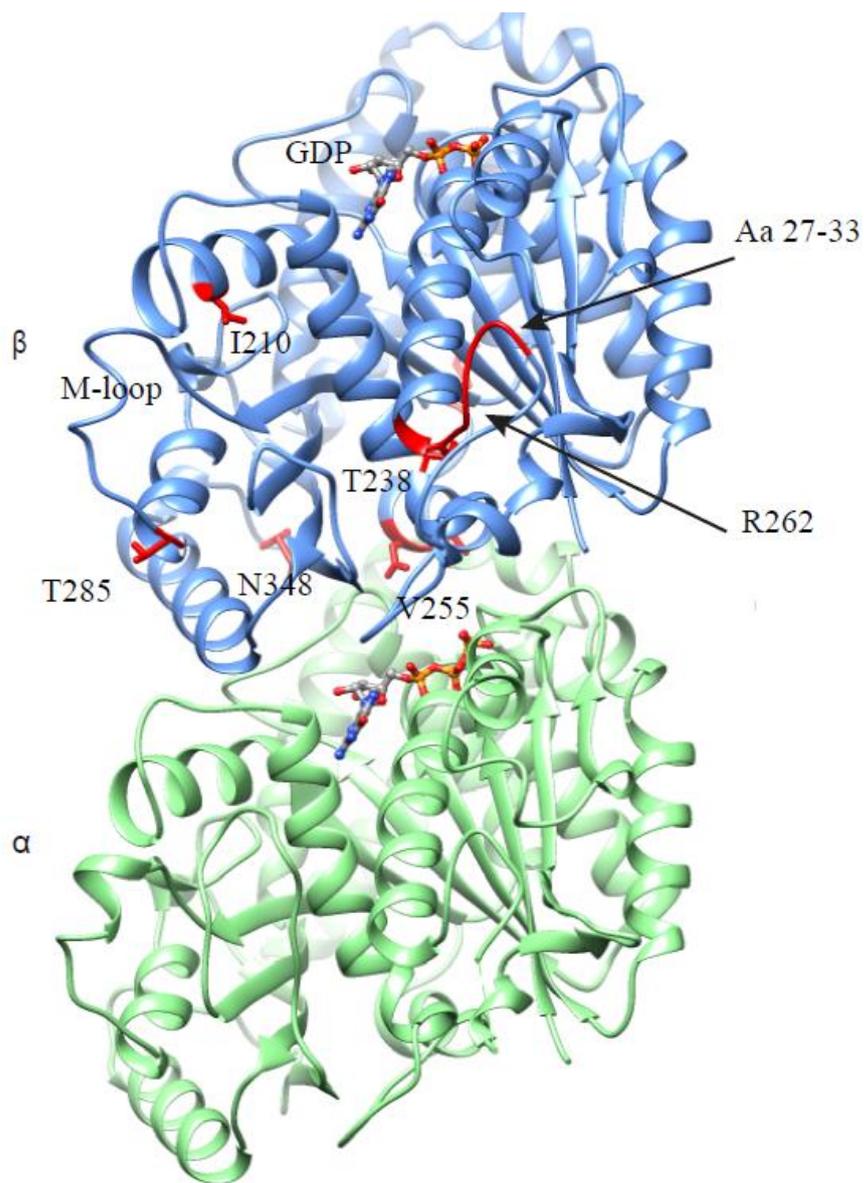


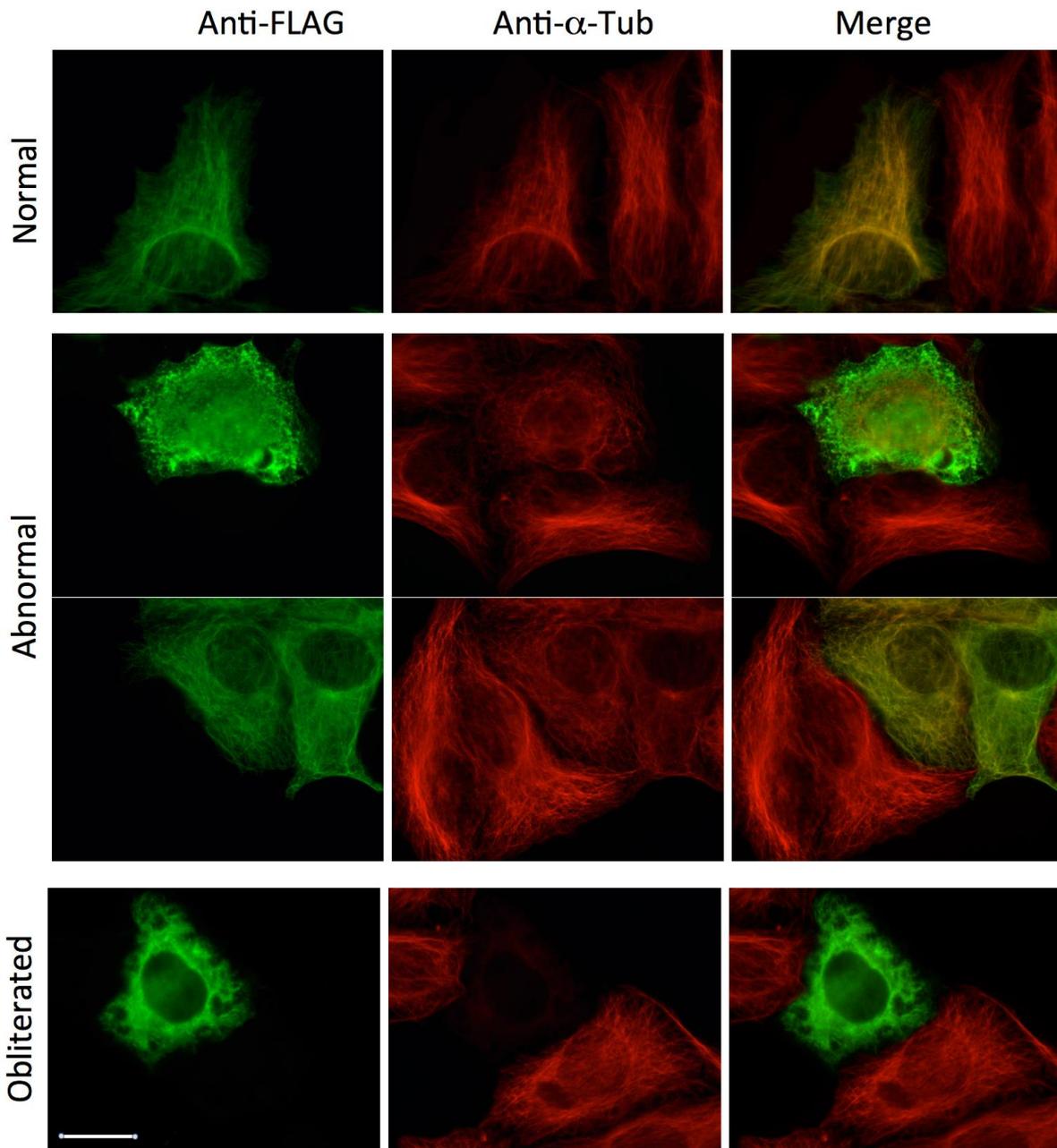
Supplementary Figure 1: Location of *TUBB8* mutations and their conservation among primate species

(A) Location of mutations in *TUBB8*. New identified mutations in this study (Black): Eight of nine mutations are located in exon 4 of *TUBB8*, while the 80_100 del is located in exon 2. Previously identified mutations (Blue)⁴⁰: Six of seven mutations are located in exon 4, while 5G>A is located in exon 1. (B) Conservation of affected amino acid sequences among primate species. A schematic is shown of the *TUBB8* protein showing its GTP (E-site) binding domain, the C-terminal domain and the location of altered amino acids. Universally conserved residues present at the location of each substitution are shown in a sequence alignment from six non-human primate species. Four affected amino acids (V255M, R262W, T285P and N348S) are located in the C-terminal domain, while four others (p.(E27_A33del), T143Dfs*12, S176L, I210V) are located in the GTPase (E-site) domain. T238M is located between these two domains.



Supplementary Figure 2: Structural implications of TUBB8 amino acid substitutions

