# Abstract

## English

Fluorescence microscopy experiments result in big amounts of raw image data that has to be processed, analyzed and finally stored in an ordered and retrievable way. As the complexity of such experiments grows, the need for systematically managing experiment data arises. The data management system iLAP (Laboratory data management, Analysis and Protocol development) addresses these needs by providing a workflow-oriented computational environment offering tools for protocol development, wizard based data acquisition and automatic analysis.

The primary goal of this master thesis was the design and implementation of an archiving tool for the data managed within iLAP. The resulting archive of a microscopy experiment consists in an XML-based description of the data as well as the files attached to associated experiments and protocols. Besides the export functionality, also the import of archived data is realized. This offers the possibility to exchange experimental data and protocols independently from the iLAP installation.

A crucial part of the scientific workflow consists in the comparison of experimental data and its generation process. Optimization steps often start at the comparison of protocols. Therefore, the second objective of this thesis was the design of a web-based module which assists scientists in performing protocol comparisons. The herein implemented tool traces the differences between two experiment protocols and provides a clearly arranged presentation of the results in a web browser.

Both software modules have been implemented using the already existing three tier architecture of iLAP consisting of the database backend, the Spring-based application environment and the web-frontend.

**Keywords:** Microscopy experiment, iLAP, XML, archiving, comparison, JEE