



**Supplementary Fig. 1 Variants impact NAV3 microtubule stabilizing ability in**

**COS7 cells.** a. Representative confocal images of GFP-NAV3 wild type (WT) and mutated proteins (green) expressing cells treated with 10uM nocodazole for 1 hour, co-labeled with microtubule acetylated tubulin (yellow) and tyrosinated tubulin (red) markers. Compared to cells over-expressing WT GFP-NAV3 with a stable microtubular network despite the nocodazole treatment, all the variants impacted the microtubule-stabilization function of NAV3. Scale bar: 20 um. b. Bar graph quantification ratio of stable to dynamic microtubules for all respected treated groups. At least 20 transfected cells per construct were imaged and quantified. All the mutated cell groups were compared to WT using the paired student *t-test*. All the NAV3 proteins with pathogenic variants show significantly reduced abilities in dynamic microtubules stability (\*\*\*\*  $p < 0.0001$ ; \* $p < 0.371$ ; \*\*\* $p < 0.0009$ ).