Supporting Information

for Adv. Healthcare Mater., DOI 10.1002/adhm.202200849

Engineered Exosomes Containing Cathelicidin/LL-37 Exhibit Multiple Biological Functions

Yajuan Su, Navatha Shree Sharma, Johnson V. John, Gitali Ganguli-Indra, Arup K. Indra, Adrian F. Gombart and Jingwei Xie*
Supporting Information

Engineered Exosomes Containing Cathelicidin/LL-37 Exhibit Multiple Biological Functions

Yajuan Su, Navatha Shree Sharma, Johnson V John, Gitali Ganguli-Indra, Arup K. Indra, Adrian F. Gombart, and Jingwei Xie*

Dr. Y. Su, Dr. N. S. Sharma, Dr. J. V. John, Prof. J. Xie
Department of Surgery-Transplant and Mary & Dick Holland Regenerative Medicine Program, University of Nebraska Medical Center, Omaha, Nebraska 68198, United States
E-mail: jingwei.xie@unmc.edu
Prof. G. Ganguli-Indra, Prof. A. K. Indra
Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University, Corvallis, Oregon, 97331, United States;
Prof. G. Ganguli-Indra
Knight Cancer Institute, Oregon Health & Science University, Portland, Oregon, 97239, United States
Prof. A. K. Indra
Department of Dermatology, Oregon Health & Science University, Portland, Oregon, 97239, United States;
Prof. A. K. Indra, Prof. A. F. Gombart
Linus Pauling Institute, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, Oregon, 97331, United States
Prof. J. Xie
Department of Mechanical and Materials Engineering, College of Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska 68588, United States
**Figure S1.** hCAP18/LL-37 protein expression in exosomes derived from U937 cells after transfection with the *CAMP* gene. (*p*<0.05, n=6)
Figure S2. Quantification of the tube lengths formed after different treatments. Exo C: exosomes derived from U937 cells without treatment (Control). Exo VD: exosomes derived from U937 cells with treatment of VD₃-loaded PCL NF. Exo VV: exosomes derived from U937 cells with treatment of VD₃/VID400-loaded PCL NF. Abbreviations: VD₃-loaded PCL NF: 1,25(OH)₂D₃ loaded PCL nanofibers. VD₃/VID400-loaded PCL NF: 1,25(OH)₂D₃ and VID400 co-loaded PCL nanofibers. (*p<0.05, n=6)
Table S1. The most common set of protein components identified by quantitative proteomics of exosomes derived from U937 cells after treatment with 1,25(OH)₂D₃ and VID400 co-loaded PCL nanofibers (ExoVV).

| Protein          | Description                                                                 |
|------------------|-----------------------------------------------------------------------------|
| TLN1_HUMAN       | Talin-1 OS=Homo sapiens OX=9606 GN=TLN1 PE=1 SV=3                            |
| IQGA1_HUMAN      | Ras GTPase-activating-like protein IQGAP1 OS=Homo sapiens OX=9606 GN=IQGAP1 PE=1 SV=1|
| FAS_HUMAN        | Fatty acid synthase OS=Homo sapiens OX=9606 GN=FASN PE=1 SV=3               |
| FLNA_HUMAN       | Filamin-A OS=Homo sapiens OX=9606 GN=FLNA PE=1 SV=4                         |
| MYO1G_HUMAN      | Unconventional myosin-Ig OS=Homo sapiens OX=9606 GN=MYO1G PE=1 SV=2          |
| ACTN4_HUMAN      | Alpha-actinin-4 OS=Homo sapiens OX=9606 GN=ACTN4 PE=1 SV=2                 |
