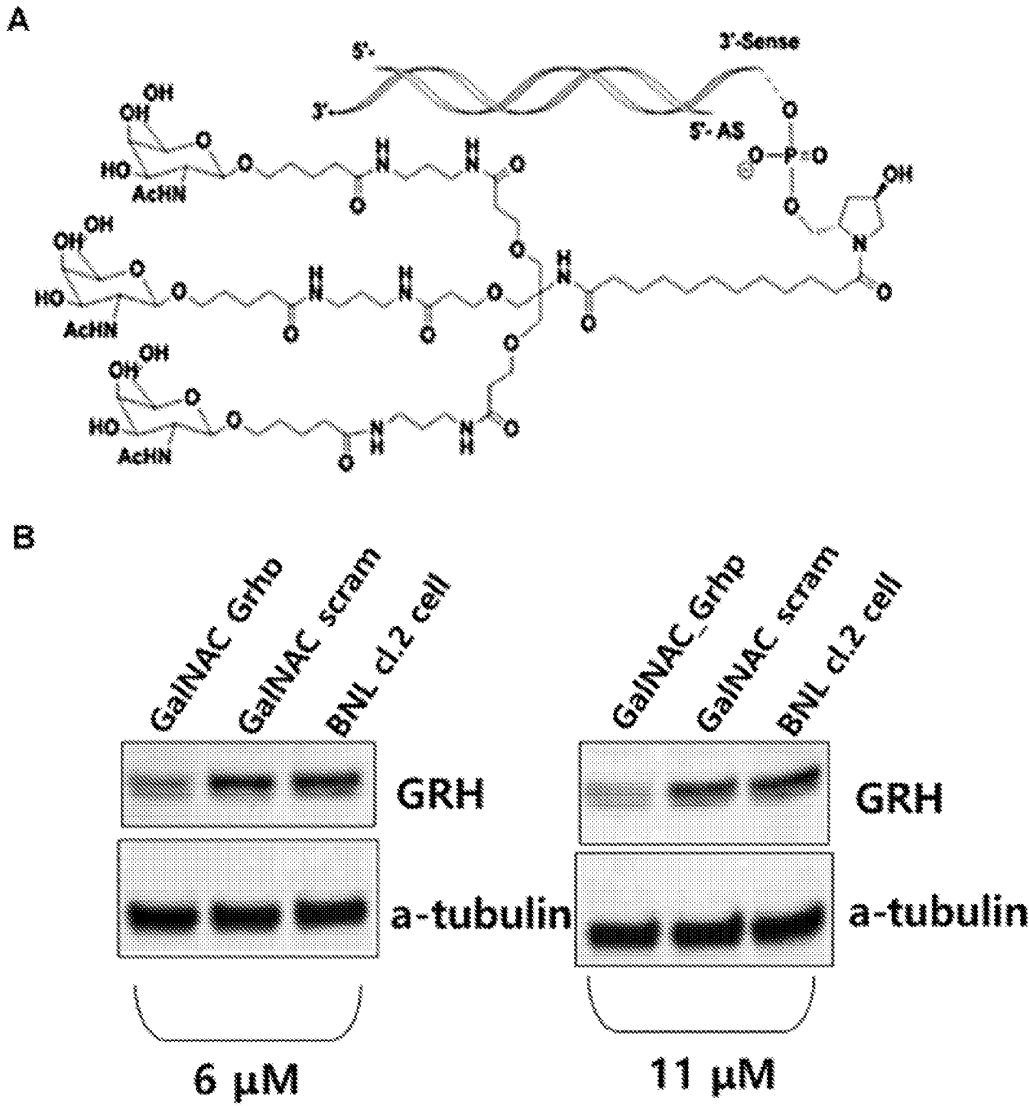


Figure 32

