

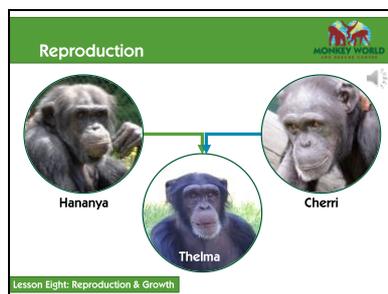
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Welcome back for lesson eight of our home education course, where we will be exploring being born and growing up. In today's lesson we will discover:

- The factors that affect primate reproduction, i.e. natural selection
- The different developmental stages of primate life cycles

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All living things – including plants – must **reproduce** to survive, otherwise they will go extinct. **Reproduction** is biological process where a new life is made by two **parent** organisms mating and producing **offspring**. The offspring get half of their DNA from each parent, and are therefore not carbon copies of their parents – they **inherit** different characteristics from both parents, so they might resemble one or the other in different ways.

Thelma is a female chimpanzee who was born at Monkey World in 2013; Her father is Hananya (L) and her mother is Cherri (R). Thelma inherited half of her DNA from her mum and the other half from her dad. She doesn't look exactly the same as either of them, but does like similar to both of them. She has a similar brow and hair parting to Hananya, but her face is longer and lined by a white beard like her mum.

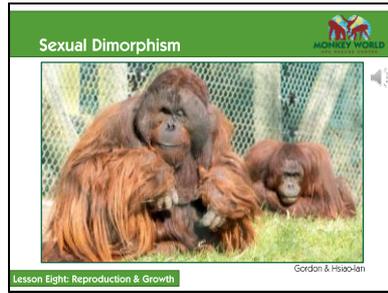
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Animals reproduce to help their species to survive, and an animal is more likely to survive when it is well-adapted to its environment. We have talked a lot about primate adaptations – they are adapted to live in trees, but some have terrestrial adaptations that allow them to live on the ground. They have adaptations that help them to feed, such as prehensile tails or flexible shoulder joints, and adaptations to help them communicate, like scent glands and throat sacs. The more adapted a primate is, the more likely it is to survive. When it reproduces, it will pass these traits down to their offspring in their DNA, which will in turn help them to survive and continue to pass these traits down the genetic line. Females will choose to reproduce with the males that have the best qualities, so their children will have the best chance of survival. This is the process of **natural selection**.

For example, female woolly monkeys may choose to produce offspring with a male who is bigger, stronger and has a longer tail than others, and a female gibbon may be more likely to pair bond with a male whose song can be heard the loudest and clearest.

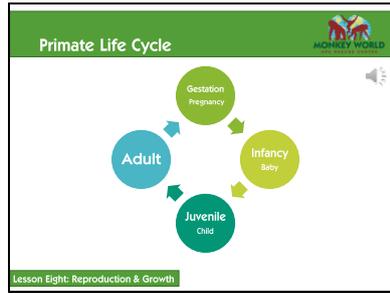
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We briefly discussed **sexual dimorphism** in our Communication & Senses lesson, as it is a form of visual communication. Sexual dimorphism are the consistent and significant differences in the appearances of the males and females of a species. The differences exhibited are important for use in fighting and dominance displays – let’s look at an example. Male orang-utans are often twice the size of females, develop large fatty cheek pads during their **adolescence** and also have a large throat sac that they can inflate to bellow out their **long call**. Remember, orang-utans exhibit the noyau social pattern so they live more solitary lives than other primates. A louder, clearer call will be heard by more females, and a bigger, stronger male will be better equipped to fight off any competition if necessary.

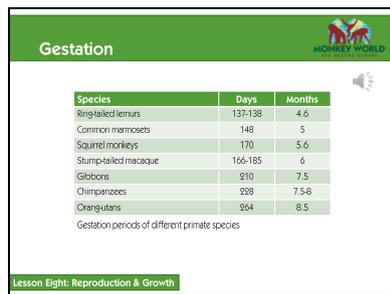
Not all primates exhibit sexual dimorphism as clearly as orang-utans. The primate species who tend to have the biggest differences between the males and females are those that have more competition between the males. Research gorillas and geladas to see more examples!

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A life cycle describes the different stages of an organism’s life. A primate’s life cycle starts inside their mother’s womb, where they grow or **gestate** before they are born. They spend some time (months – years depending on species) as an infant/baby when they are completely reliant on their mum to carry and feed them. Then they become more independent as a juvenile/child, and learn everything they need to know before starting adult life. As an adult, they are completely mature and will start their own family, continuing the life cycle. Let’s look at some of our chimpanzees and other primates to learn some more.

