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Biologically creation was started through the process of cloning by Shri Hari Vishnu and science of *Ardhanarishvara swaroopa* as well as Manas Putras of Brahma

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Abstract

Till today, science has not been able to prove that the man came first or the woman story is still incomplete. Theory of Panspermia believes that life on earth has come from another planet, now if this is true then life on that planet come from. The story is far from science, Purans gave opposite answer, where Vishnu Purana and Shrimad Bhagwad Gita prove that the origin of life is not from any other planet but it has happened here only. According to Shiv Puran, the archetype **(*Ardhanarishvara swaroop*)** of Lord Shiva proves that the origin of a woman is from man. While proving all the logic and scientific analyzes so far, we have prepared this review paper in which we will know how the woman was born from man in the beginning of creation? What is the logic behind Manas Putras of Lord Brahma and scientifically who is the father of Lord Brahma? This research paper will give the scientific concept of all these.

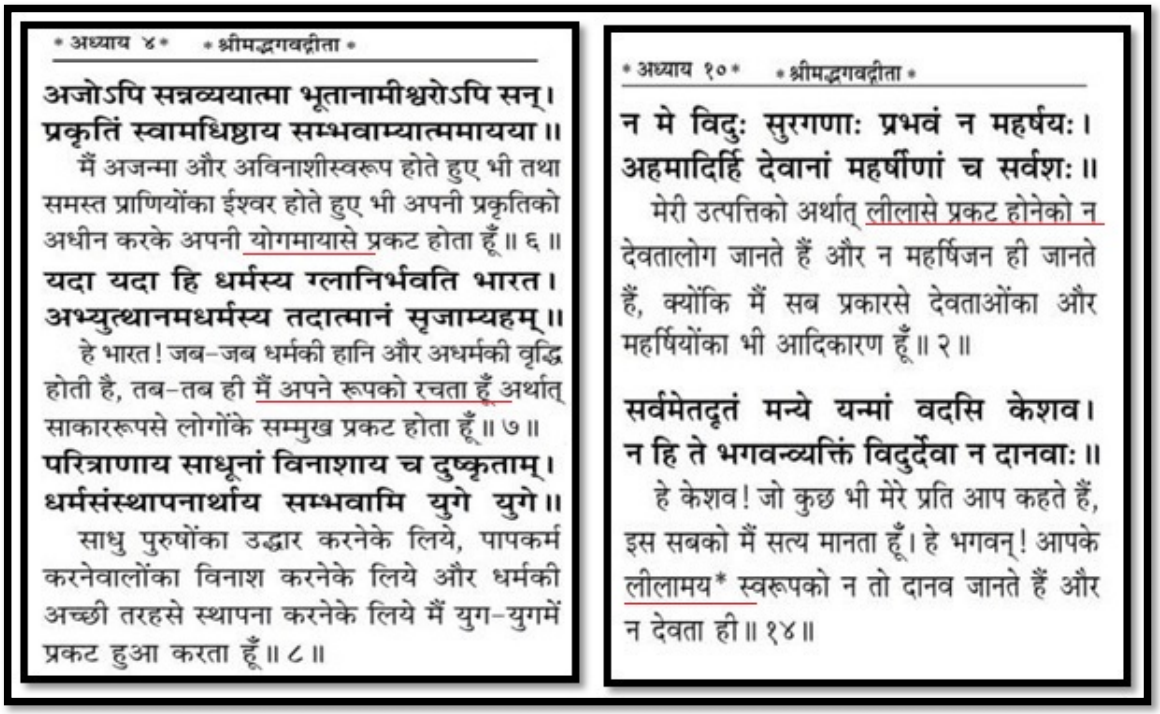
Keywords : Shiva, Shiv Puran, Brahma, Manas Putras, *Ardhanarishvara*

Introduction

According to the Shrimad Bhagwad Gita Shree Hari Vishnu was born from *Yog Maya* in the beginning of creation, after which Brahma, the creator of the world, was born from the navel of Vishnu. Shri Hari gave the responsibility to Brahma that he used to run the Universe properly for this purpose he produces male and female. Brahma created their Manas sons but could not create a woman then Lord Shiva lectured Brahma about *Ardhanarishvar* form and said that female exists in male. Millions of years ago Lord Shiva explained complete human genetics to Lord Brahma, whereas science began to tell about XY chromosomes in 1891. This paper will show the highest techniques of science used millions of years ago at the time of creation.

Birth evidences of Shri Hari Vishnu through Yogmaya

Some verses (Fig 1) of Shrimad Bhagwad Gita show that Shri Hari Vishnu take birth through *Yogmaya*. The scientific aspect of *Yogmaya* we will define in another upcoming paper. Here we only focus Birth of Brahma and their Manas Putras and the complete science behind *Ardhnarishwara swaroop* of Lord Shiva.



* अध्याय ४ * * श्रीमद्भगवद्गीता *

अजोऽपि सन्नव्ययात्मा भूतानामीश्वरोऽपि सन्।
प्रकृतिं स्वामधिष्ठाय सम्भवाम्यात्ममायया॥

मैं अजन्मा और अविनाशीस्वरूप होते हुए भी तथा समस्त प्राणियोंका ईश्वर होते हुए भी अपनी प्रकृतिको अधीन करके अपनी योगमायासे प्रकट होता हूँ॥ ६॥

यदा यदा हि धर्मस्य ग्लानिर्भवति भारत।
अभ्युत्थानमधर्मस्य तदात्मानं सृजाम्यहम्॥

हे भारत! जब-जब धर्मकी हानि और अधर्मकी वृद्धि होती है, तब-तब ही मैं अपने रूपको रचता हूँ अर्थात् साकाररूपसे लोगोंके सम्मुख प्रकट होता हूँ॥ ७॥

परित्राणाय साधूनां विनाशाय च दुष्कृताम्।
धर्मसंस्थापनार्थाय सम्भवामि युगे युगे॥

साधु पुरुषोंका उद्धार करनेके लिये, पापकर्म करनेवालोंका विनाश करनेके लिये और धर्मकी अच्छी तरहसे स्थापना करनेके लिये मैं युग-युगमें प्रकट हुआ करता हूँ॥ ८॥

* अध्याय १० * * श्रीमद्भगवद्गीता *

न मे विदुः सुरगणाः प्रभवं न महर्षयः।
अहमादिर्हि देवानां महर्षीणां च सर्वशः॥

मेरी उत्पत्तिको अर्थात् लीलासे प्रकट होनेको न देवतालोग जानते हैं और न महर्षिजन ही जानते हैं, क्योंकि मैं सब प्रकारसे देवताओंका और महर्षियोंका भी आदिकारण हूँ॥ २॥

सर्वमेतदृतं मन्ये यन्मां वदसि केशव।
न हि ते भगवन्व्यक्तिं विदुर्देवा न दानवाः॥

हे केशव! जो कुछ भी मेरे प्रति आप कहते हैं, इस सबको मैं सत्य मानता हूँ। हे भगवन्! आपके लीलामय* स्वरूपको न तो दानव जानते हैं और न देवता ही॥ १४॥

Fig 1: Chapter 4 verse 6th, 7th and Chapter 10 verses 2nd , 14th of Shrimad Bhagwad Gita [Source: Shrimad Bhagwad Gita,Gita Press Gorakhpur, 207th Reprint Edition, Book No.20] **which shows the birth of Shri Hari Vishnu through Yogmaya or Leela.**

Lord Brahma birth evidences from Shri Hari Vishnu and Scientific technology used.

Shrimad Bhagwad Gita - "You (Shri Hari Vishnu) the father of Brahma itself"

In chapter 11 verse 39 of Shrimad Bhagwad Gita [1] it is clearly written that "You are Vayu (the wind-god), Yama (the god of death), Agni (the god of fire), Varuna (the god of water), the moon-god, Brahma (the lord of creation), nay, the father of Brahma itself. Hail, hail to you thousands times; salutation, repeated salutations to you once again". But Shrimad Bhagwad Gita fails to explain in which manner he was the father of Lord Brahma. To search this answer we go through Shrimad Bhagwat Mahapuran section 3, chapter 8th verses 13, 14 and 15 (Fig.2). These verses show the Birth of Brahma from Lord Shri Hari Vishnu it means Shri Hari Vishnu was the father of Lord

Brahma. Here one major question arises that at the time of creation when Lord Shri Hari Vishnu come into existence through *Yogmaya* (divine Potency) there is no existence of female (as literature shows). Lord Shri Hari Vishnu fuse their sperm cells to skin cell and create Lord Brahma.

Scientific meanings of terminologies used in Brahm's birth

Amniotic sac as *Kamalkosh*

In the Puranas, Brahma was shown inside the *KAMALKOSH* and according to science it is called Amniotic Sac which contain amniotic fluid. How let's see. Here Shri Hari Vishnu gives the concept of Placenta, Umbilical Cord which is connected to Lord Brahma and Brahma was inside amniotic sac (Fig 2,Fig 3) which is called *"Kamalkosh"* in Shrimad Bhagwad Mahapuran (Fig 4).In ancient time Amniotic sac (this name is mentioned in Biological and Medical Science) is known as *Kamalkosh*.

कमल (symbol of spontaneous generation or represent different stages of embryo to develop in complete baby)

कोष (means a store house or cyst)

कमलकोष = a cyst which develop spontaneously to store baby/embryo

In modern science कमलकोष is known as Amniotic sac

Fig 2 : Shows the connection in between कमलकोष and Amniotic Sac (created by Assistant Prof Priyank Bharati)

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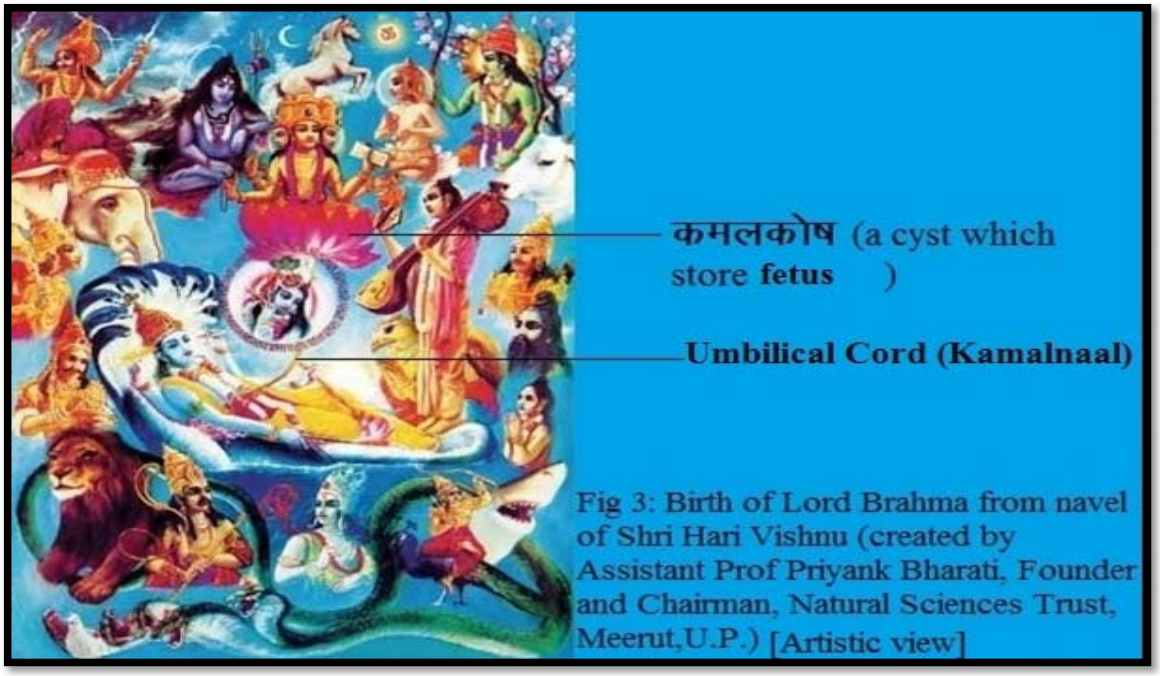

Fig 3: Birth of Lord Brahma from navel of Shri Hari Vishnu (created by Assistant Prof Priyank Bharati, Founder and Chairman, Natural Sciences Trust, Meerut,U.P.) [Artistic view]

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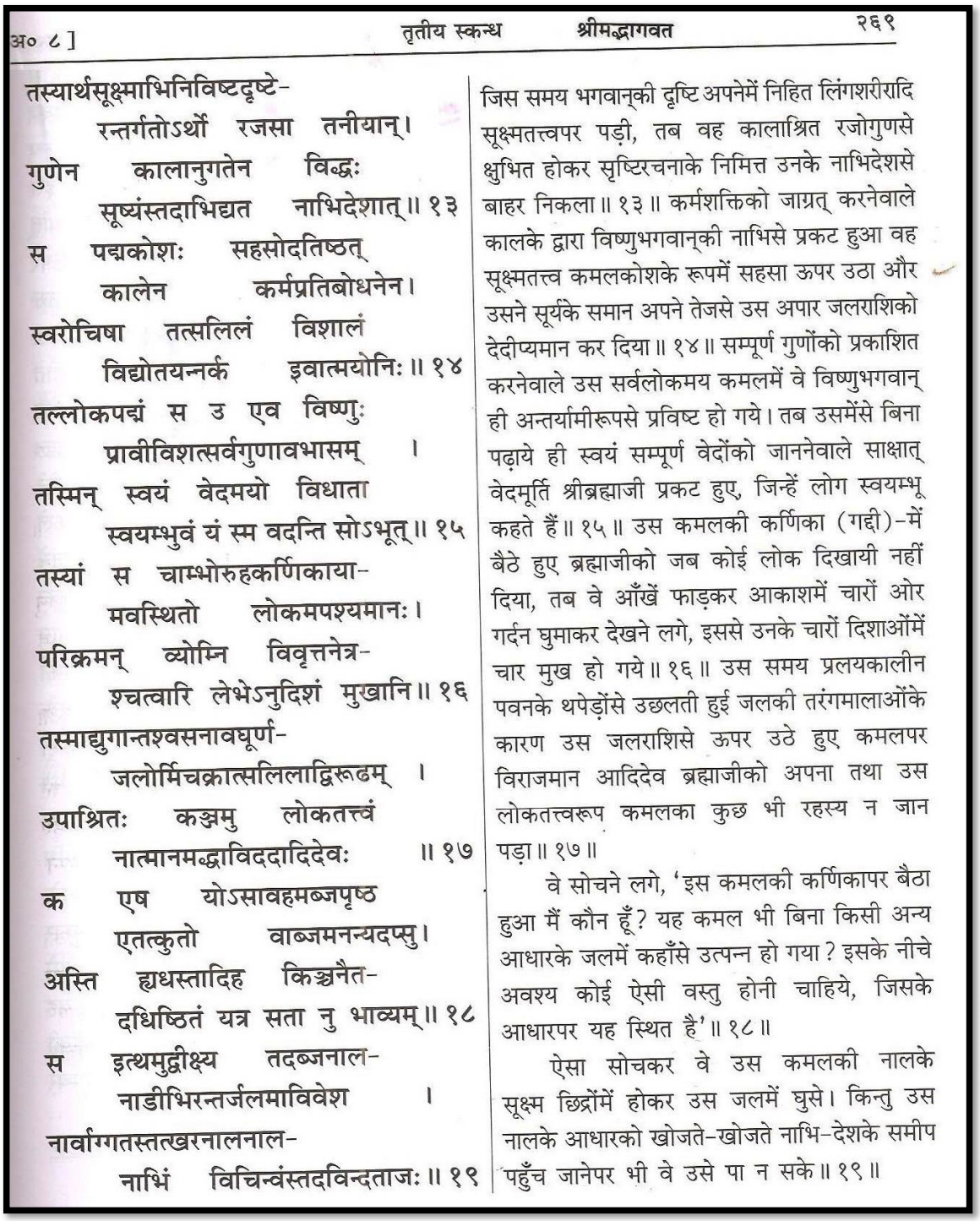


अ० ८] तृतीय स्कन्ध श्रीमद्भागवत २६९

तस्यार्थसूक्ष्माभिनिविष्टदृष्टे-
रन्तर्गतोऽर्थो रजसा तनीयान्।
गुणेन कालानुगतेन विद्धः
सूष्यंस्तदाभिद्यत नाभिदेशात्॥ १३
स पद्मकोशः सहसोदतिष्ठत्
कालेन कर्मप्रतिबोधनेन।
स्वरोचिषा तत्सलिलं विशालं
विद्योतयन्नर्क इवात्मयोनिः॥ १४
तल्लोकपद्मं स उ एव विष्णुः
प्रावीविशत्सर्वगुणावभासम्।
तस्मिन् स्वयं वेदमयो विधाता
स्वयम्भुवं यं स्म वदन्ति सोऽभूत्॥ १५
तस्यां स चाम्भोरुहकर्णिकाया-
मवस्थितो लोकमपश्यमानः।
परिक्रमन् व्योम्नि विवृत्तनेत्र-
श्चत्वारि लेभेऽनुदिशं मुखानि॥ १६
तस्माद्युगान्तश्वसनावघूर्ण-
जलोर्मिचक्रात्सलिलाद्विरूढम्।
उपाश्रितः कञ्जमु लोकतत्त्वं
नात्मानमद्धाविददादिदेवः॥ १७
क एष योऽसावहमब्जपृष्ठ
एतत्कुतो वाब्जमनन्यदप्सु।
अस्ति ह्यधस्तादिह किञ्चनैत-
दधिष्ठितं यत्र सता नु भाव्यम्॥ १८
स इत्थमुद्वीक्ष्य तदब्जनाल-
नाडीभिरन्तर्जलमाविवेश।
नार्वाग्गतस्तत्खरनालनाल-
नाभिं विचिन्वंस्तदविन्दताजः॥ १९

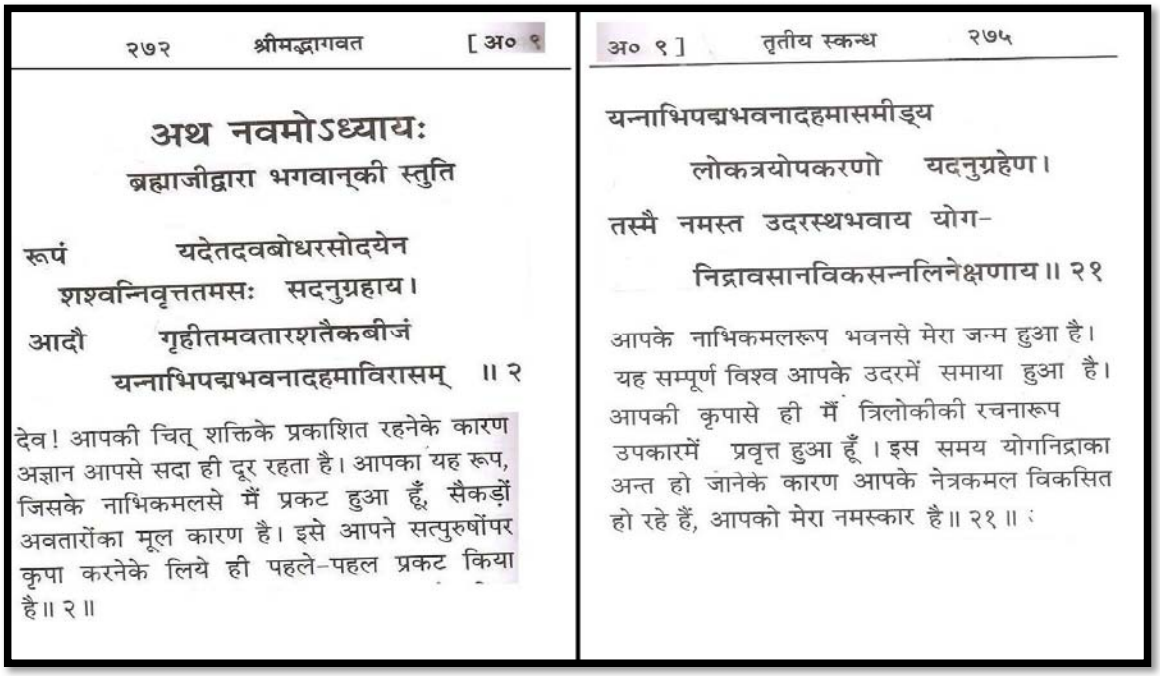
जिस समय भगवान्‌की दृष्टि अपनेमें निहित लिंगशरीरादि सूक्ष्मतत्त्वपर पड़ी, तब वह कालाश्रित रजोगुणसे क्षुभित होकर सृष्टिरचनाके निमित्त उनके नाभिदेशसे बाहर निकला॥ १३॥ कर्मशक्तिको जाग्रत् करनेवाले कालके द्वारा विष्णुभगवान्‌की नाभिसे प्रकट हुआ वह सूक्ष्मतत्त्व कमलकोशके रूपमें सहसा ऊपर उठा और उसने सूर्यके समान अपने तेजसे उस अपार जलराशिको देदीप्यमान कर दिया॥ १४॥ सम्पूर्ण गुणोंको प्रकाशित करनेवाले उस सर्वलोकमय कमलमें वे विष्णुभगवान् ही अन्तर्यामीरूपसे प्रविष्ट हो गये। तब उसमेंसे बिना पढ़ाये ही स्वयं सम्पूर्ण वेदोंको जाननेवाले साक्षात् वेदमूर्ति श्रीब्रह्माजी प्रकट हुए, जिन्हें लोग स्वयम्भू कहते हैं॥ १५॥ उस कमलकी कर्णिका (गद्दी)-में बैठे हुए ब्रह्माजीको जब कोई लोक दिखायी नहीं दिया, तब वे आँखें फाड़कर आकाशमें चारों ओर गर्दन घुमाकर देखने लगे, इससे उनके चारों दिशाओंमें चार मुख हो गये॥ १६॥ उस समय प्रलयकालीन पवनके थपेड़ोंसे उछलती हुई जलकी तरंगमालाओंके कारण उस जलराशिसे ऊपर उठे हुए कमलपर विराजमान आदिदेव ब्रह्माजीको अपना तथा उस लोकतत्त्वरूप कमलका कुछ भी रहस्य न जान पड़ा॥ १७॥