| AHNK_HUMAN       | Neuroblast differentiation-associated protein AHNAK OS=Homo sapiens OX=9606 GN=AHNAK PE=1 SV=2|
| MOES_HUMAN       | Moesin OS=Homo sapiens OX=9606 GN=MSN PE=1 SV=3                             |
| PLSL_HUMAN       | Plastin-2 OS=Homo sapiens OX=9606 GN=LCP1 PE=1 SV=6                         |
| KPYM_HUMAN       | Pyruvate kinase PKM OS=Homo sapiens OX=9606 GN=PKM PE=1 SV=4                |
| PTPRC_HUMAN      | Receptor-type tyrosine-protein phosphatase C OS=Homo sapiens OX=9606 GN=PTPRC PE=1 SV=3|
| ACTB_HUMAN       | Actin cytoplasmic 1 OS=Homo sapiens OX=9606 GN=ACTB PE=1 SV=1               |
| CLH1_HUMAN       | Clathrin heavy chain 1 OS=Homo sapiens OX=9606 GN=CLTC PE=1 SV=5            |
| ACTG_HUMAN       | Actin cytoplasmic 2 OS=Homo sapiens OX=9606 GN=ACTG1 PE=1 SV=1              |
| ANXA6_HUMAN      | Annexin A6 OS=Homo sapiens OX=9606 GN=ANXA6 PE=1 SV=3                       |
| ACTN1_HUMAN      | Alpha-actinin-1 OS=Homo sapiens OX=9606 GN=ACTN1 PE=1 SV=2                 |
| HSP7C_HUMAN      | Heat shock cognate 71 kDa protein OS=Homo sapiens OX=9606 GN=HSPA8 PE=1 SV=1 |
| URPO2_HUMAN      | Fermitin family homolog 3 OS=Homo sapiens OX=9606 GN=FERMT3 PE=1 SV=1       |
| ENOA_HUMAN       | Alpha-enolase OS=Homo sapiens OX=9606 GN=ENO1 PE=1 SV=2                     |
| DYHC1_HUMAN      | Cytoplasmic dynein 1 heavy chain 1 OS=Homo sapiens OX=9606 GN=DYN1H1 PE=1 SV=5|
| PRKDC_HUMAN      | DNA-dependent protein kinase catalytic subunit OS=Homo sapiens OX=9606 GN=PRKDC PE=1 SV=3|
| ITAM_HUMAN       | Integrin alpha-M OS=Homo sapiens OX=9606 GN=ITGAM PE=1 SV=2                |
| 4F2_HUMAN        | 4F2 cell-surface antigen heavy chain OS=Homo sapiens OX=9606 GN=SLC3A2 PE=1 SV=3|
| K2C1_HUMAN       | Keratin type II cytoskeletal 1 OS=Homo sapiens OX=9606 GN=KRT1 PE=1 SV=6     |
| AMPN_HUMAN       | Aminopeptidase N OS=Homo sapiens OX=9606 GN=ANPEP PE=1 SV=4                 |
| K1C9_HUMAN       | Keratin type I cytoskeletal 9 OS=Homo sapiens OX=9606 GN=KRT9 PE=1 SV=3       |
| ITA6_HUMAN       | Integrin alpha-6 OS=Homo sapiens OX=9606 GN=ITGA6 PE=1 SV=5                 |
| ITA7_HUMAN       | Sodium/potassium-transporting ATPase subunit alpha-1 OS=Homo sapiens OX=9606 |
| Gene Name      | Description                                           | Organism | Accession | Translated |  |
|---------------|-------------------------------------------------------|----------|-----------|------------|--------|
| WDR1_HUMAN    | WD repeat-containing protein 1 OS=Homo sapiens       | Homo sapiens | OX=9606  | GN=WDR1 PE=1 SV=4 |        |
| TBB5_HUMAN    | Tubulin beta chain OS=Homo sapiens                   | Homo sapiens | OX=9606  | GN=TUBB PE=1 SV=2 |        |
| EHD1_HUMAN    | EH domain-containing protein 1 OS=Homo sapiens       | Homo sapiens | OX=9606  | GN=EHD1 PE=1 SV=2 |        |
| EZRI_HUMAN    | Ezrin OS=Homo sapiens                                 | Homo sapiens | OX=9606  | GN=EZR PE=1 SV=4 |        |
| TBA1B_HUMAN   | Tubulin alpha-1B chain OS=Homo sapiens                | Homo sapiens | OX=9606  | GN=TUBA1B PE=1 SV=1 |        |
