

# Premature parturition induced by LPS or RU486 in mice

## A MODEL FOR PRETERM BIRTH

### Model

In Humans, labor is premature if regular contractions of the uterus resulting in changes in the cervix starts more than three weeks before the due date. Preterm birth, defined as childbirth occurring at less than 37 completed weeks or 259 days of gestation, is the greatest problem associated with preterm labor.

Early initiation of the inflammatory pathway by infection of the genital tract contributes to 25% to 40% of all human preterm births. Several mouse models of infection-induced preterm birth have been developed, most commonly using *Escherichia coli* or the toxic component on the surface of gram-negative bacteria, lipopolysaccharide (LPS). Another currently used model is based on early progesterone withdrawal induced by administration of RU486 (also known as the anti-progesterone and anti-glucocorticoid drug Mifepristone). RU486 induces uterine contractions and cervical ripening.

### Species

- Mouse
- Rat
- Guinea-pig

### Interest

This model is suitable for compounds acting on uterus contractions. This model is validated with the relevant compound nifedipine (a L-type calcium channel blocker) used in the clinic.

### Model Description

- Primigravid pregnant mice on gestational day 17 are placed into individual cages.
- 3 h later, preterm labor is induced by RU486 (a progesterone receptor inhibitor) or LPS administrations.
- Mice are continuously monitored via video recording using an infrared camera to determine the time of pups delivery and the number of pups delivered.
- All dead pups are controlled by lung float test to distinguish whether a new-born was born dead or alive.
- Tested compounds can be administered *via* various routes (i.v., i.p., s.c., p.o.).

### Evaluated Parameters

- Delivery time (h): Time interval between preterm birth induction and first pup delivery
- Delivery (%): Percentage of mice delivering as function of time after preterm induction
- Cumulative delivery (%): Cumulative percentage of mice delivering by one hour interval period after preterm induction
- Live pup (%): Percentage of number of pups born alive on the total number of pups born

### Reference

Pohl *et al.*, *J Pharmacol Exp Ther* 366:349–364. 2018.

