杨凌 简介

杨凌，男，汉族，博士，教授，兼中国农业大学博士生导师。1967 年 11 月出生，河北永年人。1991 年 7 月毕业于河北农业大学畜牧兽医系畜牧专业，2005 年 12 月获河北农业大学动物营养与饲料科学专业农学硕士学位，2010 年 1 月**中国农业大学动物遗传育种与繁殖专业博士**研究生毕业（全日制）。2013 年 7-8 月到澳大利亚新南威尔士大学进修。河北省畜牧兽医学会养牛学分会副会长、河北省畜牧兽医学会动物繁殖学分会副会长。国家级科技特派员。政协邯郸市第十三届委员。河北省自然科学基金会评专家，国际期刊 BMC Veterinary Research（SCI 二区）编委。国际期刊 Critical Reviews in Food Science and Nutrition、Immunology、International Journal of Molecular Sciences 等审稿专家。动物科学系主任。河北工程大学优秀研究生导师。河北省优秀硕士论文指导教师。指导的学生获牛精英挑战赛（国家级赛事）肉牛组一等奖，奶牛组二等奖，奶牛组个人二等奖和三等奖 2 项。主持省级科研计划项目 5 项，以第一作者或通信作者发表 SCI 收录论文 57 篇（二区以上论文 19 篇）。

一、主要成果

1. 提高山羊妊娠产羔率的研究，邯郸市山区创业三等奖（市级），第一，2014 年；

2. 邯郸县奶业产业化技术集成与示范，河北省科技厅（省级），第二，2011 年；

3. 獭兔优秀杂交组合筛选及提高养殖效益技术，河北省山区创业三等奖（省级），第三，2012 年

4. 山区奶牛良种繁育关键技术研究与示范，河北省科技厅（省级），第一，2016 年；

5. 绵羊妊娠早期胸腺和骨髓表达 ISG15 和 PIBF 的研究，河北省自然科学基金面上项目，2016 年，第一；

6. 绵羊附植前胚胎形态变化的分子调控机制（30771548），国家自然科学基金面上项目，2010，参与；

7. 山区奶牛繁殖标准化生产技术研究与示范，河北科技厅重点研发计划项目，2020 年，第一；

8. 绵羊妊娠早期脾脏表达 Th2 细胞因子的研究，河北省高等学校科学技术研究重点项目，2021 年，第一；

9. Expression of interferon‐stimulated gene 15‐kDa protein, cyclooxygenase (COX) 1, COX‐2, aldo‐keto reductase family 1, member B1, and prostaglandin E synthase in the spleen during early pregnancy in sheep，日本畜产协会优秀论文奖，2022 年，第一。

二、目前承担的课题

1. 2021-2022，奶牛早期妊娠诊断试剂盒研发与应用，河北科技厅重点研发计划项目，40 万，主持；

2. 2021-2023，绵羊妊娠早期子宫内膜免疫相关信号通路的研究，河北省自然科学基金面上项目，10 万，主持；

3. 2022-2024，小尾寒羊妊娠期精准饲养技术研究，河北科技厅重点研发计划项目，30 万，主研人；

4. 2022-2024，妊娠对绵羊肝脏营养代谢通路的影响，河北省自然科学基金面上项目，10 万，主研人。

三、专利

1. 杨凌，等，用于牛羊早期妊娠诊断的 ISG15 胶体金试纸条及其制作方法，**发明专利**，专利号 ZL2014101477319. 2016 年 6 月授权。

2. 杨凌，等，用于奶牛早期妊娠诊断的 C1q 胶体金试纸条制作方法，**发明专利**，申请日期 2021.12.14，专利申请号 202111521284.5。

四、代表性论文：

1. Cao Jianhua, Zhao Shuxin, Zhang Yaqi, Cai Jiabao, Zhang Leying, **Yang Ling***. Pregnancy influences expression of interferon-stimulated genes, progesterone receptor and progesterone-induced blocking factor in ovine thyroid. *Animal Bioscience*. 2024. Accept. (SCI 二区)

2. **Yang Ling***, Meng Yao, Shi Yuxiang, Fang Hongxu, Zhang Leying. Maternal hepatic immunology during pregnancy. *Frontiers in Immunology*. 2023, 14:1220323. (SCI 二区，top 期刊，IF 7.3)

