

Supporting Information

Genetic Fabrication of Functional Silk Mats with Improved Cell Proliferation Activity for Medical Application

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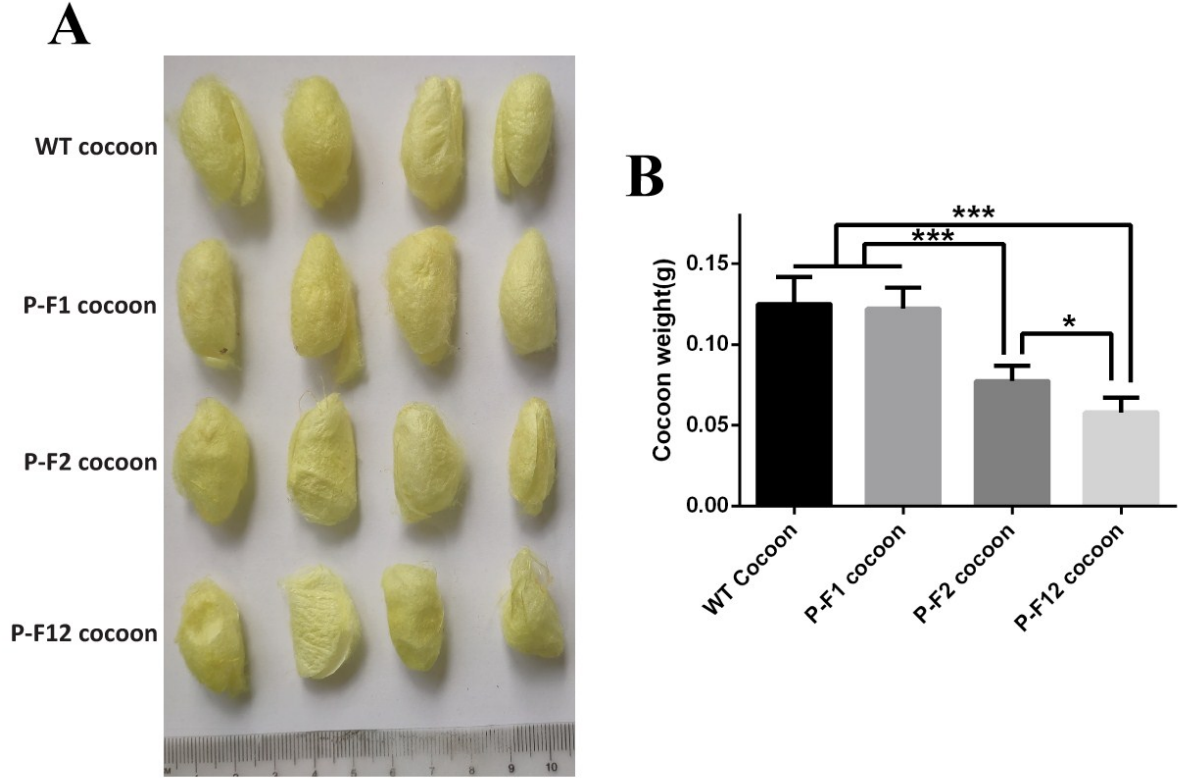
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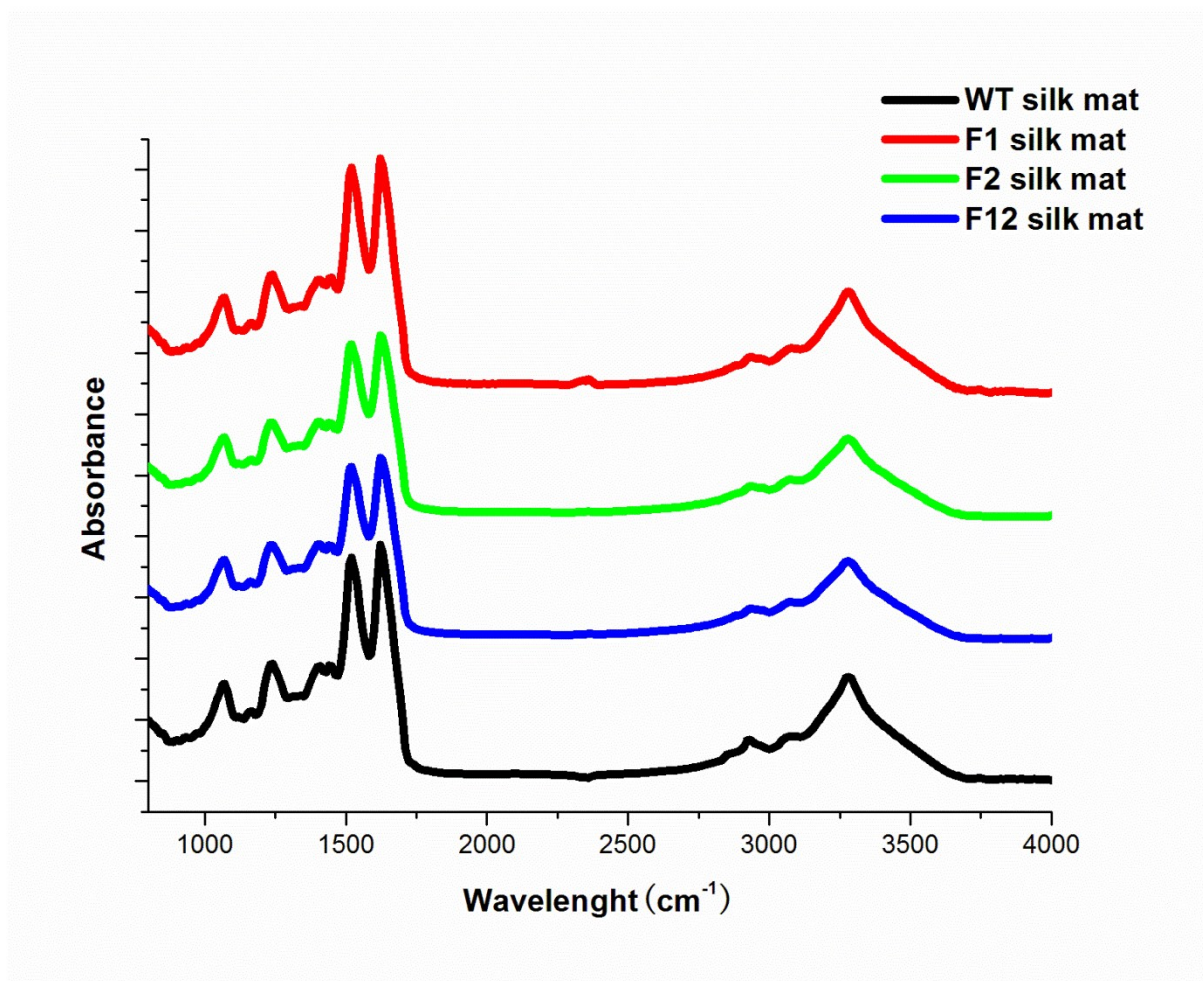
