

# ----- Supplementary Information -----

## Structural basis for Retriever-SNX17 assembly and endosomal sorting

**Supplementary Table 1. DNA constructs used in this study.**

| Name                                   | Description                                                                             | Source/reference                                                                                                                         | Identifier                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Recombinant protein preparation</b> |                                                                                         |                                                                                                                                          |                                                                                                  |
| pAV5a empty vector                     | pAV5a empty vector for insect cell expression                                           | Published <sup>1</sup>                                                                                                                   | pAV5a                                                                                            |
| pMalC2Tev empty vector                 | pMalC2Tev empty vector for bacterial expression of MBP-Tev-tagged proteins              | Published <sup>1</sup>                                                                                                                   | pMalTev                                                                                          |
| pGexTev empty vector                   | pGexTev empty vector for bacterial expression of GST-Tev-tagged proteins                | Published <sup>1</sup>                                                                                                                   | pGexTev                                                                                          |
| VPS35L                                 | VPS35L (1-963, full-length, codon optimized for E. coli expression) in pAV5a vector     | This study                                                                                                                               | pDB122                                                                                           |
| VPS35L point mutants                   | V205D<br>R248M<br>T276W<br>N279L<br>N279W<br>W280Y<br>W280D<br>K283D<br>V205D/R248M     | This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study               | pDB155<br>pDB156<br>pDB139<br>pDB157<br>pDB138<br>pDB158<br>pDB137<br>pDB159<br>pDB136           |
| VPS26C                                 | VPS26C (1-297, full-length) in pAV5a vector                                             | Published <sup>5</sup>                                                                                                                   | pDB48                                                                                            |
| VPS26C point mutant                    | K14E                                                                                    | This study                                                                                                                               | pDB160                                                                                           |
| MBP-VPS26C                             | VPS26C (1-297, full-length, codon-optimized for E. coli expression) in pMalC2Tev vector | This study                                                                                                                               | pDB72                                                                                            |
| VPS29-His <sub>6</sub>                 | VPS29-Tev-(GGG) <sub>2</sub> -His <sub>6</sub> in pAV5a vector                          | Published <sup>5</sup>                                                                                                                   | pDB47                                                                                            |
| MBP-CCDC22 NN-CH-VBD                   | MBP-Tev-CCDC22 (1-118)-(GGSK) <sub>6</sub> -CCDC22 (436-727) in pMalC2Tev vector        | Published <sup>5</sup>                                                                                                                   | pDB79                                                                                            |
| MBP-CCDC93 VBD                         | MBP-Tev-hCCDC93 (442-631) in pMalC2Tev vector                                           | Published <sup>5</sup>                                                                                                                   | pDB80                                                                                            |
| GST-SNX17                              | GST-Tev-hSNX17 (1-470, full-length) in modified pET vector                              | Published <sup>4</sup>                                                                                                                   | pDB77                                                                                            |
| GST-SNX17 truncations                  | PX-FERM (1-432)<br>FERM (110-432)<br>Δ470<br>Δ467-470                                   | This study<br>This study<br>This study<br>This study                                                                                     | pDB258<br>pDB167<br>pDB176<br>pDB177                                                             |
| GST-SNX17 CT                           | GST-SNX17 (451-470) in modified pET vector                                              | This study                                                                                                                               | pDB169                                                                                           |
| GST-SNX17 CT point mutants             | G458A<br>N459A<br>F460A<br>A461D<br>F462A<br>F462N<br>E463A<br>G464A<br>G464P<br>I465L  | This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study<br>This study | pDB218<br>pDB217<br>pDB216<br>pDB215<br>pDB214<br>pDB234<br>pDB213<br>pDB212<br>pDB241<br>pDB179 |

|                                                                           |                                                                     |            |        |
|---------------------------------------------------------------------------|---------------------------------------------------------------------|------------|--------|
|                                                                           | I465A                                                               | This study | pDB223 |
|                                                                           | I465M                                                               | This study | pDB224 |
|                                                                           | I465F                                                               | This study | pDB225 |
|                                                                           | I465S                                                               | This study | pDB226 |
|                                                                           | I465H                                                               | This study | pDB227 |
|                                                                           | I465D                                                               | This study | pDB228 |
|                                                                           | I465V                                                               | This study | pDB180 |
|                                                                           | G466A                                                               | This study | pDB181 |
|                                                                           | G466R                                                               | This study | pDB182 |
|                                                                           | G466L                                                               | This study | pDB183 |
|                                                                           | G466E                                                               | This study | pDB184 |
|                                                                           | D467T                                                               | This study | pDB207 |
|                                                                           | D467R                                                               | This study | pDB208 |
|                                                                           | D467A                                                               | This study | pDB209 |
|                                                                           | D467L                                                               | This study | pDB210 |
|                                                                           | D467N                                                               | This study | pDB211 |
|                                                                           | D467Q                                                               | This study | pDB235 |
|                                                                           | E468A                                                               | This study | pDB185 |
|                                                                           | E468R                                                               | This study | pDB186 |
|                                                                           | E468L                                                               | This study | pDB187 |
|                                                                           | E468G                                                               | This study | pDB188 |
|                                                                           | E468T                                                               | This study | pDB236 |
|                                                                           | E468Q                                                               | This study | pDB237 |
|                                                                           | D469T                                                               | This study | pDB202 |
|                                                                           | D469R                                                               | This study | pDB203 |
|                                                                           | D469A                                                               | This study | pDB204 |
|                                                                           | D469L                                                               | This study | pDB205 |
|                                                                           | D469N                                                               | This study | pDB206 |
|                                                                           | D469Q                                                               | This study | pDB238 |
|                                                                           | D469S                                                               | This study | pDB239 |
|                                                                           | D469E                                                               | This study | pDB240 |
|                                                                           | D469G                                                               | This study | pDB254 |
|                                                                           | D469M                                                               | This study | pDB255 |
|                                                                           | D469F                                                               | This study | pDB256 |
|                                                                           | L470V                                                               | This study | pDB189 |
|                                                                           | L470I                                                               | This study | pDB190 |
|                                                                           | L470G                                                               | This study | pDB191 |
|                                                                           | +471G                                                               | This study | pDB253 |
| GST-SNX31 CT                                                              | GST-SNX31 (421-440) in pGexTev vector                               | This study | pDB170 |
| GST-LRMDA CT                                                              | GST-LRMDA (179-198) in pGexTev vector                               | This study | pDB171 |
| GST-TIMM23 CT                                                             | GST-TIMM23 (190-209) in pGexTev vector                              | This study | pDB172 |
| GST-PATE1 CT                                                              | GST-PATE1 (107-126) in pGexTev vector                               | This study | pDB173 |
| GST-ARHGEF25 CT                                                           | GST-ARHGEF25 (561-580) in pGexTev vector                            | This study | pDB174 |
| GST-HYOU1 CT                                                              | GST-HYOU1 (980-999) in pGexTev vector                               | This study | pDB175 |
| GST-CCDC192 CT                                                            | GST-CCDC192 (273-292) in pGexTev vector                             | This study | pCN1   |
| GST-BCAR3 CT                                                              | GST-BCAR3 (806-825) in pGexTev vector                               | This study | pCN2   |
| GST-CD34 CT                                                               | GST-CD34 (366-385) in pGexTev vector                                | This study | pCN3   |
| GST-USH1G CT                                                              | GST-USH1G (442-461) in pGexTev vector                               | This study | pCN4   |
| GST-CCND2 CT                                                              | GST-CCND2 (270-289) in pGexTev vector                               | This study | pCN5   |
| GST- <i>Yersinia pseudotuberculosis</i> nrdB CT                           | GST-nrdB (357-376) in pGexTev vector                                | This study | pCN6   |
| GST- <i>Yersinia pseudotuberculosis</i> GspD CT                           | GST-GspD (621-640) in pGexTev vector                                | This study | pCN7   |
| GST- <i>Toxoplasma gondii</i> SR1 CT                                      | GST-SR1 (1227-1246) in pGexTev vector                               | This study | pCN8   |
| GST- <i>Listeria monocytogenes</i> amino acid ABC transporter permease CT | GST-amino acid ABC transporter permease (219-238) in pGexTev vector | This study | pCN9   |
| GST-MTO1 CT                                                               | GST-MTO1 (698-717) in pGexTev vector                                | This study | pCN10  |

|                                     |                                                 |                                      |                                         |
|-------------------------------------|-------------------------------------------------|--------------------------------------|-----------------------------------------|
| GST-SNX17-HYOU1 CT                  | GST-SNX17(451-464) – HYOU1(994-999)             | This study                           | pDB219                                  |
| GST-HYOU1-SNX17 CT                  | GST-HYOU1(980-993)-SNX17(465-470)               | This study                           | pDB220                                  |
| GST-GGS-SNX17 CT                    | GST-SNX17 (GGS-464-470)                         | This study                           | pDB221                                  |
| GST-SNX17-HYOU1 chimera CT          | GST-SNX17(451-464)-HYOU1(994-999)               | This study                           | pDB219                                  |
| GST-HYOU1-SNX17 chimera CT          | GST-HYOU1(980-993)-SNX17(465-470)               | This study                           | pDB220                                  |
| GST-GGS <sub>4</sub> -SNX17 CT      | GST-(GGS) <sub>4</sub> -SNX17(464-470)          | This study                           | pDB221                                  |
| <b>Mammalian expression vectors</b> |                                                 |                                      |                                         |
| pEBB                                | Empty vector                                    | Published <sup>2</sup>               | EB006                                   |
| pEBB-VPS35L-2xHA                    | Full length, also referred to as wild-type (WT) | Published <sup>3</sup>               | EB1758                                  |
| pEBB-VPS35L-2xHA point mutations    | N279W<br>W280D<br>V205D/R248M                   | This study                           | EB1919,<br>EB1918,<br>EB1917            |
| pEBB-HA-VPS26C                      | Wild-type (WT)                                  | This study                           | EB1354                                  |
| pLVX                                | Empty vector                                    | Takara                               | EB1611                                  |
| pLVX-VPS35L-2xHA point mutations    | Wild-type (WT)<br>N279W<br>W280D<br>V205D/R248M | Published <sup>3</sup><br>This study | EB1778,<br>EB1925,<br>EB1924,<br>EB1923 |
| pCI2-GFP-FLAG-SNX17                 | Wild-type (WT)                                  | This study                           | EB1915                                  |
| pcDNA 3.1-FLAG-SNX31                | Wild-type (WT)                                  | This study                           | EB1931                                  |

