# COMPARISON OF POWERPLEX®16 SYSTEM AND OTHER MULTIPLEX STR TYPING KITS ON CASEWORK

**L. Garofano, M. Pizzamiglio, F. Biondi, P. Linarello, T. Floris, C. Bellino, and A. De Meo**
*Reparto Carabinieri Investigazioni Scientifiche, Parma, Italia*

Short tandem repeat (STR) polymorphism can be considered the standard genetic markers used throughout the world for forensic purposes. Moreover, the introduction of multiplex PCR techniques has revolutionized the analytical possibilities providing the opportunity for simultaneous, quick, and robust co-amplification of several DNA loci from donors as well as from minute biological evidence collected at crime scenes. As a consequence, many countries have selected core STR loci in order to set up centralized databases for national and international genotype comparisons. In this regard, several leading companies in the field have increased their efforts to develop commercial kits containing highly polymorphic alleles which may be detected even starting from degraded or very small quantities of DNA templates.

The presentation will show the use of the PowerPlex® 16 for the analyses of biological traces linked to casework, three of which were previously typed with other genetic marker systems (i.e. Profiler™, SGM Plus).

The first case concerns the analyses of DNA extracted from three hair roots pulled out together and stored frozen for over a year.

The second case refers to the analyses of five exhibits consisting of both powder and small fragments from bone samples.

The third and fourth cases pertain to the analyses of DNA from sweat left on exhibits collected after a robbery and a murder case, respectively.

The strategy devised by our lab for a thorough examination of the evidence and the identification of biological traces is here described. Both Chelex® and organic procedures were performed to extract DNA, followed by DNA purification using the QIAamp® DNA mini kit. DNA was then quantified using the slot-blot procedure. Amplification and typing of the STR loci were carried out according to the manufacturers' recommendations. Our study is still preliminary and needs further evaluation, however, we are now able to show some of the advantages offered by the new forensic STR kit produced by Promega.