SUPPLEMENTARY SECTION

Treatment of the ultracentrifugation data

In the program Sedfit, a large number of discrete, independent species, for which a relationship between mass and sedimentation (*s*) and diffusion (*D*) coefficients is assumed, is considered to represent a continuous distribution [37]. It should be mentioned that an inadequate relationship between *s* and *D* only decreases the resolution of the distribution. Sedfit also takes advantage of a radial and time-independent noise subtraction procedure [37].

The normalized sedimentation coefficients $s_{20,w}^{0}$ were calculated from s with:

$$s_{20,w}^{0} = s\ [(1-\rho_{20,w}^{0}\ \bar{v}_{PDC})/(1-(1-\rho\,\bar{v}_{PDC})\ \bar{v}_{PDC})]\ (\eta/\eta_{20,w}^{0}) \quad \text{(Equation 1)}$$

The density and viscosity of water at 20 °C are $\rho_{20,w}^{0}$ = 0.99828 g/ml and $\eta_{20,w}^{0}$ = 1.002 cP, respectively. The partial specific volume of the complex, $\bar{v}_{PDC}$, used for the calculation of $s_{20,w}^{0}$ is:

$$\bar{v}_{PDC} = (\bar{v}_P + \delta_D\ \bar{v}_D + \delta_L\ \bar{v}_L + \delta_w\ \bar{v}_w)/(1 + \delta_D + \delta_L + \delta_w) \quad \text{(Equation 2)}$$

δ_D, δ_L and δ_w, are the amounts in gram of detergent, lipids and water hydration, respectively, per gram of protein, and $\bar{v}_P$, $\bar{v}_D$, $\bar{v}_L$ and $\bar{v}_w$ are the partial specific volumes of the constituents. δ_D and δ_L have been determined experimentally; δ_w is assumed to be 0.3 g/g.

The Svedberg equation relates the experimental *s* value to the buoyant molar mass of the complex, M_{bPDC}, and its Stoke radius R_s:

$$M_{bPDC} = s\ N_A\ 6\ \pi\ \eta\ R_S \quad \text{(Equation 3)}$$

where N_A is Avogadro's number.

The value of the buoyant molar mass depends on the solvent density but can also be expressed as a function of the molecular mass, M_P, of the protein in the BmrA-detergent complex, the quantity of bound detergent (δ_D), lipids (δ_L) and solvent (δ_W), and of $\bar{v}_P$, $\bar{v}_D$, $\bar{v}_L$ and $\bar{v}_w$:

$$M_{bPDC} = M_P\ [(1-\rho\,\bar{v}_P) + \delta_D\ (1-\rho\,\bar{v}_D) + \delta_L\ (1-\rho\,\bar{v}_L) + \delta_w\ (1-\rho\,\bar{v}_w)] \quad \text{(Equation 4)}$$

The molar mass of PDC, M_{PDC}, is given without hydration:

$$M_{PDC} = M_P\ (1 + \delta_D + \delta_L) \quad \text{(Equation 5)}$$

The frictional ratio f/f° relates the Stokes radius R_S to the minimum radius R° of the non-hydrated particle:

$$R_S = f/f°\ R° \quad \text{(Equation 6)}$$

$$R° = [(3M_P(\bar{v}_P + \delta_D\ \bar{v}_D + \delta_L\,\bar{v}_L))/(4\pi N_A)]^{1/3} \quad \text{(Equation 7)}$$