

세미나 초록

발표주제	Telomeres reformed with non-telomeric sequences
발표내용	<p>Telomeres are part of a highly refined system for maintaining the stability of linear chromosomes. Most telomeres rely on simple repetitive sequences and telomerase enzymes to protect chromosomal ends; however, in some species or telomerase-defective situations, an alternative lengthening of telomeres (ALT) mechanism is used. ALT mainly utilises recombination-based replication mechanisms and the constituents of ALT-based telomeres vary depending on models. Here we show that mouse telomeres can exploit non-telomeric, unique sequences in addition to telomeric repeats. We establish that a specific subtelomeric element, the mouse template for ALT (mTALT), is used for repairing telomeric DNA damage as well as for composing portions of telomeres in ALT-dependent mouse embryonic stem cells. Epigenomic and proteomic analyses before and after ALT activation reveal a high level of non-coding mTALT transcripts despite the heterochromatic nature of mTALT-based telomeres. After ALT activation, the increased HMGN1, a non-histone chromosomal protein, contributes to the maintenance of telomere stability by regulating telomeric transcription. These findings provide a molecular basis to study the evolution of new structures in telomeres.</p>