| UBA1_HUMAN    | Ubiquitin-like modifier-activating enzyme 1 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=UBA1 PE=1 SV=3 |        |
| TBA1C_HUMAN   | Tubulin alpha-1C chain OS=Homo sapiens                | Homo sapiens | OX=9606  | GN=TUBA1C PE=1 SV=1 |        |
| TBA1A_HUMAN   | Tubulin alpha-1A chain OS=Homo sapiens                | Homo sapiens | OX=9606  | GN=TUBA1A PE=1 SV=1 |        |
| ANXA2_HUMAN   | Annexin A2 OS=Homo sapiens                            | Homo sapiens | OX=9606  | GN=ANXA2 PE=1 SV=2 |        |
| TBB4B_HUMAN   | Tubulin beta-4B chain OS=Homo sapiens                 | Homo sapiens | OX=9606  | GN=TUBB4B PE=1 SV=1 |        |
| DYSF_HUMAN    | Dysferlin OS=Homo sapiens                             | Homo sapiens | OX=9606  | GN=DYSF PE=1 SV=1 |        |
| GDIB_HUMAN    | Rab GDP dissociation inhibitor beta OS=Homo sapiens   | Homo sapiens | OX=9606  | GN=GD12 PE=1 SV=2 |        |
| UTRO_HUMAN    | Utrophin OS=Homo sapiens                              | Homo sapiens | OX=9606  | GN=UTRN PE=1 SV=2 |        |
| HS90B_HUMAN   | Heat shock protein HSP 90-beta OS=Homo sapiens        | Homo sapiens | OX=9606  | GN=HSP90AB1 PE=1 SV=4 |        |
| CYFP1_HUMAN   | Cytoplasmic FMR1-interacting protein 1 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=CYFIP1 PE=1 SV=1 |        |
| EF2_HUMAN     | Elongation factor 2 OS=Homo sapiens                   | Homo sapiens | OX=9606  | GN=EEF2 PE=1 SV=4 |        |
| TBA4A_HUMAN   | Tubulin alpha-4A chain OS=Homo sapiens                | Homo sapiens | OX=9606  | GN=TUBA4A PE=1 SV=1 |        |
| AT2B4_HUMAN   | Plasma membrane calcium-transporting ATPase 4 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=ATP2B4 PE=1 SV=2 |        |
| SHKB1_HUMAN   | SH3KBP1-binding protein 1 OS=Homo sapiens             | Homo sapiens | OX=9606  | GN=SHKBP1 PE=1 SV=2 |        |
| IQGA2_HUMAN   | Ras GTPase-activating-like protein IQGAP2 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=IQGAP2 PE=1 SV=4 |        |
| ITAL_HUMAN    | Integrin alpha-L OS=Homo sapiens                      | Homo sapiens | OX=9606  | GN=ITGAL PE=1 SV=3 |        |
| GNAI2_HUMAN   | Guanine nucleotide-binding protein G(i) subunit alpha-2 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=GNAI2 PE=1 SV=3 |        |
| ARPC2_HUMAN   | Actin-related protein 2/3 complex subunit 2 OS=Homo sapiens | Homo sapiens | OX=9606  | GN=ARPC2 PE=1 SV=1 |        |
| EHD4_HUMAN    | EH domain-containing protein 4 OS=Homo sapiens        | Homo sapiens | OX=9606  | GN=EHD4 PE=1 SV=1 |        |
| Gene | Description                                                                                     | Organism   | Gene Symbol | Peptide Length | Sequence Variants |
|------|--------------------------------------------------------------------------------------------------|------------|-------------|----------------|------------------|
| RFIP1_HUMAN | Rab11 family-interacting protein 1 OS=Homo sapiensOX=9606 GN=RAB11FIP1 PE=1 SV=3               | Homo sapiens | RAB11FIP1   |                |                  |