3. Meng Yao, Yang Zhen, Quan Yaodong, Zhao Shuxin, Zhang Leying, **Yang Ling***. Regulation of IkappaB protein expression by early gestation in the thymus of ewes. *Veterinary Sciences*. 2023, 10:462. (SCI 二区)

4. Fang Shengya, Cai Chunjiang, Bai Ying, Zhang Leying, **Yang Ling***. Early Pregnancy Regulates Expression of IkappaB Family in Ovine Spleen and Lymph Nodes. ***International Journal of Molecular Sciences***. 2023, 24:5156. (SCI 二区，IF 5.6)

5. Cai Chunjiang, Ren Ying, Cao Jianhua, Fang Shengya, Zhang Leying, **Yang Ling***. Expression of IkappaB Family in the Ovine Liver during Early Pregnancy. ***Animals***. 2023, 13:1057. (SCI 二区，IF 3.231)

6. Wu Jiaxuan, Fang Shengya, Feng Pengfei, Cai Chunjiang, Zhang Leying, **Yang Ling***. Changes in expression levels of Nod-like receptors in the spleen of ewes. *Animal Reproduction*. 2023, 20(1):e20220093. (SCI 四区，IF 1.810)

7. Zhang L., Ren Y., Li Y., Meng Y., Fang H., **Yang L.***. Regulation of Nod-like receptor expression in the liver of ewes during early pregnancy. *Journal of Animal and Feed Sciences*. 2023, 32:267-79. (SCI 四区，IF 1.500)

8. Zhang Leying, Li Yuanjing, Zhao Zhenyang, Cai Jiabao, Zhao Shuxin, **Yang Ling***. Modulation of nod-like receptor expression in the thymus during early pregnancy in ewes. Vaccines. 2022, 10:2128. (SCI 三区，IF 7.8)

9. **Yang Ling***, Cai Chunjiang, Fang Shengya, Hao Shaopeng, Zhang Taipeng, Zhang Leying. Changes in expression of nuclear factor kappa B subunits in the ovine thymus during early pregnancy. ***Scientific Reports***. 2022, 12:17683. (SCI 三区，IF 4.996)

10. Zhao Zhenyang, Li Yuanjing, Cao Jianhua, Fang Hongxu, Zhang Leying, **Yang Ling***. Early pregnancy modulates expression of Nod-like receptor family in lymph nodes of ewes. ***Animals***. 2022, 12:3285. (SCI 二区，IF 3.231)

11. Zhang Leying, Zhang Taipeng, Yang Zhen, Cai Chunjiang, Hao Shaopeng, **Yang Ling***. Expression of nuclear factor kappa B in ovine maternal inguinal lymph nodes during early pregnancy. ***BMC Veterinary Research***. 2022, 18:266. (SCI 二区，IF 2.792)

12. Han Xu, Wang Siyuan, Ren Ying, Lin Tao, Zhang Leying, **Yang Ling***. Selection of early pregnancy specific proteins and development a rapid

immunochromatographic test strip in cows. ***Theriogenology.*** 2022, 187:127-134. (SCI 二区，top 期刊，IF 2.923)

13. Feng Pengfei, Wu Jiaxuan, Ren Ying, Zhang Leying, **Yang Ling***. Early pregnancy regulates the expression of prolactin and its receptor in the thymus, the liver, the spleen and lymph nodes in sheep. ***Domestic Animal Endocrinology***. 2022, 81:106731. (SCI 二区，IF 2.566)

14. Fang Shengya, Zhang Taipeng, Qiao Haiyun, Hao Shaopeng, Zhang Leying, **Yang Ling***. Expression of nuclear factor kappa B components in the ovine maternal liver in early pregnancy periods. ***Animal Science Journal.*** 2022, 93:e13724. (SCI 三区，IF 1.974)

15. Hao Shaopeng, Fang Hongxu, Fang Shengya, Zhang Taipeng, Zhang Leying **Yang Ling***. Changes in nuclear factor kappa B components expression in the ovine spleen during early pregnancy. ***Journal of Animal and Feed Sciences***. 2022, 31(1):3-11. (SCI 四区，IF 1.500)

16. Zhang Leying, Zhang Qiongao, Wang Haichao, Feng Pengfei, Yang Gengxin, **Yang Ling***. Effects of early pregnancy on the complement system in the ovine thymus. ***Veterinary Research Communications***. 2022, 46(1):137-145. (SCI 三区，IF 2.816)

