

# Vpliv časa in temperature shranjevanja na koncentracijo DNA

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Zaradi hitrega naraščanja števila metod analiziranja vzorcev deoksiribonukleinske kisline (DNA), se povečuje tudi pomen raziskovanja pogojev, ki vplivajo na kvaliteto shranjenih vzorcev DNA, predvsem na koncentracijo in čistost vzorca. Delo z vzorci DNA vključuje raziskave na področjih rekombinantne tehnologije, genetike, farmacije, evolucije, forenzike, medicine, ekologije in arheologije. Cilj naše naloge je bil ugotoviti, kako čas in temperatura shranjevanja vzorca vplivata na čistost in koncentracijo DNA. Preučevali smo vzorce biofilma iz treh slovenskih rek. Vzorci DNA so bili shranjeni en mesec pri temperaturi 4<sup>o</sup> C, nato smo iz polovice posameznega vzorca izolirali DNA, drugo polovico pa še za tri mesece shranili pri temperaturi -20<sup>o</sup>C. Za merjenje čistosti in koncentracije DNA v vzorcu smo uporabili napravi, spektrometer NanoDrop in fluorometer Qubit.

Rezultati meritev deloma potrjujejo naše hipoteze. Koncentracije DNA, izolirane iz istega vzorca se le nekoliko razlikujejo, to dokazuje, da je DNA zelo stabilna molekula.

V prihodnjih letih pričakujemo razvoj novih področij, na katerih bo delo z ustrezno shranjenimi vzorci DNA omogočalo celovit in zanesljiv vpogled v dedni zapis ter natančnost analiz za potrebe posameznih raziskav. Izziv na področju shranjevanja vzorcev DNA je, kako še izboljšati pogoje hranjenja, ne le glede na čas in temperaturo, ampak tudi glede na druge pogoje, ki lahko vplivajo na koncentracijo in čistost.

## **The Impact of Temperature and Time on DNA Sample Concentration**

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There has been a tremendous progress in the development of the DNA analysing methods recently. Recombinant DNA technology, genetics, pharmacy, evolution, forensic, medicine, ecology, archaeology are some of the scientific disciplines involving DNA sample analyses as a working method. That is why we decided to find out what impacts of temperature and time of storage there are on DNA samples as the goal of our research work. We first started with biofilm samples from three Slovenian rivers.

The experimental part of our research involved storage of DNA samples at 4<sup>o</sup> C for one month. After that, we analysed half of the DNA sample with NanoDrop spectrometer and Qubit fluorometer. The other half of the DNA sample was stored at -20<sup>o</sup>C for another three months and then analysed.

The results of our experimental work are very promising, nevertheless there are few differences when we compare results of both experiments. Regarding DNA concentration and purity even after the storage, DNA is very stable and that is why appropriate for further research work. The challenge for the future development is how to improve the DNA sample storage conditions, not just regarding time and temperature, but also some other conditions as well. That could improve accuracy and reliability of the DNA analysing methods even more.