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Transport of Motor Proteins along Microtubules: A Study by Optical Trapping Method and Analysis of Data[1] ANGELIQUE MCFARLANE, Seton Hall University — The cellular transportation is fundamental for cell function. Under this transportation, organelles bind to motor proteins. These proteins, then move along cellular microfilaments such as microtubules. The optical trapping technique is a method that allows us to monitor the movement of molecular motors along their tracks. In this method, motor proteins are absorbed by micro-sized beads. The beads are captured by the laser and placed close to the microfilaments. Consequently, the motor proteins bind to the track and move along them. This motion can be recorded and analyzed. In this work, we have analyzed many produced trajectories resulted from the motion of a single kinesin along microtubules. We present the design of the experiment, the method of recording and extracting data, as well as the factors that need to be considered to obtain accurate results. Finally, we calculated some of the physical properties resulted from kinesin movement in our experiment. Our outcomes are compatible with previously reported results.

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