Supporting Information

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Phosphorylated and Phosphonated Low-Complexity Protein Segments for Biomimetic Mineralization and Repair of Tooth Enamel

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Table S1. Estimated isoelectric point (pI) and net charge at pH 7.0 of three peptides

| Name    | Estimated pI | Net charge at pH 7.0 |
|---------|--------------|----------------------|
| LCPS-OH | 5.235        | -0.783               |
| LCPS-OP | 2.405        | -2.543               |
| LCPS-CP | ~ 3.54       | ~ -1.98              |
Table S2. Summary of sequencing data quality. raw_reads: the number of reads in the raw data. clean_reads: the number of reads after filtering the original data. clean_bases: The number of bases after filtering the original data (clean base=clean reads*150bp). error_rate: the overall sequencing error rate of the data. Q20: The percentage of bases with a Phred value greater than 20 (Q20) or 30 (Q30) to the total bases. GC_pct: The percentage of G and C in the four bases in clean reads.

| Sample       | Raw_reads | Clean_reads | Clean_bases | Mean length | Error_rate | Q20  | Q30  | GC_pct |
|--------------|-----------|-------------|-------------|-------------|------------|------|------|--------|
| No peptide1  | 4632943   | 44895324    | 6.73G       | 266.10389   | 0.02       | 98.4 | 95.2 | 51.42  |
| No peptide2  | 4516277   | 43616164    | 6.54G       | 261.01545   | 0.02       | 98.3 | 95.0 | 50.75  |
| LCPS-OH1     | 4540639   | 43855150    | 6.58G       | 258.41872   | 0.02       | 98.3 | 94.9 | 49.92  |
| LCPS-OH2     | 4609116   | 44642588    | 6.7G        | 260.64469   | 0.02       | 98.3 | 95.0 | 50.12  |
| LCPS-OP1     | 4703002   | 45489808    | 6.82G       | 258.22909   | 0.02       | 98.3 | 95.0 | 49.82  |
| LCPS-OP2     | 4638644   | 44998284    | 6.75G       | 260.14670   | 0.02       | 98.4 | 95.1 | 49.82  |
| LCPS-CP1     | 4753465   | 46273018    | 6.94G       | 260.32209   | 0.02       | 98.4 | 95.1 | 49.77  |
| LCPS-CP2     | 4581700   | 44525560    | 6.68G       | 259.50755   | 0.02       | 98.4 | 95.1 | 49.68  |
Table S3. Difference gene numbers statistics.

| Compare            | all | up | down | threshold                                      |
|--------------------|-----|----|------|------------------------------------------------|
| LCPS-OHvsControl   | 103 | 22 | 81   | DESeq2 padj<0.05 |log2FoldChange|>0.0 |
| LCPS-OPvsControl   | 1629| 678| 951  | DESeq2 padj<0.05 |log2FoldChange|>0.0 |
| LCPS-CPvsControl   | 1650| 698| 952  | DESeq2 padj<0.05 |log2FoldChange|>0.0 |
Table S4. Real-time-PCR primer sequences.

| Primers      | Sequence                              |
|--------------|---------------------------------------|
| GAPDH-F      | GGCCTTCCGTTGTTGCTACC                  |
| GAPDH-R      | TGCTGCTCACCACCTTC                    |
| RUNX2-F      | CCAAGTACAGGTTAAGCTTCT               |
| RUNX2-R      | GGTGAACCTCTGCTCCTGTC                |
| Col1a1-F     | GCTCTCTTTAGGGCCACT                  |
| Col1a1-R     | CCACGTCTCACCAGTTGGG                 |
| Tgfbr3-F     | GTTGAACCTGACTCAGGATCA              |
| Tgfbr3-R     | GTTACGATGTGAACCTCCTCCCTTG            |
| Bmpr2-F      | TTGAGTACAGGAGACTCCCTG               |
| Bmpr2-R      | TGTTCACAAGATTTGGCTGTTCCCG           |
| Bmpr1a-F     | AACAGCAGAATGTCTCCGAGATC             |
| Bmpr1a-R     | GCTCTGGAGAGCTGGGATTATGGG            |
| Sox9-F       | GACCCGAATCTGAGAGGGA                 |
| Sox9-R       | GGTTCGCTGATGCTGTTTC                |
| Map4k5-F     | CAACATCGTAGCCTACITTGTCGG            |
| Map4k5-R     | GTTAGCTGTAATTGTCAGCCA               |