

## **Abstract**

Hemoproteins are diverse and very important group of proteins involved in a wide range of biochemical processes. Their typical roles in living organisms include oxygen storage and distribution, enzymatic catalysis of redox reactions and electron transport in the respiratory chain. In relatively recent times, a fourth group of hemoproteins, the so-called heme sensor proteins, has been discovered. This group includes, among others, proteins that have the ability to reversibly bind heme, which in such cases acts as a signaling molecule. This reversible interaction is essential for cells in certain signalling pathways. As it was found, one of the heme sensor proteins is the p53 protein, which is an important transcription factor

The first phase of this diploma thesis was focused to the preparation of p53 family proteins including some of their deletion mutants. Subsequently, the task for selected proteins was to study the influence of heme on their oligomeric state. The essential part of the thesis consists of spectrophotometric studies, which aimed to reveal potential interactions of the studied proteins with heme and to characterize the interactions.

**Keywords:** heme, heme sensor proteins, p53 protein family, transcription factors, signal transduction