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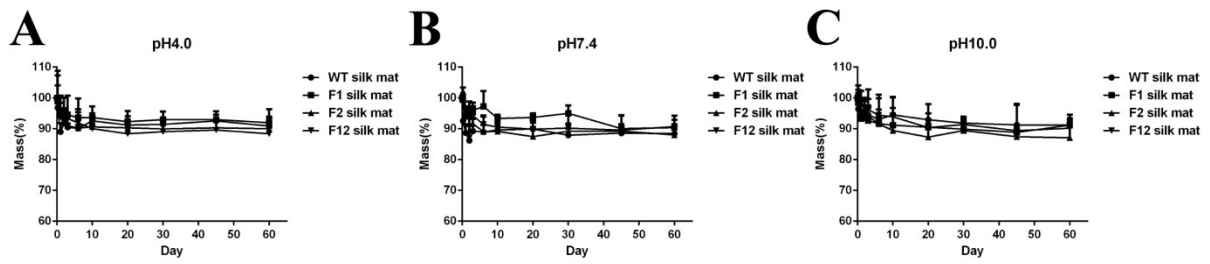
Supplementary materials



Supplementary fig. 1 Cocoon shape and weight analysis of P-F1, P-F2 and P-F12 silkworms. (A) cocoon shape of P-F1, P-F2 and P-F12 silkworms. (B) cocoon weight analysis of P-F1, P-F2 and P-F12 silkworms.