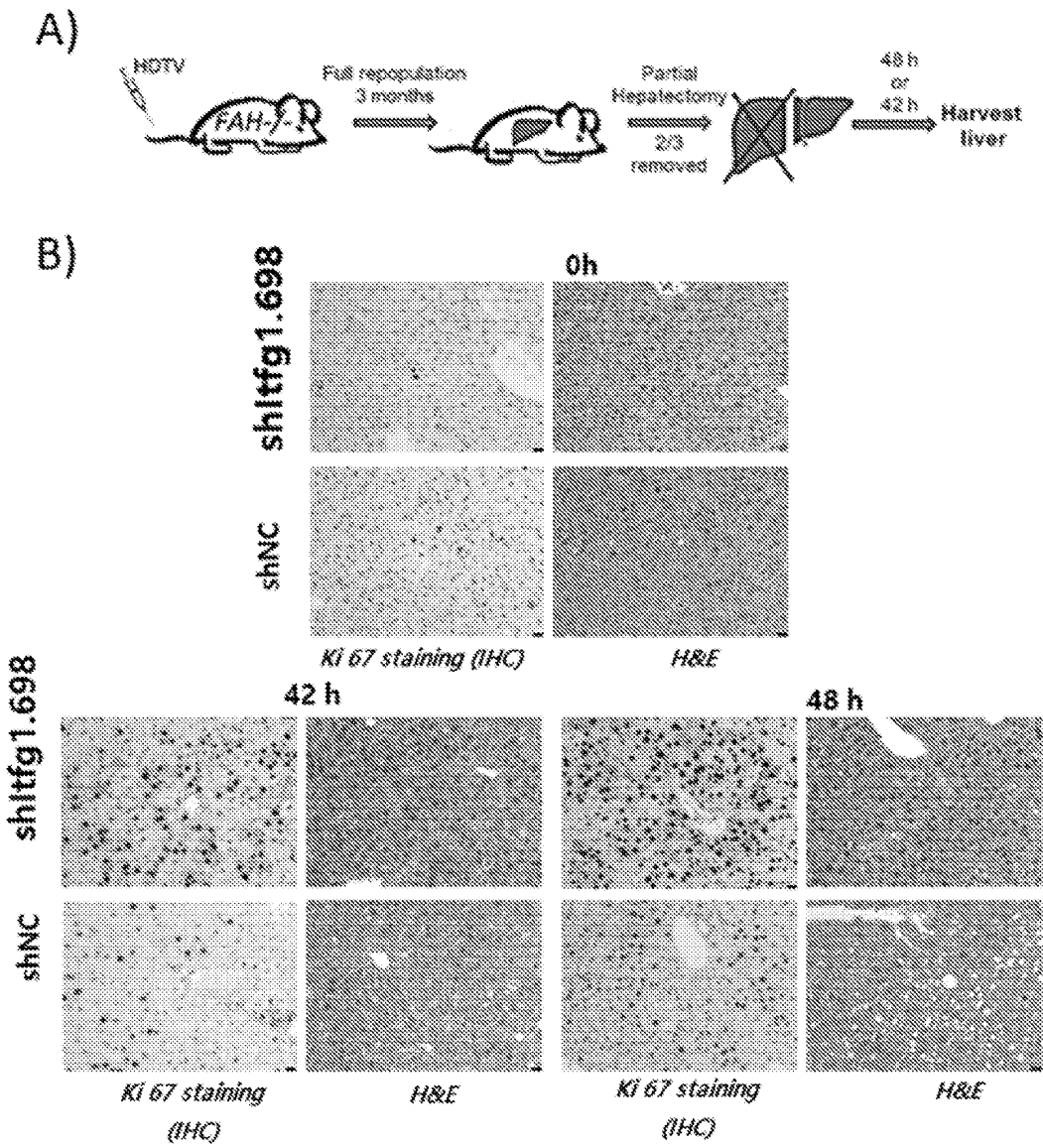


Figure 33 (A)-(B) (continued)

