

**P007** Twin ribozymes as molecular tools for site-specific modification of RNA

**Stéphanie Vuléon and Sabine Müller**

*Ruhr-Universität Bochum, Fakultät Chemie,  
Universitätsstr. 150, D-44780 Bochum*

Site-specific modification of RNA molecules is a major goal in biological studies, structural and functional analysis. While introduction of site-specific modifications can be achieved by chemical synthesis, labelling of long transcribed RNAs is a difficult task. Usually, modified triphosphates are used for random incorporation during *in vitro* transcription, while controlled labelling can be achieved only at the 3'- or 5'-end. We have developed an approach for site-specific internal modification of long RNA molecules that relies on the ribozyme mediated exchange of RNA segments. A small engineered RNA of only 141 nucleotides, derived from the hairpin ribozyme by tandem duplication (hence dubbed "twin ribozyme") catalyzes in a strictly controlled fashion two chain cleavage events and two ligations and thus mediates the exchange of a patch of residing substrate sequence against a separately added synthetic RNA fragment. We have prepared RNA oligonucleotides carrying modifications such as different dyes or biotin and added them as exchange fragments to the twin ribozyme reaction. As a result a number of modifications were successfully introduced into a 145 nts RNA substrate with up to 60% yield.