वे सोचने लगे, 'इस कमलकी कर्णिकापर बैठा हुआ मैं कौन हूँ? यह कमल भी बिना किसी अन्य आधारके जलमें कहाँसे उत्पन्न हो गया? इसके नीचे अवश्य कोई ऐसी वस्तु होनी चाहिये, जिसके आधारपर यह स्थित है'॥ १८॥

ऐसा सोचकर वे उस कमलकी नालके सूक्ष्म छिद्रोंमें होकर उस जलमें घुसे। किन्तु उस नालके आधारको खोजते-खोजते नाभि-देशके समीप पहुँच जानेपर भी वे उसे पा न सके॥ १९॥

Fig 4: **Verses taken from Shrimad Bhagwad Mahapuran shows the birth of Lord Brahma from Shri Hari Vishnu. These sloks also proves the existence of *Kamalkosh* in which Brahma was sitting. These sloks are also the evidences of birth of Brahma from Shri Hari Vishnu's sperm cell with the fusion of navel cells.[Source:** Section (Skandh) 3rd

, Chapter 8th, Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26,pg-269]



२७२ श्रीमद्भागवत [अ० ९

अथ नवमोऽध्यायः

ब्रह्माजीद्वारा भगवान्‌की स्तुति

रूपं यदेतदवबोधरसोदयेन
शश्वन्निवृत्ततमसः सदनुग्रहाय।
आदौ गृहीतमवतारशतैकबीजं
यन्नाभिपद्मभवनादहमाविरासम् ॥ २

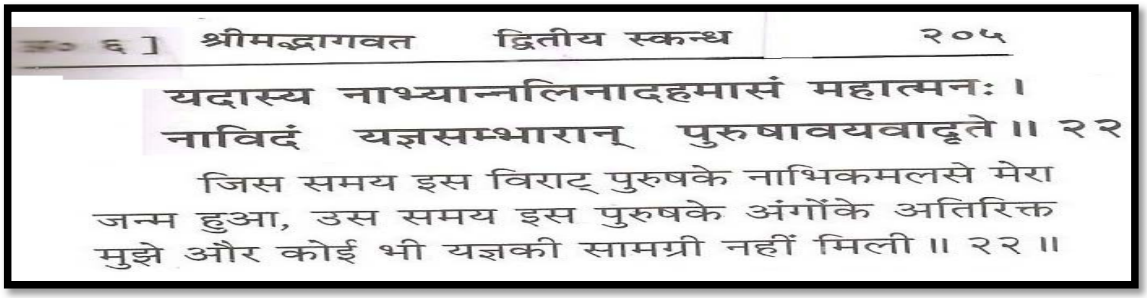
देव! आपकी चित् शक्तिके प्रकाशित रहनेके कारण अज्ञान आपसे सदा ही दूर रहता है। आपका यह रूप, जिसके नाभिकमलसे मैं प्रकट हुआ हूँ, सैकड़ों अवतारोंका मूल कारण है। इसे आपने सत्पुरुषोंपर कृपा करनेके लिये ही पहले-पहल प्रकट किया है॥ २॥

अ० ९] तृतीय स्कन्ध २७५

यन्नाभिपद्मभवनादहमासमीड्य
लोकत्रयोपकरणो यदनुग्रहेण।
तस्मै नमस्त उदरस्थभवाय योग-
निद्रावसानविकसन्नलिनेक्षणाय॥ २१

आपके नाभिकमलरूप भवनसे मेरा जन्म हुआ है। यह सम्पूर्ण विश्व आपके उदरमें समाया हुआ है। आपकी कृपासे ही मैं त्रिलोकीकी रचनारूप उपकारमें प्रवृत्त हुआ हूँ। इस समय योगनिद्राका अन्त हो जानेके कारण आपके नेत्रकमल विकसित हो रहे हैं, आपको मेरा नमस्कार है॥ २१॥

Fig 5: Birth of Brahma through *NabhiKamal (Umbilical Cord)* [Source: Skandh (section) 3rd , Chapter 9th , Slok 2 and 21, Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26,pg-272 and 275]

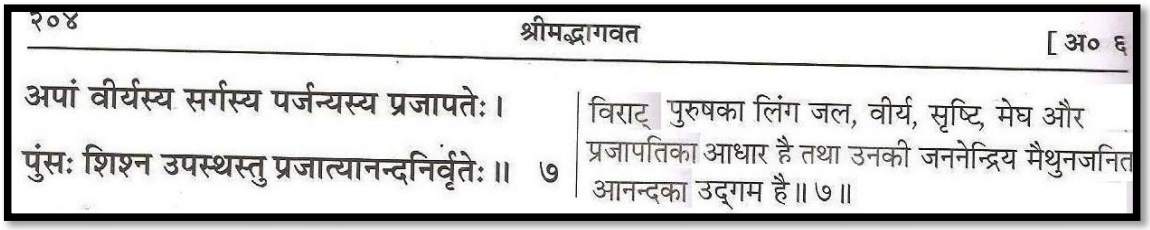


अ० ६] श्रीमद्भागवत द्वितीय स्कन्ध २०५

यदास्य नाभ्यान्नलिनादहमासं महात्मनः।
नाविदं यज्ञसम्भारान् पुरुषावयवादृते॥ २२

जिस समय इस विराट् पुरुषके नाभिकमलसे मेरा जन्म हुआ, उस समय इस पुरुषके अंगोंके अतिरिक्त मुझे और कोई भी यज्ञकी सामग्री नहीं मिली॥ २२॥

Fig 6: Slok 22 of Shrimad Bhagwad Mahapuran gives the concept of Placenta. Here Yagh word is used for energy. In science food (nutrition) is transferred from mother to fetus through Umbilical Cord only[Source: Skandh (section) 2nd , Chapter 6th, Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26,pg-205**]**.



२०४ श्रीमद्भागवत [अ० ६

अपां वीर्यस्य सर्गस्य पर्जन्यस्य प्रजापतेः।
पुंसः शिश्न उपस्थस्तु प्रजात्यानन्दनिर्वृतेः॥ ७

विराट् पुरुषका लिंग जल, वीर्य, सृष्टि, मेघ और प्रजापतिका आधार है तथा उनकी जननेन्द्रिय मैथुनजनित आनन्दका उद्गम है॥ ७॥

Fig 7: Slok of Shrimad Bhagwad Mahapuran give the clue that how Shri Hari Vishnu give birth to Brahma. This is the main verse on which Scientists of foreign countries going to work. They are creating babies by the fusion of sperm cells by any cell in human body. [Source: Skandh (section) 2nd , Chapter 6th , Slok 7, Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26,pg-204**]**

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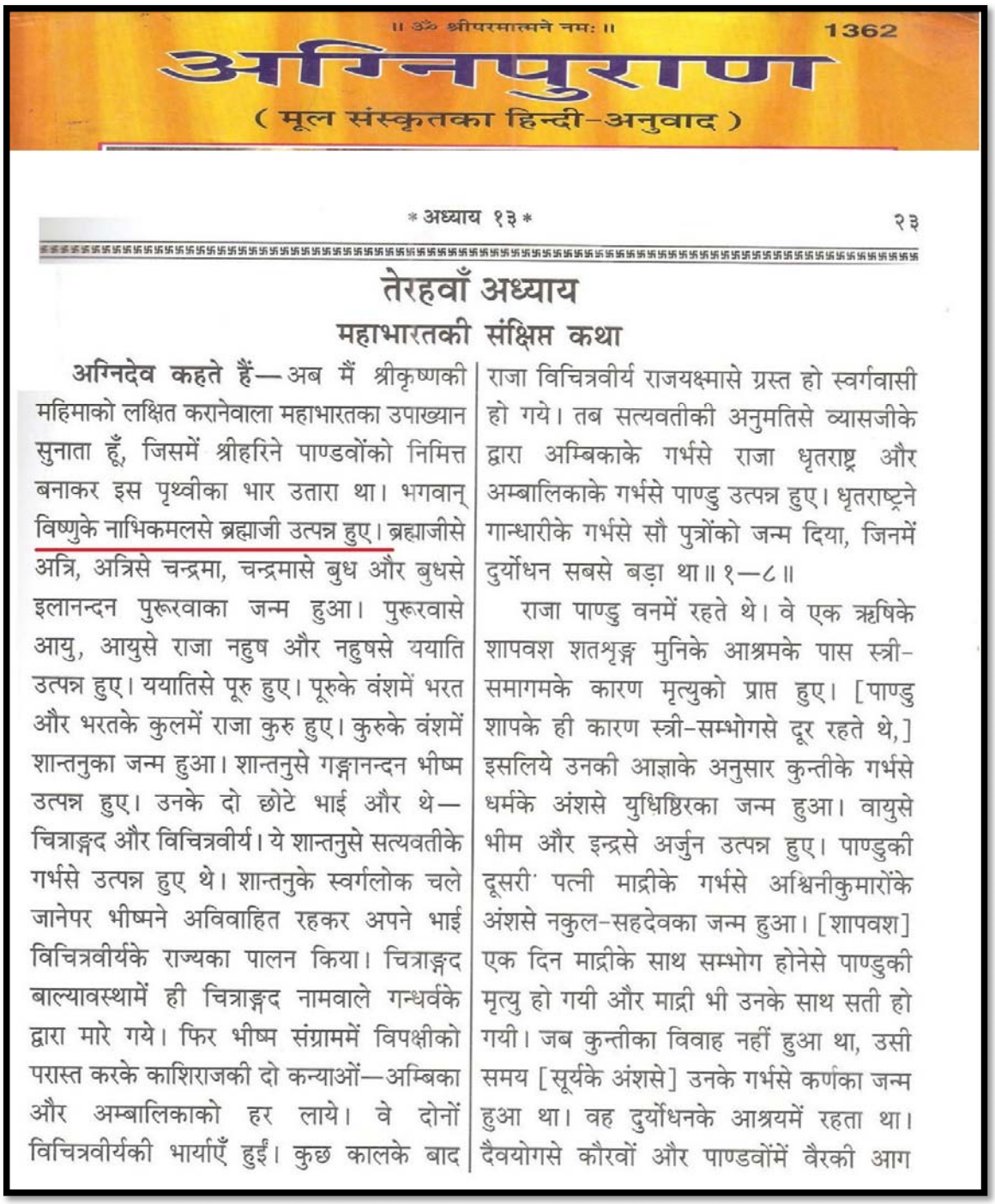

॥ ॐ श्रीपरमात्मने नमः ॥ 1362

अग्निपुराण

(मूल संस्कृतका हिन्दी-अनुवाद)

* अध्याय १३ * २३

तेरहवाँ अध्याय

महाभारतकी संक्षिप्त कथा

अग्निदेव कहते हैं—अब मैं श्रीकृष्णकी महिमाको लक्षित करानेवाला महाभारतका उपाख्यान सुनाता हूँ, जिसमें श्रीहरिने पाण्डवोंको निमित्त बनाकर इस पृथ्वीका भार उतारा था। भगवान् विष्णुके नाभिकमलसे ब्रह्माजी उत्पन्न हुए। ब्रह्माजीसे अत्रि, अत्रिसे चन्द्रमा, चन्द्रमासे बुध और बुधसे इलानन्दन पुरूरवाका जन्म हुआ। पुरूरवासे आयु, आयुसे राजा नहुष और नहुषसे ययाति उत्पन्न हुए। ययातिसे पूरु हुए। पूरुके वंशमें भरत और भरतके कुलमें राजा कुरु हुए। कुरुके वंशमें शान्तनुका जन्म हुआ। शान्तनुसे गङ्गानन्दन भीष्म उत्पन्न हुए। उनके दो छोटे भाई और थे—चित्राङ्गद और विचित्रवीर्य। ये शान्तनुसे सत्यवतीके गर्भसे उत्पन्न हुए थे। शान्तनुके स्वर्गलोक चले जानेपर भीष्मने अविवाहित रहकर अपने भाई विचित्रवीर्यके राज्यका पालन किया। चित्राङ्गद बाल्यावस्थामें ही चित्राङ्गद नामवाले गन्धर्वके द्वारा मारे गये। फिर भीष्म संग्राममें विपक्षीको परास्त करके काशिराजकी दो कन्याओं—अम्बिका और अम्बालिकाको हर लाये। वे दोनों विचित्रवीर्यकी भार्याएँ हुईं। कुछ कालके बाद राजा विचित्रवीर्य राजयक्ष्मासे ग्रस्त हो स्वर्गवासी हो गये। तब सत्यवतीकी अनुमतिसे व्यासजीके द्वारा अम्बिकाके गर्भसे राजा धृतराष्ट्र और अम्बालिकाके गर्भसे पाण्डु उत्पन्न हुए। धृतराष्ट्रने गान्धारीके गर्भसे सौ पुत्रोंको जन्म दिया, जिनमें दुर्योधन सबसे बड़ा था॥ १—८॥

राजा पाण्डु वनमें रहते थे। वे एक ऋषिके शापवश शतशृङ्ग मुनिके आश्रमके पास स्त्री-समागमके कारण मृत्युको प्राप्त हुए। [पाण्डु शापके ही कारण स्त्री-सम्भोगसे दूर रहते थे,] इसलिये उनकी आज्ञाके अनुसार कुन्तीके गर्भसे धर्मके अंशसे युधिष्ठिरका जन्म हुआ। वायुसे भीम और इन्द्रसे अर्जुन उत्पन्न हुए। पाण्डुकी दूसरी पत्नी माद्रीके गर्भसे अश्विनीकुमारोंके अंशसे नकुल-सहदेवका जन्म हुआ। [शापवश] एक दिन माद्रीके साथ सम्भोग होनेसे पाण्डुकी मृत्यु हो गयी और माद्री भी उनके साथ सती हो गयी। जब कुन्तीका विवाह नहीं हुआ था, उसी समय [सूर्यके अंशसे] उनके गर्भसे कर्णका जन्म हुआ था। वह दुर्योधनके आश्रयमें रहता था। दैवयोगसे कौरवों और पाण्डवोंमें वैरकी आग

Fig 8: Evidence of Brahma Birth from Shri Hari Vishnu in Agni Puran [**Source:** Chapter 13 Agni Puran, Gita Press Gorakhpur, 13th Reprint Edition, Book No 1362, pg-23]

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अग्निपुराण

२८ * अग्निपुराण *

सत्रहवाँ अध्याय
जगत्‌की सृष्टिका वर्णन

अग्निदेव कहते हैं— ब्रह्मन्! अब मैं जगत्‌की सृष्टि आदिका, जो श्रीहरिकी लीलामात्र है, वर्णन करूँगा; सुनो। श्रीहरि ही स्वर्ग आदिके रचयिता हैं। सृष्टि और प्रलय आदि उन्हींके स्वरूप हैं। सृष्टिके आदिकारण भी वे ही हैं। वे ही निर्गुण हैं और वे ही सगुण हैं। सबसे पहले सत्स्वरूप अव्यक्त ब्रह्म ही था; उस समय न तो आकाश था और न रात-दिन आदिका ही विभाग था।

* अध्याय १८ * २९

तदनन्तर सृष्टिकालमें परमपुरुष श्रीविष्णुने प्रकृतिमें प्रवेश करके उसे क्षुब्ध (विकृत) कर दिया। फिर प्रकृतिसे महत्तत्त्व और उससे अहंकार प्रकट हुआ। अहंकार तीन प्रकारका है—वैकारिक (सात्त्विक), तैजस (राजस) और भूतादिरूप तामस। तामस अहंकारसे शब्द-तन्मात्रावाला आकाश उत्पन्न हुआ। आकाशसे स्पर्श-तन्मात्रावाले वायुका प्रादुर्भाव हुआ। वायुसे रूप-तन्मात्रावाला अग्नितत्त्व प्रकट हुआ। अग्निसे रस-तन्मात्रावाले जलकी उत्पत्ति हुई और जलसे गन्ध-तन्मात्रावाली भूमिका प्रादुर्भाव हुआ। यह सब तामस अहंकारसे होनेवाली सृष्टि है। इन्द्रियाँ तैजस अर्थात् राजस अहंकारसे प्रकट हुई हैं। दस इन्द्रियोंके अधिष्ठाता दस देवता और ग्यारहवीं इन्द्रिय मन(-के भी अधिष्ठाता देवता)—ये वैकारिक अर्थात् सात्त्विक अहंकारकी सृष्टि हैं। तत्पश्चात् नाना प्रकारकी प्रजाको उत्पन्न करनेकी इच्छावाले भगवान् स्वयम्भूने सबसे पहले जलकी ही सृष्टि की और उसमें अपनी शक्ति (वीर्य)-का आधान किया। जलको 'नार' कहा गया है; क्योंकि वह नरसे उत्पन्न हुआ है। 'नार' (जल) ही पूर्वकालमें भगवान्‌का 'अयन' (निवास-स्थान) था; इसलिये भगवान्‌को 'नारायण' कहा गया है॥ १—७ ½ ॥

स्वयम्भू श्रीहरिने जो वीर्य स्थापित किया था, वह जलमें सुवर्णमय अण्डके रूपमें प्रकट हुआ। उसमें साक्षात् स्वयम्भू भगवान् ब्रह्माजी प्रकट हुए, ऐसा हमने सुना है। भगवान् हिरण्यगर्भने एक वर्षतक उस अण्डके भीतर निवास करके उसके दो भाग किये। एकका नाम 'द्युलोक' हुआ और दूसरेका 'भूलोक'। उन दोनों अण्ड-खण्डोंके बीचमें उन्होंने आकाशकी सृष्टि की। जलके ऊपर तैरती हुई पृथ्वीको रखा और दसों दिशाओंके विभाग किये। फिर सृष्टिकी इच्छावाले प्रजापतिने वहाँ काल, मन, वाणी, काम, क्रोध तथा रति आदिकी तत्तद्रूपसे सृष्टि की। उन्होंने आदिमें विद्युत्, वज्र, मेघ, रोहित इन्द्रधनुष, पक्षियों तथा पर्जन्यका निर्माण किया। तत्पश्चात् यज्ञकी सिद्धिके लिये मुखसे ऋक्, यजु और सामवेदको प्रकट किया। उनके द्वारा साध्यगणोंने देवताओंका यजन किया। फिर ब्रह्माजीने अपनी भुजासे ऊँचे-नीचे (या छोटे-बड़े) भूतोंको उत्पन्न किया, सनत्कुमारकी उत्पत्ति की तथा क्रोधसे प्रकट होनेवाले रुद्रको जन्म दिया। मरीचि, अत्रि, अङ्गिरा, पुलस्त्य, पुलह, क्रतु और वसिष्ठ—इन सात ब्रह्मपुत्रोंको ब्रह्माजीने निश्चय ही अपने मनसे प्रकट किया। साधुश्रेष्ठ! ये तथा रुद्रगण प्रजावर्गकी सृष्टि करते हैं। ब्रह्माजीने अपने शरीरके दो भाग किये। आधे भागसे वे पुरुष हुए और आधेसे स्त्री बन गये; फिर उस नारीके गर्भसे उन्होंने प्रजाओंकी सृष्टि की। (ये ही स्वायम्भुव मनु तथा शतरूपाके नामसे प्रसिद्ध हुए। इनसे ही मानवीय सृष्टि हुई।) ॥ ८—१७ ॥

इस प्रकार आदि आग्नेय महापुराणमें 'जगत्‌की सृष्टिका वर्णन' नामक सत्रहवाँ अध्याय पूरा हुआ॥ १७ ॥

Fig 9: Agni Puran shows that Shri Hari Vishnu gave birth to Lord Brahma from his sperm cell and fuse it with another cell of his body. This chapter also give evidence of Brahma's Manas Putra and Birth Manu and Satrupa from Brahma. [Source: Chapter-17th , Agni Puran, Gita Press Gorakhpur, 13th Reprint Edition, Book No 1362, pg-28-29]

The amniotic sac is a bag of fluid inside a uterus where the unborn baby develops and grows. It is also refer as "membrane" because the sac is made of 2 membranes called the amnion and the chorion. The Amniotic sac is filled with amniotic fluid (AF). The fluid in the amniotic sac is 98% water and 2% cells from the baby and salts. It plays a significant defensive role as a part of the innate immune system since AF has an organized pool of antimicrobial peptides against common bacterial and fungal pathogen [2]. Research also shown that proteins which are found in amniotic fluid from specific gestational age inhibit tumor growth in tumor bearing mice [3]. The amniotic sac begins to develop from the point of conception and is completely formed within the first 3 weeks of pregnancy[4]. This sac protect the baby from external pressure. The amniotic sac allows the fetus ample room to swim and move around which helps build muscle tone. The amniotic sac and fluid maintain a slightly higher temperature than the mother's body, usually 99.7 F

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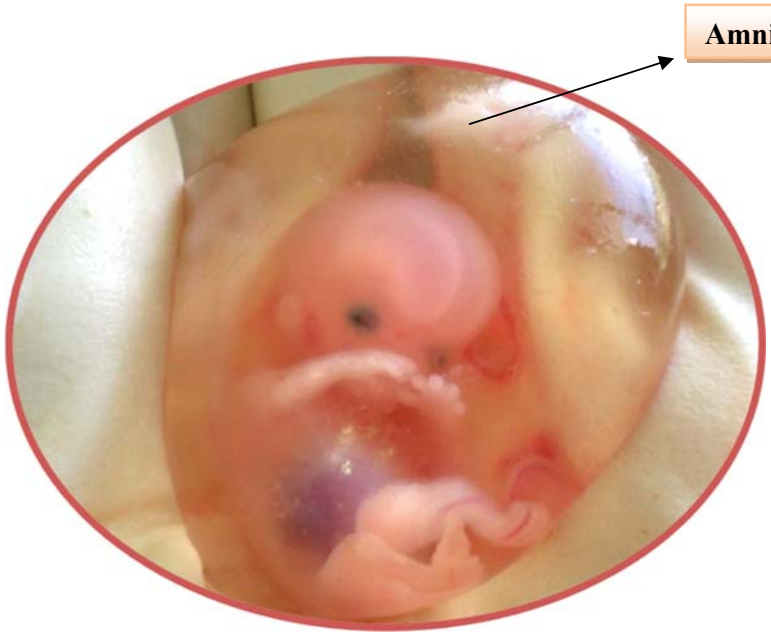


Fig 10: Human fetus 10 weeks with amniotic sac

The inner of these fetal membranes, the amnion [Fig 12], encloses the **amniotic cavity**, containing the amniotic fluid and the fetus[Fig 10][Fig 11]. The outer membrane, the chorion, contains the amnion and is part of the placenta. On the outer side, the amniotic sac is connected to the yolk sac, the allantois and, via the umbilical cord, to the placenta[5]. During embryogenesis, AF volume increases faster than embryonic size. The water in AF originally comes from maternal plasma and passes through the fetal membranes based on hydrostatic and osmotic forces. As the placenta and fetal vessels develop, water and solute from maternal plasma pass across the placenta to the fetus and then to the Amniotic Fluid. In the early fetal period, Amniotic Fluid volume[Table 1] and fetal size are related in a linear fashion.