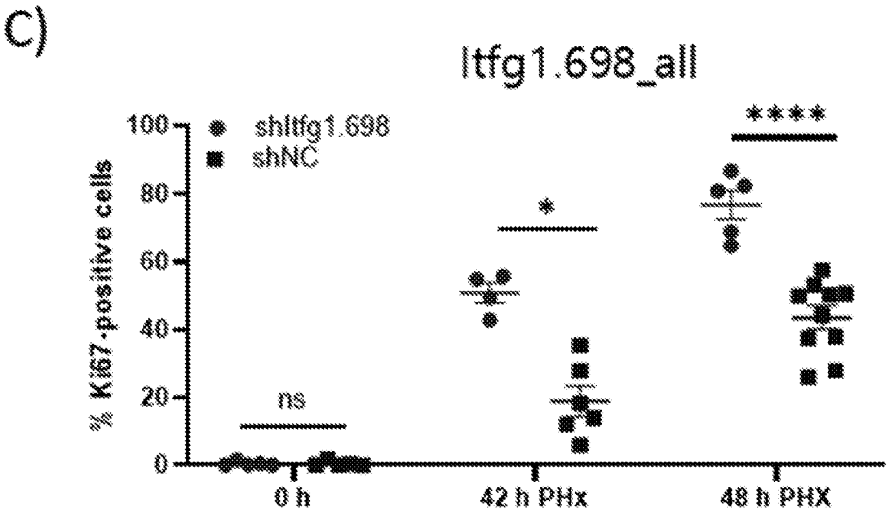


Figure 33 (C) (end)

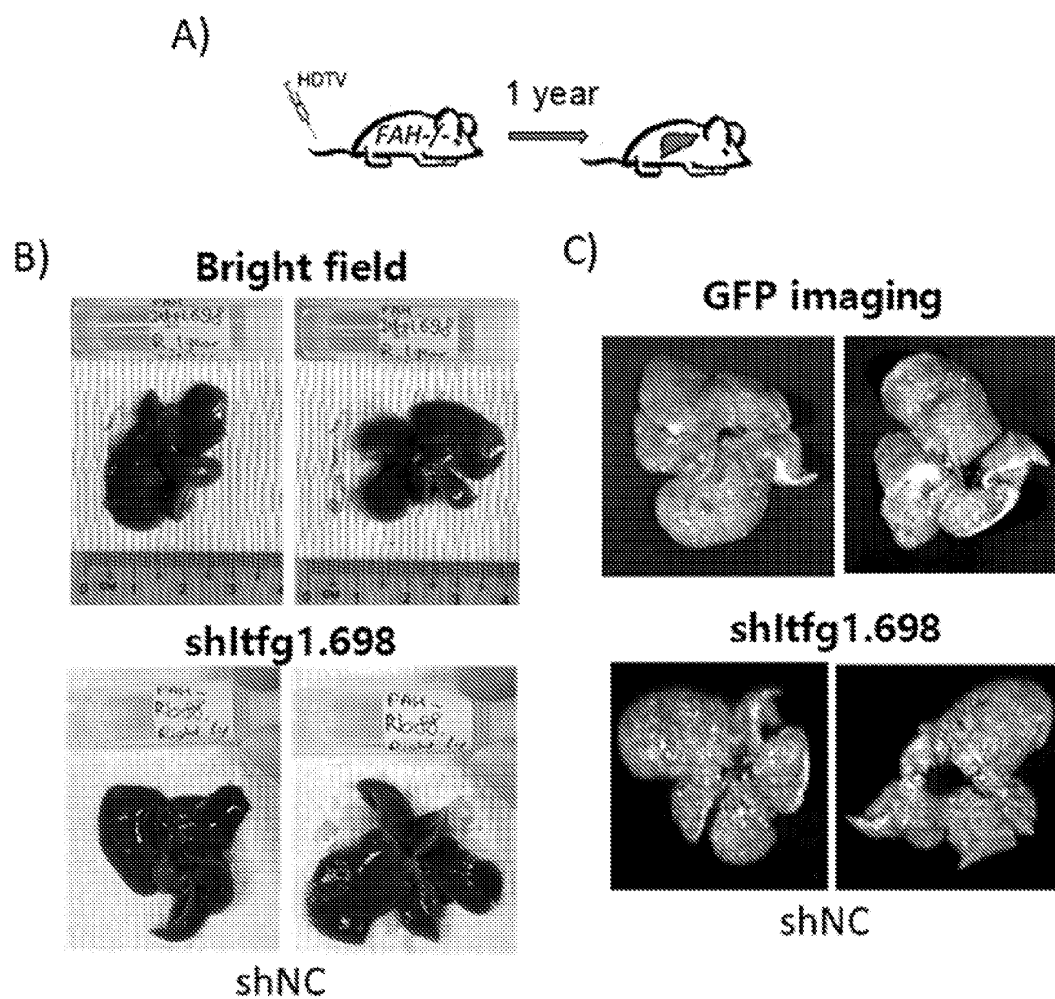


Figure 34 (A)-(C) (continued)