Supplementary fig. 2 The infrared absorption spectra of WT, F1, F2 and F12 silk mats during 800 cm^{-1} and 4000 cm^{-1} .



Supplementary fig. 3 Stability analysis of silk mats in different pH conditions. (A), (B) and (C) respectively indicated the stability of WT, F1, F2 and F12 silk mats in the PBS buffer with a pH of 4.0, 7.4 and 10.0.

Nucleic acid sequence and amino acid sequence of FGF1, FGF2 and FGF1-FGF2 fusion genes

>Optimized human FGF1 sequence

Nucleic acid sequence:

ATGGTGAGATTCGTGCTCTGCTGTACCTTGATCGCTCTCGCTGCCCTGTCAGTTAAGGCCTTCGGAC
ACCACCCGGGCAACAGAGACACTATGTTCAACTTACCTCCAGGCAATTACAAAAAGCCTAAACTGT
TGTATTGCTCAAACGGTGGACACTTTTTGAGAATCCTCCCAGACGGCACCGTGGATGGTACGAGAG
ACCGCTCTGATCAACATATCCAACCTCAGCTGAGCGCTGAATCCGTGGGAGAGGTTTACATTAAGT
CAACAGAAACTGGACAATATTTGGCCATGGACACAGATGGACTCTTATACGGCAGCCAGACTCCG
AATGAAGAGTGCTTGTTCCCTCGAACGTTTAGAAGAGAACCACTACAATACCTATATATCGAAAAAG
CATGCTGAGAAAAACTGGTTTGTCTGGTCTTAAAAAGAATGGAAGTTGTAAACGTGGCCCAAGGACT
CACTATGGTCAGAAGGCCATCTTATTCCTTCCGCTGCCCGTATCATCTGACTAA

Amino acid sequence:

MVRFVLCCTLIALAALSVKAFGHHPGNRDTMFNLPPGNYKKPKLLYCSNGGHFLRILPDGTVDGTRDR
SDQHIQLQLSAESVGEVYIKSTETGQYLAMDTDGLLYGSQTPNEECLFLERLEENHYNTYISKKHAEKN
WVGLKKNNGSCKRGPRTHYGQKAILFLPLPVSSD

>Optimized human FGF2 sequence

Nucleic acid sequence:

ATGGTGAGATTCGTGCTCTGCTGTACCTTGATCGCTCTCGCTGCCCTGTCAGTTAAGGCCTTCGGAC
ACCACCCGGGCAACAGAGACACTATGGCGGCGGGCTCAATCACAACCTTACCAGCGTTACCAGAA
GATGGAGGCTCGGGCGCATTTCCTCCAGGACATTTCAAGGACCCTAAGAGACTCTACTGCAAAAAC
GGTGGATTCTTCTGAGAATACACCCTGACGGCAGAGTGGATGGTGTAGAGAAAAGAGCGACCC
ACACATAAAATTGCAACTCCAGGCTGAAGAAAGAGGTGTGGTTTCCATCAAAGGAGTCTGTGCTAA
TAGATACTTGGCCATGAAGGAAGACGGAAGACTGTTGGCCAGCAAATGCGTGACCGATGAATGCT
TCTTCTTCGAAAGACTCGAATCCAACAATTACAACACATACAGATCGAGAAAGTACTAGTTGGT
ACGTGGCTTTGAAAAGAACAGGACAATACAAACCTCGGCTCTAAGACTGGCCCCGGGTCAGAAGGCC
ATACTGTTCTTGCCCATGAGCGCTAAATCCTAA

