

The **Structure of Macromolecular Assemblies** laboratory run by Dr. Carlos Fernández-Tornero, uses X-ray crystallography and electronic cryo-microscopy to understand the functioning of a series of proteins involved in DNA repair and whose activity is altered in **Xeroderma Pigmentosa (XP)**.

This rare inherited skin disease is characterized by an increased sensitivity to the harmful effects of ultraviolet radiation on DNA. Patients show skin lesions after exposure to sunlight and have a 10,000 times greater risk of developing skin cancer. In addition, approximately 20% of patients with XP also develop abnormalities of the nervous system. These symptoms appear early in life, usually before 10 years. Since they cannot be exposed to the sun, these patients are known as the "children of the moon."

Recently, the group led by Dr. Fernández-Tornero have obtained the atomic structure of one of the XP proteins in complex with the DNA, which has allowed them to understand why certain mutations in this protein result in the development of XP. Later studies will be aimed at deepening the molecular mechanism of this disease.