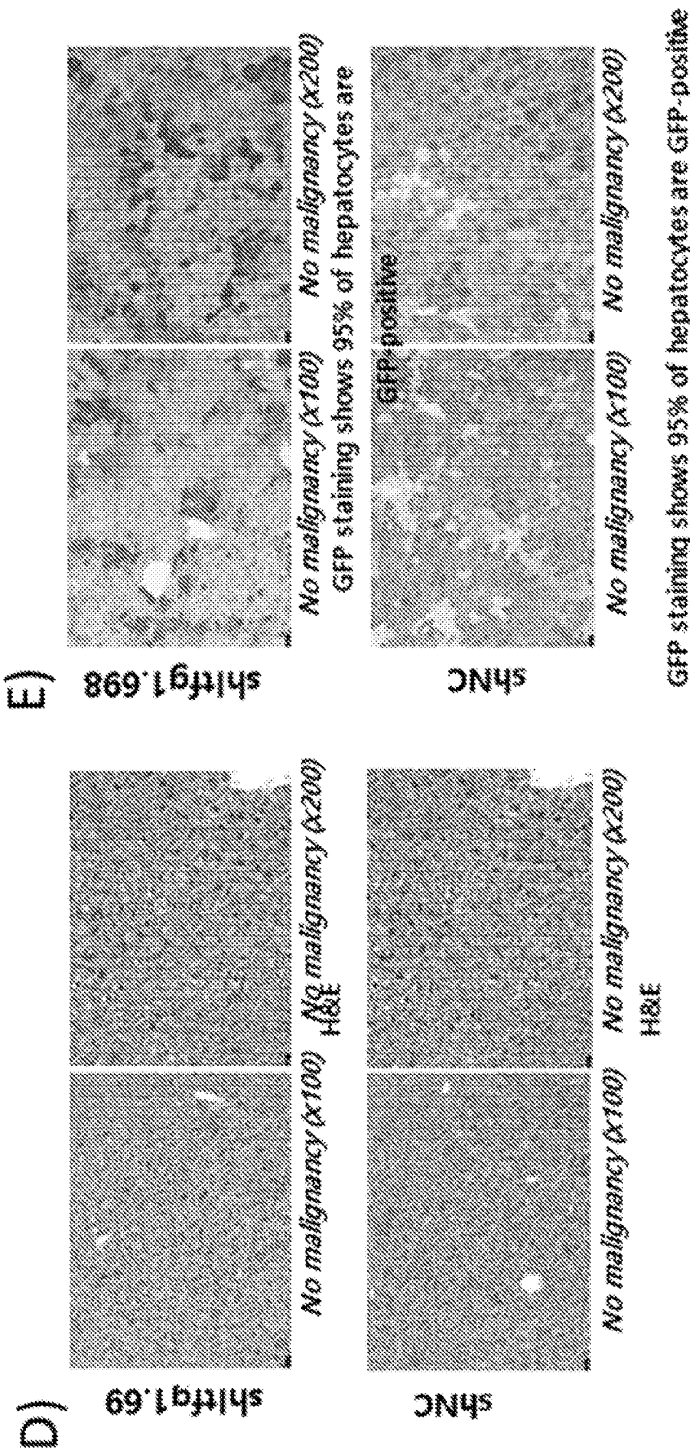


Figure 34 (D)-(E) (end)