Volume of Amniotic fluid

Volume (in ml)	Time Duration (in week)
20	**7th**
600	**25th**
1000	**34th**
800	**At the time of birth**

Table 1 : Volume of Amniotic fluid in different weeks. [Source: Cantani A (2016) A Paediatric Perspective on Stem Cells: Expression, Function, and Clinical Relevance (Stem Cells from Amniotic Fluid). Anat Physiol 6: 204. doi:10.4172/2161-0940.1000204]

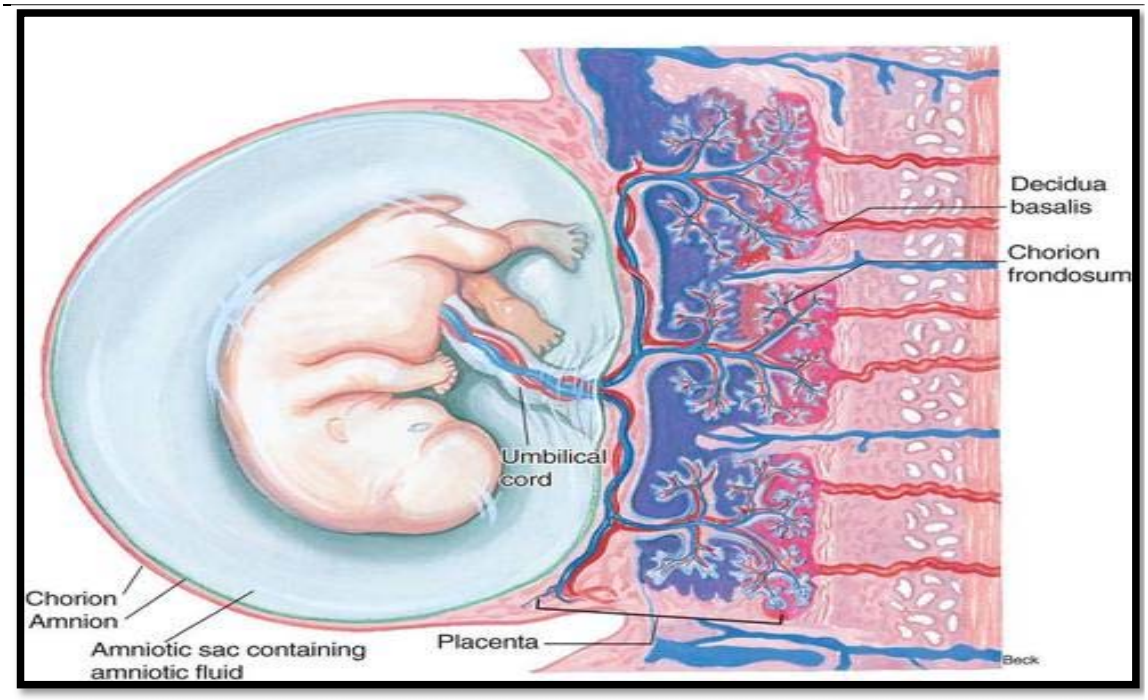


Fig 11: Different parts of Amniotic sac that is chorion, amnion and amniotic fluid which covers the fetus in uterus [Source https://humanphysiology2011.wikispaces.com/15.+ Reproductive +Physiology]

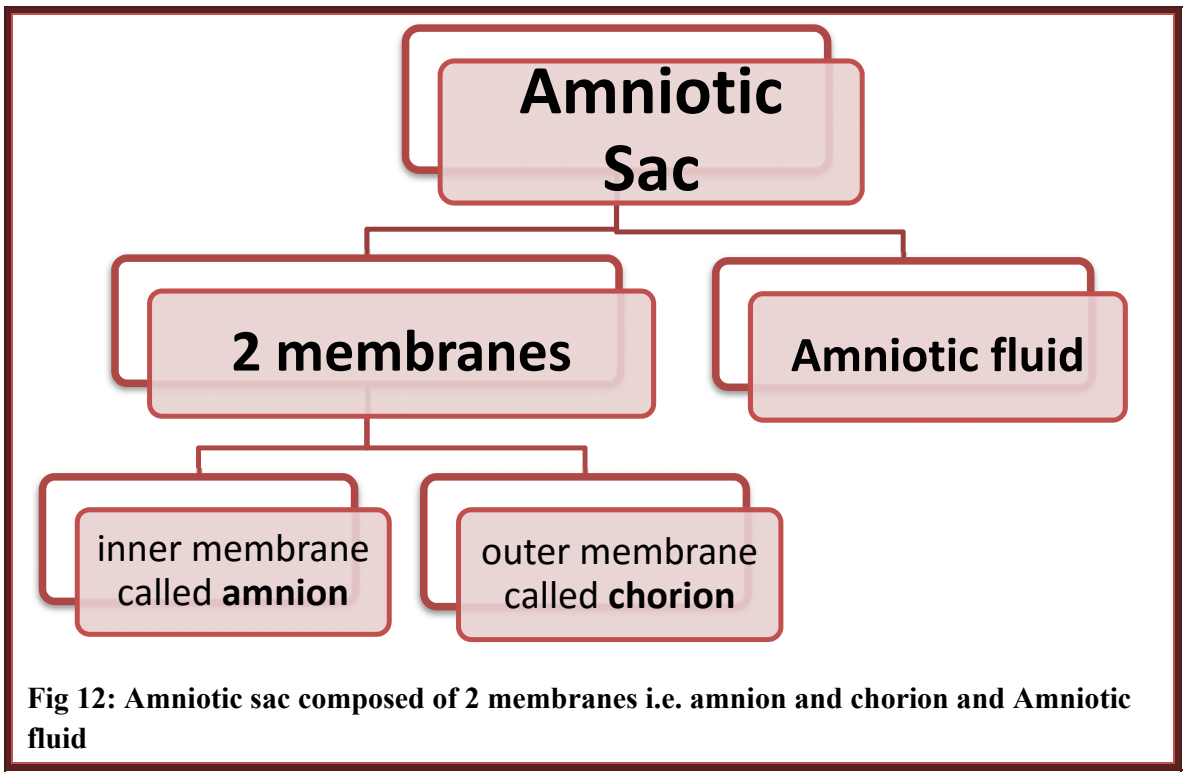


Fig 12: Amniotic sac composed of 2 membranes i.e. amnion and chorion and Amniotic fluid

There is rapid bi-directional diffusion between the fetus and the Amniotic Fluid across the not-yet keratinized fetal skin and the surfaces of the amnion, placenta, and umbilical cord, each being freely permeable to water and solutes. The Amniotic Fluid serves both as a physiologic buffer and an extension of the fetal extracellular compartment. By 8 weeks of gestation, the urethra is patent and the fetal kidneys make urine. Shortly thereafter fetal swallowing begins; however, neither fetal urination nor swallowing contributes significantly to the content or volume of AF until the second half of pregnancy. Keratinization of fetal skin begins at 19 to 20 weeks of gestation and is usually complete at 25 weeks after conception. When keratinization is complete, the relationship between fetal size and Amniotic Fluid volume is no longer linear (Refer table volume of Amniotic Fluid). The human amnion is a single layer of epithelial cells separating the amniotic cavity from the vascularized chorion. Early in gestation these amniocytes are flattened, but as pregnancy progresses they become cuboidal and have increasing numbers of microvilli on their apical surface. Tortuous intercellular channels exist between the tight junctions of amniocytes. The amount of fluid that passes through the intramembranous pathway is highly variable and has been estimated at 200 to 500 ml/day[6].

Amniotic fluid (AF) is a dynamic and complex mixture. Till now little data is available about the physiological function of amniotic fluid in the process of fetal development. According to Xing-Long Tong et.al.[7] amniotic fluid carries components such as proteins or peptides, which contribute to the regulation of fetal development. They [7] conclude that proteins or peptides in AF modulate the process of fetus development since they possess potent bioactivity on cellular growth and proliferation. AF provides a pathway to transport these regulatory messengers to the whole fetal body and thus plays a pivotal role in fetal development.

Function of Amniotic Fluid :

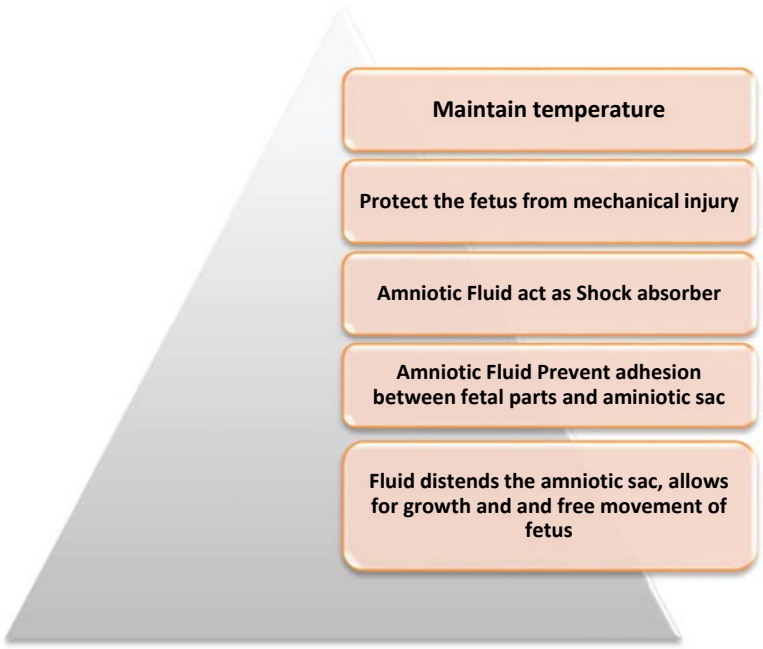


Fig 13: Function of Amniotic Fluid and Amniotic sac[Source: https://www.slideshare.net / Prativas/placenta-development-14542159 but modified accordingly]

Provide Protection: AF plays an important protective role by providing a supportive cushion allowing fetal movement and growth. AF also has a significant defensive role as a part of the innate immune system. The innate immune system is the first line of defense against pathogens and includes anatomic and physiologic barriers, enzymes and antimicrobial peptides, as well as phagocytosis and release of proinflammatory mediators by neutrophils and macrophages. Many of the substances that comprise the innate immune system have been identified in AF and vernix and have been shown to have significant antimicrobial properties; these include the a-defensins [HNP1-3], lactoferrin, lysozyme, bactericidal/permeability-increasing protein, calprotectin, secretory leukocyte protease inhibitor, psoriasin [S100A7], and a cathelicidin [LL-37][8][9][10]. These potent antimicrobials show broad spectrum activity against bacteria, fungi, protozoa, and viruses. Perhaps the most important of these are the a-defensins [HNP1-3], which are found in significant concentrations in AF of women without evidence of infection and likely originate from the fetal skin and lung. AF concentrations of HNP1-3 increase with pretermlabor, preterm premature rupture of membranes (PPROM), and chorioamnionitis probably due to release from neutrophils.

Lactoferrin (LF) is a glycoprotein with two binding sites for ferric ion. LF is found in human milk and appears in human AF at 20 weeks gestation increasing in concentration with gestation. Elevated levels of LF have been noted with preterm labor and with amnionitis. In pregnancies complicated by intra-amniotic infection (IAF), LF is likely secreted by neutrophils in the AF and by amniotic cells. LF has both bacteriostatic activity, due to sequestration of iron which is then unavailable for microbial growth, and bacteriocidal activity, due to binding to bacterial outer membranes triggering release of lipopolysaccharide. Lactoferricin shows antimicrobial effects against viruses, protozoa, and fungi[11]. Lactoferrin levels decrease with the onset of term labor. There may also be nonimmune components of AF that protect the fetus from injury. For example, amniotic fluid may protect the fetal gut from the effects of platelet activating factor (PAF). PAF is a potent vasoconstrictor and has been strongly implicated in the pathophysiology of necrotizing enterocolitis in preterm infants[12]. Significant amounts of polyamines are found in AF; these have a cationic charge and may play both a nutritive and an antimicrobial role.

Provide Nutrition : AF contains carbohydrates, proteins and peptides, lipids, lactate, pyruvate, electrolytes, enzymes, and hormones. Prior to keratin production in fetal skin, amino acids diffuse from the placenta through the placental membranes into AF and from the fetal circulation through the fetal skin into AF. Like breast milk, AF is rich in taurine which is found in greater quantity in AF than in maternal serum, while most other amino acids have lower concentrations in AF than in maternal and fetal blood. Glutamine is an essential precursor for nucleic acid biosynthesis in all cells and is particularly important in rapidly dividing cells such as intestinal mucosa cells. In fetal sheep, the uptake of glutamine from the AF by the fetal intestine is an active process [13]. Arginine also plays an essential role in fetal and placental development. Studies suggest that growth factors found in AF, comparable to those in human milk, play a role in fetal growth and development**.** Transforming growth factor beta-1 (TGF-b1) is found in rat AF and human breast milk, but is found in human AF only during the late stages of gestation. TGF-b1 is believed to induce terminal differentiation of intestinal epithelial cells and to accelerate the rate of healing of intestinal wounds by stimulating cell migration. TGF-b1 may also stimulate IgA production. Thus, TGF-b1 may prepare the fetal intestine for the extrauterine environment that is experienced after parturition at term. Insulin-like growth factor I (IGF-I) is found in human milk and AF.

Erythropoietin (EPO) is found in human AF, colostrum, and mature milk. Granulocyte colony-stimulating factor (G-CSF) is found in human AF.

Source of Stem Cells : Human AF has been evaluated as a source for stem cells with initial encouraging results[14].. Amniotic fluid, fetal membrane (amnion and chorion) and placenta have been extensively investigated as a potential non-controversial source of stem cell. In amniotic fluid two main populations of stem cell have been isolated so far, first AFMSCs (Amniotic fluid mesenchymal stem cells) and second Amniotic fluid stem (AFS) cells [15]. MSCs (Mesenchymal Stem Cells) have been isolated from several adult (e.g. liver, brain, skeletal muscle and adipose tissue), extra-embryonic tissues (i.e placenta, amnion) and fetal (i.e blood, bone marrow, liver) [16].

Other functions : AF has been investigated as a potential way to deliver therapeutic agents to the fetus. AF is used as a diagnostic purpose to check the activities of fetus. Since 1970s Amniocentesis has been a valuable tool in assessing fetal well-being. Amniocentesis is also offered when a previous child has a chromosomal abnormality, a parent carries a balanced chromosomal rearrangement or an autosomal recessive disorder, a mother carries an X-linked disorder, or a major structural abnormality or group of anomalies is identified on ultrasound. Assessment of AF is also helpful in the prenatal diagnosis of neural tube defects and an impressive array of inborn errors of metabolism and hematologic and genetic diseases (excellent reviews can be found in Wilson [17] and Kramer and Cohen [18])

On the other hand, Amniotic membrane is considered as important potential source for scaffolding material [19]..Amniotic membranes (AM) develop from extra-embryonic tissue and consist of a foetal component (the chorionic plate) and a maternal component (the deciduas). These two parts are held together by the chorionic villi and connect the cytotrophoblastic shell of the chorionic sac to the *decidua basalis*. The foetal component, which includes the amniotic and chorionic foetal membranes, separates the foetus from the endometrium. The amniochorionic membrane forms the outer limits of the sac that encloses the foetus, while the innermost layer of the sac is the AM. The AM consists of an epithelial monolayer, a thick basement membrane, and an avascular stroma.

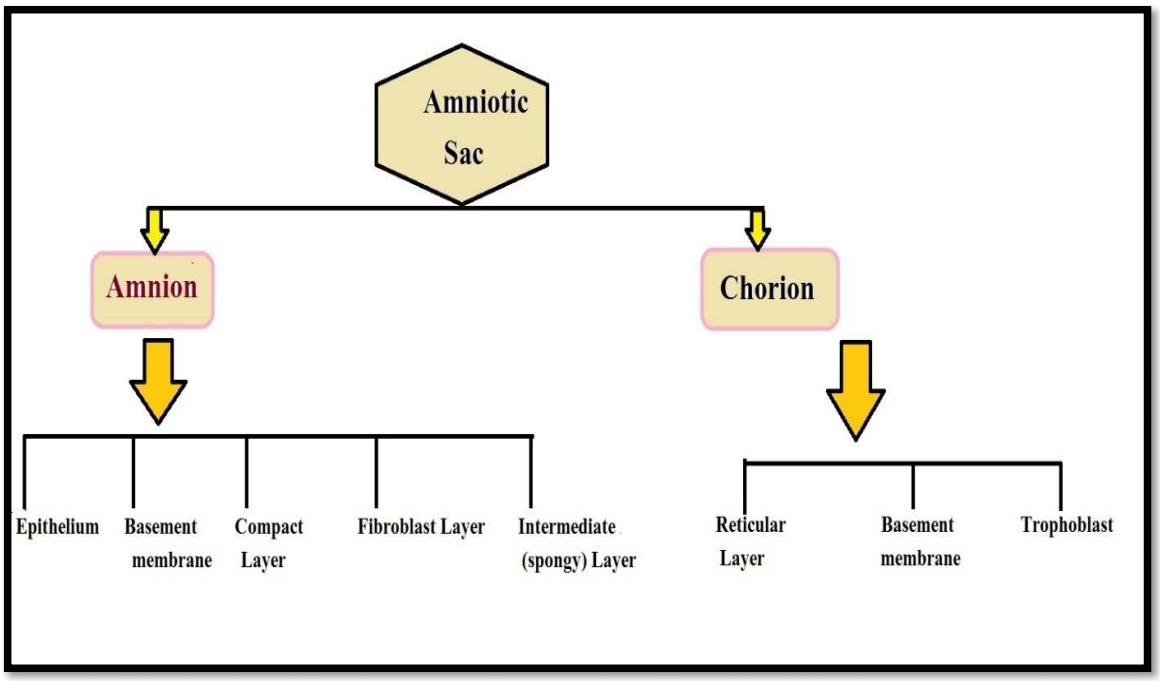


Fig 14: Layer of Amniotic sac just like Lotus Flower [Adopted from : Hassan Niknejad, Habibollah Peirovi, Masoumeh Jorjani1, Abolhassan Ahmadiani, Jalal Ghanavi1, Alexander, M. Seifalian. PROPERTIES OF THE AMNIOTIC MEMBRANE FOR POTENTIAL USE IN TISSUE ENGINEERING. Europians Cells.and Materials Vol. 15, 2008, pp 88-99]

The AM contains no blood vessels or nerves; instead, the nutrients it requires are supplied directly by diffusion out of the amniotic fluid and/or from the underlining *decidua*. The innermost layer, nearest to the foetus, is called the amniotic epithelium and consists of a single layer of cells uniformly arranged on the basement membrane. The basement membrane is one of the thickest membranes found in all human tissue. The support provided to the foetus by the basement membrane throughout gestation stands testimony to the structural integrity of this remarkable membrane. The compact layer of stromal matrix adjacent to the basement membrane forms the main fibrous skeleton of the AM. The collagens of the compact layer are secreted by mesenchymal cells situated in the fibroblast layer. Interstitial collagens (types I and III) predominate and form parallel bundles that maintain the mechanical integrity of AM. Collagens type V and VI form filamentous connections between interstitial collagens and the epithelial basement membrane. The intermediate layer (spongy layer or *zona spongiosa*) of the stromal matrix sits adjacent to the chorionic membrane. Its abundant content of proteoglycans and glycoproteins produces a spongy appearance in histologic preparations, and it contains a nonfibrillar meshwork of mostly type III collagen

[20]. The spongy layer is loosely connected to the chorionic membrane; hence, the AM is easily separated from the chorion by means of blunt dissection.

