

P011 Enzymatic Defluorination of Fluoroglutamate
Clár Donnelly and Cormac D. Murphy
*School of Biomolecular and Biomedical Sciences, University
College Dublin, Belfield, Dublin 4, Ireland.*

In recent years many halogenated organic compounds have been produced and are widely used in industry and agriculture; however, many of these compounds are toxic and can cause serious environmental pollution. Dehalogenases have attracted a great deal of interest, owing to their ability to catalyse the cleavage of halogen substituents from a wide range of organohalogenes including haloalcohols, haloacetates and haloaromatics. These enzymes have potential uses in environmental technology and in specific dehalogenation of organohalogenes from industry.

Streptomyces cattleya produces fluoroacetate and fluorothreonine; this organism also has defluorinating activity towards 4-fluoroglutamate, with the L-*threo* isomer being completely defluorinated, possibly as part of a mechanism of self-protection. Such activity is unusual, as often defluorinating enzymes have a substrate specificity that is confined to fluoroacetate. In cell free extract ammonia is released alongside fluoride ion; this may be as a result of the same enzyme activity or general deaminases also present in the extract. Interestingly a dechlorinating and deaminating system has already been discovered in *Proteus mirabilis* (Moriguchi, M, Hoshino, S and Hatanaka S, *Agric. Biol. Chem.*, 1987, 51, 3295-3299) and here we describe our investigations into the dehalogenating activities of the two bacteria in an attempt to determine if the two enzymes belong to the same class.