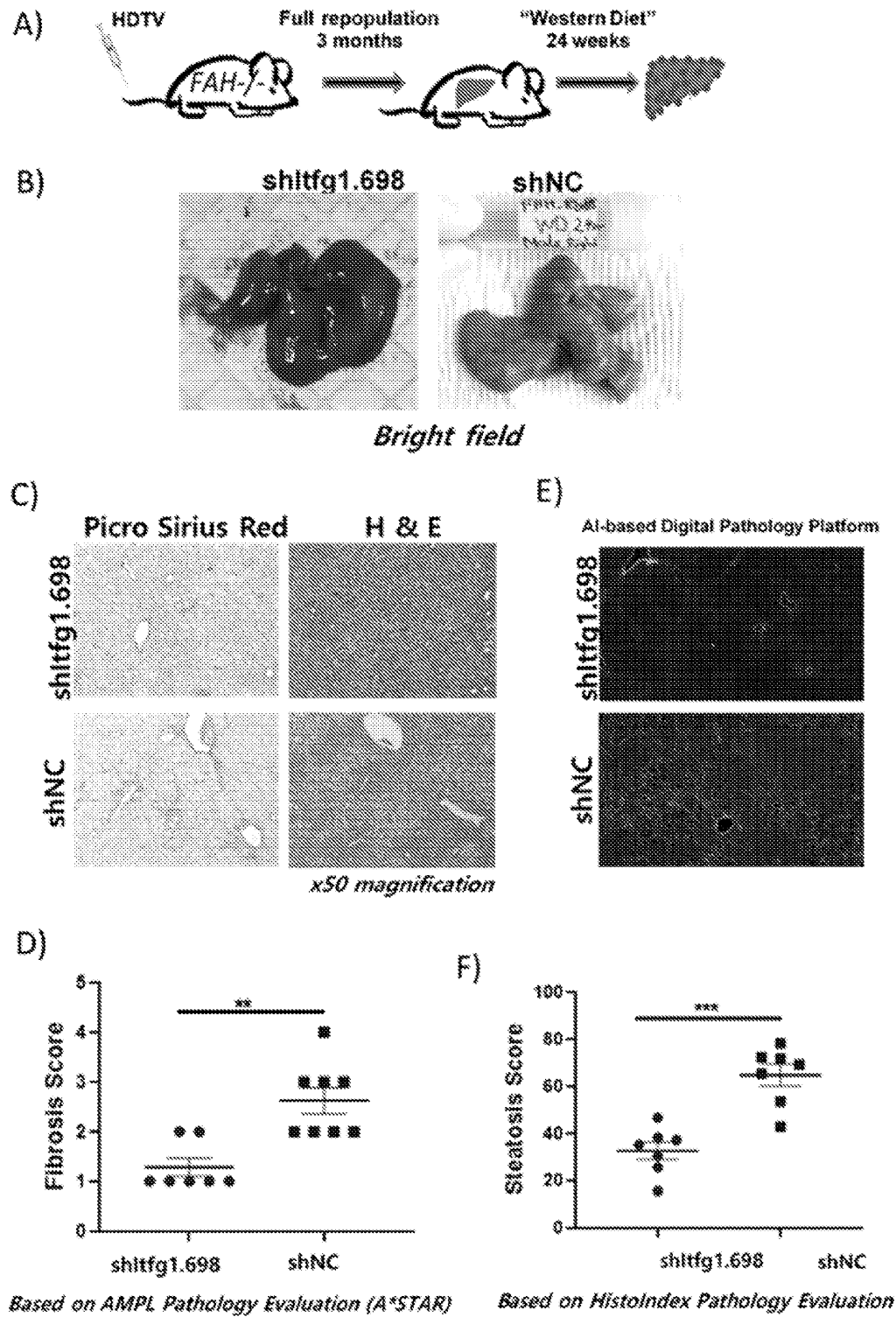


Figure 35

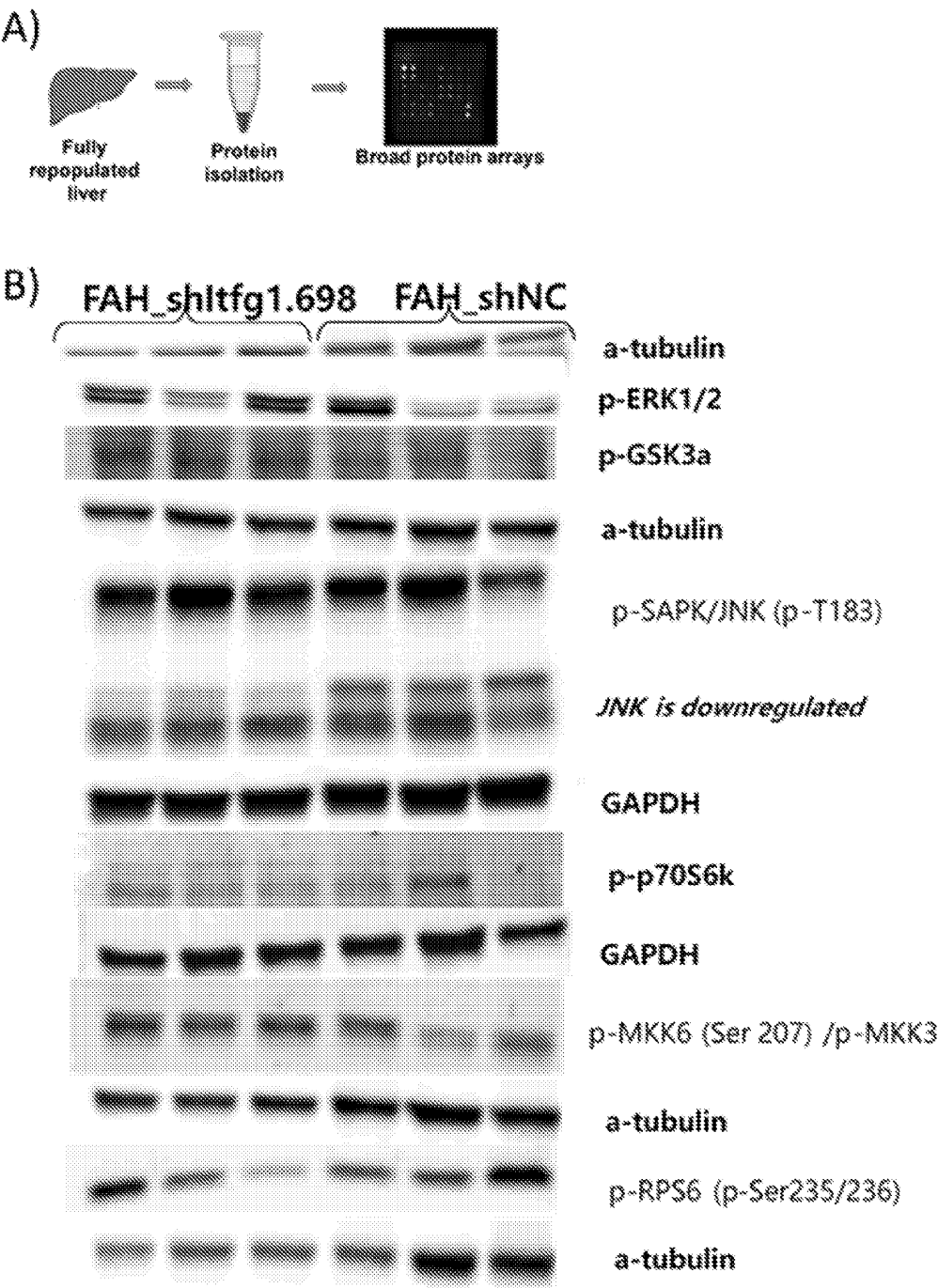


Figure 36 (A)-(B) (continued)

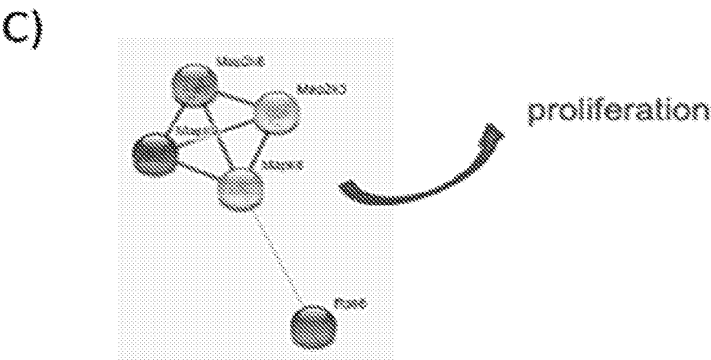


Figure 36 (C) (end)

