Supplementary Table 1: Selection of scaffolding systems for membrane proteins

Name	Scaffold Type	Adjusts to size of membrane protein	Lipid environment	Reference
Peptitergents	Peptide, 24-residue amphipathic α-helix	Yes	No	Schafmeister, C. E., Miercke, L. J. & Stroud, R. M. Structure at 2.5 A of a designed peptide that maintains solubility of membrane proteins. Science 262, 734-738 (1993).
Lipopeptide detergents	Peptide, 25-residue amphipathic α-helix with fatty acyl chains linked to side chains	Yes	No (fatty acyl chains to mimic lipid environment)	McGregor, C. L. et al. Lipopeptide detergents designed for the structural study of membrane proteins. Nature biotechnology 21, 171-176, doi:10.1038/nbt776 (2003).
β-sheet peptides	acetyl-(octyl)Gly-Ser-Leu-Ser-Leu-Asp-(octyl)Gly-Asp-NH2	Yes	No	Tao, H. et al. Engineered nanostructured beta-sheet peptides protect membrane proteins. Nature methods 10, 759-761, doi:10.1038/nmeth.2533 (2013).
Amphipols	Amphiphilic polymer	Yes	No	Tribet, C., Audebert, R. & Popot, J. L. Amphipols: polymers that keep membrane proteins soluble in aqueous solutions. Proceedings of the National Academy of Sciences of the United States of America 93, 15047-15050 (1996).
SMALPs	Styrene Maleic Acid Copolymer	No	Yes	Knowles, T. J. et al. Membrane proteins solubilized intact in lipid containing nanoparticles bounded by styrene maleic acid copolymer. Journal of the American Chemical Society 131, 7484-7485, doi:10.1021/ja810046q (2009).
Nanodiscs	Apolipoprotein A-1	No	Yes	Bayburt, T. H., Carlson, J. W. & Sligar, S. G. Reconstitution and imaging of a membrane protein in a nanometer-size phospholipid bilayer. Journal of structural biology 123, 37-44, doi:10.1006/jsbi.1998.4007 (1998).
Macrodiscs	14-residue peptide derived from Apolipoprotein A-1	No (Diameter can be varied by at least 3-fold by changing the lipid:peptide molar ratio)	Yes	Park, S. H. et al. Nanodiscs versus macrodiscs for NMR of membrane proteins. Biochemistry 50, 8983-8985, doi:10.1021/bi201289c (2011).
ΔMSP	Truncated version of Apolipoprotein A-1	No (Diameter can be varied by changing the molar ratio of ΔMSP to lipid)	Yes	Wang, X., Mu, Z., Li, Y., Bi, Y. & Wang, Y. Smaller Nanodiscs are Suitable for Studying Protein Lipid Interactions by Solution NMR. The protein journal 34, 205-211, doi:10.1007/s10930-015-9613-2 (2015).
ΔH-MSP variants	Truncated versions of Apolipoprotein A-1	No (Diameter can be varied by changing the molar ratio of scaffold protein to lipid)	Yes	Hagn, F., Etzkorn, M., Raschle, T. & Wagner, G. Optimized phospholipid bilayer nanodiscs facilitate high-resolution structure determination of membrane proteins. Journal of the American Chemical Society 135, 1919-1925, doi:10.1021/ja310901f (2013).
Salipro	Saposin lipoproteins	Yes	Yes	Frauenfeld, J. et al. A novel lipoprotein nanoparticle system for membrane proteins. Nature Methods (2016)