



Bioreversible Protein Esterification

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WARF: P130148US02

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a high-yielding, catalyst-free method to esterify proteins using certain diazo compounds.

Overview

Proteins contain carboxyl groups. These charged groups make it difficult for any protein to enter a human (or other eukaryotic) cell. Modifying proteins to enter cells could revolutionize medicine, e.g., by helping antibodies reach intracellular targets or by replacing damaged proteins.

One way to modify proteins is to convert their carboxyl groups into esters. Existing esterification methods are inefficient in water. A new method is needed that is high-yielding and 'bioreversible,' meaning the protein reverts to its original form once it successfully enters the cell.

The Invention

UW-Madison researchers have developed an efficient new method for esterifying proteins using certain diazo compounds. The compounds convert protein carboxyl groups into esters in buffered water. The modification is removed by enzymes that reside in all human cells, making the method bioreversible.

Diazo compounds have the general formula $R_2C=N_2$, but not all are effective. They must have a basicity within a certain range.

Applications

- Esterification of proteins and peptides
- Cell transfection

Key Benefits

- Bioreversible
- Highly selective
- Efficient and high yielding
- Catalyst free
- Works in water

Stage of Development

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Using their new method the researchers have decorated and unlabeled two proteins - ribonuclease A and a red fluorescent protein (RFP).

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Additional Information

Related Technologies

- [WARF reference number P08318US02 describes a method for synthesizing effective diazo compounds.](#)

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Sensors](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854

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