

Research Theme: Cell Biology
Research Project Title: The dynamic trafficking within the Golgi
Principal Investigator/Supervisor: Asst. Prof. Lei Lu
Co-supervisor/ Collaborator(s) (if any):
Project Description
<p>a) Background:</p> <p>The Golgi is a sub-cellular organelle that functions as a trafficking hub within a eukaryotic cell. It comprises serially stacked membrane sacs called cisternae, which are roughly divided into four sub-Golgi zones including the <i>cis</i>, <i>medial</i>, <i>trans</i>-Golgi and <i>trans</i>-Golgi network. Within the Golgi, two concurrent flows of membranes and proteins (cargos) exist—from <i>cis</i> to <i>trans</i> or <i>trans</i> to <i>cis</i>. It is still unclear how the Golgi maintains its unique organization and how cargos move within the Golgi. One of the greatest challenges in studying the Golgi is that the details within the Golgi (or the sub-Golgi structures) are beyond the resolution of the conventional light microscopy. We have recently developed super-resolution methods and demonstrated their capabilities in revealing sub-Golgi dynamics (Tie et al., 2016; Tie et al., 2018). These new tools give our lab a unique advantage in studying the trafficking mechanism within the Golgi (intra-Golgi).</p> <p>b) Proposed work:</p> <p>We will quantitatively examine the intra-Golgi dynamic trafficking of various secretory and endocytic reporters using the cutting-edge super-resolution microscopic tools developed in this lab.</p>
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