The AM has many characteristics, which make it potentially suitable for use in TE. The epithelial layer of the AM includes cells that have similar characteristics to stem cells. As described, these cells express pluripotent markers of stem cells and can be differentiated into all three germ layers. AECs(Amniotic Epithelial cells) are not, however, tumourigenic upon transplantation. These cells have no need for a feeder layer throughout their cultivation. In addition, there are many other advantages that suggest AECs are an excellent source of cells for Tissue Engineering (TE). The AM can act as a scaffold for TE. The ECM components of the basement membrane from the AM include collagen, fibronectin, laminin and other proteoglycans important for overlying cell growth. These ingredients are the ligands for integrin receptors, and hence, have a great role in cell adhesion during the cell seeding protocol. Other properties of the AM include anti-inflammation, anti-fibrosis, anti-scaring, anti-microbial, low immunogenicity and reasonable mechanical property, which are all important for use in TE.

Umbilical Cord as Kamal naal

Umbilical Cord is derived from Latin *umbilicus* means "the navel" [21] and the native term is navel string[22].Navel string is known as *Naal* in Hindi. On preliminary level it is proved that *Kamalnaal* is known as Umbilical cord. How *Kamalnaal* is called Umbilical Cord let's see.

Navel string is known as *Naal* in Hindi

The umbilical cord provides the pathway for unhindered blood transport from the placenta to the foetus and vice versa. Aristotle (384–322 BC) originally identified the umbilical cord as the connection between the mother and unborn child[23][Refer Fig 15].

The initial umbilical cord is formed during the 4th to 8th weeks of gestation (calculated from the first day of the last menstrual cycle) by the expanding amnion enveloping tissue from the body stalk, the omphalomesenteric duct and the umbilical coelom[24]. Blood flow is established within the umbilical cord by the end of the 5th week of gestation[25].

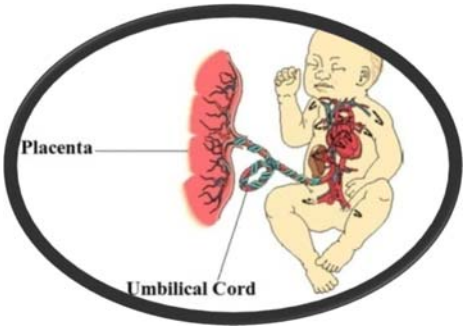


Fig 15: The umbilical cord connect the placenta and fetus

Umbilical cord is a life line that attach developing embryo or fetus to the placenta. During prenatal development, the umbilical cord is physiologically and genetically part of the fetus and, (in humans), normally contains two small arteries (the umbilical arteries) and one vein (the umbilical vein), buried within Wharton's jelly. The umbilical vein supplies the fetus with oxygenated, nutrient rich blood from the placenta. Conversely, the fetal heart pumps deoxygenated, nutrient-depleted blood through the umbilical arteries back to the placenta[26].

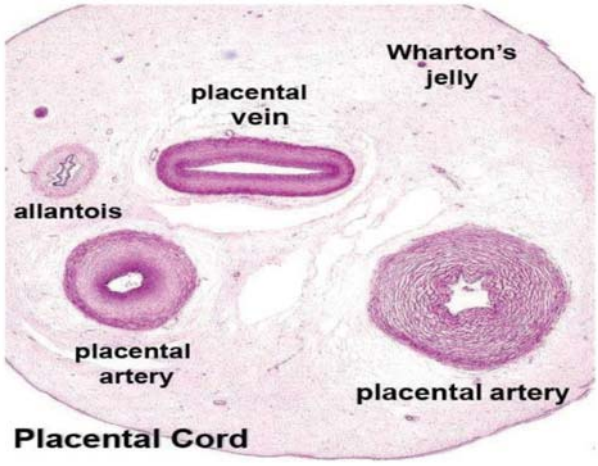


Fig 16: A cross-sectional image of a postpartum umbilical cord showing the major structures (Hill M. UNSW Embryology. Placenta Histology. [Internet] 2017]; Available from: http://embryology.med. unsw.edu.au/notes/placenta5.htm).

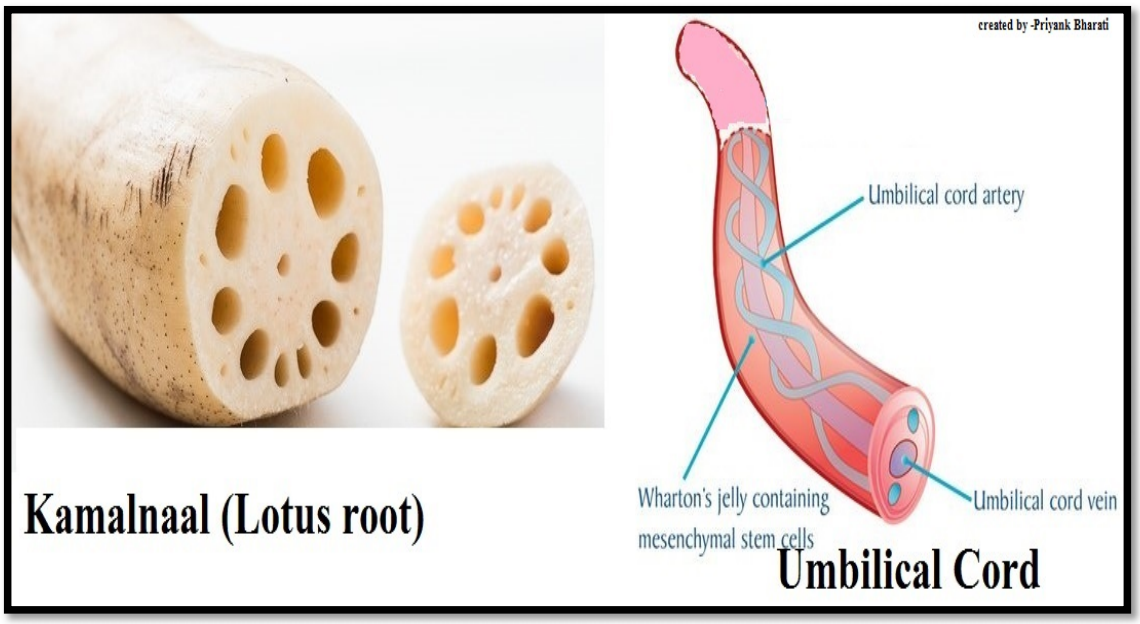


Fig 17: **Comparison in between Kamalnaal and Umbilical Cord.**

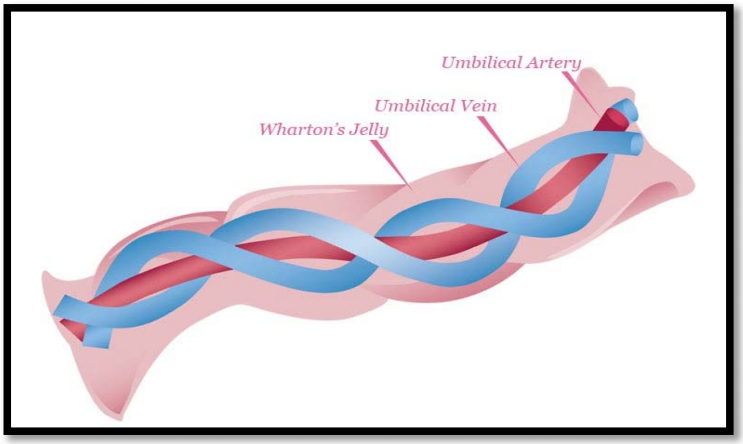


Fig 18: **Umbilical Cord** [Adopted from https://umbilicalstemcellsbanking.wordpress.com /umbilical-cord-and-cord-blood-banking-2/]

By the end of the third week of development the embryo is attached to placenta via a connecting stalk . At approximately 25 days the yolk sac forms and by 28 days at the level of the anterior wall of the embryo, the yolk sac is pinched down to a vitelline duct, which is surrounded by a primitive umbilical ring . By the end of the 5th week the primitive umbilical ring contains [27]

- a connecting stalk within which passes the allantois (primitive excretory duct), two umbilical arteries and one vein;
- the vitelline duct (yolk sac stalk); and

- a canal which connects the intra- and extraembryonic coelomic cavities

By the 10th week the gastrointestinal tract has developed and protrudes through the umbilical ring to form a physiologically normal herniation into the umbilical cord. Normally these loops of bowel retract by the end of the third month. Occasionally residual portions of the vitelline and allantoic ducts, and their associated vessels, can still be seen even in term umbilical cords, especially if the fetal end of the cord is examined .

At term the umbilical cord[Fig 18] has a average length of 50–60 cm[24][28][29] with diameter 1.5 cm[24]. Normal cord length can range from 30 cm to 100 cm, with less than 30 cm considered short[30]. The structure of the umbilical cord can vary in the number of umbilical arteries, the length and diameter of the cord, and the direction and number of spirals of the cord [31]. Although the length of the umbilical cord has no intrinsic effect on fetal blood flow, a longer cord is more susceptible to knotting, entanglement around the fetus (especially the neck), and even prolapse out of the uterus during delivery, any of which can lead to intrauterine fetal demise[32]. The umbilical cord normally contains two umbilical arteries and one umbilical vein which are surrounded by mucoid connective tissue, and this is called the Wharton's jelly. This jelly has physical properties much like a polyurethane pillow which is resistant to twisting and compression. This property serves to protect the critical vascular lifeline between the placenta and fetus. In the Wharton's jelly, the most abundant glycosaminoglycan is hyaluronic acid[33], which forms a hydrated gel around the fibroblasts and collagen fibrils and maintains the tissue architecture of the umbilical cord by protecting it from pressure[34]. The phenotypic stromal cells in the Wharton's jelly are fibroblast-like cells[35]. However, cells with the ultrastructural characteristics of myofibroblasts have been found[36]. Recently, Mitchell et al.[37]. found that matrix cells from Wharton's jelly can be induced to form neurons and glia cells by treating with basic fibroblast growth factor and low-serum media plus butylated hydroxyanisole and dimethyl sulfoxide.

The umbilical cord normally inserts near the center of the placenta. However, in approximately 7% of single births the insertion point occurs at the very edge of the placenta (marginal insertion) and in about 1% of cases, the umbilical cord does not insert into the placenta at all, but the fetal vessels ramify through the external membranes before entering the placenta (velamentous insertion). When the umbilical cord inserts into the chorionic plate of the placenta , the fetal vessels are stabilized, and thus protected from torsional and shear forces. On the other hand, insertion into the membranes exposes the fetal vessels to the

potential for rupture due to shearing forces or if the vessels pass near the internal cervical os (vasa previa), by rupture due to an ascending inflammation prior to the time of delivery[32].

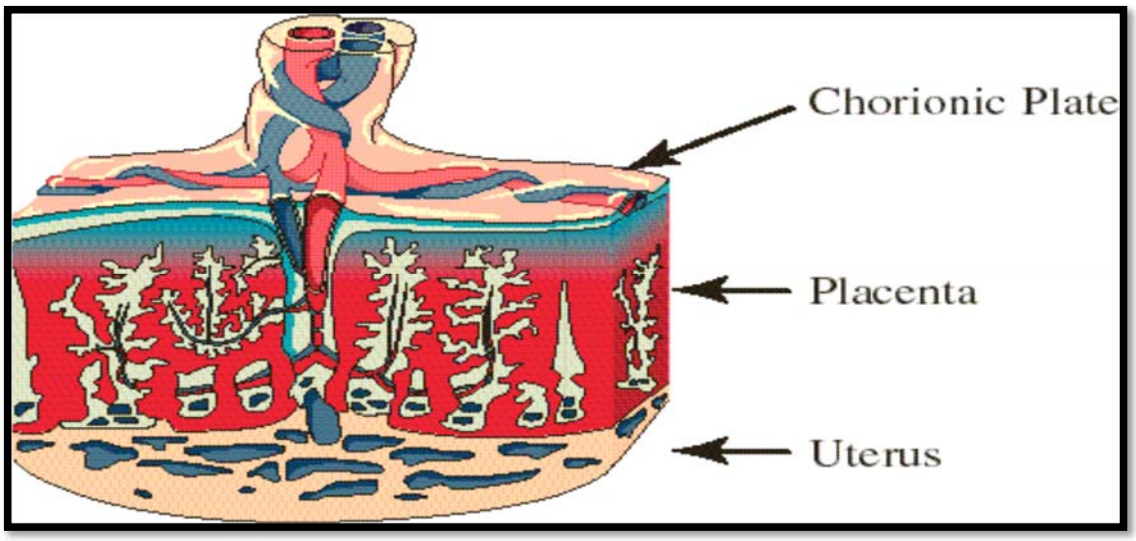


Fig 19: **Insertion of Umbilical Cord into chorionic plate** [Source http://klimanlabs.yale.edu /placenta/research/Umbilical%20Cord%20EOR_163162_284_18220.pdf]

Mechanisms of blood flow in the umbilical cord vein

The placenta provides a large volume of blood awaiting transportation to the foetus. "The quantity of the blood flowing from the fetus to the placenta very nearly equals that flowing from the placenta to the fetus"[38] and as such the foetus can be considered a closed system. Movement of oxygenated blood from the placenta to the foetus occurs by the following methods:

1. The umbilical cord vein pressure increases from 4.5 mmHg at 18 weeks gestation to 6 mmHg at term[39] and the blood pressure distending the umbilical vein is higher than that in the fetal IVC (Inferior Vena Cava) [38]. This gradient is due to at least two mechanisms:
    - Normal foetal heart contractions producing a pressure gradient between the atria and ventricles, which in turn diminishes the preload in the venous circulation and allows the blood in the umbilical vein to move towards the heart[40]
    - Changes in abdominal and thoracic cavity pressures due to foetal breathing movements causing a pressure gradient between the umbilical vein and the

ductus venosus [40] such that there is an increase in the velocity of the blood in the umbilical vein during inspiration [41]

2. Passive pressure changes in the umbilical cord vein due to longitudinal distortion of the arteries with each foetal heart beat. The pressure peaks in the umbilical cord artery and vein are out of phase by 180° which results in the addition of the effect of numerous, small pressure changes along the length of the cord and the subsequent movement of blood through the umbilical cord vein [38]

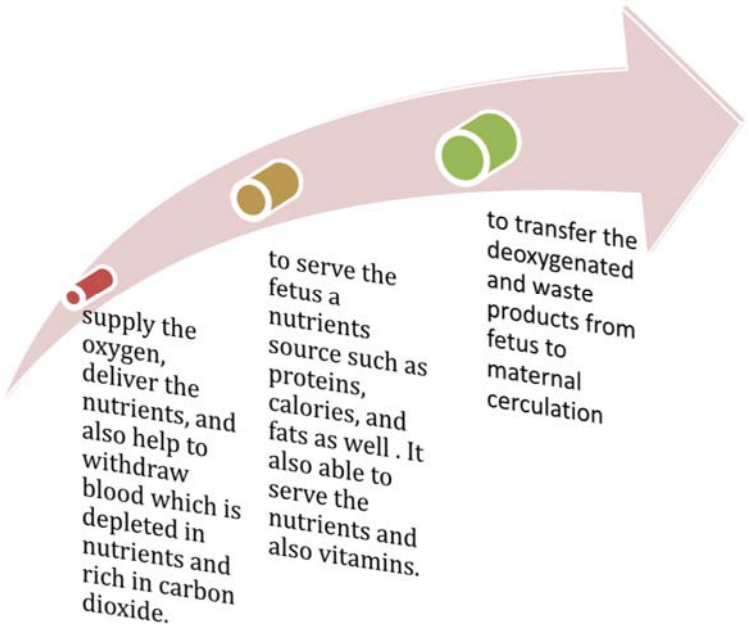


Fig 20: Function of Umbilical Cord [Source : http://EzineArticles.com/4825538]

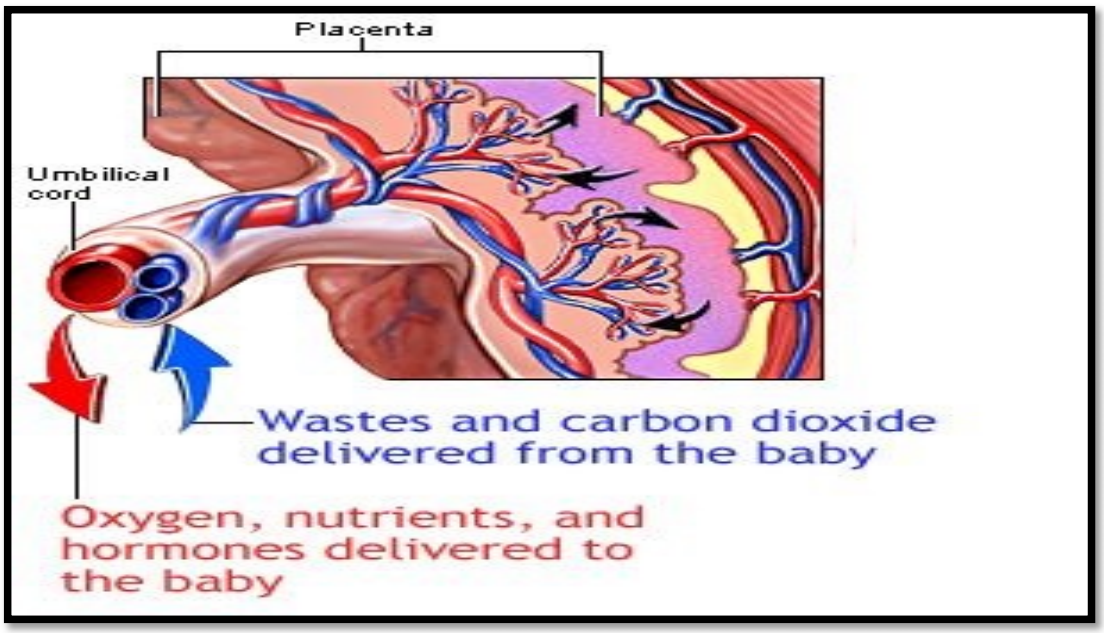


Fig 21: Working of Umbilical Cord [Source https://in.pinterest.com/klostee/birth-placenta-umbilical-cord/?lp=true]

Umbilical cord blood (UCB) has been shown to be a suitable source of haematopoietic stem cells (HSCs) for haematopoietic reconstitution. UCB source of stem cells appears to be as effective as bone marrow when an HLA (Human leukocyte antigen) matched adult donor is not available[42][43]. In past few years, the clinical applications of Umbilical cord Blood-based cell therapies have broaden with a growing number of diseases treated with HSC (Haematopoietic stem cell). UCB has been shown to be viable alternative to Bone marrow (BM) and Peripheral Blood (PB). UCB has clear over the other sources of stem cells. It requires less restriction for matching, as the naive immune system appears to cause less severe Graft Versus Host Disease (GVHD) [44]. Now a days UCB Banks are drastically increasing in all over the World. Cord blood is used to treat cancers, blood disorders, metabolic disorders and immune disorders In 2007, cord blood was used as a therapy for over 40 diseases [45]. Clinical trials are currently testing cord blood as a treatment for other serious conditions, including autism, cerebral palsy, spinal cord injury and hearing loss.

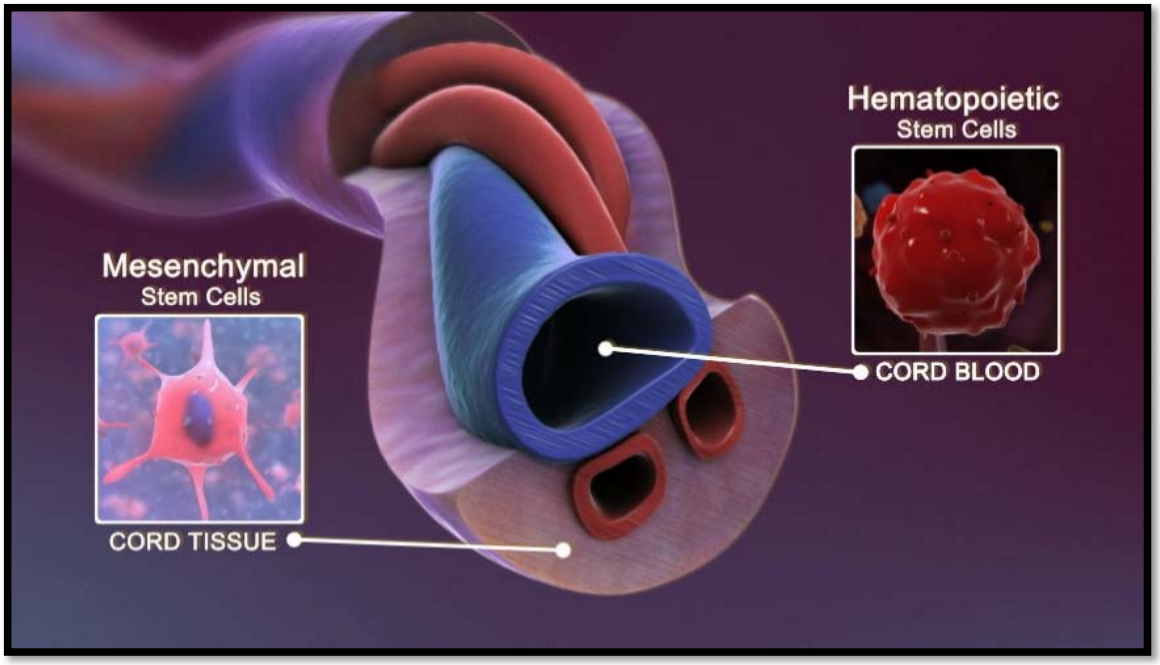


Fig 22 : UCB as a source of stem cell (Source: http://newgeneticsglobal.com/zen-umbilical-cord-blood-stem-cell/)

In this section we know about Umbilical cord their physiology, anatomy and function this all again similar to Lotus stem. Lotus plants provide several bioactive ingredients like alkaloids, flavonoids, antioxidants, antisteroids, antipyretic, anticancerous, antiviral and anti-obesity properties [46]. Lotus stem is good for health hence it is used to treat many diseases where as UCB is also used to treat many diseases. Again principles of both are same.

