

# Long-term radiobiological effects of <sup>131</sup>I exposure

– dose, age and time related transcriptomic and proteomic response in rats

<sup>131</sup>I is commonly used in the clinic for treating thyroid diseases, since the thyroid has a physiological uptake of iodine. <sup>131</sup>I labelled pharmaceuticals are also used for cancer treatment, but since not all iodine atoms are bound to the carrier molecules, some <sup>131</sup>I will then be accumulated also in the thyroid which then is an organ at risk. <sup>131</sup>I is also one of the most commonly released radionuclides during nuclear accidents. Children are in general more sensitive to radiation and an increased number of thyroid cancers was seen in children but not in adults after the Chernobyl accident. The biological response to irradiation differs depending on several parameters, including age at exposure, time after exposure, and absorbed dose. There is a knowledge gap regarding the mechanisms involved in the radiobiological effects in thyroid tissue, especially to low doses from <sup>131</sup>I and effects remaining at late time points. This thesis is based on three papers. In Paper I, late dose related effects on the transcriptome and proteome in thyroid and plasma from young rats are investigated. In Paper II, the age and time related effects on the transcriptome and proteome in thyroid and plasma from young and adult rats are addressed. In Paper III, the age- and dose-related effects on the thyroid proteome are investigated twelve months after exposure.



Malin Larsson is a Medical Physicist and conducted her PhD-thesis in the Eva Forssell-Aronsson group at the Department of Medical Radiation Sciences, University of Gothenburg. For additional information please visit <https://www.gu.se/forskning/eva-forssell-aronsson>

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