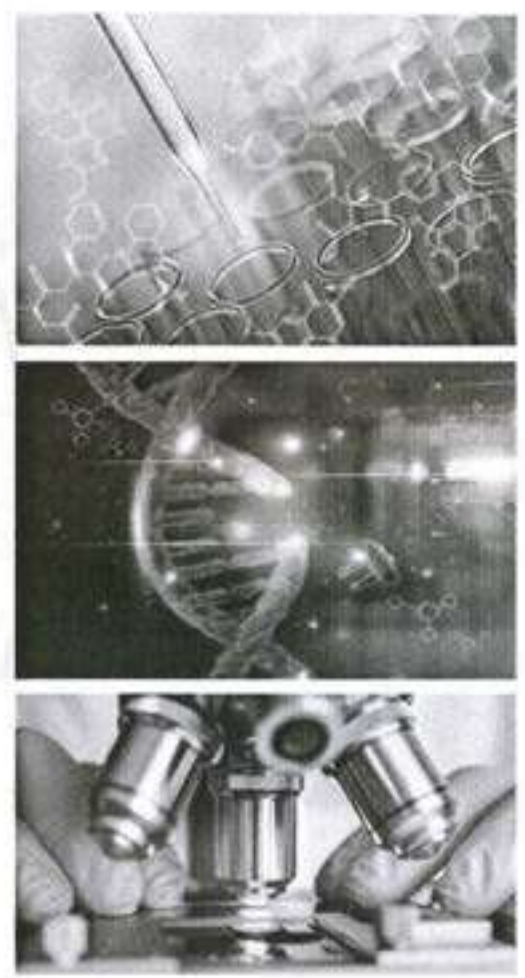
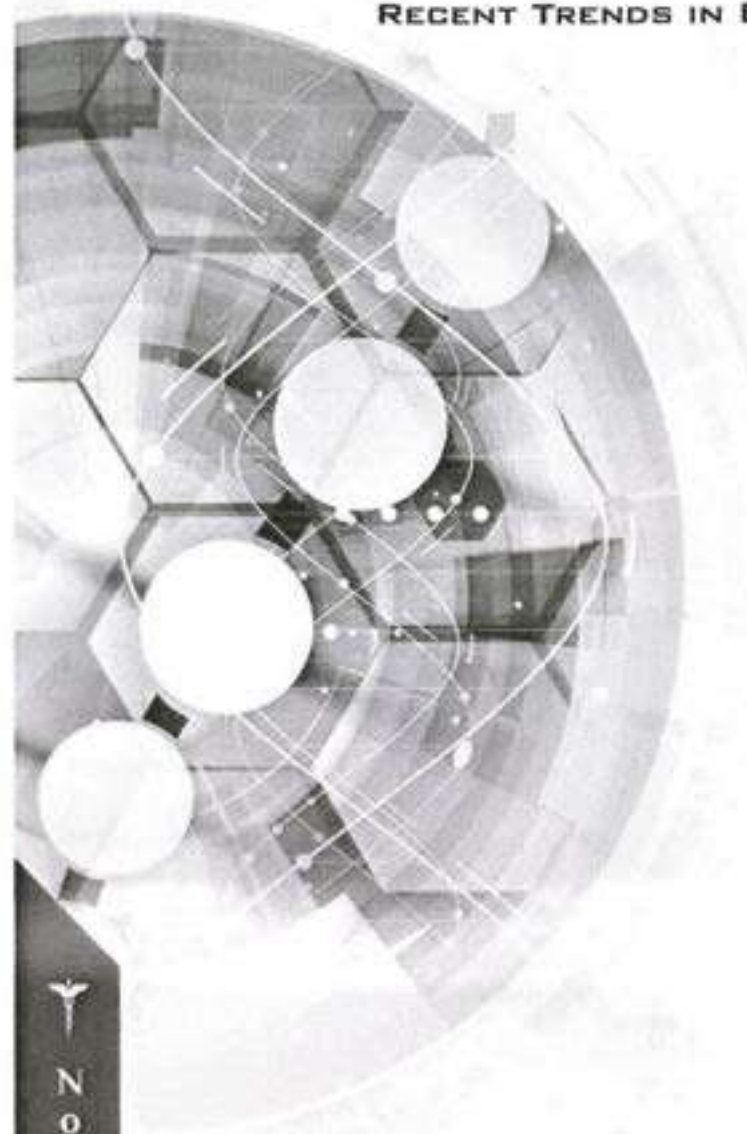


RECENT TRENDS IN BIOTECHNOLOGY



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Fundamentals of Medical Biotechnology

Rajneesh Prajapat • M. Kasturi
B. Manivannan • Anita Mishra
Editors

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Chapter 8

**ASSISTED REPRODUCTIVE TECHNOLOGIES:
AN OVERVIEW**

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ABSTRACT

Assisted Reproduction is the bioengineering of the fertilization process *in vitro* by natural/surgical manipulation of the Sperm and ovum to form the zygote and replacing the zygote at initial stage of cell division into the uterus for the completion of gestation and parturition. It offers many technical options for infertile couples to own their child. An infertile couple may have their child through their own gametes or genetic material or from the donor gametes or genetic material. Surrogacy is also an option when a woman is unable to bear the child in her uterus. Following the success of the assisted reproduction through *in vitro*

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fertilization in 1978, there have been several advancements in the technology in subsequent years and reached almost the peak within a decade. Assisted Reproductive Technologies are indicated for treatment of the couple with idiopathic infertility, man with spermatogenic failure or having defective spermatozoa, woman with nonfunctional ovaries or uterus, Preimplantation Genetic Diagnosis, aneuploidy screening and Surrogacy. Indeed, Assisted Reproductive Technologies have become the standard treatment for infertile patients.

Keywords: infertility, ART, IVF, spermatozoa, oocyte

1. ART: AN INTRODUCTION

A couple termed infertile when they are unable to have a child despite continued unprotected intercourse for a period of one year [1]. Around 30 per cent of couples of reproductive ages worldwide are infertile, the majority of them are reported from developing countries. Although the problem may exist among both men and women, women in particular are more stigmatized for her inability to have the child resulting in domestic violence isolation and sometimes suicide in developing countries [2, 3, 4, 5]. Infections in the reproductive tract and/or sexually transmitted diseases that lead to bilateral tubal occlusion are the most common causes for infertility among women in developing countries and Assisted Reproductive Technologies (ART) are the best treatment for such tubal occlusion related infertility in woman [6, 7].

In the late 1970's one of the ART Procedures, *in vitro* Fertilization (IVF) brought a major revolution in the history of infertility management in human. The pioneering efforts of Dr. Robert Edwards, Oldham General Hospital, Greater Manchester, UK brought the world's first child, "Louise Joy Brown", through IVF, commonly referred as first test tube child of the world, born on July 25, 1978 [8] On the same year, within a span of 70 days, Dr. Subhas Mukerjee from India was the second in the world to bring the first test tube child of India, 'Durga alias Kanupriya Agarwal' born on October 03, 1978 [9]. The first documented IVF Child in India is Harsha Chewda, born in 1986 by then pioneering IVF Research by Dr. Anand

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