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Pūrṇam

A Journal of Indian Knowledge Systems

(Website: <https://purnam.vercel.app>, <https://purnam.ac.in>)

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Pūrṇam Vol. 1 No.2 July - December 2025 Pages: 28 - 31 ISSN: 3049-3587 (Print)

Literary Research

Unusual Reproductive Events in the *Mahābhārata* and their Possible Biotechnological Equivalents

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Abstract

The *Mahābhārata* is a massive narrative detailing ancient history and philosophical wisdom. It also contains remarkable accounts of unconventional reproductive events that challenge standard human biology. This paper explores these unusual births, focusing primarily on the *Ādi Parva*, to identify conceptual equivalents with modern biotechnology. These unusual births are narrated as conceptual models rather than mere mythology. These narrations offer stimulating thought experiments for contemporary biotechnologists working in fields such as synthetic biology, genetic engineering, and regenerative medicine. They challenge traditional boundaries regarding maternal gestation and species-specific genetic barriers, providing a unique framework for reimagining the future of reproductive science. By bridging the gap between ancient literary tradition and modern technological aspirations, this paper attempts to provide food for thought for researchers aiming to push the limits of developmental biology and cellular differentiation.

Keywords: Mahābhārata, Synthetic Biology, Embryo Manipulation, Cloning, Developmental Biology, Ancient Indian Knowledge Systems, Parthenogenesis

Introduction

The great epic ‘Mahābhārata’, originally known as ‘Jaya’ composed by Vyasa, is considered one of the world’s most comprehensive and massive narratives, detailing the ancient history, genealogy, warfare, and

philosophical wisdom of ancient India. Mahābhārata is divided into 18 main chapters known as *Mahā Parvas*, starting with ‘Ādi parva’ till the ‘Swargarohana parva’, each of which is further subdivided into *Upa Parvas* (each named as a *parvas*) and numerous *Adhyāyas* (chapters). These *parvas* revolve around the rivalry and conflict between two branches of the

Kuru dynasty: the Pāṇḍavas (sons of Pāṇḍu) and the Kauravas (the hundred sons of Dhṛtarāṣṭra).

This paper is about unusual births narrated in the Mahābhārata, limiting the scope discussion to the first parva, the Ādi Parva since the major instances of birth are covered in the Ādi parva. Further, the paper does not provide any background of the initial characters named and also does not give in details, the background of the story. For biotechnologists, the Mahābhārata offers unique case studies in non-traditional reproduction as it provides an opportunity for understanding ancient concepts of genealogy, illustrates processes of conception, gestation, and physical creation that is different significantly from standard human biology.

Narrations of unusual births

The study of the *Mahābhārata* provides ancient narratives describing reproductive processes and morphological developments that present conceptual equivalents to modern genetic and regenerative biotechnology. These accounts suggest pathways for development outside conventional biological limits, offering stimulating thought experiments for contemporary biotechnologists, particularly those focused on genetic engineering, synthetic biology, and developmental research. The following narrations focus on the unusual birth indicating their possible relevance to modern biotechnology challenges.

Ex-Utero Gestation and Artificial Conception

This category details births resulting from the manipulation or development of germ cells outside the natural maternal environment, analogous to modern In Vitro Fertilization (IVF), artificial wombs, or cell culturing.

Droṇa's Birth from a Vessel

The sage Bharadvāja's semen (*retas*) fell after viewing the Apsarā Ghṛtācī. The semen was collected and placed in a *Droṇa* (a vessel or pot), leading to Droṇa's birth. (Ch.121, *Saṁbhava Parva*) This is analogous to Ectogenesis (Artificial Womb/Vessel). Here Development and gestation achieved entirely outside the biological mother, utilizing an artificial environment or container for cellular development.

Kṛpa and Kṛpī's Birth from Grass

The semen of the ascetic Śaradvan, startled by the Apsarā Jālapadī, fell onto *darbha* grass, from which Kṛpa and Kṛpī were born., (Ch. 120, *Saṁbhava Parva*) This is analogous to Ex-Vivo/Substrate Culturing:

Spontaneous or induced development of viable embryos on a non-traditional, biological substrate (grass), rather than in a uterus or standardized medium.

Dhṛṣṭadyumna and Draupadī (Fire Altar)

The pair emerged from the sacrificial fire (*Yajñakunḍa*). This outcome was directed by King Drupada through a specialized ritual (Yajña) seeking a son capable of killing Droṇa. (Ch. 153, *Caitraratha Parva*). This relates to Directed Cellular/Embryonic Genesis with Trait Selection: The fire altar acts a facility generating fully developed individuals (genesis) with pre-selected genetic traits (killing Droṇa).

