

**P020** Structure and function of nucleus-vacuole junctions in  
*Saccharomyces cerevisiae*

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Nonessential portions of the yeast nucleus are targeted to the vacuole and degraded by "piecemeal microautophagy of the nucleus" (PMN). During PMN teardrop-like nuclear blebs are engulfed by invaginations of the vacuole membrane, pinched into the vacuole lumen, and degraded by hydrolases. PMN occurs in the context of nucleus-vacuole (NV) junctions, which are Velcro-like patches formed through specific interactions between Vac8p on the vacuole membrane and Nvj1p on the outer nuclear membrane (perinuclear ER). Nvj1p binds and sequesters three proteins into this specialized ER domain, including Vac8p, Tsc13p, and Osh1p. We have mapped the three partner-binding domains of Nvj1p and determined that its unusual N-terminal domain is important for targeting to the perinuclear ER. Mutations that affect the activity of Tsc13p, which is required for the biosynthesis of very long chain fatty acids, reduce the volumes of PMN structures. PMN is also affected by loss of the seven OSH-encoded proteins, which are thought to mediate non-vesicular lipid transport. These results suggest that the lipid composition of NV junctions regulates the formation of PMN structures. NV junctions represent a unique model system for studying the biology of ER membrane contact sites and, as well, the molecular mechanism of selective microautophagy