17. Zhang Leying, Cao Lidong, Feng Pengfei, Han Xu, **Yang Ling***. Complement regulation in ovine lymph nodes during early pregnancy. ***Experimental and Therapeutic Medicine***. 2022, 23(2):166. (SCI 四区，IF 2.751)

18. **Yang Ling***, Wang Luyu, Wu Jiaxuan, Wang Haichao, Yang Gengxin, Zhang Leying. Changes in Expression of Complement Components in the Ovine Spleen during Early Pregnancy. ***Animals***. 2021, 11: 3183. (SCI 二区，IF 3.231)

19. **Yang Ling**, Bai Jiachen, Ju Zhihua, Jiang Qiang, Wang Jinpeng, Gao Yaping, Zhang Yaran, Wei Xiaochao, Huang Jinming*. Effect of functional single nucleotide polymorphism g.-572 A > G of apolipoprotein A1 gene on resistance to ketosis in Chinese Holstein cows. ***Research in Veterinary Science***. 2021, 135: 310-316. (SCI 三区，IF 2.553)

20. Wu Jiaxuan, Zhang Qiongao, Zhang Leying, Feng Pengfei, Gao Meihong, Zhao Zhenyang, **Yang Ling***. Toll-like receptor signaling is changed in ovine lymph node during early pregnancy. ***Animal Science Journal***. 2021, 92: e13541. (SCI 三区，IF 1.974)

21. Feng Pengfei, Yang Gengxin, Zhang Weifeng, Zhang Leying, Wu Jiaxuan, **Yang Ling***. Early pregnancy regulates expression of complement components in ovine liver. ***Animal Science Journal***. 2021, 92:e13660. (SCI 三区，IF 1.974)

22. Zhang Leying, Yang Gengxin, Zhang Qiongao, Feng Pengfei, Gao Meihong, **Yang Ling***. Early pregnancy affects expression of Toll-like receptor signaling members in ovine spleen. ***Animal Reproduction***. 2021, 18(2):e20210009. (SCI 四区，IF 1.810)

23. **Yang Ling**, Zhao Zimo, Cui Maosheng, Zhang Leying, Li Qianjun. Melatonin Restores the Developmental Competence of Heat Stressed Porcine Oocytes, and Alters the Expression of Genes Related to Oocyte Maturation. ***Animals***. 2021, 11: 1086. (SCI 二区，IF 3.231)

24. Gao Meihong, Cai Chunjiang, Han Xu, Wang Luyu, Zhang Weifeng, Zhang Leying, **Yang Ling***. The early stage of pregnancy modulates toll-like receptor signaling in the ovine liver. ***Journal of Applied Animal Research***. 2021, 49: 374-381. (SCI 三区，IF 1.987)

25. Cao N, Cao L, Gao M, Wang H, Zhang L, **Yang L***. Changes in mRNA and protein levels of gonadotropin releasing hormone and receptor in ovine thymus, lymph node, spleen, and liver during early pregnancy. ***Domestic Animal Endocrinology***. 2021, 76:106607. (SCI 二区，IF 2.566)

26. Li Ning, Wang Luyu, Cao Nan, Zhang Leying, Han Xu, **Yang Ling***. Early pregnancy affects the expression of toll-like receptor pathway in ovine thymus. ***Reproductive Biology***. 2020, 20: 547-554. (SCI 四区，IF 2.376)

27. Zhang Leying, Zhao Zimo, Wang Yujiao, Li Ning, Cao Nan, **Yang Ling***. Changes in expression of interferon-stimulated genes and ubiquitin activating enzyme E1-like in ovine thymus during early pregnancy. ***Animal Reproduction.*** 2020, 17(2): e20190134. (SCI 四区，IF 1.807)

28. Bai Jiachen, Zhang Leying, Zhao Zimo, Li Ning, Wang Bin, **Yang Ling***. Expression of melatonin receptors and CD4 in the ovine thymus, lymph node, spleen and liver during early pregnancy. ***Immunology***. 2020, 160: 52-63. (SCI 二区， **IF 7.397**)

29. **Yang Ling,** Wang Qingkai, Cui Maosheng*, Li Qianjun, Mu Shuqin, Zhao Zimo. Effect of Melatonin on the In Vitro Maturation of Porcine Oocytes, Development of Parthenogenetically Activated Embryos, and Expression of Genes

Related to the Oocyte Developmental Capability. ***Animals.*** 2020, 10:209. (SCI 二区，IF 2.752)

