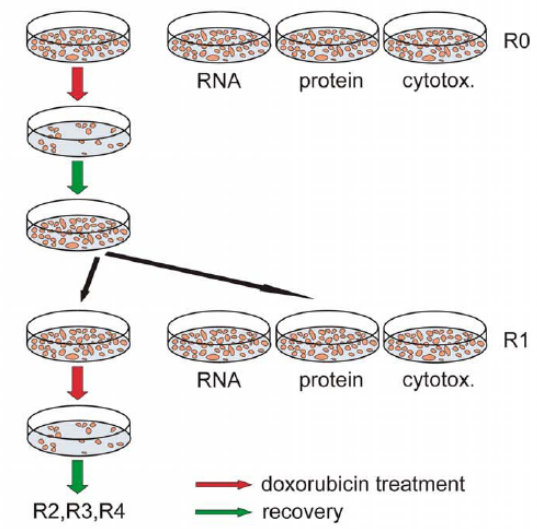
Novel Mechanisms of Chemoresistance

Occurrence of chemoresistance is one of the major obstacles in chemotherapy of breast cancer patients. Thus, we want to mimic the pulse therapy of cancer patients applied in the clinics by using an *in vitro* cell culture system. Therefore, we established the Molecular Evolution Assay, where we treat cancer cell lines with various chemotherapeutic drugs for several cycles. After each treatment round cells are harvested for cytotoxicity assays as well as for RNA and protein isolation to investigate changes in chemosensitivity and gene expression. The cytotoxicity assays revealed that cells became more resistant providing evidence for the induction of chemoresistance.



Schematic diagram of the Molecular Evolution Assay

Facilitating this assay we can perform a comprehensive analysis of resistance mechanisms *in vitro*. Novel resistance mechanisms will subsequently be validated *in vivo* and compared to clinical settings.