## Solving Golgi's Mysteries with New Imaging Tools

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The Golgi apparatus plays a critical role in the membrane trafficking of eukaryotic cells by glycosylating secretory cargos and sorting them into various organelles. The mammalian Golgi is a complex membrane network consisting of heterogeneous and laterally connected Golgi stacks, each containing multiple tightly packed flat membrane sacs called cisternae. Yet, despite more than a century of study, the Golgi remains one of the most enigmatic organelles due to difficulties in spatially resolving its structure using electron or light microscopy. Our laboratory is dedicated to solving the mysteries of the Golgi by developing novel fluorescence imaging tools such as GLIM, en face-averaging, and side-averaging. These tools enable us to directly and quantitatively image the Golgi cisternal organization and intra-Golgi transport of secretory cargos. Using these methods, we have found that constitutive secretory cargos exit the *trans*-region instead of the conventional belief that they exit the *trans*-Golgi network. Our research sheds light on the organization and function of the Golgi, providing insights into how it works.
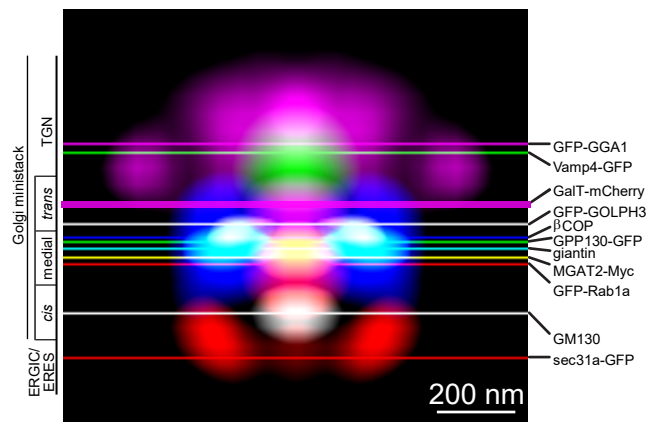
The composite image of side-averaged Golgi proteins demonstrates the organization of the Golgi ministack.

References:
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