

WINTER SEMESTER 2025 / 2026

RTG 2756 CYTAC SEMINAR SERIES

TUESDAY, NOVEMBER 4  
17:00 IN HS5

CYTAC

RTG 2756

**PROF. DR. ALF HONIGMANN**

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### ASSEMBLY OF TIGHT JUNCTIONS:

#### COUPLING OF SURFACE CONDENSATION AND ACTIN POLYMERIZATION

*Tight junctions (TJ) play an essential role in sealing barrier forming tissues, by forming belts of polymeric strands around cellular perimeters. In previous work, we have shown that the condensation of ZO-1 scaffold proteins is required for tight junction assembly. However, the mechanisms by which junctional condensates initiate at cell-cell contacts and elongate around cell perimeters remain unknown. First, by combining biochemical reconstitutions and live-cell imaging of MDCKII tissue, we found that tight junction belt formation is driven by adhesion receptor-mediated ZO-1 surface condensation. Second, we found that interactions of ZO-1 with apical polarity proteins induce a pre-wetting transition that drives growth of condensates around the apical perimeter. Third, ZO1 condensates directly facilitate local actin polymerization and filament bundling, supporting condensate elongation into a continuous tight junction belt. Taken together, our work identifies how cells couple surface condensation with cytoskeleton organization to assemble and structure adhesion complexes.*

#### Tight junction belt formation in epithelial tissue