| VAT1_HUMAN | Synaptic vesicle membrane protein VAT-1 homolog OS=Homo sapiensOX=9606 GN=VAT1 PE=1 SV=2       | Homo sapiens | VAT1        |                |                  |
| PLCB3_HUMAN | 1-phosphatidylinositol 4 5-bisphosphate phosphodiesterase beta-3 OS=Homo sapiensOX=9606 GN=PLCB3 PE=1 SV=2 | Homo sapiens | PLCB3       |                |                  |
| ITB2_HUMAN | Integrin beta-2 OS=Homo sapiensOX=9606 GN=ITGB2 PE=1 SV=2                                      | Homo sapiens | ITB2        |                |                  |
| NIBA1_HUMAN | Protein Niban 1 OS=Homo sapiensOX=9606 GN=NIBAN1 PE=1 SV=1                                      | Homo sapiens | NIBAN1      |                |                  |
| DOCK8_HUMAN | Dedicator of cytokinesis protein 8 OS=Homo sapiensOX=9606 GN=DOCK8 PE=1 SV=3                   | Homo sapiens | DOCK8       |                |                  |
| DOCK2_HUMAN | Dedicator of cytokinesis protein 2 OS=Homo sapiensOX=9606 GN=DOCK2 PE=1 SV=2                   | Homo sapiens | DOCK2       |                |                  |
| TLN2_HUMAN | Talin-1 OS=Homo sapiensOX=9606 GN=TLN1 PE=1 SV=4                                                | Homo sapiens | TLN1        |                |                  |
| IQGA2_HUMAN | Ras GTPase-activating-like protein IQGAP1 OS=Homo sapiensOX=9606 GN=IQGAP1 PE=1 SV=2           | Homo sapiens | IQGAP1      |                |                  |
| FAS_HUMAN | Fatty acid synthase OS=Homo sapiensOX=9606 GN=FASN PE=1 SV=4                                   | Homo sapiens | FASN        |                |                  |
| FLNA_HUMAN | Filamin-A OS=Homo sapiensOX=9606 GN=FLNA PE=1 SV=5                                             | Homo sapiens | FLNA         |                |                  |
| MYO2G_HUMAN | Unconventional myosin-Ig OS=Homo sapiensOX=9606 GN=MYO1G PE=1 SV=3                             | Homo sapiens | MYO1G       |                |                  |
| ACTN5_HUMAN | Alpha-actinin-4 OS=Homo sapiensOX=9606 GN=ACTN4 PE=1 SV=3                                     | Homo sapiens | ACTN4       |                |                  |
| AHNK_HUMAN | Neuroblast differentiation-associated protein AHNAK OS=Homo sapiensOX=9606 GN=AHNAK PE=1 SV=3 | Homo sapiens | AHNAK       |                |                  |
| MOES_HUMAN | Moesin OS=Homo sapiensOX=9606 GN=MSN PE=1 SV=4                                                  | Homo sapiens | MSN         |                |                  |
| PLSL_HUMAN | Plastin-2 OS=Homo sapiensOX=9606 GN=LCP1 PE=1 SV=7                                              | Homo sapiens | LCP1        |                |                  |
| KPYM_HUMAN | Pyruvate kinase PKM OS=Homo sapiensOX=9606 GN=PKM PE=1 SV=5                                    | Homo sapiens | PKM         |                |                  |
| PTPRC_HUMAN | Receptor-type tyrosine-protein phosphatase C OS=Homo sapiensOX=9606 GN=PTPRC PE=1 SV=4         | Homo sapiens | PTPRC       |                |                  |
| ACTB_HUMAN | Actin cytoplasmic 1 OS=Homo sapiensOX=9606 GN=ACTB PE=1 SV=2                                    | Homo sapiens | ACTB        |                |                  |