## Supplementary Table 2. Sequences of recombinant proteins used in this study.

Note that only sequences in the final product (i.e., after protease cleavage to remove the affinity tag) are shown and are annotated by corresponding colors.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>VPS35L</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN <sup>W</sup> FFKIA<br>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVS <sup>V</sup> YARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br>GVELPSYLPLYPPAMDWIFQCISYHAPEALLTEM <sup>M</sup> ERCKKLGNNALLNSVMSAFRAEF <sup>I</sup> ATRSMDFIGMIKECDESGFPKHL <sup>L</sup> FRSLGLNLALA<br>DPESDRLQILNEAWKVITKLN <sup>P</sup> QDYINCAEVWVEYTCKHFTKRE <sup>V</sup> NTVLADVIK <sup>H</sup> MTPDRAFEDSY <sup>P</sup> QLQLIKKVIAHFHDFSVLFSVEKFL<br>PFLDMFQKESVRVEVCKC <sup>I</sup> MDAFIKHQEQPTKDPVILNALLHVCKTMHDSV <sup>N</sup> ALTLEDEKRM <sup>L</sup> SYLINGFIK <sup>M</sup> VSFGRDFEQQLSFYVESRSMFC<br>NLEPVLVQLIHSVNRLAMETRKVMKGNHSR <sup>K</sup> TAA <sup>F</sup> VRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br>IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVLFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYL <sup>H</sup> IDKVDNSD <sup>S</sup> LYGGDSK<br>FLAENNKLCETVMAQILEHLKTLAKDEALKRQSS <sup>L</sup> GLSFFNSILAHGDLRNNKLNQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPD <sup>M</sup> THL<br>TELALRLPLQ <sup>T</sup> RT |
| <b>VPS35L<sup>V205D</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN <sup>W</sup> FFKIA<br>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVS <sup>V</sup> YARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br>GVELPSYLPLYPPAMDWIFQCISYHAPEALLTEM <sup>M</sup> ERCKKLGNNALLNSVMSAFRAEF <sup>I</sup> ATRSMDFIGMIKECDESGFPKHL <sup>L</sup> FRSLGLNLALA<br>DPESDRLQILNEAWKVITKLN <sup>P</sup> QDYINCAEVWVEYTCKHFTKRE <sup>V</sup> NTVLADVIK <sup>H</sup> MTPDRAFEDSY <sup>P</sup> QLQLIKKVIAHFHDFSVLFSVEKFL<br>PFLDMFQKESVRVEVCKC <sup>I</sup> MDAFIKHQEQPTKDPVILNALLHVCKTMHDSV <sup>N</sup> ALTLEDEKRM <sup>L</sup> SYLINGFIK <sup>M</sup> VSFGRDFEQQLSFYVESRSMFC<br>NLEPVLVQLIHSVNRLAMETRKVMKGNHSR <sup>K</sup> TAA <sup>F</sup> VRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br>IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVLFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYL <sup>H</sup> IDKVDNSD <sup>S</sup> LYGGDSK<br>FLAENNKLCETVMAQILEHLKTLAKDEALKRQSS <sup>L</sup> GLSFFNSILAHGDLRNNKLNQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPD <sup>M</sup> THL<br>TELALRLPLQ <sup>T</sup> RT |
| <b>VPS35L<sup>R248M</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN <sup>W</sup> FFKIA<br>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVS <sup>V</sup> YARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br>GVELPSYLPLYPPAMDWIFQCISYHAPEALLTEM <sup>M</sup> ERCKKLGNNALLNSVMSAFRAEF <sup>I</sup> ATRSMDFIGMIKECDESGFPKHL <sup>L</sup> FRSLGLNLALA<br>DPESDRLQILNEAWKVITKLN <sup>P</sup> QDYINCAEVWVEYTCKHFTKRE <sup>V</sup> NTVLADVIK <sup>H</sup> MTPDRAFEDSY <sup>P</sup> QLQLIKKVIAHFHDFSVLFSVEKFL<br>PFLDMFQKESVRVEVCKC <sup>I</sup> MDAFIKHQEQPTKDPVILNALLHVCKTMHDSV <sup>N</sup> ALTLEDEKRM <sup>L</sup> SYLINGFIK <sup>M</sup> VSFGRDFEQQLSFYVESRSMFC<br>NLEPVLVQLIHSVNRLAMETRKVMKGNHSR <sup>K</sup> TAA <sup>F</sup> VRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br>IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVLFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYL <sup>H</sup> IDKVDNSD <sup>S</sup> LYGGDSK<br>FLAENNKLCETVMAQILEHLKTLAKDEALKRQSS <sup>L</sup> GLSFFNSILAHGDLRNNKLNQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPD <sup>M</sup> THL<br>TELALRLPLQ <sup>T</sup> RT |
| <b>VPS35L<sup>R276W</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN <sup>W</sup> FFKIA<br>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVS <sup>V</sup> YARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br>GVELPSYLPLYPPAMDWIFQCISYHAPEALLTEM <sup>M</sup> ERCKKLGNNALLNSVMSAFRAEF <sup>I</sup> ATRSMDFIGMIKECDESGFPKHL <sup>L</sup> FRSLGLNLALA<br>DPESDRLQILNEAWKVITKLN <sup>P</sup> QDYINCAEVWVEYTCKHFTKRE <sup>V</sup> NTVLADVIK <sup>H</sup> MTPDRAFEDSY <sup>P</sup> QLQLIKKVIAHFHDFSVLFSVEKFL<br>PFLDMFQKESVRVEVCKC <sup>I</sup> MDAFIKHQEQPTKDPVILNALLHVCKTMHDSV <sup>N</sup> ALTLEDEKRM <sup>L</sup> SYLINGFIK <sup>M</sup> VSFGRDFEQQLSFYVESRSMFC<br>NLEPVLVQLIHSVNRLAMETRKVMKGNHSR <sup>K</sup> TAA <sup>F</sup> VRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br>IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVLFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYL <sup>H</sup> IDKVDNSD <sup>S</sup> LYGGDSK<br>FLAENNKLCETVMAQILEHLKTLAKDEALKRQSS <sup>L</sup> GLSFFNSILAHGDLRNNKLNQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPD <sup>M</sup> THL<br>TELALRLPLQ <sup>T</sup> RT |
| <b>VPS35L<sup>N279L</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCL <sup>L</sup> WFFKIA<br>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVS <sup>V</sup> YARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br>GVELPSYLPLYPPAMDWIFQCISYHAPEALLTEM <sup>M</sup> ERCKKLGNNALLNSVMSAFRAEF <sup>I</sup> ATRSMDFIGMIKECDESGFPKHL <sup>L</sup> FRSLGLNLALA<br>DPESDRLQILNEAWKVITKLN <sup>P</sup> QDYINCAEVWVEYTCKHFTKRE <sup>V</sup> NTVLADVIK <sup>H</sup> MTPDRAFEDSY <sup>P</sup> QLQLIKKVIAHFHDFSVLFSVEKFL<br>PFLDMFQKESVRVEVCKC <sup>I</sup> MDAFIKHQEQPTKDPVILNALLHVCKTMHDSV <sup>N</sup> ALTLEDEKRM <sup>L</sup> SYLINGFIK <sup>M</sup> VSFGRDFEQQLSFYVESRSMFC<br>NLEPVLVQLIHSVNRLAMETRKVMKGNHSR <sup>K</sup> TAA <sup>F</sup> VRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br>IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVLFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYL <sup>H</sup> IDKVDNSD <sup>S</sup> LYGGDSK<br>FLAENNKLCETVMAQILEHLKTLAKDEALKRQSS <sup>L</sup> GLSFFNSILAHGDLRNNKLNQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPD <sup>M</sup> THL<br>TELALRLPLQ <sup>T</sup> RT |
| <b>VPS35L<sup>N279W</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAVF <sup>PWHS</sup> RRNRYKAEFASCRLEAVPLEFGDYHPLKPI <sup>T</sup> VTESKTKKVN <sup>R</sup> KGSTSS <sup>T</sup> SSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br>DSSRRKRDRDDNSVVGSD <sup>F</sup> EPW <sup>T</sup> NKRGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br>LNQSLKDAWASDQKV <sup>K</sup> ALKI <sup>V</sup> IQCSKLLSDTSV <sup>I</sup> QFYPSKFVLITDILD <sup>T</sup> FGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCL <sup>L</sup> WFFKIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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| <p>SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVSVYARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br/> GVBLPSYLPPLYPAMDWIFQCISYHAPEALLTEMMECKKLGNNALLNSVMSAFRAEFIATRSMDFIGMIKECDESGFPKHLFRSLGLNLALA<br/> DPPESDRLQILNEAWKVITKLNKPNQDYINCAEVWVEYTCKHFTKREVNTVLADV IKHMT PDRAFEDSY PQLQLI IKKVIAHFHDFSVLFSVEKFL<br/> PFLDMFQKESVRVEVCKCIMDAFIKHQQEPTKDPVILNALLHVCKTMHDSVNALTLEDEKRMLSYLINGFIKMVSFGRDFEQQLSFYVESRSMFC<br/> NLEPVLVQLIHSVNRLAMETRKMVGKGNHSRKTA AFVRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br/> IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYLHYIDKVDSDNSLYGGDSK<br/> FLAENNKLCETVMAQILEHLKTLAKDEALKRQSSGLSFFNSILAHGDLRNNKNLQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPDMDTHL<br/> TELALRLPLQTRT</p>                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><b>VPS35L</b><sup>W280Y</sup></p> <p>MAVFPWHSRNRNYKAEFASCRLEAVPLEFGDYLHPLKPITVTESKTKKVNRKGSTSSSTSSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br/> DSSRRKRDRDDNSVVGSDFEFPTWNRKGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br/> LNQSLKDAWASDQKV KALKI VIQCSKLLSDTSVIQFYPSKFVLITDILDTFGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN<b>Y</b>FFKIA<br/> SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVSVYARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br/> GVBLPSYLPPLYPAMDWIFQCISYHAPEALLTEMMECKKLGNNALLNSVMSAFRAEFIATRSMDFIGMIKECDESGFPKHLFRSLGLNLALA<br/> DPPESDRLQILNEAWKVITKLNKPNQDYINCAEVWVEYTCKHFTKREVNTVLADV IKHMT PDRAFEDSY PQLQLI IKKVIAHFHDFSVLFSVEKFL<br/> PFLDMFQKESVRVEVCKCIMDAFIKHQQEPTKDPVILNALLHVCKTMHDSVNALTLEDEKRMLSYLINGFIKMVSFGRDFEQQLSFYVESRSMFC<br/> NLEPVLVQLIHSVNRLAMETRKMVGKGNHSRKTA AFVRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br/> IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYLHYIDKVDSDNSLYGGDSK<br/> FLAENNKLCETVMAQILEHLKTLAKDEALKRQSSGLSFFNSILAHGDLRNNKNLQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPDMDTHL<br/> TELALRLPLQTRT</p>                    |
| <p><b>VPS35L</b><sup>W280D</sup></p> <p>MAVFPWHSRNRNYKAEFASCRLEAVPLEFGDYLHPLKPITVTESKTKKVNRKGSTSSSTSSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br/> DSSRRKRDRDDNSVVGSDFEFPTWNRKGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br/> LNQSLKDAWASDQKV KALKI VIQCSKLLSDTSVIQFYPSKFVLITDILDTFGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN<b>D</b>FFKIA<br/> SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVSVYARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br/> GVBLPSYLPPLYPAMDWIFQCISYHAPEALLTEMMECKKLGNNALLNSVMSAFRAEFIATRSMDFIGMIKECDESGFPKHLFRSLGLNLALA<br/> DPPESDRLQILNEAWKVITKLNKPNQDYINCAEVWVEYTCKHFTKREVNTVLADV IKHMT PDRAFEDSY PQLQLI IKKVIAHFHDFSVLFSVEKFL<br/> PFLDMFQKESVRVEVCKCIMDAFIKHQQEPTKDPVILNALLHVCKTMHDSVNALTLEDEKRMLSYLINGFIKMVSFGRDFEQQLSFYVESRSMFC<br/> NLEPVLVQLIHSVNRLAMETRKMVGKGNHSRKTA AFVRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br/> IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYLHYIDKVDSDNSLYGGDSK<br/> FLAENNKLCETVMAQILEHLKTLAKDEALKRQSSGLSFFNSILAHGDLRNNKNLQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPDMDTHL<br/> TELALRLPLQTRT</p>                    |
