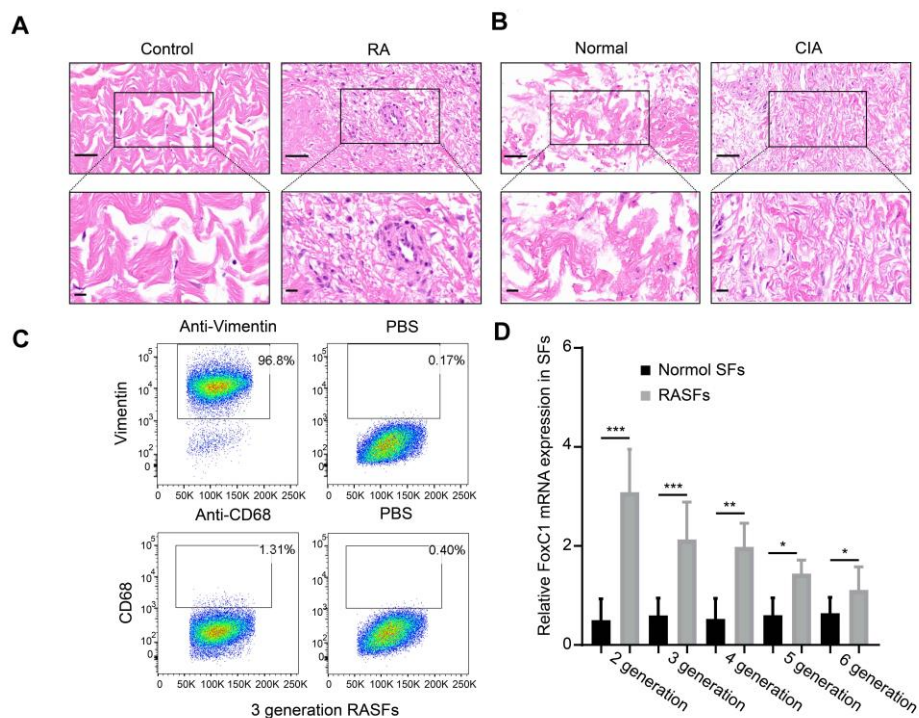


Supplementary Figure and Figure Legends



Supplementary Figure 1. FoxC1 and β -catenin are significantly upregulated in the synovium and SFs of RA patients and CIA rats. (A-B) The synovial tissue morphology of RA patients (n = 20), CIA rats (n = 6), and the corresponding control groups were identified by HE staining. Original magnification $\times 200$, original magnification $\times 400$. (C) CD68 and vimentin were detected by flow cytometry in 3 generations RASFs. CD68 was used to label synovial macrophages. Vimentin was used to label synovial fibroblasts. (D) FoxC1 expression in different generations of SFs (normal SFs (n=3) and RASFs (n=3)) was detected by qRT-PCR. Experiments were independently repeated three times. The data were expressed as mean \pm SD. *p<0.05, **p<0.01, ***p<0.001, t-test. Scale bars: 50 μ m.

Supplementary Table

Supplementary Table 1. General patient information (n=30)

| Patients | Rheumatoid arthritis(n=20) | Amputation due to trauma (n=4) | Requiring arthroscopic surgery(n=6). |
|--|----------------------------|--------------------------------|--------------------------------------|
| Age in years, mean (SD) | 50.9 (13.7) | 31.7(5.9) | 21.4(10.6) |
| Female, n (%) | 15(75) | 2(50) | 4(66.7) |
| Duration of rheumatoid arthritis (year), mean (SD) | 9.5(8.5) | | |
| RF positive, n (%) | 16(80) | | |
| Anti-CCP positive n (%) | 13(60) | | |
| ESR (mm/hr), mean (SD) | 36.9(25.2) | | |
| CRP (mg/l), mean (SD) | 20.1(20.4) | | |
| DAS28-ESR, mean (SD) | 5.6(1.5) | | |
| HAQ, mean (SD) | 1.5(0.7) | | |
| NSAID, n(%) | 18(90) | | |
| DMARD, n(%) | 12(60) | | |
| Prednisolone, n(%) | 8(40) | | |
| Previous biological therapy n(%) | 1(5) | | |

RF, rheumatoid factor; DMARD, disease-modifying anti-rheumatic drugs; Anti-CCP, anti-cyclic citrullinated peptide; ESR, erythrocyte sedimentation rate; CRP, c-reactive protein; DAS28-ESR, disease activity score for 28-joint counts based on the esr; HAQ, health assessment questionnaire; NSAID, non-steroidal anti-inflammatory drug; mm, millimeter; hr, hour; mg, milligram; l, liter