| CLH2_HUMAN | Clathrin heavy chain 1 OS=Homo sapiensOX=9606 GN=CLTC PE=1 SV=6                                | Homo sapiens | CLTC        |                |                  |
| ACTG_HUMAN | Actin cytoplasmic 2 OS=Homo sapiensOX=9606 GN=ACTG1 PE=1 SV=2                                   | Homo sapiens | ACTG1       |                |                  |
| ANXA7_HUMAN | Annexin A6 OS=Homo sapiensOX=9606 GN=ANXA6 PE=1 SV=4                                           | Homo sapiens | ANXA6       |                |                  |
| ACTN2_HUMAN | Alpha-actinin-1 OS=Homo sapiensOX=9606 GN=ACTN1 PE=1 SV=3                                     | Homo sapiens | ACTN1       |                |                  |
| HSP8C_HUMAN | Heat shock cognate 71 kDa protein OS=Homo sapiensOX=9606 GN=HSPA8 PE=1 SV=2                     | Homo sapiens | HSPA8       |                |                  |
| URP3_HUMAN | Ferritin family homolog 3 OS=Homo sapiensOX=9606 GN=FERMT3 PE=1 SV=2                           | Homo sapiens | FERMT3      |                |                  |
| ENO1_HUMAN | Alpha-enolase OS=Homo sapiensOX=9606 GN=ENO1 PE=1 SV=3                                         | Homo sapiens | ENO1        |                |                  |
| DYHC2_HUMAN | Cytoplasmic dynein 1 heavy chain 1 OS=Homo sapiensOX=9606 GN=DYNC1H1 PE=1 SV=6                  | Homo sapiens | DYNC1H1     |                |                  |
| PRKDC_HUMAN | DNA-dependent protein kinase catalytic subunit OS=Homo sapiensOX=9606 GN=PRKDC PE=1 SV=4        | Homo sapiens | PRKDC       |                |                  |
| Gene ID | Description |
|---------|-------------|
| ITAM_HUMAN | Integrin alpha-M OS=Homo sapiens OX=9606 GN=ITGAM PE=1 SV=3 |
| 4F3_HUMAN | 4F2 cell-surface antigen heavy chain OS=Homo sapiens OX=9606 GN=SLC3A2 PE=1 SV=4 |
| K2C2_HUMAN | Keratin type II cytoskeletal 1 OS=Homo sapiens OX=9606 GN=KRT1 PE=1 SV=7 |
| AMPN_HUMAN | Aminopeptidase N OS=Homo sapiens OX=9606 GN=ANPEP PE=1 SV=5 |
| K1C10_HUMAN | Keratin type I cytoskeletal 9 OS=Homo sapiens OX=9606 GN=KRT9 PE=1 SV=4 |
| ITA8_HUMAN | Integrin alpha-6 OS=Homo sapiens OX=9606 GN=ITGA6 PE=1 SV=6 |
| ITA9_HUMAN | Sodium/potassium-transporting ATPase subunit alpha-1 OS=Homo sapiens OX=9606 GN=ATP1A1 PE=1 SV=2 |
| WDR2_HUMAN | WD repeat-containing protein 1 OS=Homo sapiens OX=9606 GN=WDR1 PE=1 SV=5 |
| TBB6_HUMAN | Tubulin beta chain OS=Homo sapiens OX=9606 GN=TUBB PE=1 SV=3 |
| EHD2_HUMAN | EH domain-containing protein 1 OS=Homo sapiens OX=9606 GN=EHD1 PE=1 SV=3 |
| EZRI_HUMAN | Ezrin OS=Homo sapiens OX=9606 GN=EZR PE=1 SV=5 |
| TBA2B_HUMAN | Tubulin alpha-1B chain OS=Homo sapiens OX=9606 GN=TUBA1B PE=1 SV=2 |
| UBA2_HUMAN | Ubiquitin-like modifier-activating enzyme 1 OS=Homo sapiens OX=9606 GN=UBA1 PE=1 SV=4 |
| TBA2C_HUMAN | Tubulin alpha-1C chain OS=Homo sapiens OX=9606 GN=TUBA1C PE=1 SV=2 |
Table S2. Identification of those proteins upregulated in exosomes derived from U937 cells treated with 1,25(OH)$_2$D$_3$ and VID400 co-loaded PCL nanofibers (Exo VV) compared to untreated cells (Exo C) by proteomic analysis.

