

0127. Artificial Womb Trials in Humans Could Start Soon 人类人工子宫试验, 即将开始

Table of Contents

- [1. Artificial Womb Trials in Humans /Could Start \(v.\) Soon 人类人工子宫试验, 即将开始](#)
- [2. Artificial Womb Trials in Humans Could Start Soon](#)
- [3. Cerebral palsy 脑瘫](#)

1. Artificial Womb Trials in Humans /Could Start (v.) Soon 人类人工子宫试验, 即将开始

The team **has emphasized that** /the technology is not intended (a.)为...打算 (或设计) 的 — or able — to support (v.) development /**from** conception 怀孕; 受孕 **to** birth.

该团队强调, 该技术无意或无法支持从受孕到出生的发育。

Example 1. 案例

intended

(a.) ~ **for sb/sth** | ~ **as sth** | ~ **to be/do sth** : planned or designed for sb/sth 为...打算 (或设计) 的

- The book is intended (a.) for children. 这本书是为儿童写的。
- The notes are intended (a.) as an introduction to the course. 这些笔记的目的是作为对这门课程的介绍。

Instead, the scientists **hope that** /主 simulating (v.) some elements of a natural womb /谓 will ① increase (v.) survival /② and **improve (v.) outcomes** for *extremely premature (a.)* 早产的; 未成熟的; 过早的; 提前的 *babies*.

相反, 科学家们希望模拟自然子宫的某些元素, 能够提高极早产儿的存活率, 并改善其结局。

In humans, that' s anything 后定 **earlier than 28 weeks of gestation** 怀孕; 妊娠期 — less than 70% of the way to *full term* 足月, which is typically between 37 and 40 weeks.

对于人类来说, 这是指妊娠 28 周之前的任何时间, 不到足月的 70%. 足月通常在 37 至 40 周之间。

Example 2. 案例

full term

足月: 指妊娠期满, 胎儿发育完全, 准备出生的状态。

Preterm (a.) (婴儿) 早产的 (尤指怀孕不足37周) *birth*, **defined** by the World Health Organization **as** birth (v.) before 37 weeks of gestation 妊娠 (期) ; 怀孕 (期) , can **happen (v.) spontaneously** 自发地, 不由自主地; 自然地 /or because some conditions — such as an infection, *hormone imbalance* 激素失衡, **high blood pressure** or diabetes — can **turn** the womb **into** *an inhospitable* 不适于居住的; (尤指) 无遮蔽处的, 荒凉的 *environment* for the fetus 胎儿.

世界卫生组织将"早产"定义为"妊娠 37 周之前的出生"，可能是自发发生，也可能是因为某些情况（例如感染、激素失衡、高血压或糖尿病），能使子宫变成不适合胎儿生存的环境。

Example 3. 案例
preterm

→ pre-, 在前，早于，预先， -term, 期限，正常日期。

It poses (v.) 造成（威胁、问题等）；引起；产生 an enormous global health problem.

它造成了巨大的全球健康问题。

Preterm birth is the largest cause of death and disability /in children under five.

早产是五岁以下儿童死亡和残疾的最大原因。

Mortality is strongly linked with the baby' s *gestational* 妊娠期的；受孕的 *age* 孕龄 *at birth*.

"死亡率"与"婴儿出生时的胎龄"密切相关。

Example 4. 案例
gestational age

孕龄：从女性最后一次月经开始算起的怀孕时期的长度，或者根据更准确的方法估计的妊娠时期的长度。

Gestational age estimates how far along **you are in your pregnancy**. Most pregnancies **last (v.) about 40 weeks** from the first day of **the last menstrual (a.)** 月经的 **period**.

孕龄估计您怀孕的时间。大多数妊娠，从末次月经的第一天开始，持续约 40 周。

Gestational age is the common term **used** during pregnancy **to describe** how far along the pregnancy is. It is measured in weeks, from the first day of **the woman' s last menstrual cycle to the current date**. A normal pregnancy can range from 38 to 42 weeks.

孕龄是怀孕期间用来描述怀孕时间的常用术语。它以周为单位，从女性最后一次月经周期的第一天到当前日期。正常妊娠期为 38 至 42 周。

Infants **born (v.) before 37 weeks** are considered premature (a.) 早产的. Infants **born (v.) after 42 weeks** are considered postmature (a.) 过度成熟的.