The figure shows an atomic model of the α/β tubulin heterodimer (PDB ID: 3JAS) viewed from the microtubule lumen. The locations of mutations, which are highlighted in red, are mapped on the β -tubulin subunit.



Supplementary Figure 3: Examples of microtubule architecture in HeLa cells expressing wild type or mutant (missense) forms of TUBB8

HeLa cells transfected with C-terminally FLAG-tagged sequences encoding wild type or mutant forms of TUBB8 were analyzed by immunofluorescence using an anti-FLAG antibody (to detect the transgene, shown in green) and an anti- α -tubulin antibody (to detect endogenous microtubules, shown in red). The figure shows examples of cells with normal interphase microtubule architecture (top row), cells with a thinned or tangled arrangement of microtubules (second and third rows), and cells in which the entire microtubule network had been obliterated. Bar = 10 microns.

Supplementary Table 1: Clinical oocytes characteristics of oocyte retrieved from maturation arrest patients

Case	GV oocyte	MI oocyte	MII oocyte	Oocyte with Abnormal morphology	Immature oocyte (unknown stage)	Fertilized oocyte	Abnormal Fertilized oocyte
S176L	1	25	0	2	4	0	0
I210V	1	1	4	0	9	3	0
T238M	4	17	6	0	3	0	2
V255M	0	25	0	2	2	0	0
R262W	0	32	0	0	0	0	4
T285P	0	11	0	0	0	0	0
N348S	0	5	0	0	42	8	0
E27_A33del	3	19	1	0	10	0	0
T143Dfs*12	0	14	1	1	3	0	0