| Gene_names | p-value  | Fold-Change | Fold-Change (Description) |
|------------|----------|-------------|----------------------------|
| ITGAM      | 2.68E-08 | 10.5799     | Exo VV up vs Exo C        |
| THBD       | 1.01E-07 | 16.1338     | Exo VV up vs Exo C        |
| SAMSNI1    | 5.17E-07 | 29.4971     | Exo VV up vs Exo C        |
| ITGB2      | 2.83E-06 | 4.83999     | Exo VV up vs Exo C        |
| LGALS9     | 5.06E-06 | 5.98938     | Exo VV up vs Exo C        |
| NUCB1      | 7.50E-06 | 3.68541     | Exo VV up vs Exo C        |
| APBB1IP    | 1.04E-05 | 4.72294     | Exo VV up vs Exo C        |
| ATP6AP2    | 2.47E-05 | 4.26694     | Exo VV up vs Exo C        |
| TREM1      | 4.06E-05 | 15.8611     | Exo VV up vs Exo C        |
| CDA        | 4.13E-05 | 5.02869     | Exo VV up vs Exo C        |
| C2         | 5.46E-05 | 3.68838     | Exo VV up vs Exo C        |
| ITGAX      | 5.65E-05 | 3.60442     | Exo VV up vs Exo C        |
| ITGAL      | 5.76E-05 | 5.68363     | Exo VV up vs Exo C        |
| TNFAIP8L2  | 5.81E-05 | 2.61434     | Exo VV up vs Exo C        |
| LRRC25     | 6.15E-05 | 10.1122     | Exo VV up vs Exo C        |
| DYSF       | 6.34E-05 | 5.10607     | Exo VV up vs Exo C        |
| PEPD       | 6.48E-05 | 3.74495     | Exo VV up vs Exo C        |
| CTSD       | 8.32E-05 | 3.80166     | Exo VV up vs Exo C        |
| MELTF      | 0.000108458 | 3.85453 | Exo VV up vs Exo C        |
| PLEKHO2    | 0.000138952 | 2.36508 | Exo VV up vs Exo C        |
| ATP1A1     | 0.000140254 | 2.85749 | Exo VV up vs Exo C        |
| GLRX       | 0.000167929 | 2.87929 | Exo VV up vs Exo C        |
| ANXA2      | 0.000192251 | 2.41324 | Exo VV up vs Exo C        |
| CD38       | 0.000202525 | 5.88916 | Exo VV up vs Exo C        |
| CHMP4C     | 0.000202934 | 272.377 | Exo VV up vs Exo C        |
| APPL2      | 0.000234393 | 16.228 | Exo VV up vs Exo C        |
| TNFAIP2    | 0.000237766 | 3.24541 | Exo VV up vs Exo C        |
| EHBP1L1    | 0.000273345 | 3.79094 | Exo VV up vs Exo C        |
| CORO1C     | 0.00032802 | 2.47337 | Exo VV up vs Exo C        |
| DBNL       | 0.000339773 | 2.25577 | Exo VV up vs Exo C        |
| ANXA5      | 0.000414805 | 3.02411 | Exo VV up vs Exo C        |
| STX11      | 0.000430554 | 3.05764 | Exo VV up vs Exo C        |
| IL17RA     | 0.000436588 | 6.67974 | Exo VV up vs Exo C        |
| STXBP3     | 0.000439995 | 2.39009 | Exo VV up vs Exo C        |
| Gene   | Fold Change   | p-value      | Description          |
|--------|---------------|--------------|----------------------|
| ACTN1  | 2.47935       | 0.000441083  | Exo VV up vs Exo C  |
