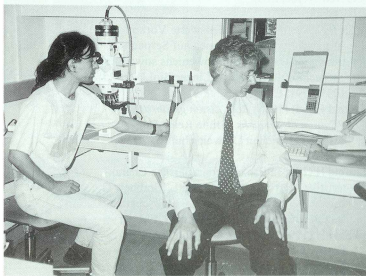


Cytology and Genetics

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Cytology and genetics have a long tradition at the Institute of Botany (Prof. L. Geitler, Prof. K. Schnarf, Prof. E. Tschermak-Woess) and a variety of organisms including higher and lower plants and animals have been the subject of scientific activities.

At present, in the department only three major topics are dealt with: *plant molecular cell biology*, *meiosis*, and *RNA-protein interaction*. We predominantly study *model organisms*, namely *Arabidopsis thaliana*, *Saccharomyces cerevisiae*, and *Xenopus laevis*. Only peer-reviewed projects are being worked on, and the majority of projects are parts of the respective "research priority" programs. With respect to lecturing and teaching, the scientific personnel of the department is fully engaged in the "Studienzweig Genetik". A number of compulsory lectures and lab courses for the genetics students are our responsibility.

The work in the department is directed

1. towards integrating **molecular biology and genetics of the model plant *Arabidopsis thaliana***. This research includes four major projects.
 - a. The regulation of polymerase I transcription in *A. thaliana* (D. Schweizer & A. Bachmair)
 - b. Ubiquitin-dependent proteolysis in *Arabidopsis thaliana* (A. Bachmair)
 - c. Expression of yeast transposable element Ty1 in *Arabidopsis thaliana* for mechanistic studies and gene tagging (A. Bachmair)
 - d. Research on plant-pathogen interactions using the model plant *A. thaliana* and the bacterial pathogens *Xanthomonas campestris* and *Pseudomonas syringae* (Ch. Grimm, W. Aufsatz)
2. and towards **understanding the meiotic process**. This research focuses on early meiotic events in the model organism *Saccharomyces cerevisiae* and includes genetical, biochemical, immunocytochemical, and cytogenetical approaches. This research comprises the following projects.
 - a. Molecular characterization of components of the synaptonemal complex in the yeast *Saccharomyces cerevisiae* (J. Loidl, F. Klein, D. Schweizer)
 - b. Genetic and molecular cytological characterizations of genes involved in chromosome pairing and segregation (F. Klein)
3. towards the study of **RNA metabolism mediated by RNA binding proteins** in higher eucaryotes. This research focuses on the biochemical and biological analysis of double stranded RNA binding proteins:

- a. Structural and biochemical analysis of a novel double stranded RNA-binding motif (M. Jantsch)
- b. Biological analysis of double stranded RNA binding proteins in the frog *Xenopus laevis* (M. Jantsch)

International Cooperations

Dr. A. Zach, The Hebrew University of Jerusalem, Department of Agricultural Botany, Israel (protein turnover)

Dr. Hirohiko Hirochika, Department of Molecular Biology, National Institute of Agrobiological Resources, Japan (transposons)

Dr. N.J. Panopoulos, Institute of Molecular Biology & Biotechnology, Crete, Greece (plant pathology)

Dr. Harry Scherthan, University of Kaiserslautern, Department of Human Biology and Genetics, Germany (molecular cytogenetics)

Dr. Shauna Somerville, Carnegie Institution of Washington, Department of Plant Biology, Stanford, California, USA (plant pathology)

Prof. Kurt Wüthrich, Swiss Federal Institute of Technology, Hönggerberg, Zürich, Switzerland (NMR-structural analysis of protein-nucleic acid complexes)

Selected References

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