Supplementary Table 2. Experimental correlation primers.

| Gene | Sequences |
|----------------------------------|--------------------------------|
| Human FoxC1 sense | 5'-CAGCATCCGCCACAACCTCT-3' |
| Human FoxC1 antisense | 5'-GCAGCCTGTCCTTCTCCTCCT-3' |
| Rat FoxC1 sense | 5'-ACGGCACAACCTCTCGCTTAATG-3' |
| Rat FoxC1 antisense | 5'-CTTGTCCTTCACCGCGTCCTTC-3' |
| Human β -Catenin sense | 5'-GGCTCTTGTGCGTACTGTCCTTC-3' |
| Human β -Catenin antisense | 5'-GCTTCTTGGTGTCTGGCTGGTC-3' |
| Rat β -Catenin sense | 5'-GTTGCTCCACTCCAGGAATGAAGG-3' |

| | |
|--------------------------------|------------------------------------|
| Rat β -Catenin antisense | 5'- GCACCAATGTCCAGTCCGAGATC-3' |
| Human GSK-3 β sense | 5'-AGGAGAACCCAATGTTTCGTAT-3' |
| Human GSK-3 β antisense | 5'- ATCCCCTGGAAATATTGGTTGT-3' |
| Human c-Myc sense | 5'-CGAGGAGAATGTCAAGAGGCCGAAC-3' |
| Human c-Myc antisense | 5'- GCTTGGACGGACAGGATGTATGC-3' |
| Human cyclin D1 sense | 5'- TACCGCCTCACACGCTTCCTC-3' |
| Human cyclin D1 antisense | 5'-ACCTCCTCCTCCTCCTCCTCCTC-3' |
| Human fibronectin sense | 5'- ATGCAACGATCAGGACACAAGGAC-3' |
| Human fibronectin antisense | 5'-TGCCTCTCACACTTCCACTCTCC-3' |
| Human MMP3 sense | 5'-CGAGGAGAATGTCAAGAGGCCGAA -3' |
| Human MMP3 antisense | 5'-GCTTGGACGGACAGGATGTATGC-3' |
| β -actin sense | 5'- AGAAGATCTGGCACCACACC-3' |
| β -actin antisense | 5'- GAACCAGGAGTTAAGAACACG-3' |
| miR-141-3p sense | 5'- CGGCTAACACTGTCTGGTAAAGATGG -3' |
| miR -593-3p sense | 5'- CGTGTCTCTGCTGGGGTTTCT -3' |
| miR -516b-5p sense | 5'-GGCATCTGGAGGTAAGAAGCACTTT-3' |
| miR 1290 sense | 5'- CGCGTGGATTTTTGGATCAGGGA -3' |
| miR -200a-3p sense | 5'-GCGTAACACTGTCTGGTAACGATGT -3' |
| U6 sense | 5'-CTCGCTTCGGCAGCACATATACT-3' |

Supplementary Table 3. siRNAs, miR-141-3p mimic and inhibitor sequences used in this work

| Gene | Sequences |
|-------------------------------------|-------------------------------|
| Human siFoxC1 sense | 5'-CCAGUGAACGGGAAUAGUAUU-3' |
| Human siFoxC1 antisense | 5'-UACUAUUCCCGUUCACUGGUU-3' |
| Rat siFoxC1 sense | 5'-GCCACAAGAUUACAAGAAAUU-3' |
| Rat siFoxC1 antisense | 5'-UUUCUUGUAAUCUUGUGGCUU-3' |
| Human si β -Catenin sense | 5'-UCACCUCGUGGUACCUGAAUU-3' |
| Human si β -Catenin antisense | 5'-UUCAGGUACCACGAGGUGAUU-3' |
| miR-141-3p mimic sense | 5'-U AACACUGUCUGGUAAAGAUGG-3' |
| miR-141-3p mimic antisense | 5'-CCAUCUUUACCAGACAGUGUUA-3' |
| miR-141-3p inhibitor | 5'-CCAUCUUUACCAGACAGUGUUA-3' |

