

**P024** Riboswitches as regulative tools – introduction of an *in vivo* screening system in yeast  
**Anke Hunsicker, Sabrina Zeiher, Martin Sanchez and Beatrix Suess**  
*Lehrstuhl für Mikrobiologie, Universität Erlangen, Germany*

RNA-elements are able to change conformation by binding small ligands. The allosteric conversion of these elements can effect regulation of translation if they are located in the 5' UTR of a gene. Such RNA's that are active in regulation are called riboswitches.

In our project we focus on the identification of short synthetic, *in vitro*-selected RNA-molecules (aptamers) that are able to regulate translation by binding antibiotics *in vivo*. Previous work has shown that only few *in vitro*-selected aptamers are regulatory active *in vivo*. Therefore we combined *in vitro*-selection with an *in vivo*-screening in yeast. We inserted an aptamer-pool selected against neomycin in front of a *gfp*-reporter gene and measured fluorescence in the absence and presence of neomycin. Only 30% of 5000 analysed yeast colonies showed significant fluorescence in the absence of neomycin. Out of these we identified 10 individual sequences which were able to mediate regulation in a neomycin-dependent manner. Six of these contained a unique motif. We identified a minimier of 23 nts which yielded a regulatory factor of 4. Structural probing showed that binding occurs at two distinct regions of the aptamer as was already shown for a regulatory active tetracycline-binding aptamer.