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## Biotechnological intervention for improvement of livestock

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Biotechnology becomes an integral part of the arsenal of tools that can be used to improve animal production in order to meet the demands of the consumer within economic, environmental and ethical constraints imposed by society. It contributes to animal production by improving the environmental component of the production systems as well as by improving the genetic make-up of livestock. Recent advances in animal breeding, molecular biology, reproductive technologies and information and communication technologies, present unprecedented opportunities for livestock improvement in the developing countries. After giving a general overview of biotechnology and animal production, this technical theme focuses on the three areas of biotechnology contributing to genetic improvement of livestock, i.e. reproductive biotechnology, livestock genomics and marker assisted selection (MAS), and transgenics. Animal biotechnology has many potential uses. The transgenic animals have been created with increased growth rates, enhanced lean muscle mass, enhanced resistance to disease or improved use of dietary phosphorous to lessen the environmental impacts of animal manure. Transgenic poultry, swine, goats and cattle that generate large quantities of human proteins in eggs, milk, blood or urine also have been produced, with the goal of using these products as human pharmaceuticals. A specific example of these particular applications of animal biotechnology is the transfer of the growth hormone gene of rainbow trout directly into carp eggs. The resulting transgenic carp produce both carp and rainbow trout growth hormones and grow to be one-third larger than normal carp. Another example is the use of transgenic animals to clone large quantities of the gene responsible for a cattle growth hormone. The hormone is extracted from the bacterium, is purified and is injected into dairy cows, increasing their milk production by 10 to 15 percent. That growth hormone is called bovine somatotropin or BST. Another major application of animal biotechnology is the use of animal organs in humans. Pigs currently are used to supply heart valves for insertion into humans, but they also are being considered as a potential solution to the severe shortage in human organs available for transplant procedures.

### Biography

G C Gahlot is currently Professor (ABG) and Incharge of Molecular Genetics Laboratory, Department of Animal Breeding & Genetics, Principal Investigator of All India Coordinated Research Project on Goat Improvement and Nodal Officer, RAJUVAS, Bikaner (Rajasthan), India. He has completed his BVSc & AH (1984) from University of Udaipur, India and PhD (2001) from Rajasthan Agricultural University, Bikaner (Rajasthan) India. He has more than 25 years teaching/research experience. He guided 7 MVSc students out of which 5 students worked in the field of Molecular Genetics. To his credit he has 38 research publications, 46 Research articles presented/published in symposium/conferences, 9 Technical reports published, 10 T.V. and Radio broadcast, 10 popular hindi leaflets/article, life member of 5 professional associations. He also worked as Principal Investigator of ICAR Research Schemes and DBT projects.

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