37 周之前出生的婴儿被认为是早产儿。42 周后出生的婴儿被视为过早出生。

At or before 22 weeks — considered **the cusp**（两曲线相交的）尖点，会切点，交点 of fetal viability 生存能力，发育能力；可行性 — few fetuses **survive (v.) outside the womb**.

在 22 周或之前（被认为是胎儿生存能力的关键时期），很少有胎儿能在子宫外存活。

Example 5. 案例
cusp

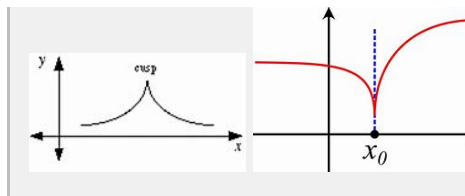
/kʌsp/

(n.) 1.(technical 术语) **a pointed end** where two curves meet (v.)（两曲线相交的）尖点，会切点，交点

• the cusp of a leaf 叶尖

2.the time when one sign of the zodiac ends (v.) and the next begins (v.)（黄道十二宫的）两宫会切的时辰

→ 来自 PIE*sker, 切，砍，词源同 shear, carnal.



By 28 weeks, most can survive (v.), but often require (v.) significant 有重大意义的；显著的 life support.

到 28 周时，大多数人都可以存活，但通常需要大量的生命支持。

Artificial-womb technology **aims (v.) to improve outcomes (n.)** for **preterm babies** /who are born (v.) in the period between 22 and 28 weeks, for whom **survival has improved**, but **long-term health issues** are frequent.

人工子宫技术旨在改善 22 至 28 周内出生的早产儿的结局，这些早产儿的生存率有所提高，但长期健康问题也很常见。

In a study of 2.5 million people in Sweden, for example, 主 78% of people 后定 **born (v.) before 28 weeks of gestation** 妊娠（期）；怀孕（期）/谓 had some sort of **medical condition**（因不可能治愈而长期患有的）疾病 — **ranging from** asthma 气喘；哮喘 and hypertension 高血压 **to cerebral** 大脑的；脑的 **palsy** 瘫痪，麻痹（尤指四肢颤动类）and epilepsy 癫痫；羊痫风；羊角风 — by the time they were adults.

例如，一项针对瑞典 250 万人的研究显示，78% 妊娠 28 周之前出生的人，在成年时患有某种疾病，包括哮喘、高血压、脑瘫和癫痫等。

Example 6. 案例

asthma /'æzmə/

[U] a medical condition of the chest **that makes breathing difficult** 气喘；哮喘 → 拟声词。

cerebral palsy

[U] a medical condition usually caused by brain damage before or at birth **that causes the loss of control of movement in the arms and legs** 大脑性瘫痪

脑瘫的更详细介绍，见本页最后。

epi-lep-sy

/'epi-lep-si/ [U] a disorder of the nervous system that causes a person to become unconscious suddenly, often with violent movements of the body 癫痫；羊痫风；羊角风

→ epi-, 在上，在中。-lepsy, 拿，握，抓住，词源同 lemma, catalepsy. 即疾病上身的。

古代人不了解癫痫病，看到有人癫痫发作时，还以为是神灵附体了，所以在希腊语中用epilepsis来称呼癫痫病。该词由epi（在……上）和lepsy（抓住），字面意思就是“神灵附体、被神灵抓住”。

特征为反复地癫痫发作，即为重复发作或长或短的严重抽搐症状，可能会造成物理性伤害，甚至骨折。患者倾向在无诱发原因下持续重复地发作。

大多数癫痫病例的肇因尚未厘清，在少数病例中肇因于脑损伤、中风、脑肿瘤、脑部感染或先天性障碍，经致脑病作用而致病；而一小部分的癫痫病例，与已知的“基因突变”直接相关。

癫痫发作，是大脑皮质中过度且异常的神经元活动所产生的结果。

For full-term births, that rate **was** 37%.

对于足月出生，这一比例为 37%。

主 **Death and disability**, especially in babies 后定 **born (v.) at younger gestational** 妊娠期的；受孕的 **ages**, 谓 **often occur** /because the lungs and brain are among **the last organs** 后定 to fully mature (v.) in humans.

