DOCTORAL CANDIDATE:	Marita Borg Distefano
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AREA OF EXPERTISE:	Cell biology
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DISSERTATION TITLE: *Identification of novel roles of Rab proteins regulating transport between endosomes and Golgi*

Rab proteins are localized to distinct intracellular compartments and are involved in controlling and coordinating different steps of vesicular membrane transport inside the cell. Over 60 Rab proteins have been identified, but only half of these have been characterized. The PhD candidate Marita Borg Distefano has studied two different Rab proteins, namely Rab9 and Rab7b, and identified novel functions for these Rabs. She discovered that Rab9, previously known to regulate traffic from endosomes to the Golgi apparatus, also controls the transport in the opposite direction. Furthermore, by identifying two novel interaction partners for Rab7b, Borg Distefano elucidated completely new and previously unknown roles for this small GTPase. In more detail, by cellular studies she showed that Rab7b has important functions in both autophagy, which is a process of self-degradation and recycling during cellular stress, and also in cell migration, a key process used by different types of cells such as immune cells to patrol the body for pathogens or cancer cells to invade surrounding tissues. Rab proteins are small GTPases that bind and hydrolyze GTP, and this cycling must be tightly regulated in order for the Rabs to perform their many functions. In this thesis, Borg Distefano also identified a GTPase activating protein which aids Rab7b in hydrolyzing GTP.

The work of this thesis contributes in gaining more knowledge of how the different compartments in the cell communicate, but also in unraveling new connections between intracellular traffic and cell migration. These findings may have further implications in understanding the mechanisms behind diseases associated with altered trafficking and motility such as immune disorders and cancer.