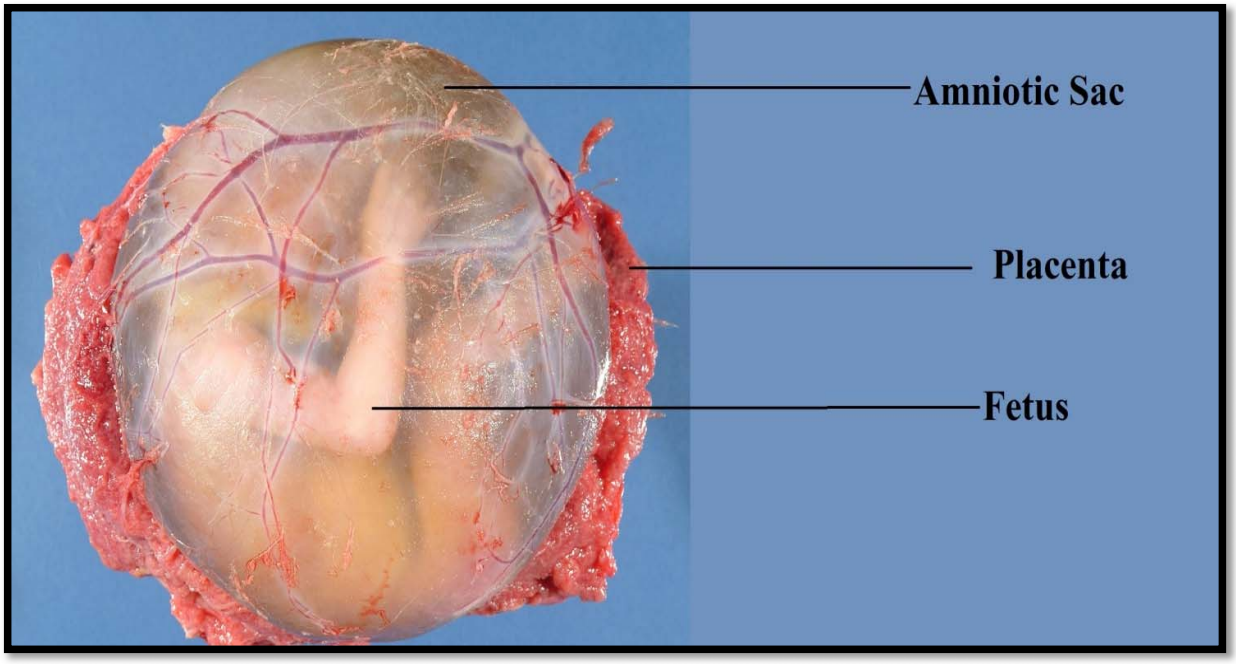


Fig 23: This figures shows how fetus is covered with amniotic sac

Placenta as Kamalnabh

We saw in the Puranas that with the help of Kamalnabh Lord Brahma used to take food stuff from Shri Hari Vishnu's body. Now on the other side, if you look at science, then this work is done by Placenta. In Greek placenta is known as flat cake (Greek, plakuos = flat cake) named on the basis of this organs appearance[47] and in Latin it is known as cake [48]. Scientific literature shows that placenta is composite or pancake structure that attach to inside of the uterus and connected to the fetus with the help of Umbilical Cord which supplies nutrients to the developing embryo[49][50]

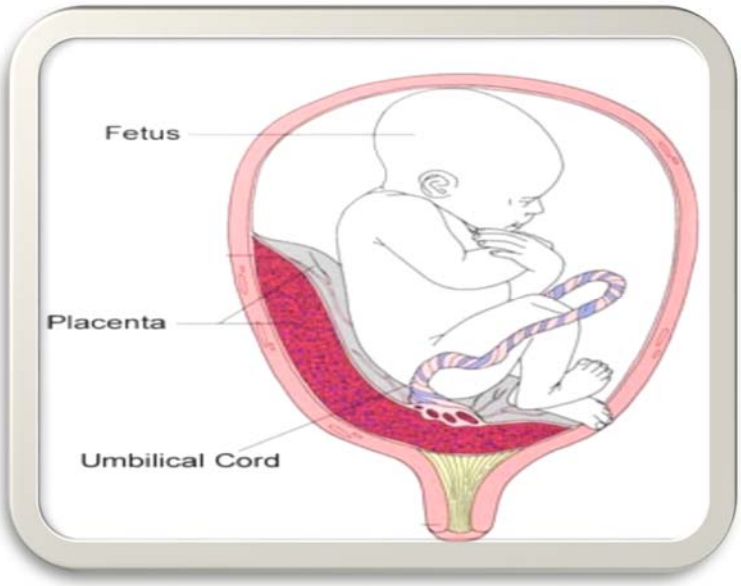


Fig 24: Placenta attached to uterine wall of Mother

The Placenta is responsible for working as interface between mother's and the developing fetus. They have three main tasks:

- Provide nutrition to the fetus
- Attach the fetus to the uterine wall
- Allow the fetus to transfer waste products to the mother's body

Some studies shows that signalling made by placenta can calibrate the rate of fetal growth and influence the length of the pregnancy. The maternal fetal interface (placenta) plays a important role in the health of both fetus and mother [51]. According to me we can reschedule the length of pregnancy i.e. delay and shorten the length of pregnancy time through placental signalling. A growing fetus require lots of nutrients and oxygen that it can't provide for itself, so the fetal blood that flows through the capillaries of the chronic villi is oxygen and nutrient poor because of this skewness in the nutrient and oxygen concentration between the fetal blood in the villi and the maternal blood in the intervillous space, nutrients and oxygen diffuse from the maternal blood, into the villi and into the fetal blood[49]. IgG antibodies pass through the human placenta, providing protection to fetus [52].

According to author (Priyank Bharati) We can reschedule the length of pregnancy i.e. delay and shorten the length of pregnancy time through placental signalling.

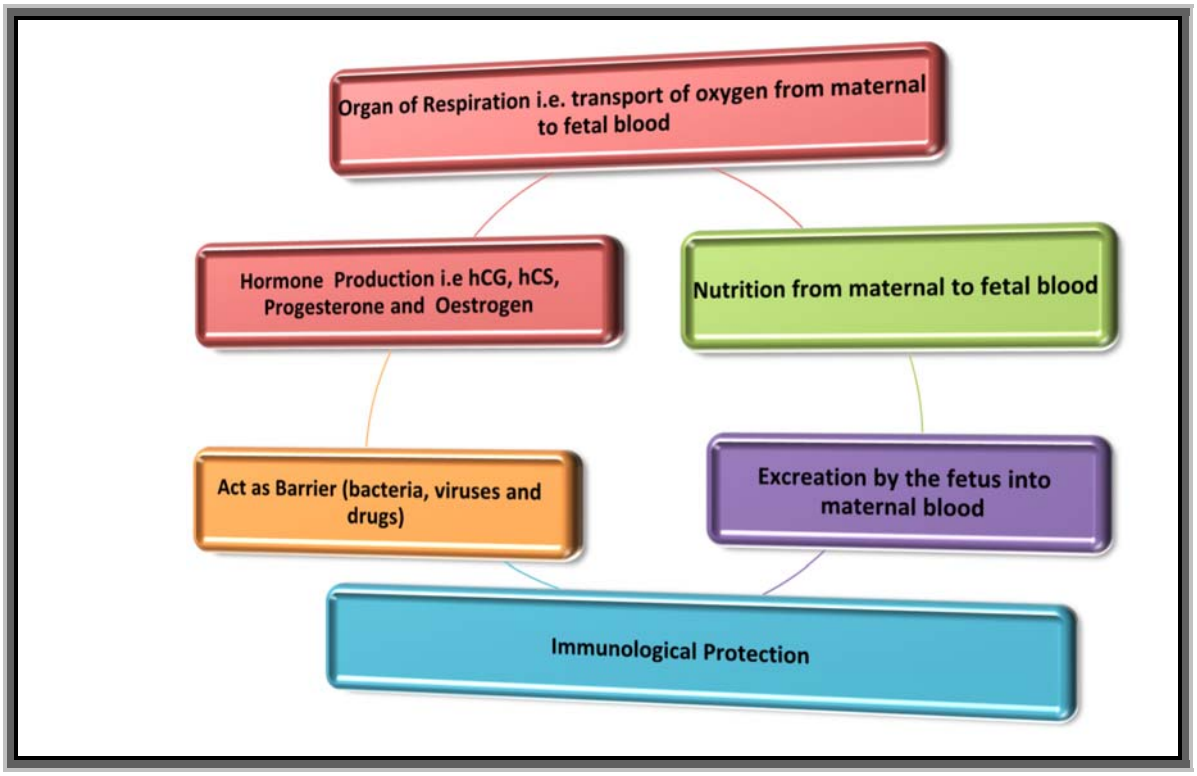


Fig 25: Function of Placenta. hCG means human chorionic gonadotropin where as hCS stands for human chorionic somatomammotropin

Function of Placenta [27]

As dipicted in Fig 25, the main function of placenta are :.

1. **Exchange of metabolic and gaseous products between mother and fetus bloodstream.**

❖ Exchange of Nutrition and Electrolytes:-

Such as Free fatty acids, carbohydrates, vtamins and amino acids is rapid and increase as pregnancy advances.

❖ Exchange of gases:

Such as Carbon Dioxide , Carbon monoxide and Oxygen is accomplished by simple diffusion (Diffusion is a physical process where molecules of a material move from an area of high concentration to an area of low concentration. It happens in a solution in gas or in a liquid). As per the literature, the fetus extracts 20-30 mL of oxygen per minute from the circulation of mother.

❖ Transmission of maternal Antibodies :-

Immunoglobulins (Ig) consist almost entirely of maternal immunoglobulins G(IgG) which begins to be transported from mother to fetus at approximately 14 weeks. The fetus gains passive immunity against various inffection.

2. Production of hormones

❖ Hormone Production:- The placenta produces progestrone hormone in sufficent amount to maintain pregnancy. Placenta also produces estrogenic hormones in addition to progestrone. Estrogenic hormones produces just before the end of pregnancy, when a maximum level is reached. These high levels of estrogens promote development of the mammary gllands and uterine growth. hCG (human chorionic gonadotropin) produced by syncytiotrophoblast during the first 2 months of pregnancy. hCG maintain the corpus luteum (The *corpus luteum* is a temporary endocrine structure involved in ovulation and early *pregnancy*).This hormone is excreted by the mother in the urine, and in the early stages of gestation, its presence is used as a indicator of pregnancy. Another hormone produced by placenta is somatomammotropin- it is growth hormone like substance. This gives the fetus priority on maternal blood glucose and makes mother somewhat diabetogenic. It also promotes breast development for milk production.

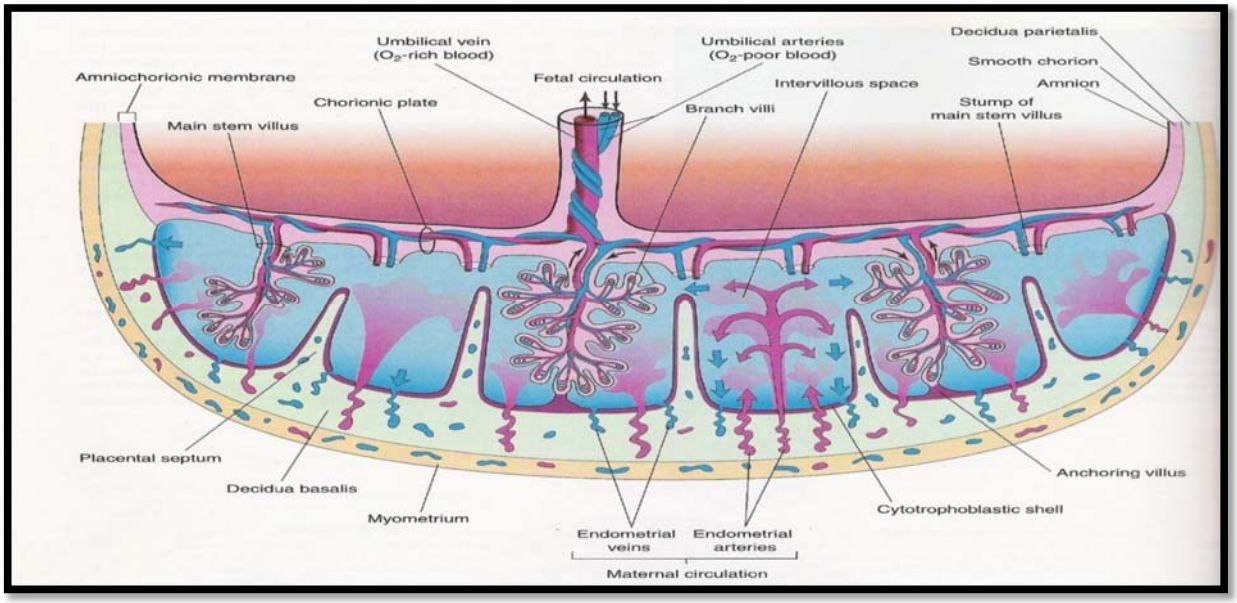


Fig 26 : Placental Circulation [Source **:** https://kgmu.org/download/virtualclass/anatomy/Placenta-4-2-15.pdf**]**

The fetal blood contain high concentration of carbon dioxide (CO_2) and other waste products, while the material blood in the intervillous space contains low concentrations of these waste products. As a result, carbon dioxide and other waste products diffuse out of the fetal blood, across the trophoblasts of the chorionic villi and into the maternal blood that surrounds the villi. The mother's lungs, kidneys and liver will easily remove these waste products from her blood. Notice that in the placenta, the maternal and fetal blood does not mix because two blood supplies remain separated by the fetal trophoblasts and endothelial cells. However, nutrients and waste products, including oxygen and carbon dioxide, are free to diffuse from one blood supply to the other down concentration gradients [49].Scientist magazine[51] .states that placental communication also has a significant role in priming the immune system of the fetus, training it to tolerate certain stimuli and thereby preventing harmful reaction. After birth placenta is expelled from the uterus. Here it is proved that Kamalnabh is nothing but it is only a Placenta the only difference is terminology used in ancient time. Otherwise, both words have same meaning.

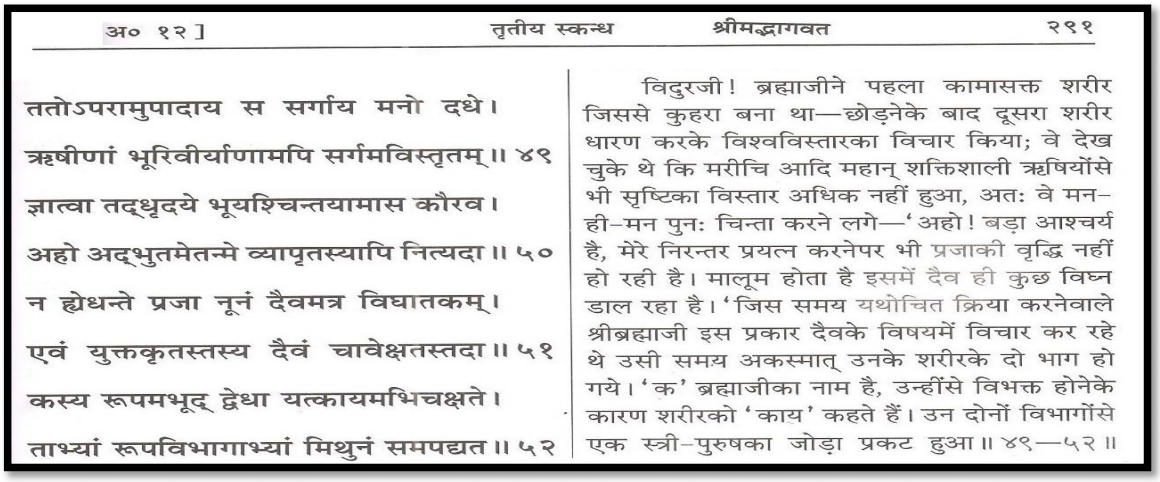
Without using advanced scientific technology it was not possible to create anyone. Scientists search this technique in year 2016 but not complete technique. Millions of year journey somehow ends. In 2016 research published in the journal Nature [53] shows that there is a possibility to create motherless babies and if any cell of the body is fused from the sperm cell, then the child is possible. The next task of University of Bath's scientists to create babies by the fusion of sperm cells and non egg cell like skin. Verse 13 (Fig 4) of Shrimad Bhagwad Mahapuran and University of Bath's scientists statements [54][55][56] both are similar. Let's see the similarity

Shrimad Bhagwad Mahapuran	Statements of University of Bath's Scientists
Section 3rd Chapter 8th verse 13 (pg 269) Original Verse :	Dr Tony Perry, University of Bath, said that his team was planning to take the next step of attempting to produce live offspring from ordinary non-egg cells, such as skin cells. Motherless babies created from skin cells

तस्यार्थसूक्ष्माभिनिविष्टदृष्टे- रन्तर्गतोऽर्थो रजसा तनीयान्। गुणेन कालानुगतेन विद्धः सूष्यंस्तदाभिद्यत नाभिदेशात्॥ १३ Meaning :- जिस समय भगवान्‌की दृष्टि अपनेमें निहित लिंगशरीरादि सूक्ष्मतत्त्वपर पड़ी, तब वह कालाश्रित रजोगुणसे क्षुभित होकर सृष्टिरचनाके निमित्त उनके नाभिदेशसे बाहर निकला॥ १३॥	could be on the horizon after scientists discovered a method of creating offspring without the need for a female egg. Any cell in the human body could be fertilised by a sperm. [Source http://www.telegraph.co.uk/science/2016/09/13/motherlessbabiespossibleasscientistscreateliveoffspringw/]

Table 1 : ***Similarity in between Shrimad Bhagwad Mahapuran and Statements of University of Bath's Scientists***

Evidence of *Ardhanarishvara* roop of Shiva mentioned in various Purans



अ० १२] तृतीय स्कन्ध श्रीमद्भागवत २९१

ततोऽपरामुपादाय स सर्गाय मनो दधे।
ऋषीणां भूरिवीर्याणामपि सर्गमविस्तृतम्॥ ४९
ज्ञात्वा तद्धृदये भूयश्चिन्तयामास कौरव।
अहो अद्भुतमेतन्मे व्यापृतस्यापि नित्यदा॥ ५०
न ह्येधन्ते प्रजा नूनं दैवमत्र विघातकम्।
एवं युक्तकृतस्तस्य दैवं चावेक्षतस्तदा॥ ५१
कस्य रूपमभूद् द्वेधा यत्कायमभिचक्षते।
ताभ्यां रूपविभागाभ्यां मिथुनं समपद्यत॥ ५२

विदुरजी! ब्रह्माजीने पहला कामासक्त शरीर जिससे कुहरा बना था—छोड़नेके बाद दूसरा शरीर धारण करके विश्वविस्तारका विचार किया; वे देख चुके थे कि मरीचि आदि महान् शक्तिशाली ऋषियोंसे भी सृष्टिका विस्तार अधिक नहीं हुआ, अतः वे मन-ही-मन पुनः चिन्ता करने लगे—'अहो! बड़ा आश्चर्य है, मेरे निरन्तर प्रयत्न करनेपर भी प्रजाकी वृद्धि नहीं हो रही है। मालूम होता है इसमें दैव ही कुछ विघ्न डाल रहा है।' जिस समय यथोचित क्रिया करनेवाले श्रीब्रह्माजी इस प्रकार दैवके विषयमें विचार कर रहे थे उसी समय अकस्मात् उनके शरीरके दो भाग हो गये। 'क' ब्रह्माजीका नाम है, उन्हींसे विभक्त होनेके कारण शरीरको 'काय' कहते हैं। उन दोनों विभागोंसे एक स्त्री-पुरुषका जोड़ा प्रकट हुआ॥ ४९—५२॥

Fig 27: Shrimad Bhagwad Mahapuran sloks represent Brahma acquire knowledge of sex chromosomes from Dev (another name of Shiva) [Source: Skandh (section) 3rd , Chapter 12, Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26, pg-291]

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तीसरा अध्याय

अर्द्धनारीश्वर शिव

नंदीश्वर बोले—जब ब्रह्माजी द्वारा रची हुई इस सृष्टि का विस्तार नहीं हुआ तब वे बड़े चिंतित होकर विस्तार के उपायों के विषय में सोचने लगे। ब्रह्माजी ने विचार किया कि यदि कोई इस संबंध में मेरी मदद कर सकता है तो वे सिर्फ भगवान शिव हैं। तब अपने आराध्य देव भगवान शिव को प्रसन्न करने हेतु उन्होंने शिव-शिवा के संयुक्त रूप की आराधना करनी आरंभ कर दी। उनकी स्तुति से प्रसन्न होकर भगवान शिव उनके सामने प्रकट हुए और बोले—हे ब्रह्मान्! कहो, क्या चाहते हो? अपने मनोरथ के विषय में बताओ, ताकि मैं उसे पूरा करने में तुम्हारी मदद कर सकूं।