死亡和残疾，特别是在胎龄较小的婴儿中，经常发生，因为肺和大脑是人类最后完全成熟的器官之一。

That's why obstetricians 产科医生 try to prevent **preterm birth** whenever possible — **the longer** fetuses can safely stay (v.) in the womb, **the higher** their odds (事物发生的) 可能性, 概率, 几率, 机会 are of long-term survival and good health.

这就是为什么产科医生尽可能地预防早产——胎儿在子宫内安全停留的时间越长，长期存活和健康的几率就越高。

Example 7. 案例

ob-ste-trics

/əb-'ste-triks/

[U] the branch of medicine concerned with the birth of children 产科学

-> ob-,相对,对着的, -stet,站, 站立, 词源同stand,state.即站在对面的, 后用于指站在孕妇对面给予帮助的接生婆。-ics,学科, 技术。即接生的科学, 妇产科。比较midwife.

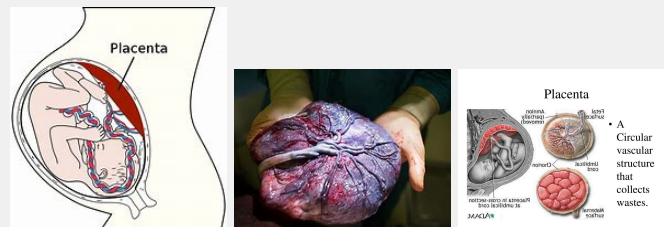
In a natural womb, a fetus 胎儿, 胎 receives (v.) oxygen, nutrients, antibodies and **hormonal signals** 激素信号 and **gets rid of waste** through the placenta 胎盘, a transient organ /in which **fetal blood interacts (v.) with maternal 母亲的 blood**.

在自然子宫中, 胎儿接收氧气、营养物质、抗体和激素信号, 并通过胎盘排出废物, 胎盘是胎儿血液与母体血液相互作用的短暂器官。

Example 8. 案例

placenta

-> 来自现代拉丁语placenta uterina,胎盘, 来自placenta,面饼, 糕饼, 来自PIE*plak,平的, 来自PIE*pele,展开, 放平, 词源同plan,place.因胎盘形如一个平的面饼而得名。



胎盘 (学名:), 又称“胞衣”, 是一种只有在雌性哺乳类动物怀孕时, 或是每一只哺乳类动物还是胎儿时, 才有的暂时器官, 位于子宫内侧的表面。

胎盘内层是羊膜囊, 羊膜囊包含羊水。胎盘植入于子宫壁, 并且从母体的血液获取营养与氧气, 排出废物。这个介面也是一个障壁, 拦下某些可能会伤害胚胎的物质。但是很多物质是胎盘无法拦截的, 像是酒精以及一些抽烟产生的物质。几种病毒也可以穿过胎盘, 如德国麻疹。

胎盘还有新陈代谢跟内分泌活动。胎盘会分泌黄体激素, 对维持怀孕很重要。也会分泌乳促素, 增加母体的血糖与血脂, 使得胎儿的营养摄取增加。

胎盘由以血管与结缔组织构成的脐带与胚胎相连。

artificial-womb technology is **most focused on** providing oxygen /and removing **carbon dioxide**, replacing **the mechanical ventilators** 通气机; 呼吸器 that are often used for neonates (尤指出生不足四周的) 新生儿.

人工子宫技术最关注的, 是提供氧气, 和去除二氧化碳, 取代通常用于新生儿的机械呼吸机。

These can damage (v.) **fragile developing lungs** /that would otherwise **still be filled with amniotic 羊膜的 fluid**.