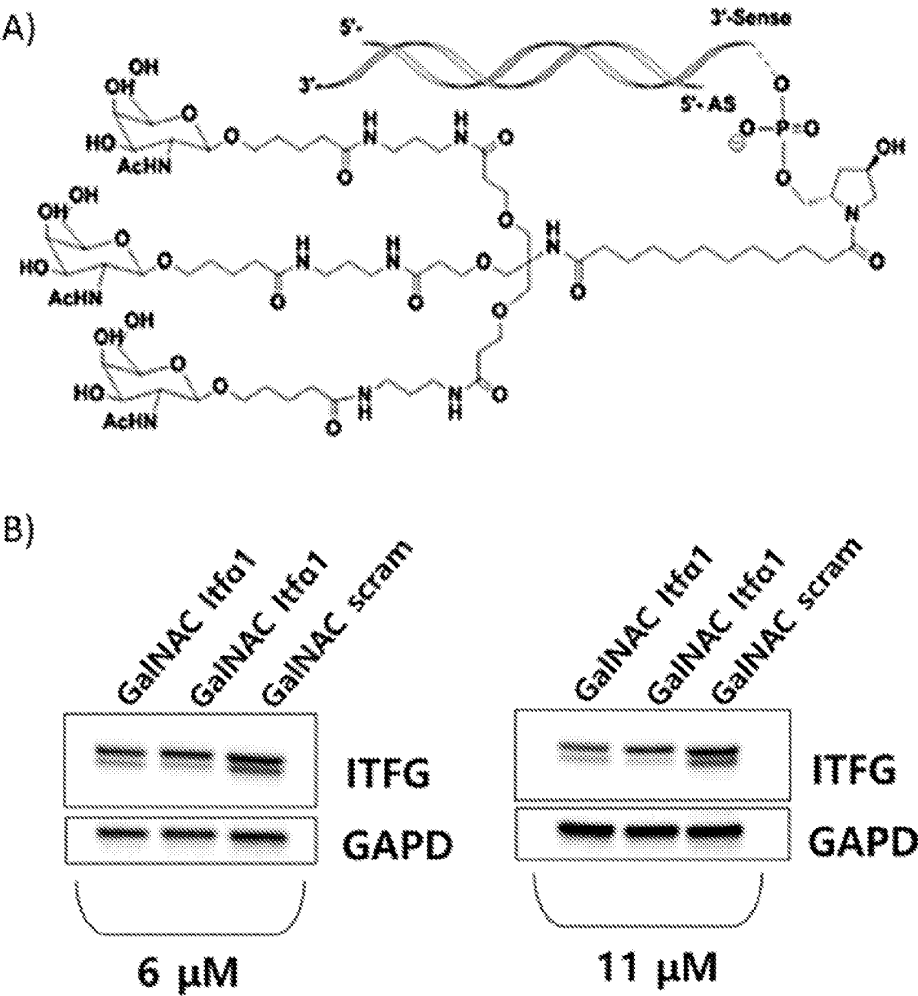


Figure 37

Mfap4 or Itfg1 knockdown enhances proliferation and regeneration beyond liver

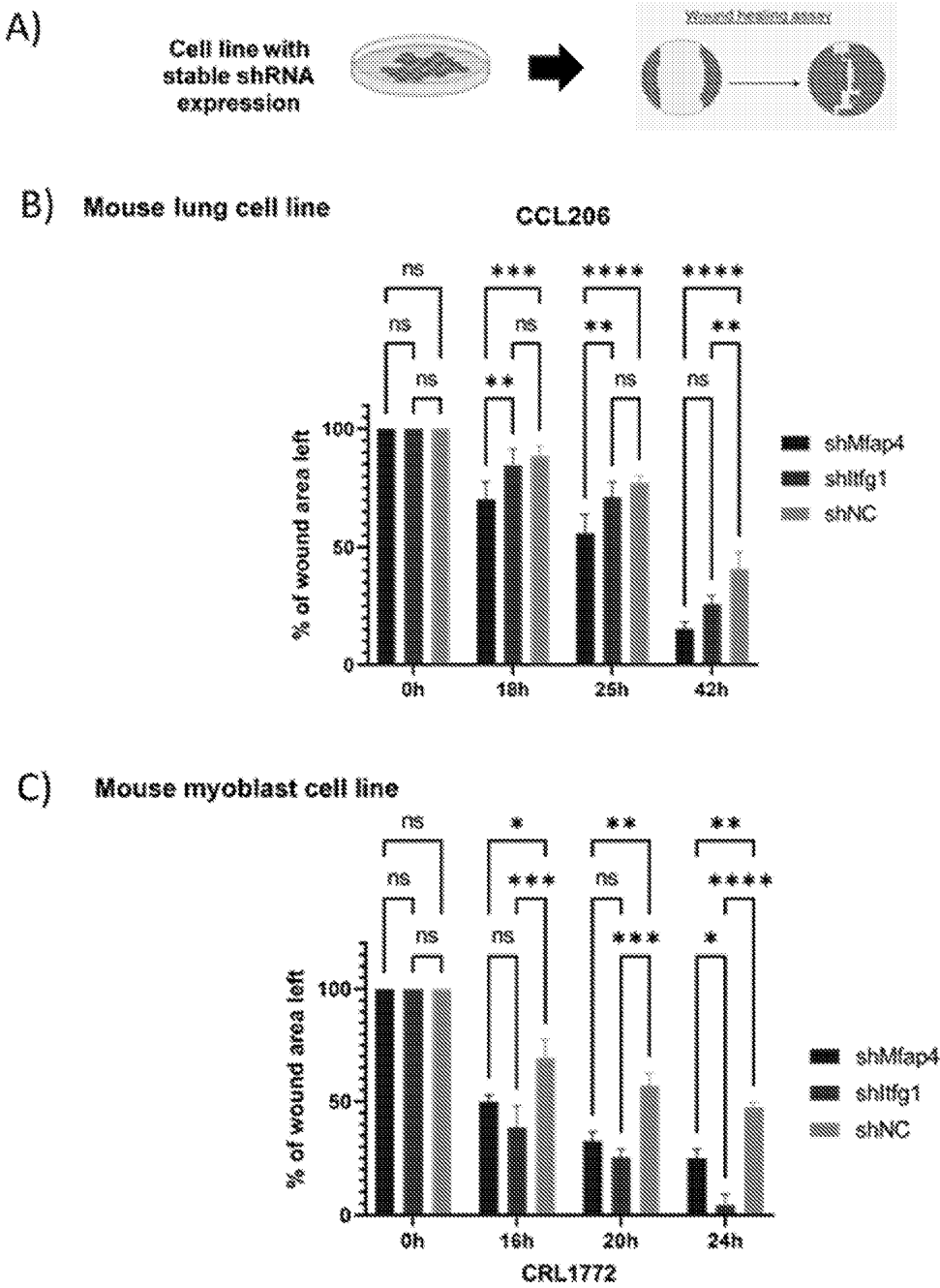
