



1 Soil: the Colours of DNA

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Considering the importance of studying extracellular DNA, a potential source of naturally transformable genetic material and microbial macronutrients, we elaborated a large scale extraction and purification protocol and tested its efficacy by application on consecutive horizons of a whole forest soil profile, covering a wide range of physical, chemical and biological soil characteristics. The *crude* (not purified) extracellular DNAs extracted throughout the forest soil profile, concentrated by freeze-drying and suspended in sterile water prior to accurate purification, showed distinct and characteristic *colours* for each respective horizon; DNAs from superficial horizons (A1 and A2) rich in organic matter, exhibited dark brown coloration, while those extracted from the deeper horizons (Bw1- BCb1) appeared less coloured and turned to be colourless for the deepest horizon (BCb2). The phenomena of the decreasing colour intensity of the DNA extracts with increasing soil depth is in accordance to the decreasing amounts of extractable DNAs and organic matter throughout the entire soil profile.

The fluorimetric quantification of both total- and extracellular DNAs throughout the soil profile provided insights in their quantitative distribution and suggested an occurred downstream movement of the extracellular DNA fraction in the *illuvial* horizon.