

Table S1 Comparative table of mammary gland development in major dairy animals

Developmental Phase	Cow	Sheep/Goat	Pig
Embryonic	Mammary glands begin to develop at 30~35 days.	Mammary glands may begin to develop at 25~35 days	Mammary glands begin to develop at 20~25 days.
Pubertal	Approximately between 6~12 months, significant changes in udder structure occur. Development speed is slower than that of sheep and pigs.	Approximately between 5~12 months, mammary development is relatively fast.	Approximately between 4~7 months, mammary development is relatively fast.
Pregnancy	Significant mammary alveolar formation typically occurs between days 110 and 140 of gestation. Placental lactogen may play a crucial role in regulating mammary development.	Mammary gland undergoes significant development during late pregnancy, with its volume experiencing exponential growth in the month preceding parturition. Placental lactogen may also play a key role.	During the last third of pregnancy, particularly between days 75 and 90, udder development becomes noticeable.
Lactation	High milk yield with a lactation period of 10~12 months.	Moderate milk yield with a shorter lactation period of about 4~6 months.	Lower milk yield with a shorter lactation period of about 1 month.
Involution	Mammary gland undergoes two stages of involution: reversible and irreversible.	Mammary gland undergoes two stages of involution: reversible and irreversible.	Mammary gland undergoes two stages of involution: reversible and irreversible.