Induced Parthenogenesis and Targeted Genetic Input

These events describe births where offspring result from divine intervention or supernatural activation, suggesting control over the paternal genetic contribution or development without conventional sexual intercourse, analogous to specialized genetic engineering or the use of specific genomic triggers.

Karṇa's Birth (Sun)

Prthā (Kuntī) received *mantras* (divine invocations) from Dūrvāsa, as a boon saying that if she invokes any god of her choice chanting the mantra she would get a child with that god's blessing. Out of curiosity, she invoked the Sun (Sūrya), and Karṇa was born. (Ch. 104, *Saṁbhava Parva*). This is analogous to Parthenogenesis or Induced Conception: The *mantra* functions as a genetic key or trigger, enabling conception through non-conventional or a divine paternal source, bypassing normal human reproductive constraints.

Pāṇḍavas' Births (Deities)

In an earlier instance Pāṇḍu's was cursed that the moment he indulges in sexual intercourse, he would die. Hence, Kuntī the wife of Pāṇḍu used the *mantras* taught by Dūrvāsa to invoke Dharma (Yama), Vāyu, and Indra, resulting in the birth of Yudhiṣṭhira, Bhīmasena, and Arjuna, respectively, Kuntī later shared the *mantra* with Mādṛī to produce Nakula and Sahadeva from the Aśvinī deities. (Ch. 104, 114, 115, *Saṁbhava Parva*). This is analogous to Directed Paternal Genetics/Controlled Surrogacy: Using ritualistic or genetic keys (*mantras*) to select and implement specific *paternal* genetic material (from deities), while the mother (Kuntī or Mādṛī) serves as the gestational surrogate. This solves the genetic barrier posed by Pāṇḍu's curse.

Embryo Manipulation and Mass Production

The rapid development and multiplication of embryos witnessed in the birth of the Kauravas present scenarios that align with modern large-scale tissue culture or embryonic cloning techniques.

Kauravas' Mass Birth

Gāndhārī was pregnant for one year but still could not deliver a baby and prematurely broke her womb (womb/fetus/embryo mass) due to impatience and envy (upon hearing of the Pāṇḍava births). This resulted in getting from the womb a mass of flesh. Later with instructions of Vyasa, the mass was divided into 100 pieces placed in clarified butter, resulting in the birth of one hundred sons (Kauravas) and later one daughter (Duḥśalā) (Ch. 107, *Sam̐bhava Parva*), (Ch. 108, *Sam̐bhava Parva*), (Ch. 69, *Sam̐bhava Parva*). This matches the Embryonic Fragmentation/Cloning. Here, the physical manipulation (breaking) of the pregnant mass suggests an analogy to advanced stem cell or embryonic splitting techniques used to yield multiple, genetically similar individuals from a single gestation or conceptus.

Post-Natal Repair and Regenerative Medicine

The account of Jarāsandha offers a remarkable early analogy for regenerative medicine and the ability to heal or fuse severely damaged biological structures.

Jarāsandha's Fusion Birth

Jarāsandha was born split into two halves, which were later joined (fused) by the Rākṣasī Jarā, resulting in a complete, powerful individual (Ch. 16, *Mantra Parva*), (Ch. 17, *Mantra Parva*). This is similar to Surgical and Tissue Regeneration. The successful joining of two separate, non-viable halves into one functioning organism suggests highly advanced knowledge of tissue engineering, grafting, and successful organ/body regeneration.

Non-Viviparous/Exotic Development

The birth of Aruna and Garuda from eggs, triggered by a special ritual, provides a detailed account of *ex-utero* development, often referred to as *in-ovo* incubation in modern avian studies, but here applied to divine beings.

Aruna and Garuda (Egg Birth)

Vīnatā bore two sons, Aruna and Garuda, from an *aṇḍam* (egg/embryo mass). The development was the result of a *Yajña* (ritual/experiment) performed by the Vālakhilya sages. Aruna was born with a disability (vikalanāgidda). (Ch. 14, 27, *Āstika Parva*). This is controlled Embryonic Incubation/Genetic

Selection. The use of a ritual (*Yajña*) to induce or control development outside the conventional uterus (in an *aṇḍam*), highlighting the possibility of observing and selecting outcomes, including developmental defects (Aruna).

