NANOG is a transcription factor that plays a critical role in maintaining the self-renewal and pluripotency of embryonic stem cells. It is named after the mythical Celtic land of Tir nan Og, which means “land of the forever young.”

NANOG is part of a network of transcription factors that control the expression of genes involved in stem cell maintenance, differentiation, and cell fate determination. It functions by binding to specific DNA sequences and activating or repressing the transcription of target genes.

In addition to its role in embryonic stem cells, NANOG has also been implicated in the development and progression of various types of cancer, including ovarian, breast, and colorectal cancer. In cancer cells, NANOG expression is often upregulated, and this has been linked to increased tumor aggressiveness, metastasis, and resistance to chemotherapy.

Targeting NANOG and its downstream targets is a potential strategy for developing new cancer therapies. However, due to its essential role in embryonic stem cell maintenance, targeting NANOG specifically in cancer cells without affecting normal stem cells remains a significant challenge.