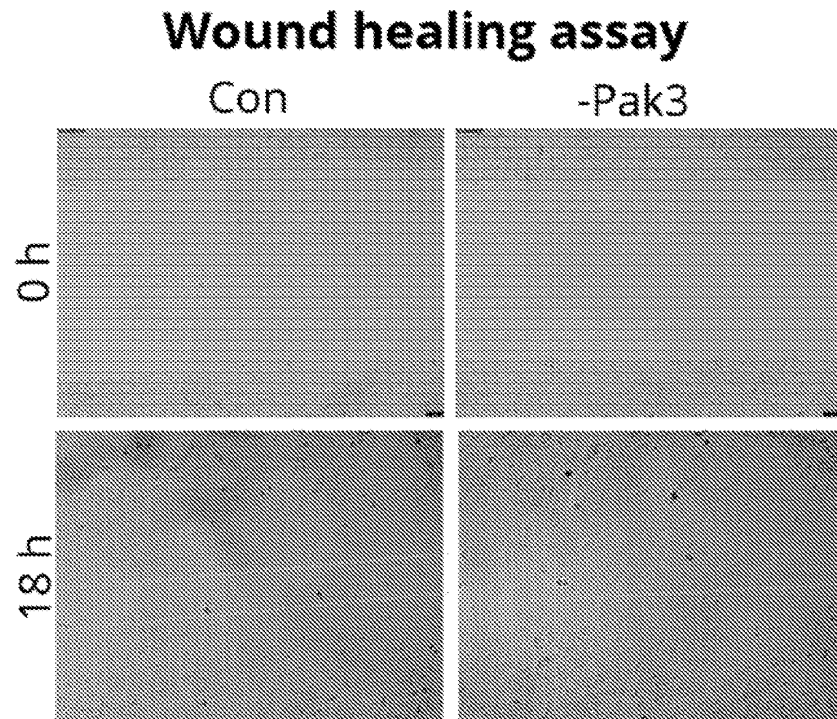


Figure 38



- Pak3 knock down showed heightened regeneration in hepatocyte cell line (AML12)

Figure 39