I will discuss recent advances in de novo design of protein nanomaterials, including the design of self-assembling closed structures with cyclic, dihedral, tetrahedral, octahedral and icosahedral point group symmetries, self-assembling 1D nanowires, and 2D hexagonal lattices. I will discuss the functionalization of these nanomaterials and the incorporation of interfaces which allow precise interaction with inorganic crystal lattices.