



Fig. 7. Isosurface comparisons. (a) Full-length Vps4p contoured at 578 kDa (continuous purple line) and 446 kDa (dashed purple line) superimposed on Δ N-Vps4p contoured at 446 kDa (blue line). The additional densities above the bowl and in the fins persist at both contours, indicating they are significant. (b) Vta1p-Vps4p complex contoured at 824 kDa (continuous yellow line) and 578 kDa (innermost dashed yellow line) superimposed over the full-length Vps4p at 578 kDa (purple line). Compared with the full-length Vps4p, the Vta1p-Vps4p complex has significant extra densities around and over the nipple above the top ring and beneath the center of the bottom ring. (c and d) Bottom and side views of the previously proposed model of hexameric VPS4B placed into the bottom ring of the full-length Vps4p reconstruction contoured at 578 kDa.

combined height of the top ring and the bottom ring (excluding the height of the nipple) was ~ 95 Å, and the height of the nipple was ~ 55 Å.

Isosurface comparisons

When the Δ N- and full-length Vps4p complexes were contoured to enclose their predicted molecular masses, aligned, and superimposed, the additional densities were clearly seen to be in the nipple (Fig. 7a). However, an important control in analyses of subcomplexes and decorated structures is a comparison of the more massive complex contoured so conservatively that it only encloses

the volume expected for the less massive subcomplex. New features in a “decorated” structure that persist even at the unrealistically conservative contour of the “core” structure are more likely to be significant than features that shrink back gradually to match the original surface of the core. When the full-length structure was contoured more conservatively to enclose only the expected volume of the Δ N-Vps4p structure, both the nipple and the fins persisted, although decreased in size. Importantly, the thickness of the bottom of the “bowl” was very nearly the same, indicating that steep gradients exist there in the three-dimensional reconstructions and that these boundaries are