Supplementary materials for luciferase reporter assay

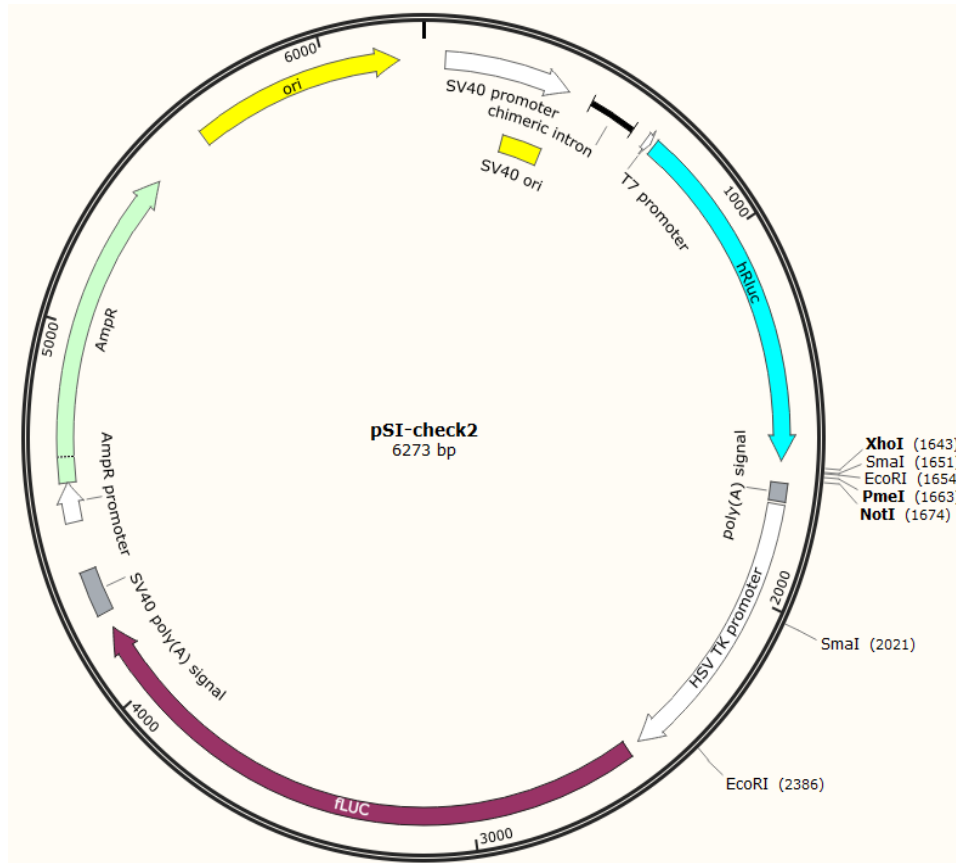
Cloning details including oligonucleotide sequence for Luciferase reporter assay