Amino acid sequence:

MVRFVLCCTLIALAALSVKAFGHHPGNRDTMAAGSITLTPALPEDGGSGAFPPGHFKDPKRLYCKNGG
FFLRIHPDGRVDGVREKSDPHIKLQLQAEERGVSISIKGVCANRYLAMKEDGRLLASKCVTDECFFFERL
ESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS

>Optimized human FGF1-FGF2 sequence

Nucleic acid sequence:

ATGGTGAGATTCGTGCTCTGCTGTACCTTGATCGCTCTCGCTGCCCTGTCAGTTAAGGCCTTCGGAC
ACCACCCGGGCAACAGAGACACTATGTTCAACTTACCTCCAGGCAATTACAAAAAGCCTAAACTGT
TGTATTGCTCAAACGGTGGACACTTTTTGAGAATCCTCCCAGACGGCACCGTGGATGGTACGAGAG
ACCGCTCTGATCAACATATCCAACCTCAGCTGAGCGCTGAATCCGTGGGAGAGGTTTACATTAAGT
CAACAGAAACTGGACAATATTTGGCCATGGACACAGATGGACTCTTATACGGCAGCCAGACTCCG
AATGAAGAGTGCTTGTTCCTCGAACGTTTAGAAGAGAACCACTACAATACCTATATATCGAAAAAG
CATGCTGAGAAAACTGGTTTTGTCGGTCTTAAAAAGAATGGAAGTTGTAAACGTGGCCCAAGGACT
CACTATGGTCAGAAGGCCATCTTATTCCTTCCGCTGCCCGTATCATCTGACAGAGCCAAGAGAGGA
TCAGGCGCTACTAATTTCTCTCTCCTGAAACAGGCCGGCGATGTGGAAGAAAACCCGGGTCCCACC
ACCATGGTGAGATTCGTGCTCTGCTGTACCTTGATCGCTCTCGCTGCCCTGTCAGTTAAGGCCTTCG
GACACCACCCGGGCAACAGAGACACTATGGCGGGCGGGCTCAATCACAACCTTACCAGCGTTACCA
GAAGATGGAGGCTCGGGCGCATTTCCTCCAGGACATTTCAAGGACCCTAAGAGACTCTACTGCAA
AACGGTGGATTCTTCTGAGAATACACCCTGACGGCAGAGTGGATGGTGTAGAGAAAAGAGCGA
CCCACACATAAAATTGCAACTCCAGGCTGAAGAAAGAGGTGTGGTTTCCATCAAAGGAGTCTGTGC
TAATAGATACTTGCCATGAAGGAAGACGGAAGACTGTTGGCCAGCAAATGCGTGACCGATGAAT
GCTTCTTCTCGAAAGACTCGAATCCAACAATTACAACACATACAGATCGAGAAAGTACACTAGTT
GGTACGTGGCTTTGAAAAGAACAGGACAATACAACTCGGCTCTAAGACTGGCCCGGGTCAGAAG
GCCATACTGTTCTTGCCCATGAGCGCTAAATCCTAA

Amino acid sequence:

MVRFVLCCTLIALAALSVKAFGHHPGNRDTMFNLPPGNYKPKLLYCSNGGHFLRILPDGTVDGTRDR
SDQHIQLQLSAESVGEVYIKSTETGQYLAMDTDGLLYGSQTPNEECLFLERLEENHYNTYISKKHAEN
WFGVGLKKNGSCKRGPRTHYGQKAILFLPLPVSSDRAKRGSGATNFSLLKQAGDVEENPGPTTMVRFVL
CCTLIALAALSVKAFGHHPGNRDTMAAGSITLTPALPEDGGSGAFPPGHFKDPKRLYCKNGGFFLRIHP
DGRVDGVREKSDPHIKLQLQAEERGVSIVKVCANRYLAMKEDGRLLASKCVTDECFERLESNNYN
TYRSRKYTSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS

Note: red sequence is FGF1 gene, blue sequence is FGF2 gene and 2A sequence is marked with yellow background.