| <p><b>VPS35L</b><sup>K283D</sup></p> <p>MAVFPWHSRNRNYKAEFASCRLEAVPLEFGDYLHPLKPITVTESKTKKVNRKGSTSSSTSSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br/> DSSRRKRDRDDNSVVGSDFEFPTWNRKGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br/> LNQSLKDAWASDQKV KALKI VIQCSKLLSDTSVIQFYPSKFVLITDILDTFGKLVYERIFSMCVDSRSVLPDHFSPENANDTAKETCLN<b>WFFD</b>IA<br/> SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVSVYARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br/> GVBLPSYLPPLYPAMDWIFQCISYHAPEALLTEMMECKKLGNNALLNSVMSAFRAEFIATRSMDFIGMIKECDESGFPKHLFRSLGLNLALA<br/> DPPESDRLQILNEAWKVITKLNKPNQDYINCAEVWVEYTCKHFTKREVNTVLADV IKHMT PDRAFEDSY PQLQLI IKKVIAHFHDFSVLFSVEKFL<br/> PFLDMFQKESVRVEVCKCIMDAFIKHQQEPTKDPVILNALLHVCKTMHDSVNALTLEDEKRMLSYLINGFIKMVSFGRDFEQQLSFYVESRSMFC<br/> NLEPVLVQLIHSVNRLAMETRKMVGKGNHSRKTA AFVRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br/> IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYLHYIDKVDSDNSLYGGDSK<br/> FLAENNKLCETVMAQILEHLKTLAKDEALKRQSSGLSFFNSILAHGDLRNNKNLQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPDMDTHL<br/> TELALRLPLQTRT</p>                    |
| <p><b>VPS35L</b><sup>V205D/R248M</sup></p> <p>MAVFPWHSRNRNYKAEFASCRLEAVPLEFGDYLHPLKPITVTESKTKKVNRKGSTSSSTSSSSSSSVVDPLSSVLDGTDPLSMFAATADPAALAAAM<br/> DSSRRKRDRDDNSVVGSDFEFPTWNRKGEILARYTTTEKLSINLFMGSEKKGAGTATLAMSEKVRTRLEELDDFEEGSQKELLNLTQQDYVNRIEE<br/> LNQSLKDAWASDQK<b>D</b>KALKI VIQCSKLLSDTSVIQFYPSKFVLITDILDTFGKLVYER<b>I</b>FSMCVDSRSVLPDHFSPENANDTAKETCLN<b>WFFK</b>IA<br/> SIRELIPRFYVEASILKCNKFLSKTGISECLPRLTCMIRGIGDPLVSVYARAYLCRVGMEVAPHLKETLNKNFFDFLLTFKQIHGDTVQNQLVVQ<br/> GVBLPSYLPPLYPAMDWIFQCISYHAPEALLTEMMECKKLGNNALLNSVMSAFRAEFIATRSMDFIGMIKECDESGFPKHLFRSLGLNLALA<br/> DPPESDRLQILNEAWKVITKLNKPNQDYINCAEVWVEYTCKHFTKREVNTVLADV IKHMT PDRAFEDSY PQLQLI IKKVIAHFHDFSVLFSVEKFL<br/> PFLDMFQKESVRVEVCKCIMDAFIKHQQEPTKDPVILNALLHVCKTMHDSVNALTLEDEKRMLSYLINGFIKMVSFGRDFEQQLSFYVESRSMFC<br/> NLEPVLVQLIHSVNRLAMETRKMVGKGNHSRKTA AFVRACVAYCFITIPSLAGIFTRNLNLYLHSGQVALANQCLSQADAFFKAAISLVEVPKMIN<br/> IDGKMRPSESFLLEFLCNFFSTLLIVPDHPEHGVFLVRELLNVIQDYTWEDNSDEKIRIYTCVLHLLSAMSQETYLHYIDKVDSDNSLYGGDSK<br/> FLAENNKLCETVMAQILEHLKTLAKDEALKRQSSGLSFFNSILAHGDLRNNKNLQLSVNLWHLAQRHGCADTRTMVKTLEYIKKQSKQPDMDTHL<br/> TELALRLPLQTRT</p> |
| <p><b>VPS26C</b></p> <p>MGTALDIKIKRANKVYHAGEVLSGVVVISSKDSVQHGVSLTMEGTVNLQLSAKSVGVFEAFYNSVKPIQIINSTIEMVKPGKFPSPGKTEIPFEF<br/> PLHLKGNKVLYETYHG VFVNIQYTLRCDMKRSLLAKDLTKTCEFI VHSAPQKGKFTPSPVDFTTIPETLQNVKERALLPKFLLRGHLNSTNCVIT<br/> QPLTGELVVESSEAAIRSVELQLVRVETCGCAEGYARDATEIQNIQIADGDVCRGLSVPIYMVFPRLFTCPTLETTNFKVEFEVNI VLLHPDHL<br/> ITENFPLKLCRI</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>VPS26C</b><sup>K14E</sup></p> <p>MGTALDIKIKRAN<b>E</b>VYHAGEVLSGVVVISSKDSVQHGVSLTMEGTVNLQLSAKSVGVFEAFYNSVKPIQIINSTIEMVKPGKFPSPGKTEIPFEF<br/> PLHLKGNKVLYETYHG VFVNIQYTLRCDMKRSLLAKDLTKTCEFI VHSAPQKGKFTPSPVDFTTIPETLQNVKERALLPKFLLRGHLNSTNCVIT<br/> QPLTGELVVESSEAAIRSVELQLVRVETCGCAEGYARDATEIQNIQIADGDVCRGLSVPIYMVFPRLFTCPTLETTNFKVEFEVNI VLLHPDHL<br/> ITENFPLKLCRI</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>MBP-Tev-VPS26C</b></p> <p>MKIEEGKLIWIINGDKGYNGLAEVGKKFEKDTGIKVTVHEHPDKLEEKFQVAATGDGDPDIIFWAHDRFGGYAQSGLLAEITPDKAFQDKLYPFTW<br/> DAVRYNGKLIAYPIAVEALSLIYNKDLLPNPPKTWEEIIPALDKELKAGKGSALMFNLQEPYFTWPLIAADGGYAFKYENGKYDIKDVGVDNAGAK<br/> AGLTFYLDLIKNNHMADTDYSIAEAAFNKGETAMTINGPWAWSNIDTSKVNKYGVTVLPTFKGQPSKPFVGVLSAGINAASPKNKELAKEFLENYL<br/> LTDEGLEAVNKDKPLGAVALKSYYEELAKDPRIAATMENAQKGEIMPNI PQMSAFWYAVRTAVINAASGRQTVDEALKDAQTNSSSSNNNNNNNN</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| <p>NLGIEGRISEFENLYFQGHMGTALDIKIKRANKVYHAGEVLSGVVVISKDSVQHQQVSLTMEGTVNLQLSAKSVGVFEAFYNSVKPIQIINSTI<br/>EMVKPGKFPSPGKTEIPFEFFPLHLKGNKVLYETYHGVFVNIQYTLRCMDKRSLLAKDLTKTCEFIVHSAPQKGKFTSPSPVDFITITPETLQNVKERA<br/>LLPKFLLRGHLNSTNCVITQPLTGLVLSSEAAIRSVLQVLRVETCGCAEGYARDATEIQNIQIADGDVCRGLSVPIYMFVFRFLTCTPLETT<br/>NFKVEFEVNIIVLLPHDLITENFLKLCRI</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>VPS29-Tev-(GGG)<sub>2</sub>-His<sub>6</sub></b> (corresponding to Q9UBQ0-2, isoform 2 in Uniprot)<br/>MAGHRLVLVLGLDLHI PHRCNSLPAKFKKLLVPGKIQHILCTGNLCTKESYDYLKTLAGDVHIVRGDFDENLNYPEQKVTVVGQFKIGLIHGHQVI<br/>PWGDMASALLQRQFDVDILISGHTHKFEAFEHENKFYINPGSATGAYNALETNIIPSVFLMDIQASTVVTVYVQLIGDDVKVERIEYKKPENLY<br/>FQGGSGSGSHHHHHH</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>MBP-Tev-CCDC22 NN-CH (1-118) - (GGSK)<sub>6</sub>-CCDC22 VBD (436-727)</b><br/>MKIEEGKLIWINGDKGYNGLAEVGKKFEKDTGIKVTVEHPDKLEEKFPQVAATGDGPDII FWAHDFRGGYAQSGLLAEITPDKAFQDKLYPFTW<br/>DAVRYNGKLIAYPIAVEALSIIYNKDLLPNPPKTWEEIPALDKELKAKGKSALMFNLQEPYFTWPLIAADGGYAFKYENGKYDIKDVGVNDAGAK<br/>AGLTFVLVDLIKNNHMNADTDYSIAEAAFNKGETAMTINGPWAWSNIDTSKVNYGVTVLPTFKGQPSKPFVGVLSAGINAASPNKELAKEFLENYL<br/>LTDEGLEAVNKDKPLGAVALKSYEEELAKDPRIAATMENAQKEIMPNI PQMSAFWYAVRTAVINAASGRQTVDEALKDAQTNSSSNNNNNNNNN<br/>NLGIEGRISEFENLYFQGHMEEADRILIHSLRQAGTAVPPDVQTLRAFTTELVEAVVRCLRVINPAVGSGLSPLPLAMASARFRLAMSLAQACM<br/>DLGYPLELGYQNFLYPSEFDLRDLFLFLAERLPTDASEDADQGGSKGGSGGSGKGGSGKGGSKRKLQDCRELESSRRLAEIQELHQSVRAAA<br/>EEARRKEEVYKQLMSELETLPDRVSRLAYTQRILEIVGNIRKQKEEITKILSDTKELQKEINSLSGKLDRTFAVTDDELVFKDAKKDDAVRKAYKY<br/>LAALHENCQLIQTIQTIEDTGTIMREVRDLEEQIETELGKKTLSNLEKIREDYRALRQENAGLLGRVREA</p> |
| <p><b>MBP-Tev-CCDC93 VBD (442-631)</b><br/>MKIEEGKLIWINGDKGYNGLAEVGKKFEKDTGIKVTVEHPDKLEEKFPQVAATGDGPDII FWAHDFRGGYAQSGLLAEITPDKAFQDKLYPFTW<br/>DAVRYNGKLIAYPIAVEALSIIYNKDLLPNPPKTWEEIPALDKELKAKGKSALMFNLQEPYFTWPLIAADGGYAFKYENGKYDIKDVGVNDAGAK<br/>AGLTFVLVDLIKNNHMNADTDYSIAEAAFNKGETAMTINGPWAWSNIDTSKVNYGVTVLPTFKGQPSKPFVGVLSAGINAASPNKELAKEFLENYL<br/>LTDEGLEAVNKDKPLGAVALKSYEEELAKDPRIAATMENAQKEIMPNI PQMSAFWYAVRTAVINAASGRQTVDEALKDAQTNSSSNNNNNNNNN<br/>NLGIEGRISEFENLYFQGHMTLTSAMTHDEDLDRRYNMEKEKYLKIRLLQARRNREIALHHRKIDEVPSRAELIQYQKRFIELRYQISAVHKETK<br/>QFFTLYNTLDDKKVYLEKEISLNSIHENFSQAMASPAARDQFLRQMEQIVEGIKQSRMKMEKKKQENKMRRDQLNDQYLELLEKQRLYFKTVKE<br/>FKEEGRKNEMLLSKVKAKAS</p>                                                                                                                                                                                               |
| <p><b>GST-Tev-SNX17</b><br/>MSPILGYWKIKGLVQPTRLLLEYLEEKYEHLRYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br/>EGAVLDIRYGVSR IAYS KDFETLKVDFLSKLP EMLKMFEDRLCHKTYLNGDHVTHPDMFLYDALDVVLYMDPMCLDAF PKLVCFKKRIEAI PQID<br/>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGS MHFSIPETESRSGDSGGSAYVAYNIHVNGVLHCRVRYSQLGLGHEQLRKEYG<br/>ANVLPAPFPKKLFSLTPAEVEQRRQLEKYMQAVRQDPLLGSSSETFNSFLRRAQQETQQVPTEEVSLVLLSNGQKVLVNVLTSDQTEDVLEAVA<br/>AKLDLPDDLIGYFSLFLVREKEDGAFS FVRKLQEFELPYVSVTSLSRQYKIVLRKSYWDSAYDDDVMENRVGLNLLYAQTVSDIERGWILVTKE<br/>QHRQLKSLQEKVSKKEFLRLAQTLRHGYLRFDACVADFPEKDCPVVVSAGNSELSLQLRPLPGQQLREGSFRVTRMRCWRVTSVPLPSGSTSSP<br/>GRGRGEVRLELA FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL<br/>SSKLSAVSLRGIGSPSTDASASDVHGNFAFEGIGDEDL</p>                                                                                 |
| <p><b>GST-tev-SNX17 FERM (110-432)</b><br/>MSPILGYWKIKGLVQPTRLLLEYLEEKYEHLRYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br/>EGAVLDIRYGVSR IAYS KDFETLKVDFLSKLP EMLKMFEDRLCHKTYLNGDHVTHPDMFLYDALDVVLYMDPMCLDAF PKLVCFKKRIEAI PQID<br/>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGS MHFSIPETESRSGDSGGSAYVAYNIHVNGVLHCRVRYSQLGLGHEQLRKEYG<br/>ANVLPAPFPKKLFSLTPAEVEQRRQLEKYMQAVRQDPLLGSSSETFNSFLRRAQQETQQVPTEEVSLVLLSNGQKVLVNVLTSDQTEDVLEAVA<br/>AKLDLPDDLIGYFSLFLVREKEDGAFS FVRKLQEFELPYVSVTSLSRQYKIVLRKSYWDSAYDDDVMENRVGLNLLYAQTVSDIERGWILVTKE<br/>QHRQLKSLQEKVSKKEFLRLAQTLRHGYLRFDACVADFPEKDCPVVVSAGNSELSLQLRPLPGQQLREGSFRVTRMRCWRVTSVPLPSGSTSSP<br/>GRGRGEVRLELA FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL<br/>FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL</p>                    |
| <p><b>GST-tev-(GGG)<sub>2</sub>-SNX17 PX-FERM (1-432)</b><br/>MSPILGYWKIKGLVQPTRLLLEYLEEKYEHLRYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br/>EGAVLDIRYGVSR IAYS KDFETLKVDFLSKLP EMLKMFEDRLCHKTYLNGDHVTHPDMFLYDALDVVLYMDPMCLDAF PKLVCFKKRIEAI PQID<br/>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGS MHFSIPETESRSGDSGGSAYVAYNIHVNGVLHCRVRYSQLGLGHEQLRKEYG<br/>ANVLPAPFPKKLFSLTPAEVEQRRQLEKYMQAVRQDPLLGSSSETFNSFLRRAQQETQQVPTEEVSLVLLSNGQKVLVNVLTSDQTEDVLEAVA<br/>AKLDLPDDLIGYFSLFLVREKEDGAFS FVRKLQEFELPYVSVTSLSRQYKIVLRKSYWDSAYDDDVMENRVGLNLLYAQTVSDIERGWILVTKE<br/>QHRQLKSLQEKVSKKEFLRLAQTLRHGYLRFDACVADFPEKDCPVVVSAGNSELSLQLRPLPGQQLREGSFRVTRMRCWRVTSVPLPSGSTSSP<br/>GRGRGEVRLELA FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL<br/>ESMVKL</p>                                                                               |
| <p><b>GST-Tev-SNX17 Δ470 (1-469)</b><br/>MSPILGYWKIKGLVQPTRLLLEYLEEKYEHLRYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br/>EGAVLDIRYGVSR IAYS KDFETLKVDFLSKLP EMLKMFEDRLCHKTYLNGDHVTHPDMFLYDALDVVLYMDPMCLDAF PKLVCFKKRIEAI PQID<br/>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGS MHFSIPETESRSGDSGGSAYVAYNIHVNGVLHCRVRYSQLGLGHEQLRKEYG<br/>ANVLPAPFPKKLFSLTPAEVEQRRQLEKYMQAVRQDPLLGSSSETFNSFLRRAQQETQQVPTEEVSLVLLSNGQKVLVNVLTSDQTEDVLEAVA<br/>AKLDLPDDLIGYFSLFLVREKEDGAFS FVRKLQEFELPYVSVTSLSRQYKIVLRKSYWDSAYDDDVMENRVGLNLLYAQTVSDIERGWILVTKE<br/>QHRQLKSLQEKVSKKEFLRLAQTLRHGYLRFDACVADFPEKDCPVVVSAGNSELSLQLRPLPGQQLREGSFRVTRMRCWRVTSVPLPSGSTSSP<br/>GRGRGEVRLELA FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL<br/>SSKLSAVSLRGIGSPSTDASASDVHGNFAFEGIGDEDL</p>                                                                    |
| <p><b>GST-Tev-SNX17 Δ467-470 (1-466)</b><br/>MSPILGYWKIKGLVQPTRLLLEYLEEKYEHLRYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br/>EGAVLDIRYGVSR IAYS KDFETLKVDFLSKLP EMLKMFEDRLCHKTYLNGDHVTHPDMFLYDALDVVLYMDPMCLDAF PKLVCFKKRIEAI PQID<br/>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGS MHFSIPETESRSGDSGGSAYVAYNIHVNGVLHCRVRYSQLGLGHEQLRKEYG<br/>ANVLPAPFPKKLFSLTPAEVEQRRQLEKYMQAVRQDPLLGSSSETFNSFLRRAQQETQQVPTEEVSLVLLSNGQKVLVNVLTSDQTEDVLEAVA<br/>AKLDLPDDLIGYFSLFLVREKEDGAFS FVRKLQEFELPYVSVTSLSRQYKIVLRKSYWDSAYDDDVMENRVGLNLLYAQTVSDIERGWILVTKE<br/>QHRQLKSLQEKVSKKEFLRLAQTLRHGYLRFDACVADFPEKDCPVVVSAGNSELSLQLRPLPGQQLREGSFRVTRMRCWRVTSVPLPSGSTSSP<br/>GRGRGEVRLELA FEYLMSKDRLQWVTITSPQAIMMSICLQSMVDEL MVKSGGSIRKMLRRRVGGTLRRSDSQQAVKSPPLLESPDATRES MVKL<br/>SSKLSAVSLRGIGSPSTDASASDVHGNFAFEGIG</p>                                                                    |
| <p><b>GST-Tev-SNX17 CT (451-470)</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |







|                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">MLYALYNNWEHMKGSLLQQSL</a>                                                                                           |
| <b>GST-Tev-PATE1 CT (107-126)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">SVYLVNFRCCSRSHDLCDNL</a>                                                       |
| <b>GST-Tev-ARHGEF25 CT (561-580)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">PTPKTPPCQARLAKLDEDEL</a>                                                    |
| <b>GST-Tev-HYOU1 CT (980-999)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">MEPEQKEQSTGQKRPLKNDL</a>                                                       |
| <b>GST-Tev-CCDC192 CT (273-292)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">MEAPVFSTHDI PPVVSDENL</a>                                                    |
| <b>GST-Tev-BCAR3 CT (806-825)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">QILTALSRKLEPPPVKQAEI</a>                                                       |
| <b>GST-Tev-CD34 CT (366-385)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">QATSRNGHSARQHVVDTEL</a>                                                         |
| <b>GST-Tev-USH1G CT (442-461)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">MAVRRRRQAMERPPALEDTEL</a>                                                      |
| <b>GST-Tev-CCND2 CT (270-289)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">KSEDELQASTPTDVRDIDL</a>                                                        |
| <b>GST-Tev-Yersinia pseudotuberculosis nrdB CT (357-376)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">MYLVGQIDSEVSADDLSDFEL</a>                           |
| <b>GST-Tev-Yersinia pseudotuberculosis GspD CT (621-640)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">VIPSIRKIDINNFTLLDSEL</a>                            |
| <b>GST-Tev-Toxoplasma gondii SR1 CT (1227-1246)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">KSGSYLRSFAFVTKLSQQEL</a>                                     |
| <b>GST-Tev-Listeria monocytogenes amino acid ABC transporter permease CT (219-238)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">IEKRVRKKENTRFTSIFDIEL</a> |
| <b>GST-Tev-MTO1 CT (698-717)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKSDLVPRGSENLYFQGHM <a href="#">ESSKTDQYLCDADRLQEREL</a>                                                        |
| <b>GST-Tev-SNX17 (451-464) -HYOU1 (994-999)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGSMA <a href="#">ASASDVHGNFAFEGLKNDL</a>                                          |
| <b>GST-Tev-HYOU1 (980-993) -SNX17 (465-470)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGSMA <a href="#">EPEQKEQSTGQKRPIGDEDL</a>                                         |
| <b>GST-Tev-(GGS)<sub>4</sub>-SNX17 (464-470)</b><br>MSPILGYWKIKGLVQPTRLLLEYLEEKYEEHLYERDEGDKWRNKKFELGLEFPNLPYYIDGDVKLTQSMAIIRYIADKHNMLGGCPKERAIEISML<br>EGAVLDIRYGVSRAYSXKDFETLKVDFLSKLPEMLKMFEDRLCHKTYLNGDHVTHPDFMLYDALDVVLYMDPMCLDAFPKLVCFKKRIEAIPIQID<br>KYLKSSKYIAWPLQGWQATFGGGDHPPKASLVPRSENLYFQGSMA <a href="#">GGSGSGSGSGSGGIGDEDL</a>                                         |

**Supplementary Table 3. DNA oligos used in this study.**

| Purpose                      | Identifier and sequence, all 5' to 3'                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VPS35L                       | GAACCTCTAAAAACCGCCACC<br>oDB220120-14, GGTGGCGGTTTTTAGGAGTTC, reverse primer to open pAV5a<br>oDB220120-15, TAATCTAGAGCCTGCAGTCTCGAG, forward primer to open pAV5a<br>cbyo-230217-3, CTCGGTCCGAACCTCTAAAAACCGCCACCATGGCAGTTTTTCCGTGGCATAG, SLIC<br>VPS35Lopti into untagged pAV5a fw<br>CGGTGCAGACCCGTACCTAATCTAGAGCCTGCAGTCTCGAGGCATGC<br>cbyo-230217-4, GCATGCCCTCGAGACTGCAGGCTCTAGATTAGGTACGGGTCTGCAGCG, SLIC<br>VPS35Lopti into untagged pAV5a bw |
| VPS35L <sup>V205D</sup>      | djbo230823-1, ATAAAGCACTGAAATTGTGATCCAGTG, Aliblunt for VPS35L V205D FW<br>CATGGGCAAGCGATCAGAAAG<br>djbo230823-2, CTTTCTGATCGCTTGCCCATG, Aliblunt for VPS35L V205D BW                                                                                                                                                                                                                                                                                 |
| VPS35L <sup>R248M</sup>      | djbo230823-3, ATGATTTTTAGCATGTGTGTGATAGCCGTAG, Aliblunt for VPS35L R248M FW<br>GGATACCTTTGGTAAACTGGTGTATGAA<br>djbo230823-4, TTCATACACCAGTTTACCAAAGGTATCC, Aliblunt for VPS35L R248M BW                                                                                                                                                                                                                                                               |
| VPS35L <sup>T276W</sup>      | Cbyo-230927-5, TGGTGTCTGAACGGTTTTTCAAATTGCCAG, Aliblunt for VPS35Lopti T276W fw<br>GGAAAATGCAAATGATACCGCCAAAGAA<br>Cbyo-230927-6, TTCTTTGGCGGTATCATTTGCATTTTCC, Aliblunt for VPS35Lopti T276W bw                                                                                                                                                                                                                                                      |
| VPS35L <sup>N279L</sup>      | djbo230823-5, CTGTGGTTTTTCAAATTGCCAGCATTC, Aliblunt for VPS35L N279L FW<br>GATACCGCCAAAGAAACCTGTCTG<br>djbo230823-6, CAGACAGGTTTCTTTGGCGGTATC, Aliblunt for VPS35L N279L BW                                                                                                                                                                                                                                                                           |
| VPS35L <sup>N279W</sup>      | Cbyo-230927-3, TGGTGGTTTTTCAAATTGCCAGCATTCG, Aliblunt for VPS35Lopti N279W fw<br>GATACCGCCAAAGAAACCTGTCTG<br>Cbyo-230927-4, CAGACAGGTTTCTTTGGCGGTATC, Aliblunt for VPS35Lopti N279W bw                                                                                                                                                                                                                                                                |
| VPS35L <sup>W280Y</sup>      | djbo230823-7, ATTTTTTCAAATTGCCAGCATTCGTG, Aliblunt for VPS35L W280Y FW<br>GATACCGCCAAAGAAACCTGTCTGAAC<br>djbo230823-8, AGTTCAGACAGGTTTCTTTGGCGGTATC, Aliblunt for VPS35L W280Y BW                                                                                                                                                                                                                                                                     |
| VPS35L <sup>W280D</sup>      | Cbyo-230927-1, GATTTTTTCAAATTGCCAGCATTCGTGAAC, Aliblunt for VPS35Lopti W280D fw<br>GATACCGCCAAAGAAACCTGTCTGAAC<br>Cbyo-230927-2, GTTCAGACAGGTTTCTTTGGCGGTATC, Aliblunt for VPS35Lopti W280D bw                                                                                                                                                                                                                                                        |
| VPS35L <sup>K283D</sup>      | djbo230823-9, GATATTGCCAGCATTCGTGAACG, Aliblunt for VPS35L K283D FW<br>CAAGAAACCTGTCTGAACGTTTTTC<br>djbo230823-10, GAAAACCAAGTTCAGACAGGTTTCTTTG, Aliblunt for VPS35L K283D BW                                                                                                                                                                                                                                                                         |
| VPS26C <sup>K14E</sup>       | djbo230824-1, GAAGTTTATCACGCCGGGAAGTG, Aliblunt for VPS26C K14E FW<br>CCTGGACATCAAGATTAAAGAGCGAAT<br>djbo230824-2, ATTCGCTCTTTTAACTCTGATGTCCAGG, Aliblunt for VPS26C K14E BW                                                                                                                                                                                                                                                                          |
| MBP-Tev-VPS26C               | oDB220725-3, ATATTACATATGGGCACCGCACTGGATATC, Forward primer to add NdeI to VPS26Copti geneblock<br>GCTGAAACTGTGCCGATTTAAGGATCCTAATAA<br>oDB220725-4, TTATTAGGATCCTTAAATGCGGCACAGTTTCAGC, Reverse primer to add BamHI to VPS26Copti geneblock                                                                                                                                                                                                          |
| GST-tev-(GGs)2-SNX17 PX-FERM | djbo230715-3, taaCTCGAGCACCACCACCAC, as forward primer to truncate out 433-470<br>caccgggaggtctatggtcaaaactc<br>djbo240112-1, gagtttgaccatagactcccggtg, reverse primer to truncate out 433-470<br><br>djbo240618-1, GGCGGTAGCATGCACTTTTCCATTCCCGAAAC, fw primer to add (GGs)2 spacer<br>CTGAAAACCTGTATTTTCAGGGATCCGGTGGCAGT<br>djbo240618-2, ACTGCCACCGGATCCCTGAAAATACAGGTTTTCAG, rv primer to add (GGs)2 spacer                                      |
| GST-tev-SNX17 FERM (110-432) | djbo240112-3, ATTATACATATGcagcaggtccccacagaggaag, forward primer to obtain NdeI - SNX17 110-432<br>caccgggaggtctatggtcaaaactctaaGGATCCAATTAT<br>djbo240112-4, ATAATTGGATCCTtagagtttgaccatagactcccggtg, reverse primer to obtain SNX17 110-432 - BamHI                                                                                                                                                                                                 |
| GST-Tev-SNX17 Δ470 (1-469)   | djbo230715-1, taaCTCGAGCACCACCACCAC, forward primer to truncate SNX17 L470<br>cgagggcattggagatgaggat                                                                                                                                                                                                                                                                                                                                                  |