भगवान शिव के इस प्रकार के वचन सुनकर ब्रह्माजी ने अपने दोनों हाथ जोड़कर भगवान शिव की स्तुति की और बोले—हे देवाधिदेव महादेव! शिवशंकर! आप तो अपने भक्तों के रक्षक हैं। आप उनके समस्त दुखों को दूर करके उनको अभीष्ट फल प्रदान करते हैं। भगवन्! आपकी आज्ञा के अनुसार मैंने सृष्टि की रचना की है परंतु भगवन्, मेरे द्वारा रची गई सृष्टि का विस्तार नहीं हो रहा है। यदि यह कार्य इसी तरह होता रहा तो कभी भी सृष्टि में वृद्धि नहीं हो पाएगी।

तब ब्रह्माजी के इन वचनों को सुनकर भगवान शिव बोले—हे ब्रह्मान्! मैं जानता हूं कि तुमने अपनी सृष्टि में प्रजा की वृद्धि के लिए मेरी पूजा-आराधना की है। यह कहकर शिवजी ने अपने शरीर से देवी शिवा को अलग कर दिया। देवी शिवा को वहां देखकर ब्रह्माजी देवी शिवा की स्तुति करने लगे और कहने लगे, देवी! आपके पति भगवान शिव की ही कृपा से इस सृष्टि का सृजन हुआ है।

भगवान शिव बोले—हे ब्रह्माजी! मैंने आपके मनोरथ को पूर्ण करने के लिए ही देवी शिवा को प्रकट किया है। इस सृष्टि का विस्तार तभी संभव है, जब मैथुनी-सृष्टि की रचना हो। इसलिए तुम इस कार्य की पूर्ति करो। यह सुनकर ब्रह्माजी भगवान शिव और शिवा दोनों की प्रसन्नता हेतु कार्य करने लगे।

ब्रह्माजी बोले—हे देवी! सृष्टि के आरंभ में आपके पति देवाधिदेव भगवान शिव ने ही मेरी रचना की थी और मुझे सृष्टि की रचना करने का आदेश दिया था। जिसके

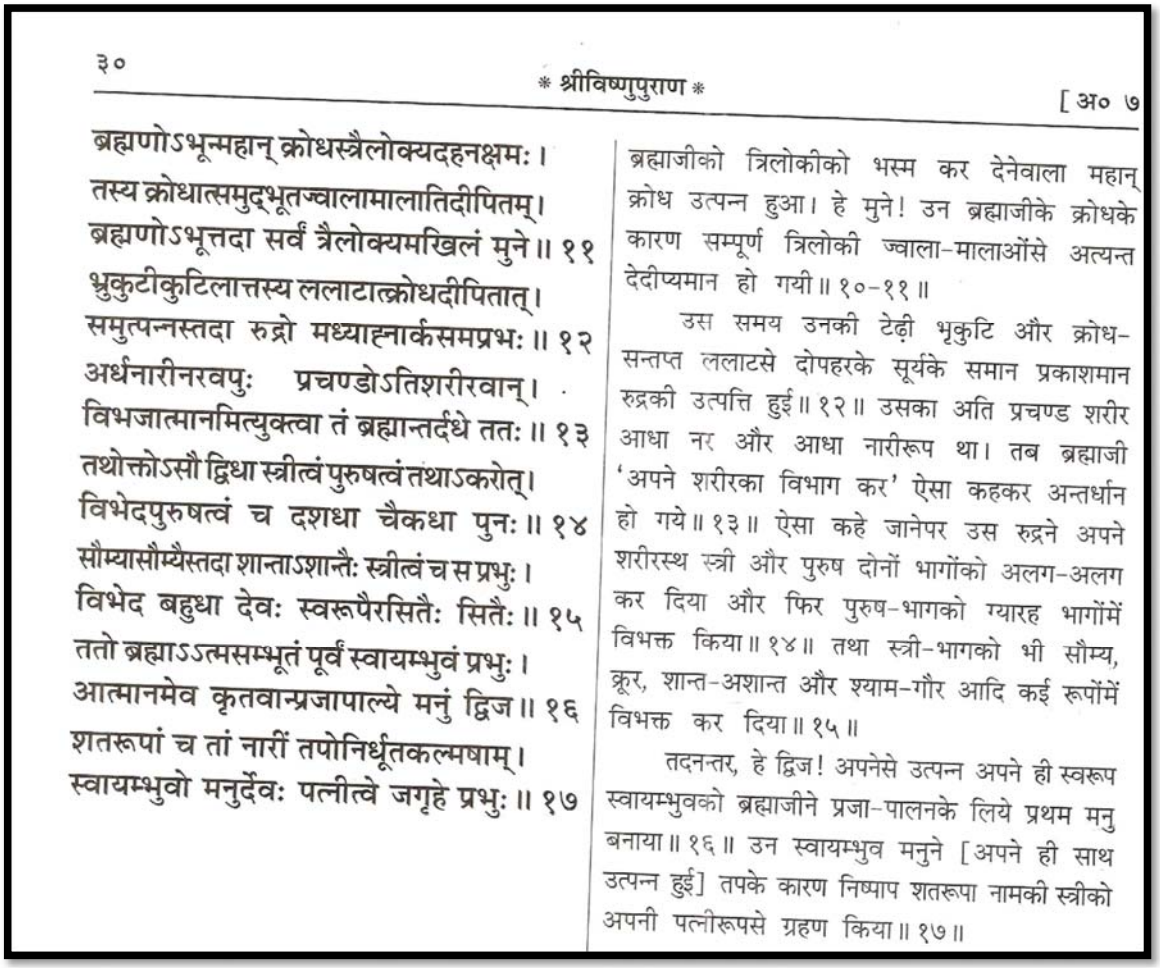
फलस्वरूप मैंने अनेक पुरुषों की रचना की परंतु इतना करने पर भी उनकी वृद्धि संभव नहीं हो सकी। इसलिए माते! मैं अपनी प्रजा की वृद्धि हेतु आपकी शरण में आया हूं। प्रजा वृद्धि तभी संभव है, जब सृष्टि का निर्माण कार्य अर्थात वृद्धि स्त्री-पुरुष के समागम से हो परंतु अभी तक मैं नारी को प्रकट नहीं कर पाया हूं। हे शिवे! आप मुझे नारी की सृष्टि करने की शक्ति प्रदान करें। हे सर्वेश्वरी! हे जगत जननी! मेरे कार्य की सिद्धि हेतु आप मेरे पुत्र दक्ष की पुत्री के रूप में जन्म लीजिए।

ब्रह्माजी की प्रार्थना को मानते हुए देवी जगदंबा ने दक्ष की पुत्री होना स्वीकार कर लिया। यह कहकर देवी शिवा ने भगवान शिव के शरीर में प्रवेश कर लिया। तत्पश्चात शिव-शिवा वहां से अंतर्धान हो गए। तभी से शिव-शिवा का अर्द्धनारीश्वर रूप विख्यात हुआ और इस संसार में स्त्री जाति की रचना संभव हुई। यह अर्द्धनारीश्वर स्वरूप वर्णन अत्यंत आनंददायक एवं मंगलकारी है।

Fig 28: Shatrudra Samhita Chapter 3 *"Ardhanarishvara Shiva"* of Shiv Puran [Source: Shiv Puran, Chapter 3, Edition 4th (2014). Editor Dr. Mahindra Mittal, Manoj Publication, Delhi.pg-469-470; ISBN-978-81-310-0619-1]

Ardhanarishvara (Sanskrit: □□□□□□□□□□□□, Ardhanārīśvara) is composite androgynous form of the Hindu God Shiva and his consort Parvati (also known as Devi , Shakti and Uma in this icon). *Ardhanarishvara* is depicted as half female and half male, split down the middle. The right half is usually the male Shiva, illustrating his traditional attributes.

The ***Shiva Purana*** [57] describes that the Lord Brahma (which is considered as a creator god) created all male beings, the Prajapatis, and told them to regenerate, which they were unable to do. Confronted with the resulting decline in the pace of creation, Brahma was perplexed and contemplated on Shiva for help. To enlighten Brahma of his folly, Shiva appeared before him as *Ardhanarishvara*. Brahma prayed to the female half of Shiva to give him a female to continue creation. The goddess agreed and created various female powers from her body, thereby allowing creation to progress.



३० * श्रीविष्णुपुराण * [अ० ७

ब्रह्मणोऽभून्महान् क्रोधस्त्रैलोक्यदहनक्षमः।
तस्य क्रोधात्समुद्भूतज्वालामालातिदीपितम्।
ब्रह्मणोऽभूत्तदा सर्वं त्रैलोक्यमखिलं मुने॥ ११
भ्रुकुटीकुटिलात्तस्य ललाटात्क्रोधदीपितात्।
समुत्पन्नस्तदा रुद्रो मध्याह्नार्कसमप्रभः॥ १२
अर्धनारीनरवपुः प्रचण्डोऽतिशरीरवान्।
विभजात्मानमित्युक्त्वा तं ब्रह्मान्तर्दधे ततः॥ १३
तथोक्तोऽसौ द्विधा स्त्रीत्वं पुरुषत्वं तथाऽकरोत्।
विभेदपुरुषत्वं च दशधा चैकधा पुनः॥ १४
सौम्यासौम्यैस्तदा शान्ताऽशान्तैः स्त्रीत्वं च स प्रभुः।
विभेद बहुधा देवः स्वरूपैरसितैः सितैः॥ १५
ततो ब्रह्माऽऽत्मसम्भूतं पूर्वं स्वायम्भुवं प्रभुः।
आत्मानमेव कृतवान्प्रजापाल्ये मनुं द्विज॥ १६
शतरूपां च तां नारीं तपोनिर्धूतकल्मषाम्।
स्वायम्भुवो मनुर्देवः पत्नीत्वे जगृहे प्रभुः॥ १७

ब्रह्माजीको त्रिलोकीको भस्म कर देनेवाला महान् क्रोध उत्पन्न हुआ। हे मुने! उन ब्रह्माजीके क्रोधके कारण सम्पूर्ण त्रिलोकी ज्वाला-मालाओंसे अत्यन्त देदीप्यमान हो गयी॥ १०-११॥

उस समय उनकी टेढ़ी भृकुटि और क्रोध-सन्तप्त ललाटसे दोपहरके सूर्यके समान प्रकाशमान रुद्रकी उत्पत्ति हुई॥ १२॥ उसका अति प्रचण्ड शरीर आधा नर और आधा नारीरूप था। तब ब्रह्माजी 'अपने शरीरका विभाग कर' ऐसा कहकर अन्तर्धान हो गये॥ १३॥ ऐसा कहे जानेपर उस रुद्रने अपने शरीरस्थ स्त्री और पुरुष दोनों भागोंको अलग-अलग कर दिया और फिर पुरुष-भागको ग्यारह भागोंमें विभक्त किया॥ १४॥ तथा स्त्री-भागको भी सौम्य, क्रूर, शान्त-अशान्त और श्याम-गौर आदि कई रूपोंमें विभक्त कर दिया॥ १५॥

तदनन्तर, हे द्विज! अपनेसे उत्पन्न अपने ही स्वरूप स्वायम्भुवको ब्रह्माजीने प्रजा-पालनके लिये प्रथम मनु बनाया॥ १६॥ उन स्वायम्भुव मनुने [अपने ही साथ उत्पन्न हुई] तपके कारण निष्पाप शतरूपा नामकी स्त्रीको अपनी पत्नीरूपसे ग्रहण किया॥ १७॥

Fig 29 : Slokas mentioned in Shri Vishnu Puran which give the evidence that how Brahma give birth to Manu and Shatrupa after the knowledge of sex chromosome(XX and XY) which was given by Lord Shiva/Rudra in the form of Ardhanarishvara swaroop.on the behalf of this scientific knowledge Brahma give birth to Manu and Shatrupa [Source: Section (Ansh) 1st ,Chapter 7th, Shri Vishnu Puran (Schitra,Hindi-Anuvaad sahit), Gita Press Gorakhpur, 46th Reprint Edition,Book No 48, pg 30**]**

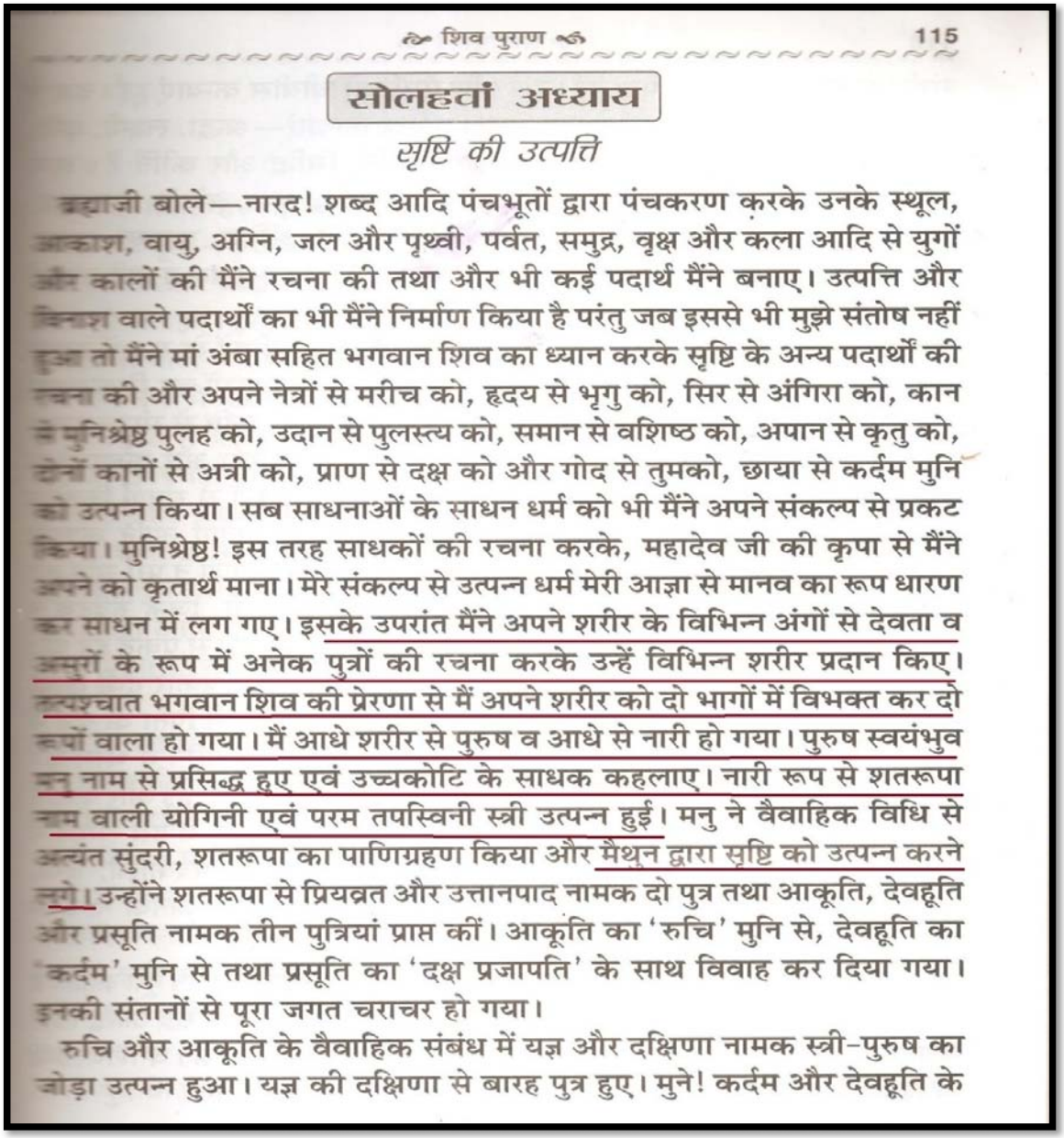
In other Puranas like the Linga Purana, Vayu Purana, Skanda Purana, Kurma Purana, and Markandeya Purana, Rudra (identified with Shiva) appears as *Ardhanarishvara*, emerging from Brahma's head, forehead, mouth or soul as the embodiment of Brahma's fury and frustration due to the slow pace of creation. Brahma asks Rudra to divide himself, and the latter complies by dividing into male and female. Numerous beings, including the 11 Rudras and various female shaktis, are created from both the halves. In some versions, the goddess unites with Shiva again and promises to be born as Sati on earth to be Shiva's wife [58].

Fig 30: ***Ardhanarishvara Shivaas mentioned in Shiv Purana*** **(Artistic view)**

Scientific Principle behind ***Ardhanarishvara***

According to Human Genetics, sex is determined on the behalf of sex chromosomes for this first of all we must know that what is chromosomes? In the nucleus of each cell, the DNA molecule is packaged into thread-like structures called chromosomes. Each chromosome is made up of DNA tightly coiled many times around proteins called histones that support its structure. Chromosomes are not visible in the cell's nucleus not even under a microscope when the cell is not dividing. However, the DNA that makes up chromosomes becomes more tightly packed during cell division and is then visible under a microscope.

Each chromosome has a constriction point called the centromere, which divides the chromosome into two sections, or "arms." The short arm of the chromosome is labeled the "p arm." The long arm of the chromosome is labeled the "q arm." The location of the centromere on each chromosome gives the chromosome its characteristic shape, and can be used to help describe the location of specific genes [59]. Here we can't go in depth about the chromosomes we only target to the process of ***Ardhanarishvara***. Research studies shows that there are 23 pair of Chromosomes in this 22 pairs are Autosomes and 1 pair is known as sex chromosome which take part in determination of sex.



शिव पुराण 115

सोलहवां अध्याय

सृष्टि की उत्पति

ब्रह्माजी बोले—नारद! शब्द आदि पंचभूतों द्वारा पंचकरण करके उनके स्थूल, आकाश, वायु, अग्नि, जल और पृथ्वी, पर्वत, समुद्र, वृक्ष और कला आदि से युगों और कालों की मैंने रचना की तथा और भी कई पदार्थ मैंने बनाए। उत्पत्ति और विनाश वाले पदार्थों का भी मैंने निर्माण किया है परंतु जब इससे भी मुझे संतोष नहीं हुआ तो मैंने मां अंबा सहित भगवान शिव का ध्यान करके सृष्टि के अन्य पदार्थों की रचना की और अपने नेत्रों से मरीच को, हृदय से भृगु को, सिर से अंगिरा को, कान से मुनिश्रेष्ठ पुलह को, उदान से पुलस्त्य को, समान से वशिष्ठ को, अपान से कृतु को, दोनों कानों से अत्री को, प्राण से दक्ष को और गोद से तुमको, छाया से कर्दम मुनि को उत्पन्न किया। सब साधनाओं के साधन धर्म को भी मैंने अपने संकल्प से प्रकट किया। मुनिश्रेष्ठ! इस तरह साधकों की रचना करके, महादेव जी की कृपा से मैंने अपने को कृतार्थ माना। मेरे संकल्प से उत्पन्न धर्म मेरी आज्ञा से मानव का रूप धारण कर साधन में लग गए। इसके उपरांत मैंने अपने शरीर के विभिन्न अंगों से देवता व असुरों के रूप में अनेक पुत्रों की रचना करके उन्हें विभिन्न शरीर प्रदान किए। तत्पश्चात भगवान शिव की प्रेरणा से मैं अपने शरीर को दो भागों में विभक्त कर दो रूपों वाला हो गया। मैं आधे शरीर से पुरुष व आधे से नारी हो गया। पुरुष स्वयंभुव मनु नाम से प्रसिद्ध हुए एवं उच्चकोटि के साधक कहलाए। नारी रूप से शतरूपा नाम वाली योगिनी एवं परम तपस्विनी स्त्री उत्पन्न हुई। मनु ने वैवाहिक विधि से अत्यंत सुंदरी, शतरूपा का पाणिग्रहण किया और मैथुन द्वारा सृष्टि को उत्पन्न करने लगे। उन्होंने शतरूपा से प्रियव्रत और उत्तानपाद नामक दो पुत्र तथा आकूति, देवहूति और प्रसूति नामक तीन पुत्रियां प्राप्त कीं। आकूति का 'रुचि' मुनि से, देवहूति का 'कर्दम' मुनि से तथा प्रसूति का 'दक्ष प्रजापति' के साथ विवाह कर दिया गया। इनकी संतानों से पूरा जगत चराचर हो गया।

रुचि और आकूति के वैवाहिक संबंध में यज्ञ और दक्षिणा नामक स्त्री-पुरुष का जोड़ा उत्पन्न हुआ। यज्ञ की दक्षिणा से बारह पुत्र हुए। मुने! कर्दम और देवहूति के

Fig 30 : Shri Rudra Sahita Part 1 Chapter 16 Sristi ki Utpatti of Shiv Purana. This chapter shows that how Lord Brahma create woman after the concept given by Lord Shiva.[Source: Shiv Puran, Chapter 3, Edition 4th (2014). Editor Dr. Mahindra Mittal, Manoj Publication, Delhi.pg-115; ISBN-978-81-310-0619-1**]**

Sex Cell Production

Human sex cells are produced by a 2 part cell division process called meiosis. Through a sequence of steps, the replicated genetic material in a parent cell is distributed among four

daughter cells. Meiosis produces gametes with one half the number of chromosomes as the parent cell. Because these cells have one half the number of chromosome as the parent cell, they are haploid cells. Human sex cells contain one complete set of 23 chromosomes. There are two stages of meiosis: meiosis I and meiosis II. Prior to meiosis, the chromosomes replicate and exist as sister chromatids. At the end of meiosis I, two daughter cells are produced. The sister chromatids of each chromosome within the daughter cells are still connected at their centromere. At the end of meiosis II, sister chromatids separate and four daughter cells are produced. Each cell contains one half the number of chromosomes as the original parent cell[60].