Aurva's Thigh Birth

During the slaughter of the Bhārgavas, a pregnant Bhārgava woman gave birth to Aurva, who emerged by splitting her thigh. His radiance subsequently blinded the Kṣatriyas. (Ch. 169, *Caitraratha Parva*) This in biotechnological terms, an Emergency Delivery/Maternal Genetic Defense. Here, a rapid, non-vaginal birth method (analogue to Caesarean section) utilized during immediate danger, coupled with the infant possessing an intrinsic biological defense mechanism (radiance causing blindness).

Transgender Gestation and Divine Nutrient Supplementation

One highly unusual narrative challenges the fundamental biological constraints of maternal gestation, which may inspire research into reproductive autonomy and synthetic sustenance.

Māndhātā's Birth from a Male

King Yauvanāśva mistakenly drank the mantra-infused clarified butter intended to make his queen pregnant, resulting in his own pregnancy and the birth of the child. When the child was born, the gods wondered who would feed it. Indra then put his finger in the baby's mouth, and milk streamed out (the child was named Māndhātā). Male Gestation / Transgender Reproduction: The immediate challenge of facilitating pregnancy in a biological male body (analogous to advanced uterine transplantation or ectopic gestation science). Synthetic Lactation/Nutrient Delivery: Indra's finger providing milk represents an advanced, immediate, and concentrated non-maternal nutrient supply to support rapid post-natal growth.

Directed Multi-Form Generation (Cloning/Differentiation)

The ability of divine beings to rapidly generate multiple distinct physical forms highlights concepts related to controlled cellular differentiation and mass production of genetically specific entities.

Kārtikēya's Quadripartite Form

The divine Kārtikēya (Kumāra), leveraging his great power (*Yōga-bala*), created four separate, visible bodies (Śākha, Viśākha, Naigamēṣa, and Skanda) simultaneously to honor four different deities (Rudra, Girirātsutā, Vāyu, and Gangā). These four bodies were identical in form and brilliance.

Controlled Somatic Replication: This is analogous to generating multiple, identical, fully formed individuals rapidly and simultaneously, demanding mastery over stem cell technology, directed differentiation, and instantaneous tissue maturation.

Cross-Realm and Hybrid Progeny

The presence of individuals born from unions between different classes of beings (humans, Nāgas, Rākṣasas) illustrates the apparent violation of species-specific genetic barriers, a core challenge in genetic engineering and hybridization research.

Irāvān's Nāga-Human Hybrid Birth

Irāvān, the valiant son of Arjuna, was born to the daughter of the Nāgarāja. He grew up protected by his mother in the Nāga Loka (serpent world).

This is about Interspecies Conception and Genetic Compatibility. The successful conception and full-term development of a hybrid offspring (human/Nāga) implies the ability to overcome genetic incompatibilities and manage developmental environments drastically different from the typical human uterus.

Ghaṭōtkaca's Rākṣasa Phenotype

Ghaṭōtkaca (son of Bhīmasena and Hiḍimbā) is consistently described as a massive, fear-inducing Rākṣasa, possessing unnatural strength and the ability to use *māyā* (illusion/transformation). He wielded complex technology like an eight-wheeled chariot and fought with a Rākṣasa army. This relates to Phenotypic Extremity and Genetic Insertion. This shows the possibility of inserting or activating genes associated with extreme physical and magical (or energy-manipulating) characteristics (Rākṣasa nature) within the human lineage. His size and

strength suggest hyper-efficient muscular/skeletal growth regulation.

Conclusion

The narrations of unusual reproductive events in the *Mahābhārata* gives a conceptualisation of biological processes. These narratives suggest that the human imagination has long grappled with the possibilities of bypassing natural constraints through artificial gestation, mass cloning, and targeted genetic modification. The unusual birth instances narrated demonstrates that these ancient records serve as a historical documentation of biological feats that coincide with the highest aspirations of contemporary developmental and regenerative research.

Further, the study of the *Mahābhārata* should not be confined to literary or theological analysis but should include interdisciplinary collaborations between humanities scholars and biotechnologists. Future research should focus on the specific methodologies described in the text, such as the use of mantras as genetic keys or the manipulation of embryonic masses, to inspire new hypotheses in developmental research. There is vast scope for more inquiry and should extend beyond the initial parvas to uncover further instances of regenerative capabilities, hybridisation, and rapid somatic replication. Overall, these ancient texts serve as a conceptual bridge, reminding us that the quest to understand and master the mysteries of life is a timeless human endeavour that continues to find new expression through the lens of modern scientific innovation.