|                                             |                                                                                                                                                                                                  |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | djbo230715-2, atcctcatctccaatgccctcg, reverse primer to truncate SNX17 L470                                                                                                                      |
| GST-Tev-SNX17 Δ467-470 (1-466)              | djbo230715-1, taaCTCAGACACCACCACCAC, forward primer to truncate SNX17 467-470<br>caatttcgccttcgaggcgattgga<br>djbo230715-3, tccaatgccctcgaaggcgaaattg, backward primer to truncate SNX17 467-470 |
| GST-Tev-SNX17 CT (451-470)                  | djbo230715-4, gccagtgccagtgtgtccac, forward primer to truncate 1-450<br>GATCTGAAAACCTGTATTTTCAGGGATCCatg<br>djbo230715-5, catGGATCCCTGAAAATACAGGTTTTCAGATC, reverse primer to truncate 1-450     |
| GST-Tev-SNX17 CT (451-470) <sup>G458A</sup> | CNo-240304-25, CCAATTTTCGCTTCGAGGGCATTG, FW primer to make G458A<br>CCAGTGCCAGTGATGTCCACG<br>CNo-240304-26, CGTGGACATCACTGGCACTGG, RV primer to make G458A                                       |
| GST-Tev-SNX17 CT (451-470) <sup>N459A</sup> | CNo-240304-23, GCCTTCGCTTCGAGGGCATTGG, FW primer to make N459A<br>GTGCCAGTGATGTCCACGGC<br>CNo-240304-24, GCCGTGGACATCACTGGCAC, RV primer to make N459A                                           |
| GST-Tev-SNX17 CT (451-470) <sup>F460A</sup> | CNo-240304-21, GCCGCTTCGAGGGCATTGGAGATG, FW primer to make F460A<br>CCAGTGATGTCCACGGCAAT<br>CNo-240304-22, ATTGCCGTGGACATCACTGG, RV primer to make F460A                                         |
| GST-Tev-SNX17 CT (451-470) <sup>A461D</sup> | CNo-240304-19, GATTTCGAGGGCATTGGAGATGAG, FW primer to make A461D<br>CAGTGATGTCCACGGCAATTTTC,<br>CNo-240304-20, GAAATTGCCGTGGACATCACTG, RV primer to make A461D                                   |
| GST-Tev-SNX17 CT (451-470) <sup>F462A</sup> | CNo-240304-17, GCCGAGGGCATTGGAGATGAGGATC, FW primer to make F462A<br>GATGTCCACGGCAATTTTCGCC<br>CNo-240304-18, GGCGAAATTGCCGTGGACATC, RV primer to make F462A                                     |
| GST-Tev-SNX17 CT (451-470) <sup>F462N</sup> | aseo-240426-1, AACGAGGCATTGGAGATGAGGATC, Forward primer to mutate F462N<br>GATGTCCACGGCAATTTTCGCC<br>aseo-240426-2, GGCGAAATTGCCGTGGACATC, Reverse primer to mutate F462N                        |
| GST-Tev-SNX17 CT (451-470) <sup>E463A</sup> | CNo-240304-15, CCGGCATTGGAGATGAGGATCTG, FW primer to make E463A<br>CCACGGCAATTTTCGCCTTCG<br>CNo-240304-16, CGAAGCGCAAATTGCCGTGG, RV primer to make E463A                                         |
| GST-Tev-SNX17 CT (451-470) <sup>G464A</sup> | CNo-240304-13, CCATTGGAGATGAGGATCTGTAACCTCG, FW primer to make G464A<br>CGCAATTTTCGCCTTCGAGG<br>CNo-240304-14, CCTCGAAGGCGAAATTGCCGTG, RV primer to make G464A                                   |
| GST-Tev-SNX17 CT (451-470) <sup>G464P</sup> | aseo-240426-12, CCGATTGGAGATGAGGATCTGTAACCTCGAG, Forward primer to mutate G464P<br>CACGGCAATTTTCGCCTTCGAG<br>aseo-240426-13, CTCGAAGGCGAAATTGCCGTG, Reverse primer to mutate G464P               |
| GST-Tev-SNX17 CT (451-470) <sup>I465L</sup> | djbo-240209-1, CTGGGAGATGAGGATCTGTAACCTCGAGC, FW primer to make I465L<br>CAATTTTCGCCTTCGAGGCG<br>djbo240209-2, GCCCTCGAAGGCGAAATTG, RV primer to make I465L                                      |
| GST-Tev-SNX17 CT (451-470) <sup>I465V</sup> | djbo-240209-3, GTGGGAGATGAGGATCTGTAACCTCGAGC, FW primer to make I465V<br>use djbo240209-2 as RV primer                                                                                           |
| GST-Tev-SNX17 CT (451-470) <sup>I465A</sup> | djbo-240308-1, GCAGGAGATGAGGATCTGTAACCTCGAGC, FW primer to make I465A<br>use previously designed djbo240209-2, GCCCTCGAAGGCGAAATTG, as reverse primer                                            |
| GST-Tev-SNX17 CT (451-470) <sup>I465M</sup> | djbo-240308-2, ATGGGAGATGAGGATCTGTAACCTCGAG, FW primer to make I465M<br>use djbo240209-2 as reverse primer                                                                                       |
| GST-Tev-SNX17 CT (451-470) <sup>I465F</sup> | djbo-240308-3, TTTGGAGATGAGGATCTGTAACCTCGAG, FW primer to make I465F<br>use djbo240209-2 as reverse primer                                                                                       |
| GST-Tev-SNX17 CT (451-470) <sup>I465S</sup> | djbo-240308-4, TCAGGAGATGAGGATCTGTAACCTCGAGC, FW primer to make I465A<br>use djbo240209-2 as reverse primer                                                                                      |
| GST-Tev-SNX17 CT (451-470) <sup>I465H</sup> | djbo-240308-5, CATGGAGATGAGGATCTGTAACCTCGAG, FW primer to make I465H<br>use djbo240209-2 as reverse primer                                                                                       |
| GST-Tev-SNX17 CT (451-470) <sup>I465D</sup> | djbo-240308-6, GATGGAGATGAGGATCTGTAACCTCGAG, FW primer to make I465D<br>use djbo240209-2 as reverse primer                                                                                       |
| GST-Tev-SNX17 CT (451-470) <sup>G466A</sup> | djbo-240209-4, GCCGATGAGGATCTGTAACCTCGAGCACC, FW primer to make G466A<br>CAATTTTCGCCTTCGAGGGCATT<br>djbo240209-5, AATGCCCTCGAAGGCGAAATTG, RV primer to make G466A                                |
| GST-Tev-SNX17 CT (451-470) <sup>G466R</sup> | djbo240209-6, CGTGATGAGGATCTGTAACCTCGAGCACC, FW primer to make G466R<br>use djbo240209-5 as RV primer                                                                                            |
| GST-Tev-SNX17 CT (451-470) <sup>G466L</sup> | djbo240209-7, CTGGATGAGGATCTGTAACCTCGAGCACC, FW primer to make G466L<br>use djbo240209-5 as RV primer                                                                                            |
| GST-Tev-SNX17 CT (451-470) <sup>G466E</sup> | djbo240209-8, GAGGATGAGGATCTGTAACCTCGAGCACC, FW primer to make G466E<br>use djbo240209-5 as RV primer                                                                                            |
| GST-Tev-SNX17 CT (451-470) <sup>D467T</sup> | CNo-240304-7, ACTGAGGATCTGTAACCTCGAGCAC, FW primer to make D467T<br>GCCTTCGAGGGCATTGGA<br>CNo-240304-8, TCCAATGCCCTCGAAGGC, RV primer to make D467T                                              |

