

## We provide services in the field of micro-organisms and natural products and research into zygomycetes.

The Jena Microbial Resource Collection (JMRC) is a joint institution of the HKI and the Friedrich-Schiller-University Jena. The JMRC provides scientific services comprising the collection, storage, maintenance and the worldwide exchange of microbiological resources (micro-organisms, natural products, test capacities). In addition, we research into the biodiversity of fungi as producers of natural products and pathogens causing infectious diseases. Our main focus is on:

- Storage, maintenance and world-wide exchange of micro-organisms, natural products and research data
- International network of resource data bases
- Bioactive compounds profiling
- Virulence of the type *Lichtheimia*
- Fungus-immune cell interactions
- Functional genomics of fungi
- Evolution, biodiversity and polyphasic taxonomy of fungi

The JMRC curates a selection of about 50,000 micro-organisms (15,000 species of fungi and 35,000 species of bacteria) as well as a library of natural products, natural product derivatives and synthetic materials. These collections serve both research projects within the HKI and the world-wide material and data exchange within the frame of cooperations and joint projects. The JMRC is closely linked with the National Reference Center for invasive Mycoses [NRZ-Myk](#) which is also accommodated at the HKI and takes over the services for the deposition of clinical isolates. In addition, the JMRC coordinates the complete biological profiling of new active compounds required for the preparation of pre-clinical stages of drug development. Investigations concerning microbial activity are carried out by JMRC staff. The JMRC provides this service to joint large-scale research partners (FungiNet, ChemBioSys, InfectControl 2020, JSMC), but also to individual projects of academic and industrial partners on request.

Zygomycetes and their pathogenic mechanisms are being investigated as the pathogenic agents of mycoses. Since the turn of the millennium, there has been a massive increase in formerly rare zygomycete infections. Our JMRC staff carries out research into the fungus *Lichtheimia corymbifera*, one of the most common human pathogenic zygomycetes that is distributed through the air. In humans, *L. corymbifera* releases a life-threatening, invasive infection of the bronchovascular-respiratory-pulmonary tract. This is an acute respiratory disease that is capable of developing into a generalised zygomycosis and may like this affect the whole body. Once manifested in the body, the fungus – depending on the immune status of the person concerned - leads to death in up to 90 % of all cases. There have been only modest possibilities available with regard to diagnostics and therapy. Our research aims at uncovering the backgrounds of the pathogenicity in order to lay a basis for the improvement in diagnostics and new therapeutic possibilities. In this process, we examine the interdependencies on a genome, transcriptome, proteome and cellular level.

