Supplemental Data

The Cell Adhesion Molecule TMIGD1 Binds to Moesin and Regulates Tubulin Acetylation and Cell Migration

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Key Words: TMIGD1, Moesin, Ezrin, tubulin acetylation, mitotic spindle, microtubular, tumor suppressor

Running Title: TMIGD1/ERM Axis Regulates tubulin acetylation and cell migration **Conflict of Interest**: Authors declare no conflict of interest.

Authors' Contributions: NR, CEC and RX-YO were involved in writing and editing of the manuscript. NR, KBC, KCSDC, RA, AM and NE all were involved in the design and performing the experiments. Corresponding Authors: Nader Rahimi, <u>nrahmi@bu.edu</u> and Catherine E Costello, <u>cecmsms@bu.edu</u>. Funding information: This work was supported in part through grants from CTSI grant (UL1TR001430) and Malory Fund, Department of Pathology, Boston University (NR), P41 GM104603 (CEC) and R24 GM134210 (CEC). **S. Figure 1**: Amino acid sequence homology of human moesin and ezrin. Alignment of human moesin (MSN) and ezrin (EZN) is shown. The FERM domain is shown in a box. Hydrophobic and negatively amino acids are highlighted in light blue and light brown colors, respectively.

	P26038 MOES_HUMAN P15311 EZRI_HUMAN	1 1	MPRTISVRVTTMDAELEFAIQENTTGKOLFDOVVKTIGLREVWFFGLQYODTKGFSTWLK MPRFINVRVTTMDAELEFAIQENTTGKOLFDOVVKTIGLREVWYFGLHYVDNKGFPTWLK	60 60	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	61 61	LNKKVTACDVRKESPLLFKFRAKFYPEDVSEELIODITORLFFLOVKEGILNDDIYCPPE LDKKVSACEVRKENPLOFKFRAKFYPEDVAEELIODITOKLFFLOVKEGILSDEIYCPPE	120 120	ERM domain
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	121 121	TAVILASYAVOSKYGDFNKEVHKSSYLAGDKLLPORVLEOHKLNKDCWEERIOVWHEEHR TAVILGSYAVOAKFGDYNKEVHKSSYLSSERLIPORVMDOHKLTRDCWEDRIOVWHAEHR	180 180	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	181 181	GMLREDAVLEYLKIAODLEMYGVNYFSIKNKKGSELWLGVDALGLNIYEONDRLTPKIGF GMLKDNAMLEYLKIAODLEMYGINYFEIKNKKGTDLWLGVDALGLNIYEKDDKLTPKIGF	240 240	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	241 241	PWSEIRNISENDKKFVIKPIDKKAPDFVFYAPRLRINKRILALCMGNH <mark>E</mark> LYMRRRKPDTI PWSEIRNISENDKKFVIKPIDKKAPDFVFYAPRLRINKRILQLCMGNH <mark>E</mark> LYMRRRKPDTI	300 300	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	301 301	EVQOMKAQAREEKHQKQMERAMLENEKKKREMAEKEKEKIEREKEELMERLKQIEEQTKK EVQOMKAQAREEKHQKQLERQQLETEKKRRETVEREKEQMMREKEELMLRLQDYEEKTKK	360 360	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	361 361	AQOELEEOTRRALELEOERKRAOSEAEKLAKEROEAEEAKEALLOASRDOKKTOEOLALE AERELSEOIORALOLEEERKRAOEEAERLEADRMAALRAKEELEROAVDOIKSOEOLAAE	420 420	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	421 421	MAEITARISOLEMAROKK <mark>E</mark> SEAVEWOOKAOMVOEDLEKTRAEIKTAMSTPHVAEPAENEO LAEYTAKIALLEEARRKEDEVEEWOHRAKEAODDLVKTKEELHLVMTAPPPPPPPYTEP	480 480	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	481 481	DEQDENGAEASADIRADAMAKDRSEEERTTEAEKNERVOKHIKAITSELAN VSYHVQESLQDEGAEPTGYSAELSSEGIRDDRNEEKRITEAEKNERVOROLITLSSELSQ	531 540	
	P26038 MOES_HUMAN P15311 EZRI_HUMAN	532 541	AR <mark>DE</mark> SKKTANDMIHAENMRLGRÖKYKTIROIROGNTKORIDEFESM AR <mark>DE</mark> NKRTHNDIIHNENMROGRÖKYKTIROIROGNTKORIDEFEAL	577 586	
 Hydrophobic amino acids Negative amino acids 					

S. Figure 2. qPCR analysis of TMIGD1 KO mouse: qPCR analysis of wild-type and TMIGD1 is shown.



S. Figure 3. Ectopic expression of Moesin and TMIGD1 in HEK-293 cell. Whole cell lysates derived from HEK-293 cells expressing TMIGD1 or moesin subjected to western blot analysis.



S. Figure 4: **TMIGD1**, **Moesin and Ezrin mRNA levels in human normal kidney verses kidney cancer types**. (**A-C**) TMIGD1, Moesin and Ezrin mRNA levels obtained from the TCGA data set via Fire Brows (<u>http://firebrowse.org/</u>). Kidney cancer types; kidney clear cell renal cell carcinoma (KIRC), kidney papillary renal cell carcinoma (KIRP), chromophobe renal cell carcinoma (KICH) and kidney pan cancer analysis (KIPAN). The horizontal small black bars within each box correspond to median expression of given proteins.

