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Gly-tag for metal-free protein purification

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Analytically pure proteins are indispensable for a variety of studies on protein's structure, post-translational modifications, and function. Affinity tag-based approach is the most widely accepted methodology for the purification of proteins.[1] However, selective binding of proteins poses a considerable challenge as proteins offer a plethora of competing sites with similar potential for interaction. Recently, we developed a methodology for selective N-Gly or Gly-tag specific labeling of proteins with appropriately designed aldehydes.[2] We demonstrated that the protein expressed with a single Gly could be labeled selectively in a cell lysate without off-target reactions. Owning to the high selectivity offered by this methodology, we developed a purification protocol using N-Gly as an affinity tag.[3] The functionalized resin is used to capture the protein of interest (POI) selectively, leaving the other proteins in solution. Subsequently, the POI is released along with the recovery of resin using on-demand reversibility protocol. The technology allows purification of N-terminus Gly containing proteins from a mixture of proteins and the cell lysate.

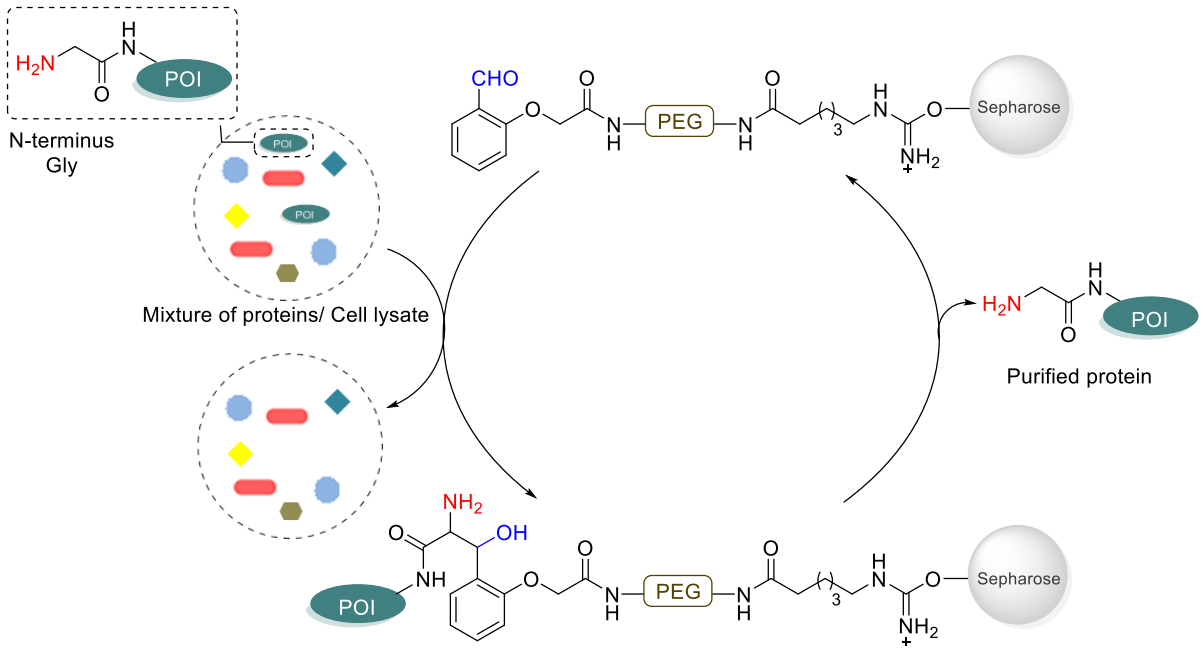

Figure: Gly-tag based protein purification.

References:

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2. (a) Rai, V.; Purushottam, L. Hemiaminal-tag for Protein Labeling and Purification. Patent application 201621041808, Dec 7, **2016**. (b) Purushottam, L.; Adusumalli, S. R.; Singh, U.; Unnikrishnan, V. B.; Rawale, D.; Gujrati, M.; Mishra, R. M.; Rai, V. *(manuscript under review)*

3. Purushottam, L.; Unnikrishnan, V. B.; Gujrati, M.; Adusumalli, S.; Rawale, D.; Mishra, R. K.; Rai, V. *(manuscript under preparation)*