

Perspectives on Embryo Biotechnology: Its Origins, Current Uses and Future Prospects

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This lecture will begin by tracing some of the history behind techniques that we nowadays take for granted in the practice of embryo transfer, and in the application of the technique to various animal biotechnologies. It will be argued that an appreciation of such history can teach us a great deal about how we need to study and teach the subject, and about the best ways to conduct and finance the research that is essential to further progress. Examples in support of this argument will be taken from the changes that have occurred in the way embryos, particularly bovine embryos, have been collected, maintained in vitro, subjected to a variety of manipulations (sexing, division to produce identical animals, combination into chimeras, transfection with foreign genes), frozen and thawed, and transferred over the past 50 years.

The impact that embryo transfer has had, and continues to have, on genetic improvement, import and export, and disease control in livestock will be considered briefly. This will lead to a discussion of the balance between applications of embryo techniques to animal production itself on the one hand and to the production of pharmaceutical and other products from animals on the other.

The lecture will conclude with the identification of some key areas in which research is likely to pay dividends in advancing the uses we make of embryos. There will be emphasis on the need to retain integrative, comparative, whole animal studies to complement the inexorable progress being made in molecular biology in this post-genomic era.