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# Reconstitution reveals motor activation for intraflagellar transport

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### **Protein Sequences of the OSM-3 (Gene ID: 177141) constructs used in the study.**

- 1.) OSM-3(G444E)-Halo (OSM-3 sequence with the G444E mutation C-terminally tagged with Halo and Flag)

Cloned into the pFastBac1 vector (Thermo Fisher) with SpeI and Not I

#### **Protein sequence:**

MAESVRVAVRCRPFNQREKDLNTTLCVGMTPNVGQVNLNAPD  
GAAKDFTFDGAYFMDSTGEQIYNDIVFPLVENVIEGYNGTVFA  
YGQTGSGKTFMSMQGIETIPAQRGVIPRAFDHIFTATATTENVKF  
LVHCSYLEIYNEEVRDLLGADNKQKLEIKEQPDRGVYVAGLS  
MHVCHDVPA CKELMTRGFNNRHVGATLMN KDSSRSHSIFTVY  
VEGMTETGSIRMGKLNLDVLAGSERQSKTGATGDRLKEATKIN  
LSLSALGNVISALVDGKSKHIPYRDSKLTRLLQDSLGGNTKTI  
MIACVSPSSDNYDETLSTLRYANRAKNIKNKPTINEDPKDALL  
REYQEEIARLKSMVQPGAVGVGAPAQDAFSIEEERKKLREEFE  
EAMNDLRGEYEREQTSKAELQKDLESLRADYERANANLDNLN  
PEEAAKKIQQLQDQFIEGEEAGNTQLKQKRMKQLKEAETKTQ  
KLAAALNVHKDDPLLQVYSTTQEKLDVTSQLEKEVKKSKGY  
EREIEDLHGEFELDRLDYLDTIRKQDQQLKLLMQIMDKIQPIIK  
KDTNYSNVDRIKKEAVWNEDESRLPEMSMSRTILPLANNGY  
MQEPARQENTLLRSNFDDKLRLERLAKSDSENLANSYFKPVKQI  
NVINKYKSDQKLSTSKSLFPSKTPTFDGLVNGVVYTDALYERA  
QSAKRPPRLASLNPKGAPMEIGTGFPFDPHYVEVLGERMHYVD  
VGPRDGTPVFLFHGNPTSSYVWRNIIPHVAPTHRCIAPDLIGMG  
KSDKPDLGYFFDDHVRFM DAFIEALGLEEVVLVIHDWGSALGF  
HWAKRNP ERVKGIAFM EFIRPIPTWDEWPEFA RETFQAFRTTD  
VGRKLIIDQNVFIEGTLPMGVVRPLTEVEMDHYREPFLNPVDR  
EPLWRFPNELPIAGEPANIVALVEEYMDWLHQSPVPKLLFWGT  
PGVLIPPAEAAARLAKSLPNCKAVDIGPGLNLLQEDNPDLIGSEI  
ARWLSTLEISGGDYKDDDDK **Stop**

- 2.) OSM-3-SNAP (wild-type OSM-3 sequence N-terminally tagged with Flag and SNAP)

Cloned into the pFastBac1 vector (Thermo Fisher) with SpeI and Not I

#### **Protein sequence:**

MDYKDDDDKGGMDKDCMKRTTLDSP LGKLELSGCEQGLHEI  
KLLGKGTSAA DAVEVPAPAAVLGGPEPLMQATAWLNAYFHQP  
EAIEEFVPALHHPVFQQESFTRQVLWKLLKVVKFGEVISYQQ  
LAALAGNPAATAAVKTALSGNPVPILIPCHRVVSSSGAVGGYE  
GGLAVKEWLLAHEGHRLGKPGLGAPGGGSGGSMAESVRVAV  
RCRPFNQREKDLNTTLCVGMTPNVGQVNLNAPDGA AKDFTFD  
GAYFMDSTGEQIYNDIVFPLVENVIEGYNGTVFA YGQTGSGKT  
FSMQGIETIPAQRGVIPRAFDHIFTATATTENVKFLVHCSYLEI  
YNEEVRDLLGADNKQKLEIKEQPDRGVYVAGLSMHVCHDVPA

CKELMTRGFNNRHVGATLMNKDSSRSHSIFTVYVEGMTETGSI  
RMGKLNLDLAGSERQSKTGATGDRLKEATKINLSLSALGNVI  
SALVDGKSKHIPYRDSKLTRLQDSLGGNTKTIMIACVSPSSDN  
YDETLSTLRYANRAKNIKNKPTINEDPKDALLREYQEEIARLK  
SMVQPGAVGVGAPAQDAFSIEEERKKLREEFEEAMNDLRGEY  
EREQTSKAELQKDLES LRADYERANANLDNLDNLP EEA AKKIQQ  
LQDQFIGGEEAGNTQLKQKRMKQLKEAETKTQKLAAALNVHKD  
DPLLQVYSTTQEKLDVTSQLEKEVKKSKGYEREIEDLHGEFE  
LDRLDYLD TIRKQDQQLKLLMQIMDKIQPIIKKDTNYSNVDR  
IKKEAVWNEDESRWILPEMSMSRTILPLANNGYMQEPARQENT  
LLRSNFDDKLRERLAKSDSENLANSYFKPVKQINVINKYKSDQ  
KLSTSKSLFPSKTPTFDGLVNGVVYTDALYERAQSAKRPPRLA  
SLNPKGP **Stop**

3.) OSM-3-Flag (wild-type OSM-3 sequence C-terminally tagged with Flag)

Cloned into the pFastBac1 vector (Thermo Fisher) with SpeI and Not I

#### **Protein sequence**

MAESVRVAVRCRPFNQREKDLNTTLCVGMTPNVGQVNLNAPD  
GAAKDFTFDGAYFMDSTGEQIYNDIVFPLVENVIEGYNGTVFA  
YGQTGSGKTFSMQGIETIPAQRGVIPRAFDHIFTATATTENVKF  
LVHCSYLEIYNEEV RDLLGADNKQKLEIKEQPDRGVYVAGLS  
MHVCHDVPA CKELMTRGFNNRHVGATLMNKDSSRSHSIFTVY  
VEGMTETGSIRMGKLNLDLAGSERQSKTGATGDRLKEATKIN  
LSLSALGNVISALVDGKSKHIPYRDSKLTRLQDSLGGNTKTI  
MIACVSPSSDNYDETLSTLRYANRAKNIKNKPTINEDPKDALL  
REYQEEIARLKSMVQPGAVGVGAPAQDAFSIEEERKKLREEFE  
EAMNDLRGEYEREQTSKAELQKDLES LRADYERANANLDNLDN  
P EEA AKKIQQ LQDQFIGGEEAGNTQLKQKRMKQLKEAETKTQ  
KLAAALNVHKDDPLLQVYSTTQEKLDVTSQLEKEVKKSKGY  
EREIEDLHGEFELDRLDYLD TIRKQDQQLKLLMQIMDKIQPIIK  
KDTNYSNVDR IKKEAVWNEDESRWILPEMSMSRTILPLANNGY  
MQEPARQENTLLRSNFDDKLRERLAKSDSENLANSYFKPVKQI  
NVINKYKSDQKLSTSKSLFPSKTPTFDGLVNGVVYTDALYERA  
QSAKRPPRLASL NPKGGDYKDDDDK **Stop**