

什么是合成 Nanodisc ？（2）

详细介绍：



成纳米盘是小尺寸的盘状结构体，由细胞膜磷脂组成，而磷脂则通过合成聚合物环结合在一起。

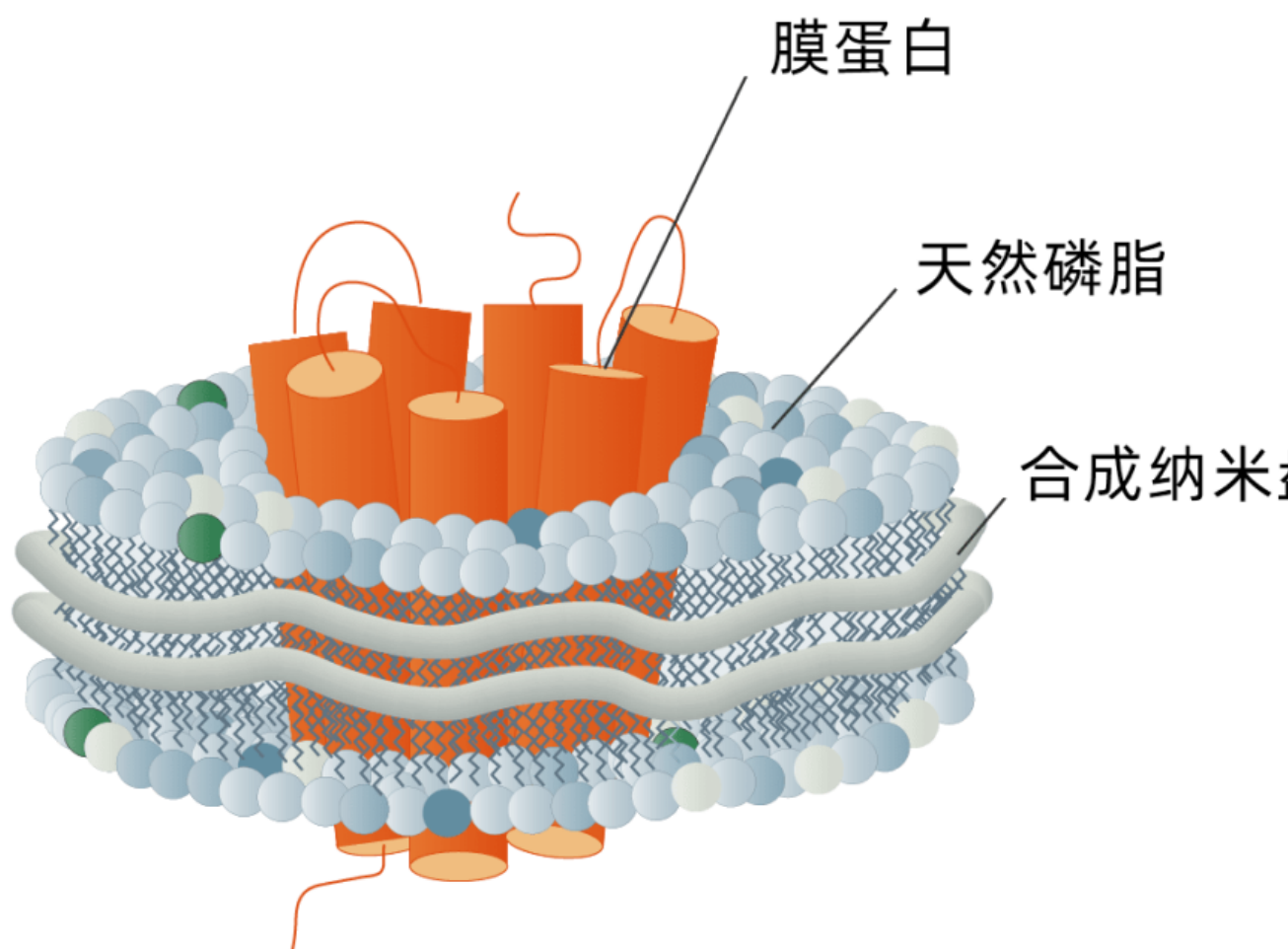


图 1：合成纳米盘描述

纳米盘提供了细胞膜中天然膜蛋白环境的可迁移、几乎一致的复制品。因此，它们规避了增溶去污剂的问题，使我

有几种不同的聚合物可用于制造合成纳米盘，各有其优缺点

DIBMA

SMA

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合成聚合物如何形成所需的纳米盘？

细胞膜为最重要的蛋白质组之一提供了其所需的环境：膜蛋白质组。膜蛋白分为外周蛋白和整合蛋白两种，二者

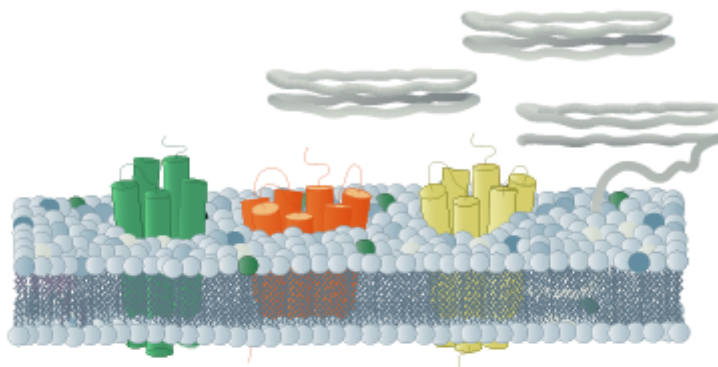
问题是，当这些疏水区与水或其他亲水性介质接触时，膜蛋白的 3D 结构将坍塌，从而失去其功能性。

为避免这种情况发生，蛋白质研究科学家通常使用去污剂（洗涤剂）来覆盖膜蛋白的这些脆弱部分。但由于使用结构的干扰等情况。

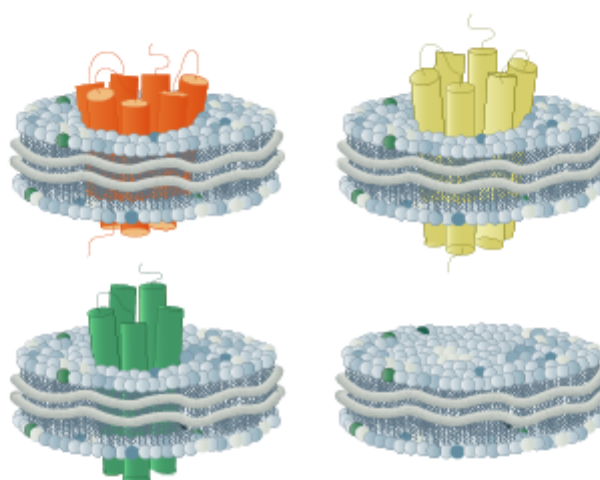
相比之下，合成聚合物能够从其单体中形成聚合物链，插入所需的目标膜蛋白周围的细胞膜之中（见图2，顶部cutter）一样，将膜蛋白从膜中溶解出来，而聚合物则使膜蛋白在新形成的纳米盘中保持稳定。

接下来采用亲和层析法精确分离稳定的目标蛋白，并实施进一步的科学分析。

1.合成聚合物添加



2.稳定的膜蛋白



3.亲和色谱法



4.稳定的靶蛋白

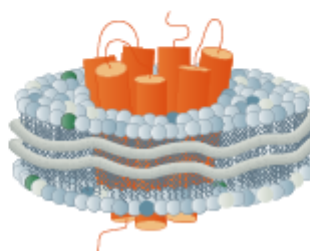


图2：在包含膜蛋白的天然细胞膜中制备合成纳米盘的过程。下一个步骤一般为亲和层析。

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	DIBMA	DIBMA Glucosamine HEPES (18041)	2023	Conformations of the Human Immunodeficiency Virus (HIV-1) Envelope Glycoproteins 2 in Detergents and Styrene-Maleic Acid Lipid Particles (SMALPs)	Zhou et al.	Dana-Farber Cancer Institute, USA
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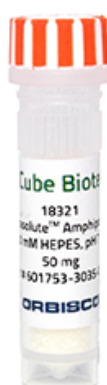
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