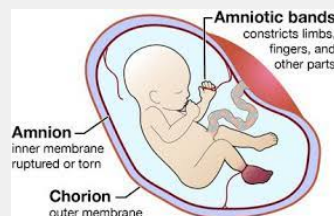
这些会损害脆弱的发育中的肺部, 否则肺部仍会充满羊水。

Example 9. 案例 amni-otic

/ˌæmni-ˈɑːtɪk/

ADJ of or relating to the amnion 羊膜的

羊膜是羊膜动物（包括爬行动物，鸟类 和哺乳动物）的胚胎所具有的一种结构。**其本质是一层封闭的生物膜**，其内包裹着的空间称为羊膜囊，**内含的液体称为羊水**。羊膜的主要作用是**保护胚胎的发育不受外界干扰，例如剧烈机械刺激和温度变化等**。从发育的角度来说，羊膜的外侧部分，来自于中胚层；而内侧部分，来自于外胚层。



2. Artificial Womb Trials in Humans Could Start Soon

The team has emphasized that the technology is not intended — or able — to support development from conception to birth. Instead, the scientists hope that simulating some elements of a natural womb will increase survival and improve outcomes for extremely premature babies. In humans, that’ s anything earlier than 28 weeks of gestation — less than 70% of the way to full term, which is typically between 37 and 40 weeks.

Preterm birth, defined by the World Health Organization as birth before 37 weeks of gestation, can happen spontaneously or because some conditions — such as an infection, hormone imbalance, high blood pressure or diabetes — can turn the womb into an inhospitable environment for the fetus.

It poses an enormous global health problem. Preterm birth is the largest cause of death and disability in children under five.

Mortality is strongly linked with the baby’ s gestational age at birth. At or before 22 weeks — considered the cusp of fetal viability — few fetuses survive outside the womb. By 28 weeks, most can survive, but often require significant life support. Artificial-womb technology aims to improve outcomes for preterm babies who are born in the period between 22 and 28 weeks, for whom survival has improved, but long-term health issues are frequent.

In a study of 2.5 million people in Sweden, for example, 78% of people born before 28 weeks of gestation had some sort of medical condition — ranging from asthma and hypertension to cerebral palsy and epilepsy — by the time they were adults. For full-term births, that rate was 37%.

Death and disability, especially in babies born at younger gestational ages, often occur because the lungs and brain are among the last organs to fully mature in humans. That’ s why obstetricians try to prevent preterm birth whenever possible — the longer fetuses can safely stay in the womb, the higher their odds are of long-term survival and good health.

In a natural womb, a fetus receives oxygen, nutrients, antibodies and hormonal signals and gets rid of waste through the placenta, a transient organ in which fetal blood interacts with maternal blood. Of these various roles, artificial-womb technology is most focused on providing oxygen and removing carbon dioxide, replacing the mechanical ventilators that are often used for neonates. These can damage fragile developing lungs that would otherwise still be filled with amniotic fluid.

3. Cerebral palsy 脑瘫

Cerebral palsy (CP) is a group of **movement disorders** that appear in early childhood. Signs and symptoms vary (v.) among people and over time, but include **poor coordination** (n.) 协作；协调；配合, stiff muscles, weak muscles, and tremors (n.) (由于寒冷或恐惧等引起的) 颤抖，战栗，哆嗦.

There may be problems with sensation, vision, hearing, and speaking. Often, babies with **cerebral palsy** do not **roll over** 翻滚,翻身, sit, crawl or walk **as early as** other children of their age.

Other symptoms include seizures (心脏病、脑部疾病等的) 突然发作 and problems with thinking or reasoning, each of which occur in about one-third of people with CP. While symptoms may get more noticeable over the first few years of life, **underlying (a.) problems** do not worsen (v.) over time.

脑瘫 (CP) 是一组出现在儿童早期的运动障碍。体征和症状因人而异，随着时间的推移而有所不同，但包括协调性差、肌肉僵硬、肌肉无力和颤抖。感觉、视力、听力和言语可能会出现问题。通常，患有脑瘫的婴儿不会像其他同龄儿童一样早翻身、坐下、爬行或行走。其他症状包括癫痫发作和思维或推理问题，大约三分之一的脑瘫患者都会出现这些症状。虽然症状在生命的最初几年可能会变得更加明显，但潜在的问题不会随着时间的推移而恶化。

Cerebral palsy is caused by abnormal development or damage to the parts of the brain that control movement, balance, and posture. Most often, the problems occur during pregnancy, but they may also occur during childbirth or shortly after birth.

脑瘫是由控制运动、平衡和姿势的大脑部分，发育异常或受损引起的。大多数情况下，这些问题发生在怀孕期间，但也可能发生在分娩期间或出生后不久。

Cerebral palsy is defined as "a group of **permanent disorders** of the development of movement and posture, causing (v.) activity limitation, that are attributed to non-progressive (a.) disturbances 障碍；失调；紊乱 that occurred in the developing fetal 胎儿的 or infant 婴儿；幼儿 brain."