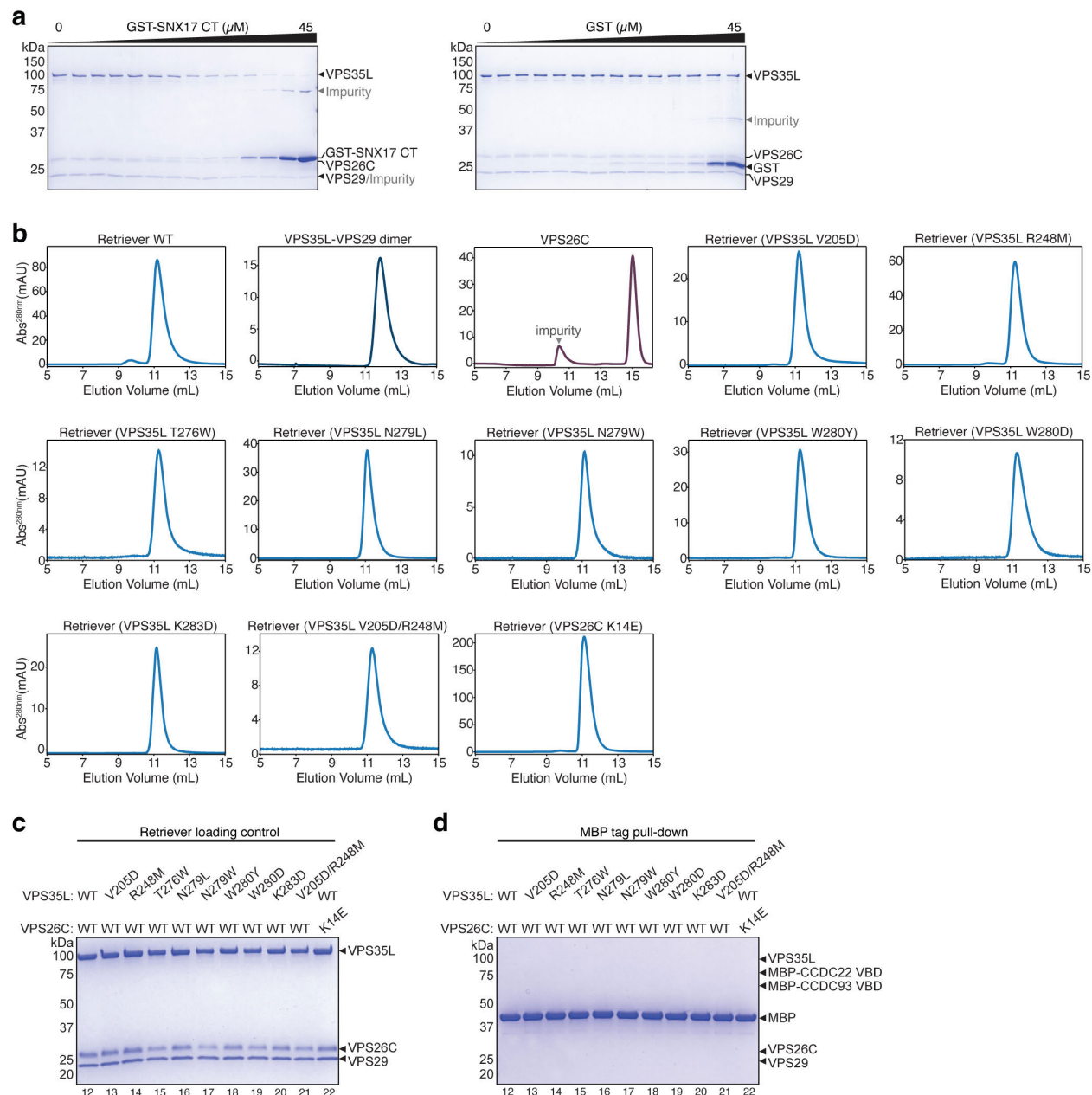
|                                                |                                                                                                                                                                                                  |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GST-Tev-SNX17 CT<br>(451-470) <sup>D467R</sup> | CNo-240304-9, CGTGAGGATCTGTAACCTCGAGCAC, FW primer to make D467<br>Use CNo-240304-8 as RV primer                                                                                                 |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D467A</sup> | CNo-240304-10, GCCGAGGATCTGTAACCTCGAGCACC, FW primer to make D467A<br>Use CNo-240304-8 as RV primer                                                                                              |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D467L</sup> | CNo-240304-11, CTGGAGGATCTGTAACCTCGAGCACC, FW primer to make D467L<br>Use CNo-240304-8 as RV primer                                                                                              |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D467N</sup> | CNo-240304-12, AATGAGGATCTGTAACCTCGAGCACC, FW primer to make D467N<br>Use CNo-240304-8 as RV primer                                                                                              |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D467Q</sup> | aseo-240426-3, CAGGAGGATCTGTAACCTCGAGCACCAC, Forward primer to mutate D467Q<br>TCGCCTTCGAGGGCATTGGA<br>aseo-240426-4, TCCAATGCCCTCGAAGGCGA, Reverse primer to mutate D467Q                       |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468A</sup> | djbo240209-9, GCCGATCTGTAACCTCGAGCACCACC, FW primer to make E468A<br>CCTTCGAGGGCATTGGAGAT<br>djbo240209-10, ATCTCCAATGCCCTCGAAGG, RV primer to make E468A                                        |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468R</sup> | djbo240209-11, CGTGATCTGTAACCTCGAGCACCACC, FW primer to make E468R<br>use djbo240209-10 as RV primer                                                                                             |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468L</sup> | djbo240209-12, CTGGATCTGTAACCTCGAGCACCACC, FW primer to make E468L<br>use djbo240209-10 as RV primer                                                                                             |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468G</sup> | djbo240209-13, GGCGATCTGTAACCTCGAGCACCACC, FW primer to make E468G<br>use djbo240209-10 as RV primer                                                                                             |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468T</sup> | aseo-240426-5, ACCGATCTGTAACCTCGAGCACCACC, Forward primer to mutate E468T<br>GCCTTCGAGGGCATTGGAGAT<br>aseo-240426-6, ATCTCCAATGCCCTCGAAGGC, Reverse primer to mutate E468T                       |
| GST-Tev-SNX17 CT<br>(451-470) <sup>E468Q</sup> | F primer: aseo-240426-7, CAGGATCTGTAACCTCGAGCACCACC, Forward primer to mutate E468Q<br>reuse aseo-240426-6                                                                                       |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469T</sup> | CNo-240304-1, ACTCTGTAACCTCGAGCACCACC, FW primer to make D469T<br>CTTCGAGGGCATTGGAGATGAG<br>CNo-240304-2, CTCATCTCCAATGCCCTCGAAG, RV primer to make D469T                                        |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469R</sup> | CNo-240304-3, CGTCTGTAACCTCGAGCACCACC, FW primer to make D469R<br>Use CNo-240304-2 as RV primer                                                                                                  |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469A</sup> | CNo-240304-4, GCCCTGTAACCTCGAGCACCACC, FW primer to make D469A<br>Use CNo-240304-2 as RV primer                                                                                                  |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469L</sup> | CNo-240304-5, TTAATGTAACCTCGAGCACCACC, FW primer to make D469L<br>Use CNo-240304-2 as RV primer                                                                                                  |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469N</sup> | CNo-240304-6, AATCTGTAACCTCGAGCACCACC, FW primer to make D469N<br>Use CNo-240304-2 as RV primer                                                                                                  |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469Q</sup> | aseo-240426-8, CAGCTGTAACCTCGAGCACCACCAC, Forward primer to mutate D469Q<br>CTTCGAGGGCATTGGAGATGAG<br>aseo-240426-9, CTCATCTCCAATGCCCTCGAAG, Reverse primer to mutate D469Q                      |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469S</sup> | aseo-240426-10, TCTCTGTAACCTCGAGCACCACCAC, Forward primer to mutate D469S<br>reuse aseo-240426-9                                                                                                 |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469E</sup> | aseo-240426-11, GAACTGTAACCTCGAGCACCACCAC, Forward primer to mutate D469E<br>reuse aseo-240426-9                                                                                                 |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469G</sup> | djbo-240522-2, GGCTGTAACCTCGAGCACCACCAC, FW primer to mutate D(-2)G<br>use aseo-240426-9, CTCATCTCCAATGCCCTCGAAG, as reverse primer                                                              |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469M</sup> | djbo-240522-3, ATGCTGTAACCTCGAGCACCACCAC, FW primer to mutate D(-2)M<br>use aseo-240426-9, CTCATCTCCAATGCCCTCGAAG, as reverse primer                                                             |
| GST-Tev-SNX17 CT<br>(451-470) <sup>D469F</sup> | djbo-240522-4, TTTCTGTAACCTCGAGCACCACCAC, FW primer to mutate D(-2)F<br>use aseo-240426-9, CTCATCTCCAATGCCCTCGAAG, as reverse primer                                                             |
| GST-Tev-SNX17 CT<br>(451-470) <sup>L470V</sup> | djbo240209-14, GTGTAACCTCGAGCACCACCAC, FW primer to make L470V<br>GAGGGCATTGGAGATGAGGAT<br>djbo240209-15, ATCTCATCTCCAATGCCCTC, RV primer to make L470V                                          |
| GST-Tev-SNX17 CT<br>(451-470) <sup>L470I</sup> | djbo240209-16, ATTTAACTCGAGCACCACCACC, FW primer to make L470I<br>use djbo240209-15 as RV primer                                                                                                 |
| GST-Tev-SNX17 CT<br>(451-470) <sup>L470G</sup> | djbo230715-1, GGCTaaCTCGAGCACCACCACCAC, forward primer to mutate SNX17<br>L470G<br>cttcgagggcattggagatgaggat<br>djbo230715-2, atcctcatctccaatgccctcgaag, reverse primer to mutate SNX17<br>L470G |
| GST-Tev-SNX17 CT<br>(451-470) <sup>L471G</sup> | use djbo230715-3, TAACTCGAGCACCACCACCAC, as forward primer<br>GAGGGCATTGGAGATGAGGATCTGGGT<br>djbo-240522-1, ACCCAGATCCTCATCTCCAATGCCCTC, RV primer to mutate L(-1)G(0)                           |
| GST-Tev-SNX31 CT<br>(421-440)                  | djbo240131-1, GTTTTCGGTAACATCAAAGAGGAGGACCTTTAAATCGTGACTGACTGACGATCTGC, FW<br>primer to aliblunt SNX31 tail into pGex<br>CtgaaaacctgtatttttcagggccatgatgAGCAAGATTAAAATTGCAAAGGATGACTGT           |

|                                                       |                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                       | djbo240131-2, ACAGTCATCCTTTTGCAATTTTAATCTTGCTcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt SNX31 tail into pGex                                                                                                                                                                                             |
| GST-Tev-LRMDA CT (179-198)                            | djbo240131-3, GGTAATCGTTTTATCCGTGACGATCAATTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt LRMDA tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgCGCTACGTGTACTACGGCAAAAATAGTGAA<br>djbo240131-4, TTCACTATTTTGGCGTAGTACAGTAGCGcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt LRMDA tail into pGex         |
| GST-Tev-TIMM23 CT (190-209)                           | djbo240131-5, ATGAAAGGGTCTCTGTTACAACAGAGTCTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt TIMM23 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgTTGTACGCGCTGTACAATAATTGGGAGCAT<br>djbo240131-6, ATGCTCCCAATTATTTGTACAGCGGTACAAcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt TIMM23 tail into pGex     |
| GST-Tev-PATE1 CT (107-126)                            | djbo240131-7, CGTTCGACGATCTTTGCAACGAGGACCTTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt PATE1 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgTCGGTATATTTAGTGAATTTTCGTTGCTGT<br>djbo240131-8, ACAGCAACGAAAATTCATAAATATACCGAcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt PATE1 tail into pGex          |
| GST-Tev-ARHGEF25 CT (561-580)                         | djbo240131-9, CGCTTGGCGAAACTTGATGAAGATGAGCTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt ARHGEF25 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgCCGACCCCCAAAACCTCCGCCATGCCAGGCC<br>djbo240131-10, GGCTTGGCATGGCGGAGTTTGGGGTCGGcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt ARHGEF25 tail into pGex |
| GST-Tev-HYOU1 CT (980-999)                            | djbo240131-11, CAGAAGCGCCCCCTGAAAATGATGAGTTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt HYOU1 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgGAGCCCGAGCAAAAGGAGCAATCCACGGGC<br>djbo240131-12, GCCCGTGGATTGCTCCTTTGCTCGGGCTCcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt HYOU1 tail into pGex       |
| GST-CCDC192 (273-292)                                 | CNo-240304-27, ATCCCGCCGGTTGTCTCCGATGAGAATTTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt CCDC192 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgCCAGAAGCTCCTGTTTTCTCCACTCACGAC<br>CNo-240304-28, GTCGTGAGTGGAGAAAACAGGAGCTTCTGGcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt CCDC192 tail into pGex |
| GST-Tev-BCAR3 (806-825)                               | CNo-240304-29, GAGCCCCCGCCGTTAAGCAAGCTGAATTTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt BCAR3 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgCAGATATTGACCGCGTTGTACGGGAAGCTG<br>CNo-240304-30, CAGTTCCGTGACAACGCGGTCAATATCTGcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt BCAR3 tail into pGex      |
| GST-Tev-CD34 (366-385)                                | CNo-240304-31, CGTCAACACGTTGTAGCGGATACCGAATTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt CD34 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgCAGGCAACATCTCGGAATGGGCACTCTGCG<br>CNo-240304-32, CGCAGAGTGCCCATTCGAGATGTTGCCCTGcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt CD34 tail into pGex       |
| GST-Tev-USH1G (442-461)                               | CNo-240304-33, CGGCCTCCGGCTTTGGAGGACATGAGTTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt USH1G tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgGCGGTAAGAAGACGCCCAAGCAATGGAG<br>CNo-240304-34, CTCATTGTCTTGGCGGCTCTTCTTACCGCcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt USH1G tail into pGex         |
| GST-Tev-CCND2 (270-289)                               | CNo-240304-35, ACCCCCACGGATGTACGCGACATAGACTTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt CCND2 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgAAAAGCGAGGATGAAGTGGATCAGGCAAGT<br>CNo-240304-36, ACTTGCTGATCCAGTTTATCTCGCTTTTcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt CCND2 tail into pGex       |
| GST-Tev-nrdB (357-376)                                | CNo-240304-37, TCTGCAGACGATCTGTCTGACTTCGAATTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt nrdB tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgTACTTGGTGGGGCAAATTGACAGTGAAGTC<br>CNo-240304-38, GACTTCACTGTCAATTTGCCCCCAAGTAcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt nrdB tail into pGex         |
| GST-Tev-GspD (621-640)                                | CNo-240304-39, AACTTCTATACGTTATTGGACAGCGAGCTTTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt GspD tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgGTAATCCCGTCGATTCTGTAAGACATCAAC<br>CNo-240304-40, GTTGATGTCTTTACGAATCGACGGGATTACcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt GspD tail into pGex       |
| GST-Tev-SR1 (1227-1246)                               | CNo-240304-41, TTCGTCACAAACTTAGTCAACAGGAGCTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt SR1 tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgAAGAGCGGTTCTTTATTTACGCTCTTTTGCA<br>CNo-240304-42, TGCAAAAGAGCGTAAATAAGAACCGCTCTTcatatggccctgaaaatacagggttttcaG, RV primer to aliblunt SR1 tail into pGex         |
| GST-Tev-amino acid ABC transporter permease (219-238) | CNo-240304-43, CGCTTCACCTCAATTTTGGACATCGAGTTATAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt ABC transporter permease tail into pGex<br>CtgaaaacctgtattttcaggggcccatatgATTGAGAAACGTGTGAAAAAGAAAATACC                                                                                                              |