| HDGFL2 | 3.99533       | 0.000474495  | Exo VV up vs Exo C  |
| RGCC   | 6.74545       | 0.000514917  | Exo VV up vs Exo C  |
| PTPRC  | 3.0392        | 0.000526724  | Exo VV up vs Exo C  |
| CAMP   | 470.437       | 0.000532294  | Exo VV up vs Exo C  |
| FBPI   | 24.145        | 0.000595578  | Exo VV up vs Exo C  |
| FGR    | 5.13695       | 0.000631321  | Exo VV up vs Exo C  |
| TKT    | 2.38031       | 0.000738368  | Exo VV up vs Exo C  |
| DTX2   | 4.43737       | 0.000820209  | Exo VV up vs Exo C  |
| DOCK8  | 2.62367       | 0.000855274  | Exo VV up vs Exo C  |
| AP3B1  | 2.67024       | 0.000835531  | Exo VV up vs Exo C  |
| GPSM3  | 3.25607       | 0.000860448  | Exo VV up vs Exo C  |
| PYCARD | 3.23947       | 0.000869115  | Exo VV up vs Exo C  |
| ANXA4  | 2.42101       | 0.000871668  | Exo VV up vs Exo C  |
| VPS25  | 3.3795        | 0.000955711  | Exo VV up vs Exo C  |
| CFD    | 2.73862       | 0.00105072   | Exo VV up vs Exo C  |
| ANPEP  | 2.38782       | 0.00105417   | Exo VV up vs Exo C  |
| ROCK1  | 2.56983       | 0.00113517   | Exo VV up vs Exo C  |
| ILVBL  | 23.1458       | 0.00120694   | Exo VV up vs Exo C  |
| ANXA1  | 2.73231       | 0.00121564   | Exo VV up vs Exo C  |
| AIF1   | 1.93578       | 0.00135533   | Exo VV up vs Exo C  |
| CANX   | 2.82032       | 0.00143503   | Exo VV up vs Exo C  |
| RNF130 | 2.799         | 0.00155221   | Exo VV up vs Exo C  |
| PIP5K1A| 4.28966       | 0.00158348   | Exo VV up vs Exo C  |
| SPAG1  | 2.32613       | 0.0016922    | Exo VV up vs Exo C  |
| ITGA3  | 6.51043       | 0.0016939    | Exo VV up vs Exo C  |
| IQGAP3 | 4.56957       | 0.00173753   | Exo VV up vs Exo C  |
| RASAL3 | 3.57329       | 0.00179153   | Exo VV up vs Exo C  |
| VCL    | 3.70157       | 0.00181903   | Exo VV up vs Exo C  |
| FAM3C  | 2.69339       | 0.00193927   | Exo VV up vs Exo C  |
| PTPRG  | 8.06401       | 0.00194656   | Exo VV up vs Exo C  |
| CAPN1  | 4.99128       | 0.00196285   | Exo VV up vs Exo C  |
| CORO1B | 2.5487        | 0.00198797   | Exo VV up vs Exo C  |
| DNP1H1 | 2.02465       | 0.00207655   | Exo VV up vs Exo C  |
| TWF2   | 2.34994       | 0.00215146   | Exo VV up vs Exo C  |
| RAB4B  | 3.62766       | 0.00215252   | Exo VV up vs Exo C  |
| HCLS1  | 2.92752       | 0.00224267   | Exo VV up vs Exo C  |
| ERBIN  | 2.6142        | 0.00228863   | Exo VV up vs Exo C  |
| RSU1   | 2.22899       | 0.00230381   | Exo VV up vs Exo C  |
Calculations S1:
Exo VV LL-37 content = 80.38 ng/mg (Figure 2B)
Total protein content of Exo VV $10^7$ particles = 0.56 μg (Figure 3A)
LL-37 content of Exo VV $10^7$ particles = 0.045 ng
LL-37 content of Exo VV $1.1 \times 10^{11}$ particles $\approx$ 500 ng