Meiosis is similar to the cell division process of nonsex cells known as mitosis. Mitosis produces two cells that are genetically identical to and contain the same number of chromosomes as the parent cell. These cells are diploid cells because they contain two sets of chromosomes. Human diploid cells contain two sets of 23 chromosomes for a total of 46 chromosomes. When sex cells unite during fertilization, the haploid cells become a diploid cell.

Sex Chromosomes (XX and XY)

The journey of XY and XX chromosomes as a sex chromosomes started in 1891 when German biologist Hermann Henking conducted a experiment and gave first indication that sex chromosomes were distinct from other chromosomes. While using a light microscope to study sperm formation in wasps, Henking noticed that some wasp sperm cells had 12 chromosomes, while others had only 11 chromosomes. Also, during his observation of the stages of meiosis leading up to the formation of these sperm cells, Henking noticed that the mysterious twelfth chromosome looked and behaved differently than the other 11 chromosomes. Accordingly, he named the twelfth chromosome the "X element" to represent its unknown nature. Interestingly, when Henking used a light microscope to study egg formation in female grasshoppers, he was unable to spot the X element. Based on his work, Henking hypothesized that this extra chromosome, the X element, must play some role in determining the sex of insects. However, he was unable to gather any direct evidence to support his hypothesis [61].

In 1905, Nettie Stevens surveyed multiple beetle species and examined the inheritance patterns of their chromosomes. In 1905, while studying the gametes of the beetle *Tenebrio molitor* , Stevens noted an unusual-looking pair of chromosomes that separated to form sperm cells in the male beetles. While studying the mealworm, she found that the males made reproductive cells with both X and Y chromosomes whereas the females made only those with X. She concluded that sex is inherited as a chromosomal factor and that males determine the gender of the offspring [61].

Any cell in the human body could be fertilized by a sperm cell [12]

Male sperm cells in humans and other mammals are heterogametic and contain one of two types of sex chromosomes. They contain either an X chromosome or a Y chromosome. Sex chromosomes may not have the same size, shape, or genetic potential. In humans, females have 2 so-called X chromosomes and males have one X chromosome and one Y chromosome. The human X and Y not strictly homologous. Y is much smaller and lacks most of loci contained on the X. They do behave as homologs during meiosis. Most chromosomes were present in equal numbers in both males and females, there were one or two additional chromosomes that were unequally represented in the two sex [62]. If the sperm cell contains a Y chromosome, then the resulting zygote will be XY or male. Different scientific studies shows that in Mammals, females have two X chromosomes: XX where as males have one X chromosome and one Y i.e. XY [63][64][65][66]**.** These are the "sex chromosomes", except these all other chromosomes are called "autosomes". The sex with two different chromosomes is the heterogametic sex. The other is the homogametic sex.

According to Shiv Puran Lord Shiva narrate the whole concept of XY chromosomes by showing Ardhanarishvara swroop to Lord Brahma

Manas Putras of Brahma

Various Purans gave the evidences of birth of Manas Putras from Brahma without involvement of female

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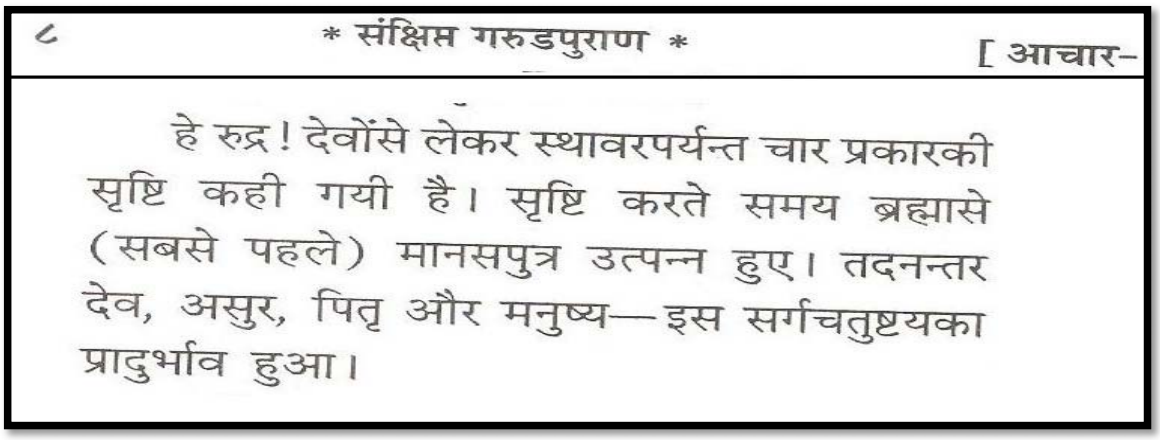
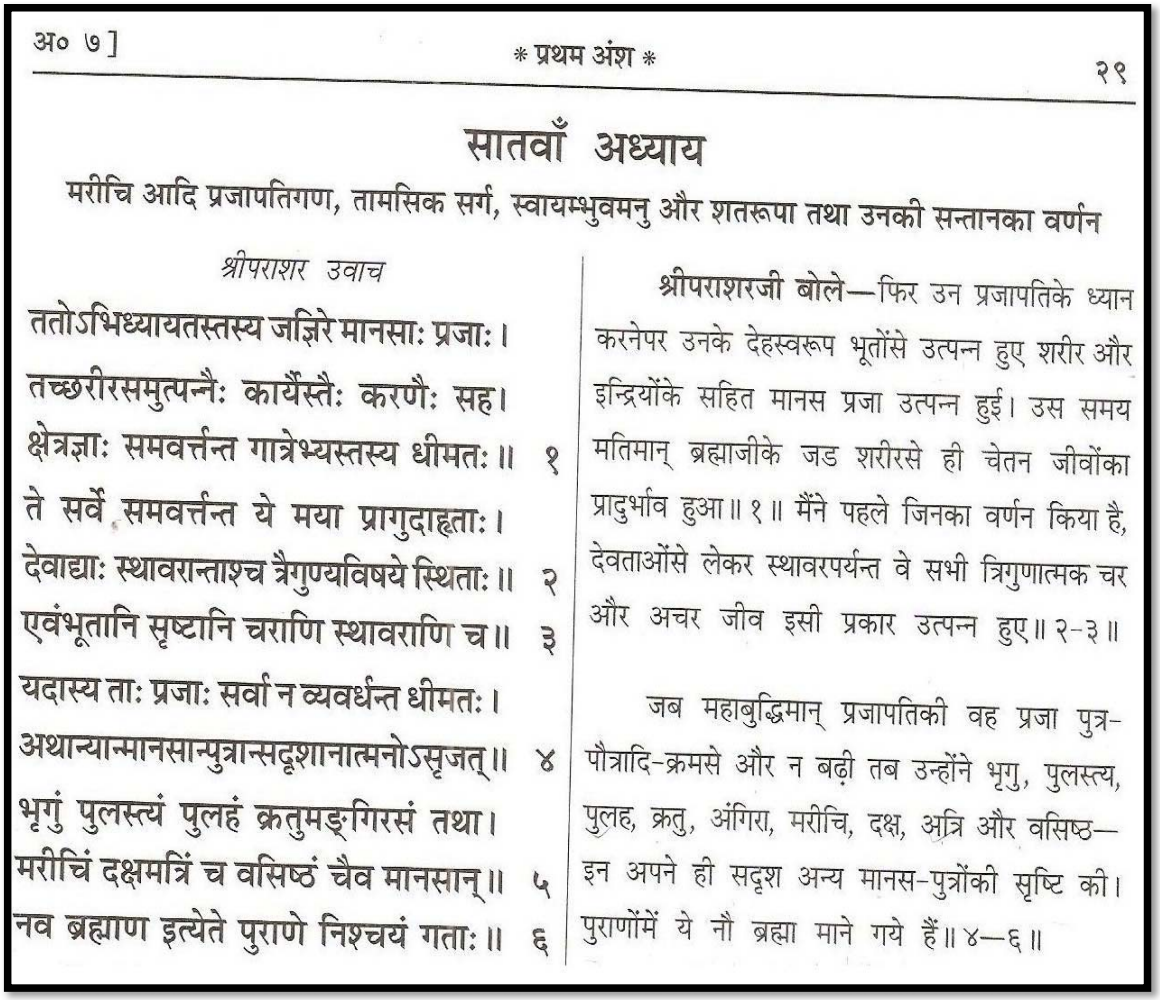


८ * संक्षिप्त गरुडपुराण * [आचार-

हे रुद्र! देवोंसे लेकर स्थावरपर्यन्त चार प्रकारकी सृष्टि कही गयी है। सृष्टि करते समय ब्रह्मासे (सबसे पहले) मानसपुत्र उत्पन्न हुए। तदनन्तर देव, असुर, पितृ और मनुष्य—इस सर्गचतुष्टयका प्रादुर्भाव हुआ।

Fig 31: Evidence of birth of Manas Putras from Brahma in Sankshipt Garud Puran [Source: , Aacharkand, Chapter 4th **,** Sankshipt Gurud Puran,Gita Press Gorakhpur, 20th Reprint, Year 2000 Edition Book No 1189, pg-8**]**



अ० ७] * प्रथम अंश * २९

सातवाँ अध्याय

मरीचि आदि प्रजापतिगण, तामसिक सर्ग, स्वायम्भुवमनु और शतरूपा तथा उनकी सन्तानका वर्णन

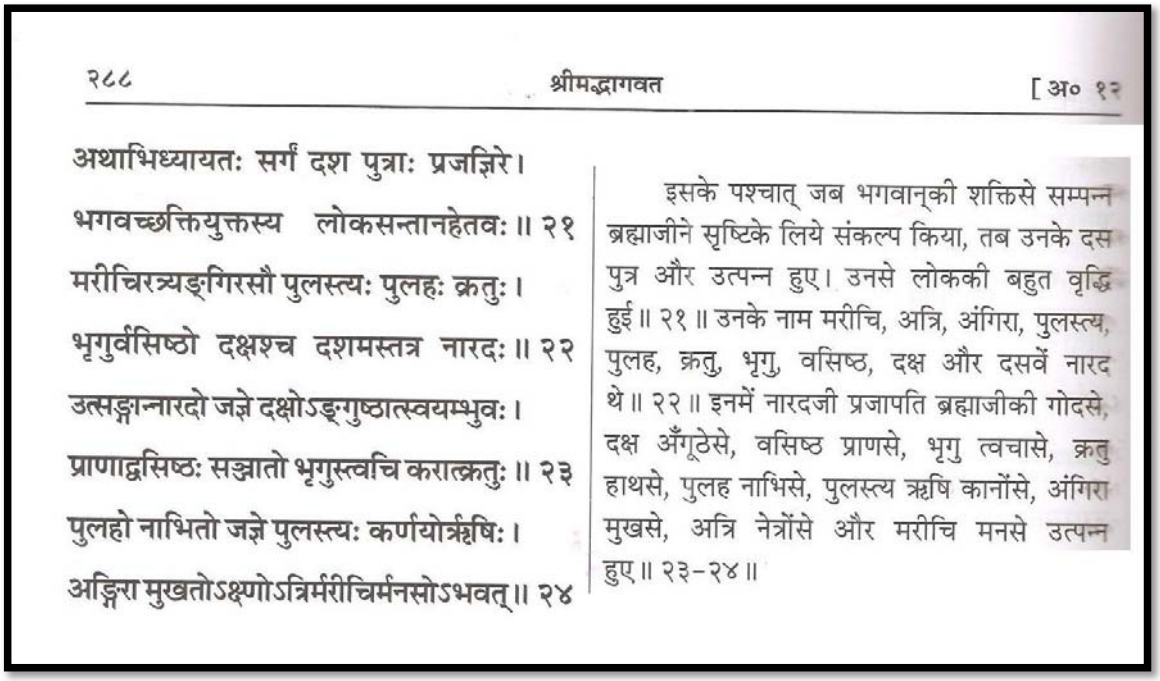
श्रीपराशर उवाच

ततोऽभिध्यायतस्तस्य जज्ञिरे मानसाः प्रजाः।
तच्छरीरसमुत्पन्नैः कार्यैस्तैः करणैः सह।
क्षेत्रज्ञाः समवर्त्तन्त गात्रेभ्यस्तस्य धीमतः॥ १
ते सर्वे समवर्त्तन्त ये मया प्रागुदाहृताः।
देवाद्याः स्थावरान्ताश्च त्रैगुण्यविषये स्थिताः॥ २
एवंभूतानि सृष्टानि चराणि स्थावराणि च॥ ३
यदास्य ताः प्रजाः सर्वा न व्यवर्धन्त धीमतः।
अथान्यान्मानसान्पुत्रान्सदृशानात्मनोऽसृजत्॥ ४
भृगुं पुलस्त्यं पुलहं क्रतुमङ्गिरसं तथा।
मरीचिं दक्षमत्रिं च वसिष्ठं चैव मानसान्॥ ५
नव ब्रह्माण इत्येते पुराणे निश्चयं गताः॥ ६

श्रीपराशरजी बोले—फिर उन प्रजापतिके ध्यान करनेपर उनके देहस्वरूप भूतोंसे उत्पन्न हुए शरीर और इन्द्रियोंके सहित मानस प्रजा उत्पन्न हुई। उस समय मतिमान् ब्रह्माजीके जड शरीरसे ही चेतन जीवोंका प्रादुर्भाव हुआ॥ १॥ मैंने पहले जिनका वर्णन किया है, देवताओंसे लेकर स्थावरपर्यन्त वे सभी त्रिगुणात्मक चर और अचर जीव इसी प्रकार उत्पन्न हुए॥ २-३॥

जब महाबुद्धिमान् प्रजापतिकी वह प्रजा पुत्र-पौत्रादि-क्रमसे और न बढ़ी तब उन्होंने भृगु, पुलस्त्य, पुलह, क्रतु, अंगिरा, मरीचि, दक्ष, अत्रि और वसिष्ठ—इन अपने ही सदृश अन्य मानस-पुत्रोंकी सृष्टि की। पुराणोंमें ये नौ ब्रह्मा माने गये हैं॥ ४—६॥

Fig32: Manas Putra sloks mentioned in Shri Vishnu Puran [Source: Section(Ansh) 1st , Chapter 7th ,Shri Vishnu Puran (Schitra,Hindi-Anuvaad sahit), Gita Press Gorakhpur, 46th Reprint Edition, Book No 48, pg 29 **]**



२८८ श्रीमद्भागवत [अ० १२

अथाभिध्यायतः सर्गं दश पुत्राः प्रजज्ञिरे।
भगवच्छक्तियुक्तस्य लोकसन्तानहेतवः॥ २१
मरीचिरत्र्यङ्गिरसौ पुलस्त्यः पुलहः क्रतुः।
भृगुर्वसिष्ठो दक्षश्च दशमस्तत्र नारदः॥ २२
उत्सङ्गान्नारदो जज्ञे दक्षोऽङ्गुष्ठात्स्वयम्भुवः।
प्राणाद्वसिष्ठः सञ्जातो भृगुस्त्वचि करात्क्रतुः॥ २३
पुलहो नाभितो जज्ञे पुलस्त्यः कर्णयोर्ऋषिः।
अङ्गिरा मुखतोऽक्ष्णोऽत्रिर्मरीचिर्मनसोऽभवत्॥ २४

इसके पश्चात् जब भगवान्‌की शक्तिसे सम्पन्न ब्रह्माजीने सृष्टिके लिये संकल्प किया, तब उनके दस पुत्र और उत्पन्न हुए। उनसे लोककी बहुत वृद्धि हुई॥ २१॥ उनके नाम मरीचि, अत्रि, अंगिरा, पुलस्त्य, पुलह, क्रतु, भृगु, वसिष्ठ, दक्ष और दसवें नारद थे॥ २२॥ इनमें नारदजी प्रजापति ब्रह्माजीकी गोदसे, दक्ष अँगूठेसे, वसिष्ठ प्राणसे, भृगु त्वचासे, क्रतु हाथसे, पुलह नाभिसे, पुलस्त्य ऋषि कानोंसे, अंगिरा मुखसे, अत्रि नेत्रोंसे और मरीचि मनसे उत्पन्न हुए॥ २३-२४॥

Fig 33: These slokas of Shrimad Bhagwad Mahapuran shows the names of Manas Putras of Brahma which was born through the fusion of sperm cells and different cells of body. [Source: Section 3rd , Chapter 12th **,**Shrimad Bhagwat Mahapuran, Part 1, Gita Press Gorakhpur, 86th Reprint Edition, Book No 26, pg 288**]**

First men in creation: Manu
First Women in creation- Kshatrupa

Science behind Manas Putras of Brahma

According to Vishnu Puran, Shri Hari Vishnu gave birth to Brahma from his navel, which is not surprising it shows only advanced science. Then after wards, the birth of the Manas sons of Brahma which was the highest state of biotechnology. One Research published in Nature [53] in the year 2016 shows that female eggs may not necessarily be required to create offspring. For the first time, a study shows that female eggs may not necessarily be required to create offspring; scientists from the University of Bath in the United Kingdom have developed a technique that involves using sperm to fertilize embryos instead of eggs, and the method has resulted in the birth of healthy baby mice. According to the research scientists injected the embryos with sperm; they grew into mice which went on

Nature Research Journal [53] shows that female eggs may not necessarily be required to create offspring

to produce their own litters. Although the researchers began with an egg cell, they do not believe it is required to start the same development. In theory, the technique should work with any cell in the body as long as half the chromosomes are removed first to allow them to fuse with the sperm's chromosomes. Motherless babies created from skin cells could be on the horizon [56] after scientists discovered a method of creating offspring without the need for a female egg. The landmark experiment on mice by the University of Bath rewrites 200 years of biology teaching and could pave the way for a baby to be born from the DNA. It was always thought that only a female egg could prompt the changes in a sperm required to make a baby, because an egg forms from a special kind of cell division in which just half the number of chromosomes are carried over. Sperm cells form in the same way, so that when a sperm and egg meet they form a full genetic quota, with half of the DNA coming from the mother and half from the father. Scientists have shown embryos could be created from cells that carry all their chromosomes, which means that, in theory, any cell in the human body could be fertilized by a sperm. The cells in an embryo copy themselves when they divide, and so mirror closely most other cells in the body, such as skin cells.

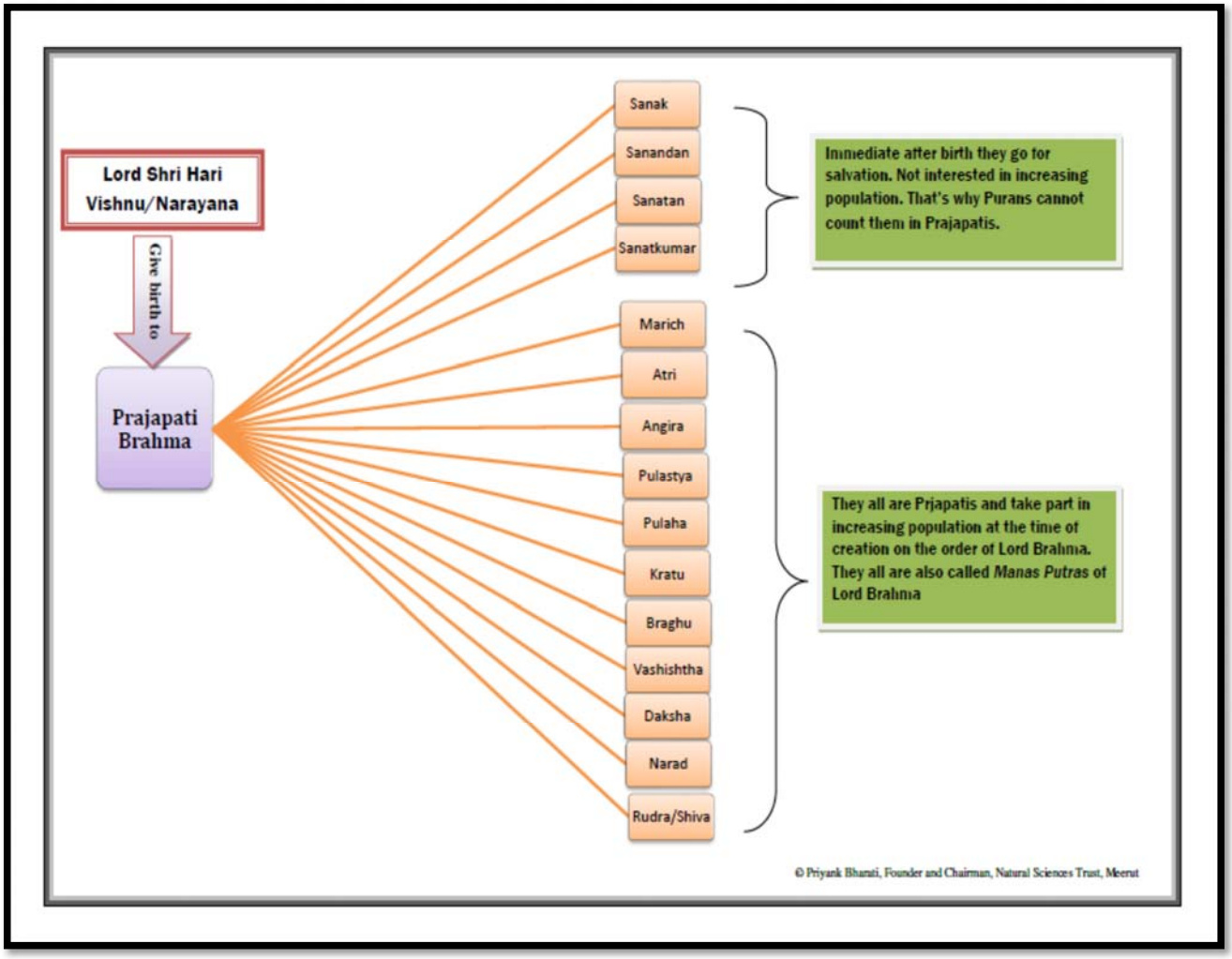


Fig 29 : Flow Chart of Birth of Brahma to their Manas Putras according to Shrimad Bhagwad Mahapuran, Shiv Puran, Garuda Purana

According to Shiv Puran after the marriage of Manu and Shatrupa sexual reproduction come into existence since before all were born through cloning.