|                                         |                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | CNo-240304-44, GGTATTTTCTTTTTTCACACGTTTCTCAATcatatggccctgaaaatacaggttttcaG, RV primer to aliblunt ABC transporter permease tail in pGex                                                                                                                                                                    |
| GST-Tev-MTO1 CT (698-717)               | djbo-240308-7, GATGCGGACCGTCTTCAAGAGCGTGAGTTGTAAATCGTGACTGACTGACGATCTGC, FW primer to aliblunt MTO1 tail into pGex<br>CtgaaaacctgtattttcagggcccatatgGAATCAAGTAAGACGGACCAGTATTATGT<br>djbo-240308-8, ACATAAATACTGGTCCGTCTTACTTGATTCCatatggccctgaaaatacaggttttcaG, RV primer to aliblunt MTO1 tail into pGex |
| GST-Tev-SNX17(451-464) – HYOU1(994-999) | ase240304-1, CTGAAAAATGATGAGTTATAACTCGAGCACCACCACCAC, FW primer to make SNX17-HYOU chimera<br>GCAATTTTCGCCTTCGAGGGC<br>ase240304-2, GCCCTCGAAGGCGAAATTGC, RV primer to make SNX17-HYOU chimera                                                                                                             |
| GST-Tev-HYOU1(980-993)-SNX17(465-470)   | ase240304-3, TCCACGGGCCAGAGCGCCCCATTGGAGATGAGGATCTGTAACTCG, FW primer to make HYOU1-SNX17 chimera<br>GAAAACCTGTATTTTCAGGGATCCATGGAGCCCCAGCAAAGGAGCAA<br>ase240304-4, TTGCTCCTTTTGCTCGGGCTCCATGGATCCCTGAAAATACAGGTTTTC, RV primer to make HYOU1-SNX17 chimera                                               |
| GST-Tev-GGS-SNX17(464-470)              | ase240304-5, CGGTTCTGGAGGCTCGGGAGGCATTGGAGATGAGGATCTGTAAC, FW primer to make GST-SNX17 (GGS-464-470)<br>GAAAACCTGTATTTTCAGGGATCCATGGGTGGATCTGGTGGATCAGG<br>ase240305-6, CCTGATCCACCAGATCCACCCATGGATCCCTGAAAATACAGGTTTTC, RV primer to make GST-SNX17 (GGS-464-470)                                         |

**Supplementary Table 4. Antibodies used in this study.**

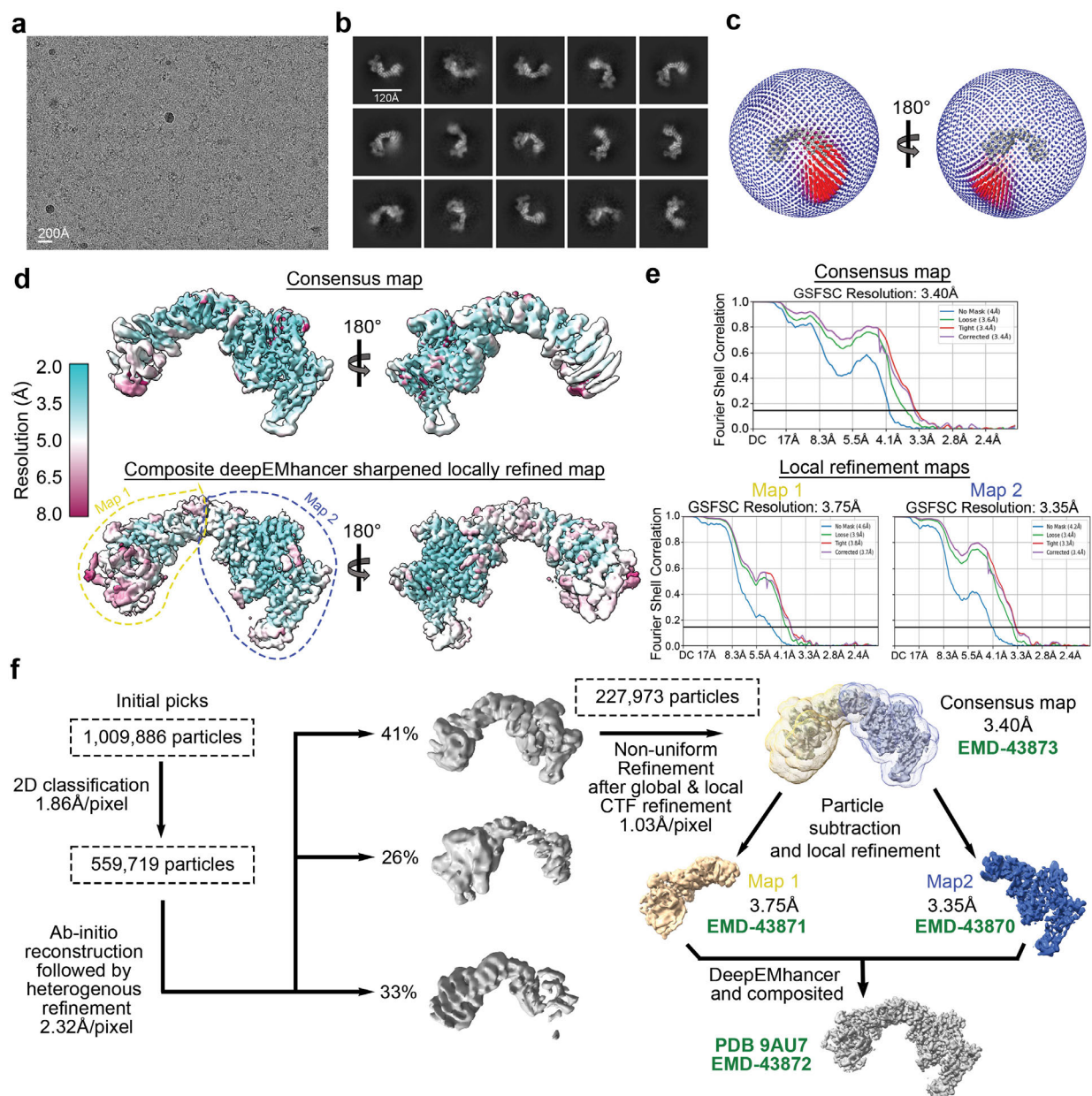
| Primary antibodies                                                     |                                                  |                                                        |                           |                                                                        |
|------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------|---------------------------|------------------------------------------------------------------------|
| WB, western blot; IF, immunofluorescence staining; FC, Flow Cytometry. |                                                  |                                                        |                           |                                                                        |
| Target                                                                 | Source<br>(host species)                         | Catalog, Clone<br>(References)                         | Application<br>(dilution) | Validation information                                                 |
| CCDC22                                                                 | ProteinTech Group<br>(rabbit)                    | 16636-1-AP                                             | WB (1:1000)               | Phillips-Krawczak et al.,<br>2015 <sup>4</sup>                         |
| CCDC93                                                                 | ProteinTech Group<br>(rabbit)                    | 20861-1-AP                                             | WB (1:1000)               | Phillips-Krawczak et al.,<br>2015 <sup>4</sup>                         |
| COMMD1                                                                 | ProteinTech Group<br>(rabbit)                    | 11938-1-AP                                             | WB (1:1000)               | Manufacturer validation<br>using various tissues and IF                |
| DENND10                                                                | Custom made,<br>Cocalico Biologicals<br>(rabbit) | 95-110 (Singla et<br>al., 2019 <sup>5</sup> )          | WB (1:500)                | Singla et al., 2019 <sup>5</sup>                                       |
| FAM21                                                                  | Custom made,<br>Cocalico Biologicals<br>(rabbit) | MC2188 (Gomez<br>and Billadeau,<br>2009 <sup>6</sup> ) | IF (1:1000)               | Gomez and Billadeau, 2009 <sup>6</sup>                                 |
| FLAG                                                                   | Sigma (mouse)                                    | F1804, M2                                              | WB (1:500)                | Manufacturer validation with<br>overexpressed proteins                 |
| HA                                                                     | Biolegend (mouse)                                | 901502, 16B12                                          | WB (1:500), IF<br>(1:100) | Manufacturer validation with<br>overexpressed proteins                 |
| HA                                                                     | Cell Signaling<br>(mouse)                        | 2999S, 6E2                                             | WB (1:1000)               | Manufacturer validation with<br>overexpressed proteins                 |
| Integrin- $\alpha$ 5                                                   | BD Biosceinces<br>(mouse)                        | 555615, IIA1                                           | IF (1:100)                | Manufacturer validation in<br>FACS using isotype control               |
| Integrin- $\beta$ 1                                                    | Santa Cruz (mouse)                               | sc-53711,<br>TS2/16                                    | IF (1:100)                | Manufacturer validation in<br>FACS using isotype control               |
| Integrin- $\beta$ 1<br>(FITC)                                          | Thermo Fisher<br>(mouse)                         | 11-0299-42,<br>TS2/16                                  | FC (5 $\mu$ l/test)       | Manufacturer validation in<br>FACS using isotype control               |
| LRMDA                                                                  | Abcam (rabbit)                                   | 150986                                                 | WB (1:500)                | Manufacturer validation with<br>overexpressed proteins                 |
| TIMM23                                                                 | Proteintech Group<br>(rabbit)                    | 11123-1-AP                                             | WB (1:500)                | Manufacturer validation with<br>immunoprecipitation                    |
| VPS26C                                                                 | Millipore (rabbit)                               | ABN87                                                  | WB (1:5000)               | Singla et al., 2019 <sup>5</sup>                                       |
| VPS29                                                                  | GeneTex (rabbit)                                 | GTX104768                                              | WB (1:500)                | Singla et al., 2019 <sup>5</sup>                                       |
| Secondary antibodies used for immunofluorescence                       |                                                  |                                                        |                           |                                                                        |
| Fluorophore                                                            | Source (target<br>species)                       | Catalog number (dilution)                              |                           | Validation                                                             |
| Alexa 488                                                              | Invitrogen (mouse)                               | A11029 (1:500)                                         |                           | Manufacturer validation in IF<br>using no primary antibody<br>controls |
| Alexa 555                                                              | Invitrogen (rabbit)                              | A21428 (1:500)                                         |                           |                                                                        |



### Supplementary Fig. 1 Quality control of proteins used in this study.

**a.** Representative Coomassie blue-stained SDS PAGE gels from three independent repeats showing the supernatant from the EPD assays used for quantification in Fig. 1d. **b-c.** Size exclusion chromatograms through a Superdex 200 Increase column (**b**) and Coomassie blue-stained SDS PAGE gels (**c**) showing loading control of indicated Retriever constructs used in pull-down assays shown in Fig. 3f. **d.** Coomassie blue-stained SDS PAGE gel showing MBP pull-

