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Ultrafast Extraction of Proteins from Tissues Using Desorption by Impulsive Vibrational Excitation

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Abstract: A picosecond IR laser (PIRL) can be used to blast proteins out of tissues through desorption by impulsive excitation (DIVE) of intramolecular vibrational states of water molecules in the cell in less than a millisecond. With PIRL/DIVE proteins covering a range of a few kDa up to several MDa are extracted in high quantities compared to conventional approaches. The chemical composition of extracted proteins remains unaltered and even enzymatic activities are maintained.