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AREA OF EXPERTISE: Cell biology
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DATE OF DISPUTATION: 18th of June 2018
DISSERTATION TITLE: *Identification and characterization of novel roles of Rab proteins in autophagy and cell migration*

Rab proteins are well known for their role in vesicular membrane transport in eukaryotic cells, in which they facilitate control and coordination of different trafficking steps. In addition, Rab proteins are involved in other cellular processes, including cell division, cell polarization, cell migration and signaling. So far more than 60 Rab proteins have been identified in humans, but many of these still remain to be characterized. In this thesis study, Ingrid Kjos and co-workers have investigated novel roles of Rab proteins by identifying new interaction partners and further characterizing the interactions using both biochemical assays and different microscopy techniques. In more detail, the authors have discovered that Rab7b interacts with an autophagy-related protein, and that Rab7b through this previously unknown interaction takes part in the regulation of autophagy, a cellular degradation and recycling pathway important for cell homeostasis and stress adaptation. Additionally, Kjos performed a screen to find new Rab proteins involved in cell migration, an important process for development, tissue repair and renewal, and the immune system. Aberrant regulation of cell migration is frequently associated with diseases such as cancer, in which the tumor cells invade surrounding tissues. Furthermore, novel interaction partners for some of the interesting candidates from the screen were identified, and the characterization of these interactions revealed roles for these Rab proteins in cellular functions important for cell migration, such as the regulation of actin cytoskeleton dynamics and cell polarity. The work of this thesis has contributed to enhance our knowledge of the functions of Rab proteins in autophagy and cell migration. The new insight provided brings to light possible implications of these proteins in disease and, may in the future aid in the development of therapeutic strategies.