

Some Applications of Recombinant DNA Technologies

Field	Application	Importance
Basic Biology	DNA Sequencing	➤ Answers questions about gene structure, gene function, and relatedness of genes and organisms
Medicine	Directed mutagenesis	➤ Answers questions about gene function
	Therapeutic proteins	➤ Makes human proteins from treating diseases such as diabetes, pituitary dwarfism, hemophilia
	Gene therapy	➤ Treats genetic diseases such as cystic fibrosis
	Improved vaccines	➤ Produces more effective with fewer side effects
	Diagnosis	➤ Allows rapid, accurate diagnosis of infections and other diseases
	Veterinary medicine	➤ Better diagnosis, prevention, and treatment of disease
Industry	Altering microorganisms	➤ Improved production of antibiotics, amino acids, vitamins, and enzymes; also improved disposal of waste, including persistent toxic chemicals
Agriculture	Altering plants	➤ More rapid breeding of disease-resistant and improved plants (e.g., tomatoes that stay fresh longer)
	Altering farm animals	➤ More rapid development of superior breeds
Criminal Investigation	DNA Fingerprinting	➤ Can determine if a biological sample, such as blood, semen, or tissue is from a particular person