**Supplementary table 1 Primer Sequences**

|  |  |  |
| --- | --- | --- |
| Primer | Sequences (5ʹ→3ʹ) | Fragment |
| *Human-KLF7-F* | CTCAATGGTGGTGCTTGCTT | 233bp |
| *Human-KLF7-R* | TGGAAAACCTGCTCGCTCTA |
| *Human-IL-6-F* | AGACAGCCACTCACCTCTTCAG | 132bp |
| *Human-IL-6-R* | TTCTGCCAGTGCCTCTTTGCTG |
| *Human-p21-F* | AGGTGGACCTGGAGACTCTCAG | 194bp |
| *Human-p21-R* | TCCTCTTGGAGAAGATCAGCCG |
| *Human-GPR84-F* | CTCCAGAAGCATCTGCCAAAGC | 116bp |
| *Human-GPR84-R* | GGCAAAGCAGAGGAACACAGCA |
| *Human-MMP2-F* | AGCGAGTGGATGCCGCCTTTAA | 138bp |
| *Human-MMP2-R* | CATTCCAGGCATCTGCGATGAG |
| *Human- GAPDH-F* | GGTGGTCTCCTCTGACTTCAA | 211bp |
| *Human-GAPDH-R* | TCTTCCTCTTGTGCTCTTGCT |
| KLF7 (si-1)  KLF7-Homo-555 | GCCUUGAAUUGGAACGCUATT |  |
| UAGCGUUCCAAUUCAAGGCTT |  |
| KLF7 (si-2)  KLF7-Homo-611 | GGUGAGGACUUGGACUGUUTT |  |
| AACAGUCCAAGUCCUCACCTT |  |

**Supplementary table 2. Patient characteristic (Mean±Std. Deviation)**

|  |  |  |
| --- | --- | --- |
|  | **BPH(n=30)** | **PCa(n=30)** |
| **Age** | 72±5.32 | 75.37±5.59 |
| **Height(cm)** | 165.1±6.71 | 164.83±6.12 |
| **Weight（kg）** | 64.1±12.08 | 65.62±9.94 |
| **BMI** | 23.45±3.71 | 24.07±3.58 |
| **TC(mmol/L)** | 4.28±1 | 3.37±1.92\* |
| **TG(mmol/L)** | 1.14±0.59 | 2.58±1.92\*\*\* |
| **LDL(mmol/L)** | 2.64±0.86 | 2.72±1.24 |
| **HDL(mmol/L** | 1.12±0.3 | 1.16±0.33 |
| **GLU(mmol/L)** | 5.72±1.75 | 6.16±1.92 |
| **PSA(mmol/L)** | 5.2±6.03 | 50.19±38.8\*\*\* |

*t* test, \**P* <0.05, \*\*\**P*<0.01 the difference was statistically significant

**Supplementary tabal 3. Comparison of the tumor formation rate of**

**prostate cancer cells in normal diet and high-fat diet mice**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Tumor formation | Non-tumorous | Total | Tumor formation rate |
| NCD | 3 | 2 | 5 | 60% |
| HFD | 9 | 1 | 10 | 90% |
| Total | 12 | 3 | 15 | 80% |

*Chi-square* test, *χ*2 =5.4, *P*=0.01, the difference was statistically significant

**Supplementary table 4.**

**Glucose and lipid levels in serum of mice under High-Fat Diet (Mean ±SD)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | FFA(mmol/L) | TG(mmol/L) | TC(mmol/L) | HDL(mmol/L) | LDL(mmol/L) | | GLU(mmol/L) |
| NCD (n=5) | 0.56±0.34 | 0.50±0.15 | 4.27±1.43 | 0.47±0.16 | | 0.22±0.18 | 9.92±3.63 |
| HFD  (n=10) | 0.93±4.48\*\* | 0.70±0.25\*\* | 5.77±0.83\*\*\* | 0.44±0.15 | | 0.18±0.15 | 11.1±5.17 |

*Non-parametric rank sum* test, \*\**P*<0.01, \*\*\**P*<0.01 the difference was statistically significant

**Supplementary Figure 1：**



**Supplementary Figure 1. Correlation between KLF7 and other factors in tumor tissues of patients with PCa.**

(A) Western Blot was used to detect the protein expression level of KLF7 in BPH tissues and tumor tissues with PCa. (B-C) qRT-PCR was used to detect the mRNA expression level of KLF7(B) and GPR84(C) in BPH tissues and tumor tissues with PCa. (D-G) Pearson method was used to analyze the correlation between serum PSA in PCa patients and the expression levels of KLF7(D), IL-6(E), p21(F) and Ki67(G) in tumor tissues. (H-J) Pearson method was used to analyze the correlation between KLF7 and IL-6(H), p21(I), Ki67(J) expression levels in tumor tissues of PCa patients.

*t* test, \**P*<0.05 the difference was statistically significant.

**Supplementary Figure 2：**



**Supplementary Figure 2.** **The basic expression level of KLF7/GPR84 in PC3 and 22RV1 cells.**

(A-B) Western Blot was used to detect the protein expression level of KLF7 in 22RV1 and PC3 cells. (C) qRT-PCR was used to detect the mRNA expression level of GPR84 in 22RV1 and PC3 cells.