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Species	Days	Months
Ring-tailed lemur	137-158	4.6
Common marmosets	148	5
Squirrel monkeys	170	5.6
Stump-tailed macaque	166-185	6
Gibbons	210	7.5
Chimpanzees	228	7.5-8
Orangutans	264	8.5

Gestation periods of different primate species

Primates first start to grow before they are born during **gestation**, or pregnancy. Primates are mammals, and this is how all mammals start life. A baby primate starts life as an **embryo** inside their mother’s womb where they will grow until they are ready to be born. Compared to other mammals of a similar size, primates have quite long gestation periods and have fewer babies – *can you remember what this is called from our very first lesson?* For example, a tarsier will only have one baby at a time, whereas a rodent of a similar size (perhaps a guinea pig or rabbit) will have a litter of babies. The length of a primates’ gestation period will vary depending on the species – ring-tailed lemurs are only pregnant for around four and a half months, but chimps and orang-utans are pregnant for around eight months.

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Infancy is the time when a baby primate is dependent on its mother for food and transport – when they are still a baby! Generally, the longer a primate’s life span/expectancy, the longer their infancy is. For example, common marmosets live for approximately 12-15 years and are infants for the first year of their lives, whereas orang-utans’ infancy lasts around 4-5 years, but they can live into their 50s.

These photos show Thelma as an infant. In the photo on the left, her mum Cherri is carrying her, holding her close to her chest while she forages for food. In the picture on the right, Cherri has made a nest for the two of them to sleep in. As a new born mammal, Thelma was unable to feed herself and had to rely on her mum producing and feeding her milk. She was also too small, weak and vulnerable to be left alone, so Cherri had to carry her everywhere she went.

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In many primate species, the babies have some distinctive traits that make it and its mother the centre of attention while they are most vulnerable. Chimpanzees are born with a white tuft of hair above their bottom and pale skin which darkens as they mature, and stump-tailed macaques are born with creamy white hair. Here are a handful of some of the babies born at Monkey World during their infancy; as a rescue centre, we don't breed from many of our primates as we need to save space for more rescues. Although there are differences in the species family groups and life cycles, all of the mothers will keep their babies close during infancy to protect them. *Do you know all of these species?*

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A primate's **juvenile** period is when they are independent but not fully mature – it's somewhere between childhood and teenage years! This is the stage that Thelma is now in: she will turn 7 in September and is no longer a baby! The white tuft of hair above her bottom is almost completely gone and, as you can see from the picture on the right, her skin is getting darker too. As a juvenile, Thelma is more than capable of travelling everywhere on her own, but she is spoiled by her mum who still carries her on her back like a baby!

In the wild it would be during this stage that a young primate has to learn valuable lessons on survival. Youngsters will be **weaned** as they transition from infant to juvenile, so they will need to learn to hunt and forage, as well as learning

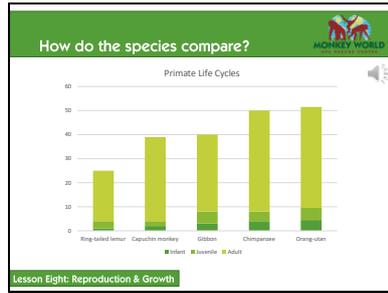
techniques such as tool use that will help them nab harder to obtain food. They will learn from their whole family about hierarchies and social interactions, how important grooming is and how to apologise when necessary! As this is such an important life stage, it generally lasts for several years in most monkeys and apes; orang-utans are weaned at around 4 years old, but will spend another 4-5 years with their mothers before they are completely mature.

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Adulthood is reached when a young primate finishes puberty and is able to produce offspring of their own. Depending on the species, they may have a **sub-adult** phase, where they are mature but need to find a suitable mate. This will happen with gibbons for example, who need to attract and bond with a mate to form a monogamous family unit. These photos show Bart, a male chimpanzee born at Monkey World in 2007. He is a juvenile in the left-hand photo, being carried by his dad Paddy; the photo on the right was taken more recently, now Bart is an adult. His body has grown significantly and he has developed the size and strength of a dominant male chimpanzee – he's asserting his dominance with a display in this photo! Bart is now the leader of his community, and learned integral leadership behaviours from Paddy, who was dominant male before him. Now he has matured, he resembles his dad a lot more, too – he's definitely grown into his ears!

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We regularly get asked how long primates live for, but each primate species' life span is slightly different – generally, larger primates have longer lives and therefore longer periods of infancy and juvenility. The great apes have the longest lives and require the most investment from their parents before they mature and start their own family. However, some small primates like capuchins have relatively short infancies, but can live until they are around 40 years old, like gibbons, chimps and orang-utans. In our follow-up activities, we will explore how human life cycles compare!

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Recap!

All living things must reproduce to survive. Each parent provides 50% of the genetic material needed to create offspring. The offspring therefore looks like their parents, but is not a clone of either one.

Primates have low reproductive rates and longer periods of infancy than other mammals.

- Gestation
- Infancy
- Juvenile
- Adult

Lesson Eight: Reproduction & Growth

All living things must reproduce to survive. Each parent provides 50% of the genetic material needed to create offspring. The offspring therefore looks like their parents, but is not a clone of either one.

Primates have low reproductive rates and longer periods of infancy than other mammals,

A primate's life cycle starts with gestation in the womb, until they are born as a helpless infant. They become juveniles when they develop some independence, but are not yet fully mature. They become adults when they are fully grown and able to start their own families.

