

SHAPING PROTEINS UNDER PRESSURE

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High hydrostatic pressure effects on biological macromolecules were known since the early 1900s, however, for over a century high-pressure biophysics research has been carried out by a relatively small number of enthusiasts who were brave enough to build their own equipment. Nevertheless, fundamental studies to date have demonstrated that pressure causes perturbation of protein structure that leads to unfolding of proteins orthogonal to the action of temperature and chaotropic reagents. Pressure effects on protein conformation are explained by hydration of solvent-excluded cavities that are eliminated upon unfolding. As a result, highly reproducible, and frequently reversible, control of protein conformation can be achieved. Pressure Biosciences is one of the pioneer companies manufacturing research-scale high pressure instrumentation for life sciences. Our products help hundreds of laboratories worldwide to prepare biological samples for biomarker discovery, control enzyme activity and protein structure for development and manufacturing of biologics, studying high pressure inactivation of pathogens and pressure effects on living piezophilic organisms. This chapter will give an overview of high pressure effects on protein structure and function and highlight utility of high pressure as a precise thermodynamic perturbation tool in a variety of research areas, ranging from food safety to cancer research, as well as development and manufacturing of biopharmaceuticals.

Meeting number (access code): 199 973 3563

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Monday, October 5, 2020

10:45 am | (UTC-04:00) Eastern Time (US & Canada) | 1 hr 15 mins

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