Double luciferase assay confirmed the existence of binding sites

between miR-141-3p and FoxC1

Vector and target gene information

1. The psi-check2 vector map is as follows:



2. Human-FoxC1 and hsa-miR-141-3p sequence information

h-FOXC1-3UTR-wt :

```
ctcgagCACACCCTCAAAGCCGAACTAAATCGAACCCCAAAGCAGGAAAAGCTA  
AAGGAACCCATCAAGGCAAATCGAACTAAAAAAAAAAATCCAATTAAAAAA  
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h-FOXC1-3UTR-mu :

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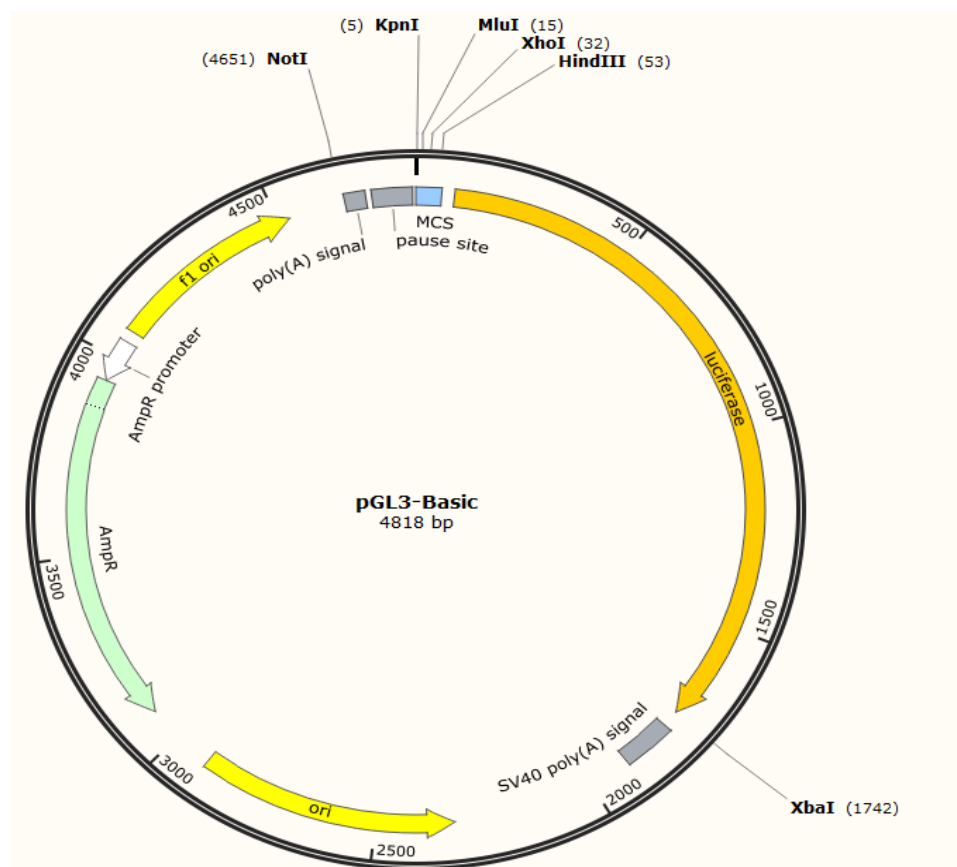
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 GAGACAGCAAATCTTGTTTAgTcAAGGAgAcTcTgACTCCAGATAACACGTA
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 TTTTAAAATGTAAATTGCAAgcggccgc

>hsa-miR-141-3p MIMAT0000432
 UAACACUGUCUGGUAAGAUGG

Double luciferase assay confirmed the existence of a binding site between FoxC1 and β -catenin promoter

Vector and target gene information

1. The psi-check2 vector map is as follows:



2. Human- β -catenin-promoter sequence information

h- β -catenin-pro-wt :

TCAGTAGGGATTAAAAATCATAATTCTAAATTTAAAGTATTTAAATTATAGAAAAATGATTCCAT
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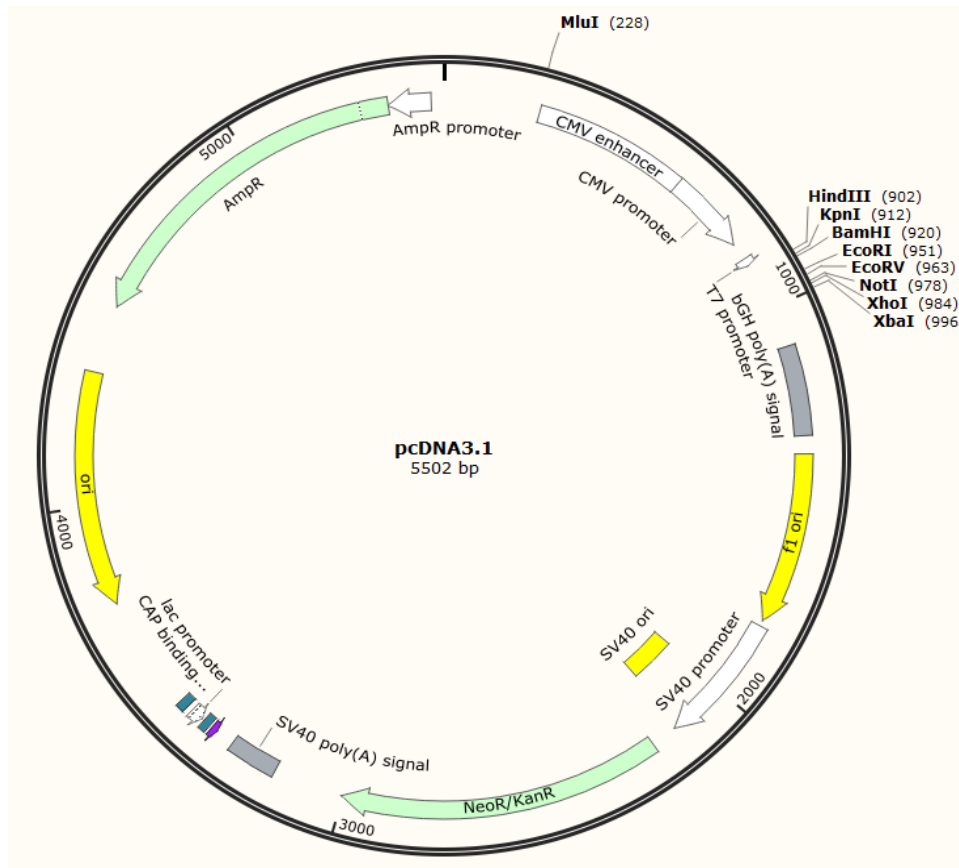
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3. The pcDNA3.1 vector map is as follows:



4. Human-FoxC1 sequence information

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