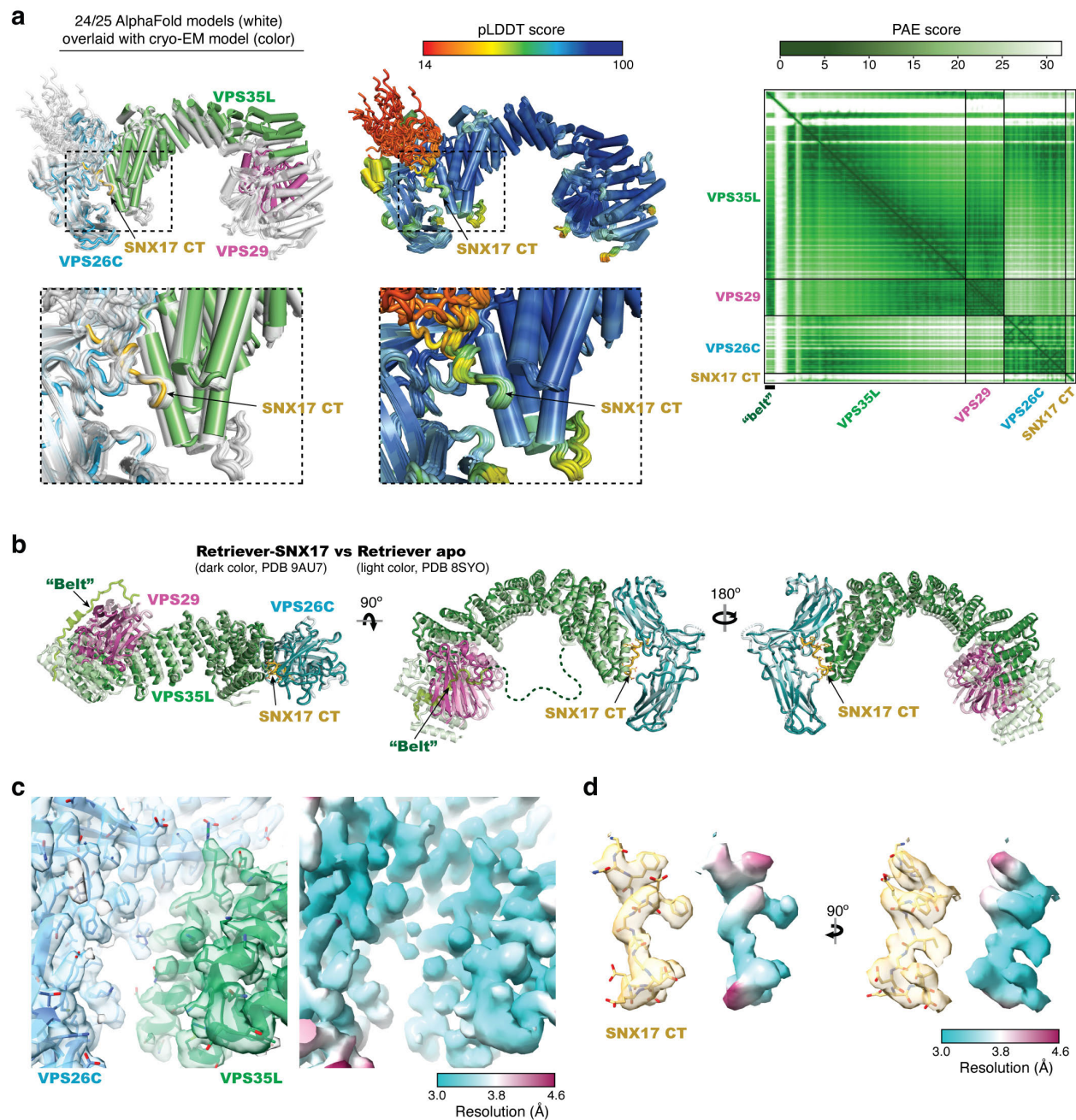
down of indicated Retriever constructs using MBP-tag as a negative control, in comparison to MBP-CCDC22-CCDC93 VBD pull-down in Fig. 3g. **(c-d)** show representative results from at least two independent experiments.



**Supplementary Fig. 2 Cryo-EM data processing summary.**

**a.** Representative cryo-EM micrograph from a total of 10,009 micrographs used for data processing. **b.** Representative 2D class averages. **c.** 3D angular distribution of all Retriever-SNX17 particles that contributed to the final main map. **d.** Local resolution of the consensus map (upper) and the composite map stitched from two locally refined maps as indicated (lower). The orientation of the map is the same as in (c). **e.** Fourier Shell Correlation (FSC) plots for the consensus map (upper) and the two locally refined maps (lower). **f.** Schematic showing cryo-EM

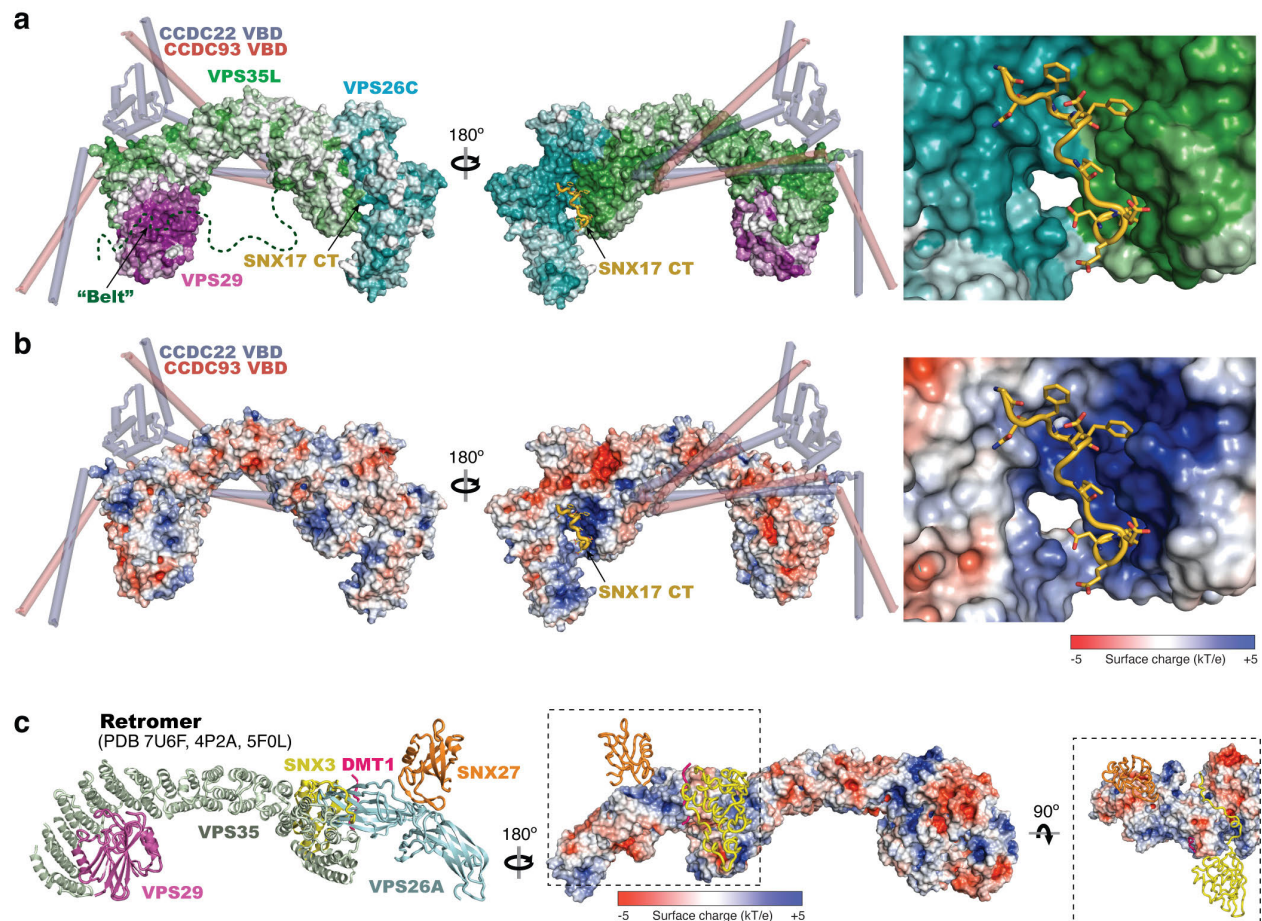
data processing steps for obtaining 3D reconstruction of the Retriever-SNX17 complex. Maps and structural model deposited to PDB/EMDB are labeled.



**Supplementary Fig. 3 Overall structure comparison and local map quality.**

**a.** Left: Overlay of models derived from AlphaFold-Multimer prediction (white) and the cryo-EM model (color). Middle: Overlay of AlphaFold-Multimer models colored using predicted local difference distance test (pLDDT) scores for local structure accuracy. Right: Predicted aligned error (PAE) scores for distance error of the top-ranked AlphaFold-Multimer model. **b.** Overlay of the cryo-EM models between the Retriever-SNX17 complex (dark color, PDB 9AU7) and the

Retriever apo form (light color, PDB 8SYO). **c-d**. Semi-transparent composite map overlayed with final model (left) (EMD-43872, PDB 9AU7) and the map colored by local resolution (right) showing the quality of the map and modeling of the SNX17 binding pocket in **(c)** and the SNX17 CT peptide in **(d)**.



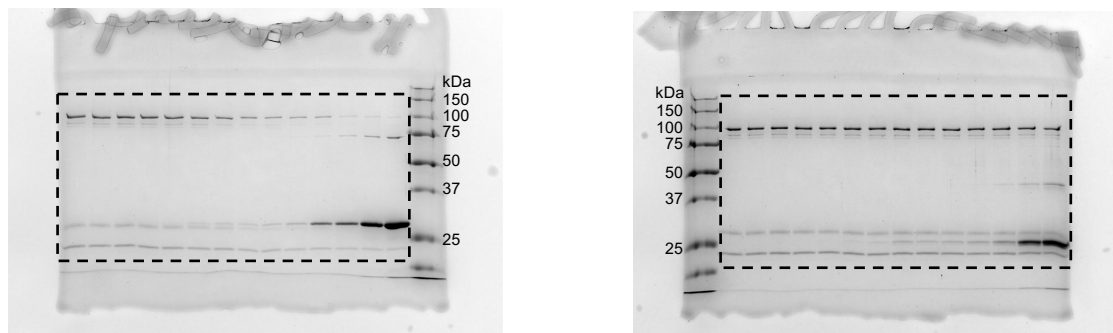
**Supplementary Fig. 4 Surface conservation and electrostatic property.**

**a-b.** Overall surface conservation **(a)** and electrostatic potentials **(b)** of Retriever complexed with SNX17 CT peptide (shown in cartoon presentation). Surface conservation was calculated with ConSurf<sup>7</sup>, with color-to-white gradients representing the most (ConSurf score = 9) to the least conserved residues (ConSurf score = 1) following the same color scheme used in Fig. 3c, d. CCDC22-CCDC93 VBD model derived from AlphaFold-Multimer predictions are shown as semi-transparent cartoon presentation as a reference. **c.** Cartoon presentation (left) and surface presentation of electrostatic potentials (right) of Retromer, showing the binding sites for indicated ligands.

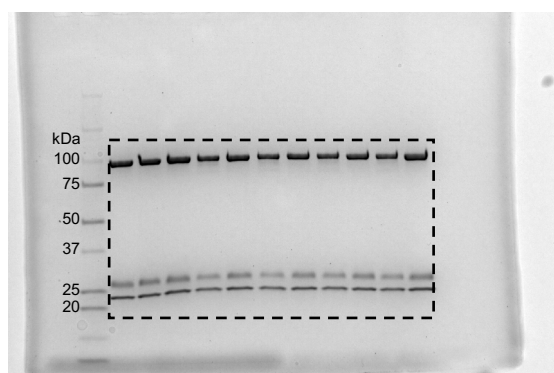
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**Uncropped gel images for Supplementary Fig. 1a**



**Uncropped gel image for Supplementary Fig. 1c**



**Uncropped gel image for Supplementary Fig. 1d**

