

세미나 초록

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발표 주제	Excavation of enzyme functions
발표 내용	<p>An enzyme that has a strict substrate specificity can be used to yield a high regio- and/or stereospecific product. This presentation examples five enzymes, whose specificity was re-considered through structural and functional analyses, and, sometimes, modified for industrial purposes. First, some of NADPH-dependent oxidoreductases can have blue fluorescence, which can be decreased or increased with a substrate. One NADPH-dependent enzyme was engineered for emitting a constant fluorescence in the presence of substrate. Second, oxidoreductases may have different a reducing equivalent, for example, NAD(H) or NADP(H). The cofactor specificity of an oxidoreductase was changed to NADPH from NADH for a consecutive reaction with another enzyme. Enzymes for catalyzing formation of a covalent bond between two carbons can be utilized for manufacturing a beneficial product. For this, a decarboxylating enzyme was excavated as a carboligase for two carbon chemicals. One-carbon chemicals are easily diffused into air and are seldomly collected either by chemically or biologically. Formaldehyde-adding aldolases were characterized and their enzyme mechanism was visualized through structural studies. A formaldehyde converting enzyme was discovered and engineered for producing beneficial a two-carbon glycolaldehyde that can be converted into valuable chemicals upon combination with other enzymes.</p>