After reading the Puranas, we have come to the conclusion that till the end of creation, all Purans and Vedas gave importance to Lord Shri Hari Vishnu. Rather, after Brahma's Manas sons, Shri Hari was worshiped by everyone as it was from Shri Hari Vishnu. Then comes the matter of a Manas son born to the wrath of Brahma and for this reason he was named Rudra and Shiva. This Rudra afterwards became Lord Shiva, whose responsibility was to slaughter. The work of Brahma was of the origin of the people, Shri Hari Vishnu was the follower and Shiva was the Savior. These three are also called Trinity. It was proved that all were born

from cloning techniques. Brahma was disheartened by thinking that how the Universe would grow further then Shiva came forward and showed *Ardhanarishwar* form and said that there is a woman exist in every man. On the other hand, if we talk about biological Sciences then the concept of Lord Shiva is absolutely true. According to Biological sciences, there are XY chromosomes inside the male and within the female there are only XX chromosomes. Here chromosomes X and Y only decide that the child born will be the boy or the girl. It was clear that Lord Shiva had complete perception of sex chromosomes millions of years ago. Only after this knowledge of Lord Shiva, Brahma created Manu and Shatruupa from the part of his own body (as written in Purans). In Shri Rudra Sahita (Refer Fig 30), Part 1, Chapter 16 of Shiv Purana, it is written that after marriage, both of them began to produce the creature by the process of concubitus. Manu and Shatrupa did not know anything about cloning techniques because they were told about sexual reproduction. Now the importance given to the pintle (sexual part of man) as it is the reason for the origin. Because Shiva explained the sex chromosome and its significance to Brahma, hence the name was Shivalinga. Now the knowledge of Shiva arose due to creation, hence the worship of Shivalinga started. It is also believed that Shivalinga is the symbol of reality and formless God. Detailed description of the various forms of Shivalinga and the method of worship are also described in the Purana. Before today, this scientific cause of Shivalinga was not available anywhere. This scientific conclusion is based on the Purans for the first time in the world.

Conclusion

Birth of Shri Ram in Satyug after cutting 10 heads of Ravana, a new head is coming again, transforming from human to any creature, birth of Lord Vasudeva Shri Krishna and Balram in Dwaparug from the hair of Lord Shri Hari Vishnu, birth of 100 sons and one daughter Dusala of Maharani Gandhari, divine vision given by Maharishi Vedavyasa to Sanjay to see the war in Kurukshetra, weapons used in the war Mahabharata these all show only the highest stages of science and technology in every era .Every new era gave rise to a new kind of science and left behind a destructive form. Even at the time of creation of this universe the techniques used , that was also the science. In Shrimad Bhagwad Gita Lord himself states that neither gods nor the great sages know the secret of my birth(i.e my appearance in human or other grab out of mere sport); for I am the prime cause in all respects of gods as well as of the great seers (Chapter 10 verse 2) .On the other side, in chapter 7 of Shrimad Bhagwad Gita , Shri Bhagwan said to Arjun, " I shall know explain you fully this phenomenal knowledge (Scientific Knowledge) along with its realization which by knowing nothing else remains yet

to be known in this World. This verse itself testifies that Sri Krishna himself has supported the science of Vedas to explain his point of view. It is not only a stanza in the Shrimad Bhagwad Gita that there is a lot of verses which reflects the glory of science. Vedas and Purans have told the glory of a kind of science. In Kaliyuga i.e. today the science is being used is nothing. Today test tube baby cannot be removed from any kind of genetic defect whereas in Mahabharata no son of Gandhari was blind and 100% success rate shown, whereas today's success rate is only 4%. It was a matter of that time when the creation began, human was aware of the difference between man and woman , was aware of the weapon but What happened when the beginning of the beginning ? How was the creation of a human race and how the woman came into existence? From where is the difference between a man and a woman came? Where the process of sexual reproduction born from and what was was the technique used to produce babies before the introduction of sexual reproduction? How was *Manas Putras* of Lord Brahma born and which technology was used by Lord Brahma to create them? All these questions were not answered till now with science but after reading this paper, we will know that we all know these techniques.

The science which Vedas said and Shri Bhagwad Gita explained that to be used for the upliftment of human and not for destruction. Vishnu Puran and Shrimad Bhagwad Gita have told the origin of Sri Hari Vishnu in the form of *Yog Maya*, Shiva Puran has told the origin of the female. The story of the different *Manas Putras* of the Lord Brahma is also not hidden from anybody, The creation of mankind is through Cloning Techniques which has been shown by Shri Hari Vishnu. With the help of cloning technique Lord Brahma was created by Shri Hari Vishnu. Then Brahma produces their Manas sons from different parts of their body with the help of cloning science, which was previously used by Lord Shri Hari Vishnu to create them. Brahma completely familiar with cloning technique because all the information was transmit in Lord Brahma from Lord Shri Hari Vishnu. This information flow technique in science is known as Microchimerism. It is shown in the Puranas that Brahma was born in the lotus (*Kamalkosh*) emitted by the navel of Shri Hari Vishnu. It is clearly written in Gita Press, Gorakhpur's Shrimad Bhagawat Mahapurana, chapter 3, verse 22 page 205[Refer Fig 6] that at that time Brahma did not get the content of yagna (food) except Lord Hari Vishnu's body . One thing is to be understand here that Kamalnabh is called placenta, Kamalnaal is known as Umbilical Cord and Kamalkosh is known as Amniotic sac. It was clear that placenta was mentioned here, whose name was given Kamalnabh in Shri Vishnu Puran and it was connected with the Kamalkosh on which Brahma was sitting is all about Aminiotic sac.

Here Kamal does not mean lotus flower but it is used to describe the situation of lotus that how it keeps its existence and identity even in the dirt. According to the biological science, when a child is in the womb of a mother, take all the nutrients from mother's body and struggles to make the identity of its existence. If there is a same situation occur outside the uterus then the person cannot survive. Only one membrane in the womb which is called amniotic sac. This amniotic sac save the baby from mechanical injury. Even after such a filthy nature of this membrane, it maintains its existence. Here the situation is very similar to the lotus blooming in the mud. In Gita Press Gorakhpur's Srimad Bhagwat Mahapurana page number 287, in verse 9, Brahma is also called Kamalyoni Lord Brahma. It means that the lotus word used here on which the sitting Brahma is shown is not a lotus but similar to a lotus Here is the biggest mistake in understanding the scriptures. Research data published in year 2017 in Nature Journal shows that in the womb, the fetus receives blood proteins from his mother through the placenta which protects him against various diseases for the rest of his life and when mother suffers organ damage such as heart attack, the fetus send stem cells through the placenta to repair the organ damage.

In 335 B.C.E., Aristotle proposed the concept of sex determination that the heat of the male partner during intercourse determined sex. If the male's heat could overwhelm the female's coldness, then a male child would form. In contrast, if the female's coldness was too strong (or the male's heat too weak), a female child would form. Environmental theories of sex determination, such as Aristotle's, were popular until about 1900, when sex chromosomes were discovered. As it turns out, Aristotle was on to something, at least in the case of some reptiles, in which the temperature of the nest determines the sex of the embryo. For most animals, however, sex is determined chromosomally [61]. Sex chromosomes are particular chromosomes that are involved in determining the sex of an organism. In the cells of humans and many other organisms the sex chromosomes consist of a pair of chromosomes called the X and Y chromosomes. The X and Y chromosomes were first discovered in beetles by Nettie Stevens in 1906. She noticed that cells of female beetles had identical looking pairs of each of their several chromosomes, but that male beetles had one pair in which the chromosomes were very different in appearance from each other. She called these two chromosomes the X and the Y, and found that female beetles differed from males in containing two X chromosomes. The same situation is also found in humans where females are XX and males are XY [64].

In 1978, the "Nettie M. Stevens and the Discovery of Sex Determination by Chromosomes" research paper found that chromosomes are a role in sex determination, but research is still going on many factors. In a research published in the journal Nature in the year 2016, the scientists have claimed that if any cell of the body is fused from the sperm cell, then the child is possible. Motherless babies created from skin cells could be on the horizon after scientists discovered a method of creating offspring without the need for a female egg. The landmark experiment on mice by the University of Bath could pave the way for a baby to be born from the DNA of men. It was always thought that only a female egg could prompt the changes in a sperm required to make a baby, because an egg forms from a special kind of cell division in which just half the number of chromosomes are carried over. Sperm cells form in the same way, so that when a sperm and egg meet they form a full genetic quota, with half of the DNA coming from the mother and half from the father. Scientists have shown embryos could be created from cells that carry all their chromosomes, which means that, in theory, any cell in the human body could be fertilized by a sperm. Scientists showed that crucially the cells in an embryo copy themselves when they divide, and so mirror closely most other cells in the body, such as skin cells. In theory, the technique should work with any cell in the body as long as half the chromosomes are removed first to allow them to fuse with the sperm's chromosomes.

Today they are thinking about to produce young one by the fusion of skin cell and sperm cells whereas Lord Shri Hari Vishnu created Lord Brahma by his navel and Lord Brahma give birth to his Manas sons and one daughter by different body parts. It is clear that the words written in Vishnu Purana and Shiva Purana were not fictitious but were the highest state of biotechnology which is proved by science today. The ***Ardhanarishvara*** form of Lord Shiva was filled with science it was clear that the woman take birth from a man and the story of Brahma's Manas son also has been proved by science today. At last I conclude that the Lord Shiva was a Father of Genetics and Lord Shri Hari Vishnu know the concept of creating motherless babies which was further transferred to Lord Brahma as he is the son of Shri Hari Vishnu. Afterwards Brahma also created his Manas Son and 1 daughter Satrupa. The story of cloning has been seen in every era, as in the Raktbija Wadh mentioned in Durga Saptashati, mentions the formation of a clone from a single drop of blood. It is proved that the creation was started through the process of Cloning but after the marriage of Manu and Satrupa sexual reproduction was the main procedure to give the birth of young ones. In the Mahabharata, the birth of Shri Krishna and Balram reflects the process of cloning from hairs. All this

demonstrates that there was a very high degree of science in our scriptures which we are not ready to accept in front of our conservative plaintiffs, but how long it is to see.

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Citations:

1. Shrimad Bhagwad Gita, Gita Press Gorakhpur, 207 Reprint Edition
2. Akinbi HT, Narendran V, Pass AK, Markart P, Hoath SB. Host defense proteins in vernix caseosa and amniotic fluid. Am J Obstet Gynecol 2004;191:2090–2096.
3. Tong XL, Zhang YF, Xu YF. Effect of human amniotic fluid on tumor-bearing mice. Chin J Appl Physiol 1992;8:182–184.
4. http://study.com/academy/lesson/whatistheamnioticsacdefinitionfunction.html
5. Larsen, WJ. Human Embryology (3rd ed.) 2001. Churchill Livingstone. p. 40. ISBN 0-443-06583-7..
6. Wintour EM, Shandley L. Effects of fetal fluid balance on amniotic fluid volume. Semin Perinatol 1993;17:158–172
7. Xing-Long Tong1, Ling Wang, Tan-Bing Gao, Yu-Guo Qin, Yu-Qiao Qi, Yan-Ping Xu, Potential Function of Amniotic Fluid in Fetal Development—Novel Insights by Comparing the Composition of Human Amniotic Fluid with Umbilical Cord and Maternal Serum at Mid and Late Gestation,J Chin Med Assoc ,July 2009 , 72(7), 368-373
8. Akinbi HT, Narendran V, Pass AK, Markart P, Hoath SB. Host defense proteins in vernix caseosa and amniotic fluid. Am J Obstet Gynecol 2004;191:2090–2096.
9. Yoshio H, Tollin M, Gudmundsson GH, et al. Antimicrobial polypeptides of human vernix caseosa and amniotic fluid: implications for newborn innate defense. Pediatr Res 2003;53:211–216.
10. Espinoza J, Chaiworapongsa T, Romero R, et al. Antimicrobial peptides in amniotic fluid: defensins, calprotectin and bacterial/permeability-increasing protein in patients with microbial invasion of the amniotic cavity, intraamniotic inflammation, preterm labor and premature rupture of membranes. J Matern Fetal Neonatal Med 2003;13:2–21.

11. Otsuki K, Yoda A, Saito H, Mitsuhashi Y, Shimizu Y, Yanaiha T. Amniotic fluid lactoferrin in intrauterine infection. Placenta 1999;20:175–9.
12. Hsueh W, Caplan MS, Qu XW, Tan XD, De Plaen IG, Gonzalez-Crussi F. Neonatal necrotizing enterocolitis: clinical considerations and pathogenetic concepts. Pediatr Dev Pathol 2003;6:6–23.
13. Bloomfield FH, van Zijl PL, Bauer MK, Harding JE. Effects of intrauterine growth restriction and intraamniotic insulin-like growth factor I treatment on blood and amniotic fluid concentrations and on fetal gut uptake of amino acid in late gestation ovine fetuses. J Pediatr Gastroenterol Nutr 2002;35:287–297.
14. Anker PS, Scherjon SA, Kleijburg-van der Keur C, et al. Amniotic fluid as a novel source of mesenchymal stem cells for therapeutic transplantation. Blood 2003;102:1548–9
15. Cantani A. A Paediatric Perspective on Stem Cells: Expression, Function, and Clinical Relevance (Stem Cells from Amniotic Fluid). Anat Physiol 2016; 6: 204. doi:10.4172/2161-0940.1000204
16. Fauza D. AF and placental stem cells. Best Practice and Research Clinical Obstetrics and Gynaecology 2004; 18: 36. 877-891.
17. Wilson RD. Amniocentesis and chorionic villus sampling. Curr Opin Obstet Gynecol 2000;12:81–6.
18. Kramer K, Cohen HJ. Intrauterine fetal diagnosis for hematologic and other congenital disorders. Clin Lab Med 1999;19:239–43.
19. Hassan Niknejad, Habibollah Peirovi, Masoumeh Jorjani , Abolhassan Ahmadiani, Jalal Ghanavi, Alexander M. Seifalian. PROPERTIES OF THE AMNIOTIC MEMBRANE FOR POTENTIAL USE IN TISSUE ENGINEERING. European cells and Materials 2008:Vol 15;88-99
20. Parry S, Strauss JF, 3rd .Premature rupture of the fetal membranes. N Engl J Med 1998; 338: 663-670.
21. http://www.etymonline.com/index.php?term=umbilicus&allowed_in_frame=0
22. http://www.etymonline.com/index.php?frame=0&search=Umbilical+&searchmode=none
23. Gill RW, Kossoff G, Warren PS, Garrett WJ. Umbilical venous flow in normal and complicated pregnancy. Ultrasound Med Biol 1984; 10 (3): 349–63.

24. Schöni-Affolter F, Dubuis-Grieder C, Strauch E. The umbilical cord. [Internet] 2017. Available from: http://www.embryology.ch/anglais/fplacenta/cordon01.html
25. Cochard LR. Netter's Atlas of Human Embryology. 1st ed. New Jersey: Icon Learning Systems; 2002.
26. Umbilical Cord from https://en.wikipedia.org/wiki/Umbilical_cord
27. Sadler, T. W., Langman's Medical Embryology (2012), 12th Edition, Lippincott Williams & Wilkins, Printed in China, ISBN- 978-1-4511-1342-6
28. Di Naro E, Ghezzi F, Raio L, Franchi M, D'Addario V. Umbilical cord morphology and pregnancy outcome. Eur J Obstet Gynecol Reprod Biol 2001; 96 (2): 150–57.
29. http://eknygos.lsmuni.lt/springer/343/380-451.pdf
30. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Williams Obstetrics. 23rd ed. New York: McGraw Hill Medical;2010.
31. Jacqueline Spurway, Patricia Logan, Sokcheon Pak. The development, structure and blood flow within the umbilical cord with particular reference to the venous system, AJUM August 2012; 15 (3); 97-102.
32. http://klimanlabs.yale.edu/placenta/research/Umbilical%20Cord%20EOR_163162_284_18220.pdf]
33. Sobolewski K, Bankowski E, Chyczewski L et al. Collagen and glycosaminoglycans of Wharton's jelly. Biol Neonate 1997;71:11–21.
34. Sakamoto T, Ono H, Saito Y. Electron microscopic histochemical studies on the localization of hyaluronic acid in Wharton's jelly of the human umbilical cord [in Japanese]. Nippon Sanka Fujinka Gakkai Zasshi 1996;48:501–507
35. McElreavey KD, Irvine AI, Ennis KT et al. Isolation, culture and characterisation of fibroblast-like cells derived from the Wharton's jelly portion of human umbilical cord. Biochem Soc Trans 1991;19:29S
36. Kobayashi K,Kubota T, Aso T. Study on myofibroblast differentiation in the stromal cells of Wharton's jelly: expression and localization of alpha-smooth muscle actin. Early Hum Dev 1998;51:223–233.
37. Mitchell KE, Weiss ML, Mitchell BM et al. Matrix cells from Wharton's jelly form neurons and glia. STEM CELLS 2003;21:50–60
38. Reynolds SR. Mechanisms of placentofetal blood flow. Obstet Gynecol 1978; 51: 245–49.

39. Kiserud T. Physiology of fetal circulation. Semin Fetal Neonatal Med 2005; 10: 493–503.
40. Fasouliotis SJ, Achiron R, Kivilevitch Z, Yagel S. The human fetal venous system: normal embryologic, anatomic, and physiologic characteristics and developmental abnormalities. J Ultrasound Med 2002; 21(10): 1145–58.
41. Vasques FA, Moron AF, Murta CG, Carvalho FH, Barbosa MM, Marcolino LA. The assessment of fetal well-being by venous Doppler velocimetry. Ultrasound Rev Obstet Gynecol 2004; 4: 121–25.
42. Cohen Y, Nagler A. Hematopoietic stem-cell transplantation 6. using umbilical cord blood. *Leuk Lymphoma* 2003; *44* : 1287-99.
43. Lusin BH, Shearer WT. American Academy of Pediatrics section on Hematology/Oncology; American Academy of Pediatrics section on Allergy/immunology. Cord blood banking for potential future transplantation. *Pediatrics* 2007; *119* : 165-70
44. David McKenna & Jayesh Sheth. Umbilical cord blood: Current status & promise for the future, Indian J Med Res September 2011, 134, pp 261-269.
45. https://www.cordbloodbanking.com/cord-blood/treatments/
46. Sridhar, K.R. and Bhat, R..Lotus – A potential nutraceutical source. Journal of Agricultural Technology 2007, 3(1): 143-155.
47. https://embryology.med.unsw.edu.au/embryology/images/d/da/2015ANAT2341_Lecture_8_-_Placenta_Development.pdf
48. https://kgmu.org/download/virtualclass/anatomy/Placenta-4-2-15.pdf
49. http://study.com/academy/lesson/the-placenta-and-the-fetus-structure-and-function.html
50. http://americanpregnancy.org/while-pregnant/fetal-life-support-system
51. http://www.the-scientist.com/?articles.view/articleNo/43618/title/The-Prescient-Placenta/
52. http://www.duhs.edu.pk/curriculum/downloads/lec2-sem4-REPWK4-20140712.pdf
53. Suzuki, T. et al (2016). Mice produced by mitotic reprogramming of sperm injected into haploid parthenogenotes. Nat. Commun. 7:12676 doi: 10.1038/ncomms12676
54. http://www.telegraph.co.uk/science/2016/09/13/motherlessbabiespossibleasscientistscreateliveoffspringw/
55. http://www.medicalnewstoday.com/articles/312904.php

56. http://news.nationalpost.com/news/world/allspermnoeggsmotherlessbabiesonthewaysays scientists
57. Shiv Puran, Chapter 3, Edition 4th (2014). Editor Dr. Mahindra Mittal, Manoj Publication, Delhi.pg-469-470; ISBN-978-81-310-0619-1
58. https://en.wikipedia.org/wiki/Ardhanarishvara#cite_note-Dehejia37ff-20
59. https://ghr.nlm.nih.gov/primer/basics/chromosome
60. https://www.thoughtco.com/sexcellsmeaning373386
61. https://www.nature.com/scitable/topicpage/the-sex-of-offspring-is-determined-by-6524953
62. Hake, L. & O'Connor, C. (2008) Genetic mechanisms of sex determination. *Nature Education* 1(1):25
63. http://www.life.illinois.edu/ib/201/lectures/SexChrom&SexDet.pdf
64. Paul D. Waters, Mary C. Wallis, Jennifer A. Marshall Graves (2007), Mammalian sex—Origin and evolution of the Y chromosome and SRY, Seminars in Cell & Developmental Biology 18 ;389–400.
65. https://www.ncbi.nlm.nih.gov/books/NBK9967/
66. https://www.nature.com/scitable/topicpage/genetic-mechanisms-of-sexdetermination 314#