

*Analysing abiotic perturbations to biological systems using  
vibrational spectroscopies*

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Human pharmaceuticals are readily detected in waste water treatment plants, rivers and estuaries. Whilst levels are not yet high enough to cause immediate harm to aquatic life, it is widely acknowledged that there is insufficient information available to determine whether exposure to low levels of these substances over long periods of time is having an impact on the microbial ecology of these environments. In order to investigate the effect on the metabolic potential of the microbial community we have been adopting a metabolomics approach using various analytical platforms including vibrational spectroscopic approaches for generating metabolic fingerprints and GC-MS for metabolic profiling. In order to turn these data into relevant knowledge about the physiology of the organism we have been using a battery of univariate and multivariate statistical analysis techniques. This presentation will report our studies of how microbes respond to API exposure and we shall also introduce spatial metabolic fingerprinting as a means of generating detailed chemical maps from algae.