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Kinesin-1 Translocation along Human Breast Cancer Cell Microtubules *in Vitro* MITRA SHOJANIA FEIZABADI, Physics Department, Seton Hall University, YONGGUN JUN, Developmental and Cell Biology, School of Biological Sciences, University of California, Irvine, CA — A principle approach to better understand intra-cellular microtubule based transport is to study such it *in vitro*. Such *in vitro* examinations have predominantly used microtubules polymerized from bovine brain tubulin, but motor function can also in principle be affected by the specific tubulin isotypes present in different cells. The human breast cancer cells carry different beta tubulin isotype distribution. However, it is entirely unknown whether transport along the microtubules is different in these cells. In this work we have characterized, for the first time, the translocation specifications of kinesin-1 along human breast cancer cell microtubules polymerized *in vitro*. We found that as compared with the translocation along bovine brain microtubules, kinesin-1 shows a fifty percent shorter processive run length and slightly slower velocity under similar experimental conditions. These first time results support the regulatory role of tubulin isotypes in regards to motor protein translocations, and quantify the translocation specifications of kinesin-1 along microtubules of human breast cancer cells.

Mitra Shojania Feizabadi
Seton Hall University

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