While movement problems are **the central feature** of CP, difficulties with thinking, learning, feeling, communication and behavior often co-occur, with 28% having epilepsy 癫痫, 58% having difficulties with communication, at least 42% having problems with their vision, and 23–56% having learning disabilities.

Muscle contractions (肌肉的) 收缩，挛缩；(尤指分娩时的) 子宫收缩 in people with **cerebral palsy** are commonly thought (v.) to arise from overactivation 过度激活.

脑瘫被定义为“一组运动和姿势发育的永久性障碍，导致活动受限，归因于发育中的胎儿或婴儿大脑中发生的非进行性障碍。” **虽然运动问题是 CP 的核心特征，但思考、学习、感觉、沟通和行为方面的困难常常同时出现**，28% 的人患有癫痫，58% 的人有沟通困难，至少 42% 的人有视力问题，23-56% 有学习障碍。 **通常认为脑瘫患者的肌肉收缩，是由于过度激活引起的。**

Example 10. 案例
non-progressive

- (a.) (of a medical condition) not continuing to develop; not becoming worse or more serious. (健康状况) 没有继续发展；不会变得更糟或更严重
- It is a non-progressive disorder, so the damage will not get any worse. 这是一种非进行性疾病，因此损害不会变得更糟。
 - Some diseases can remain nonprogressive for years. 有些疾病可以多年不进展。

Cerebral palsy is characterized by abnormal **muscle tone** ((肌肉的) 结实，健壮；(皮肤的) 柔韧) 肌张力, reflexes 反射动作；本能反应；反射作用, or motor development and coordination.

Example 11. 案例
tone

- (n.) [U] how strong and firm your muscles or skin are (肌肉的) 结实，健壮；(皮肤的) 柔韧 • how to improve your **muscle/skin tone** 如何使肌肉发达/皮肤柔韧

The neurological lesion is primary and permanent while orthopedic manifestations are secondary and progressive. In cerebral palsy unequal growth between muscle-tendon units and bone eventually leads to bone and joint deformities. At first, deformities are dynamic. Over time, deformities tend to become static, and joint contractures develop. Deformities in general and static deformities in specific (joint contractures) cause increasing gait difficulties in the form of tip-toeing gait, due to tightness of the Achilles tendon, and scissoring gait, due to tightness of the hip adductors. These gait patterns are among the most common gait abnormalities in children with cerebral palsy. However, orthopaedic manifestations of cerebral palsy are diverse. Additionally, crouch gait (also described as knee flexion gait) is prevalent among children who possess the ability to walk. The effects of cerebral palsy fall on a continuum of motor dysfunction, which may range from slight clumsiness at the mild end of the spectrum to impairments so severe that they render coordinated movement virtually impossible at the other end of the spectrum. Although most people with CP have problems with increased muscle tone, some have normal or low muscle tone. High muscle tone can either be due to spasticity or dystonia.

脑瘫的特点是肌张力、反射或运动发育和协调异常。神经系统病变是原发性和永久性的，而骨科表现是继发性和进行性的。 **在脑瘫中，肌肉肌腱单位和骨骼之间的生长不均匀，最终会导致骨骼和关节畸形。** 首先，畸形是动态的。随着时间的推移，畸形趋于稳定，关节挛缩。一般畸形和特定的静态畸形（关节挛缩）会导致步态困难增加，如由于跟腱紧张而导致的踮脚步态，以及由于髋内收肌的紧张而导致的剪刀步态。这些步态模式是脑瘫儿童最常见的步态异常之一。然而，脑瘫的骨科表现多种多样。此外，蹲伏步态（也称为膝关节屈曲步态）在有行走能力的儿童中很常见。脑瘫的影响涉及一系列运动功能障碍，其范围可能从轻度的轻微笨拙到严重的损伤以致于在光谱的另一端几乎不可能协调运动。尽管大多数脑瘫患者都存在肌张力增加的问题，但有些人的肌张力正常或较低。高肌张力可能是由于痉挛或肌张力障碍所致。