30. **Yang Ling***, Li Ning, Zhang Leying, Bai Jiachen, Zhao Zimo, Wang Yujiao. Effects of early pregnancy on expression of interferon-stimulated gene 15, STAT1, OAS1, MX1 and IP-10 in ovine liver. ***Animal Science Journal***. 2020, 91:e13378. (SCI 三区，IF 1.749)

31. Zhang Leying, Cao Lidong, Yang Fei, Han Xu, Wang Yujiao, Cao Nan, **Yang Ling*.** Relative abundance of interferon-stimulated genes STAT1, OAS1, CXCL10 and MX1 in ovine lymph nodes during early pregnancy. ***Animal Reproduction Science***. 2020, 214: 106285. (SCI 三区，IF 2.145)

32. **Yang Ling*,** Han Xu, Zhang Leying, Li Ning, Zhao Zimo, Bai Jiachen. Changes in expression of prostaglandin synthase in ovine liver during early pregnancy. ***Canadian Journal of Animal Science***. 2020, 100(3):432-439. (SCI 四区，IF 1.015)

33. Zhang Leying, Zhao Zimo, Mi Hao, Liu Baoliang, Wang Bin, **Yang Ling***. Modulation of Helper T Cytokines in Thymus during Early Pregnancy in Ewes. ***Animals***. 2019, 9:245. (SCI 二区，IF 2.752)

34. **Yang Ling*,** Lv Wan, Liu Yong, Chen Kai, Xue Jie, Wang Qingkai, Wang Bin, Zhang Leying. Effect of early pregnancy on the expression of prostaglandin synthases in the ovine thymus. ***Theriogenology***. 2019, 136: 166-171. (SCI 二区，top 期刊，IF 2.74)

35. WangYujiao, Han Xu, Zhang Leying, Cao Nan, Cao Lidong, **Yang Ling***. Early Pregnancy Induces Expression of STAT1, OAS1 and CXCL10 in Ovine Spleens. ***Animals***. 2019, 9: 882. (SCI 二区，IF 2.752)

36. Zhang Leying, Zhuang Chen, Zhao Zimo, Li Ning, Bai Jiachen, **Yang Ling***. Effect of early pregnancy on the expression of progesterone receptor and progesterone-induced blocking factor 1 in ovine liver. ***Czech Journal of Animal Science***. 2019, 64 (7): 317-323. (SCI 四区，IF 1.267)

37. **Yang Ling***, Wang Qingkai, Liu Yong, Zhang Leying, Lv Wan, Liu Baoliang. Expression profiles of interferon-stimulated gene 15 and prostaglandin synthases in the ovine lymph nodes during early pregnancy. ***Molecular Reproduction and Development***. 2019, 86: 100-108. (SCI 三区，IF 2.609)

38. **Yang Ling***, Pengda Wang, Mi Hao, Lv Wan, Liu Baoliang, Du Jinsong, Zhang Leying. Comparison of Th1 and Th2 cytokines production in ovine lymph

nodes during early pregnancy. ***Theriogenology***, 2019, 123: 177-184. (SCI 二区，top 期刊，IF 2.74)

39. **Yang Ling***, Bai Jiachen, Zhao Zimo, Li Ning, Wang Yujiao, Zhang Leying. Differential expression of T helper cytokines in the liver during early pregnancy in sheep. ***Animal Reproduction***. 2019, 16: 332-339. (SCI 四区，IF 1.807)

40. **Yang Ling**, He Kaili, Li Jianbin*, Ma Yabin, Li Rongling, Hou Minghai, Gao Yundong, Zhong Jifeng. Correlation of Antibody Levels with Peripheral Lymphocyte Subsets and Routine Hematological Parameters after Vaccination with FMD Vaccine in Young Sires. ***Pakistan Veterinary Journal***. 2019, 39(2): 251-255. (SCI 四区，IF 1.318)

41. Li Ning, Zhao Zimo, Bai Jiachen, Liu Baoliang, Mi Hao, Zhang Leying, Li Guiping, **Yang Ling***. Characterization of the Th cytokines profile in ovine spleen during early pregnancy. ***Journal of Applied Animal Research***. 2019, 47: 386-393. (SCI 三区，IF 1.63)

42. **Yang Ling**, Guo Ruiqing, Ju Zhihua, Wang Xiuge, Jiang Qiang, Liu Yong, Zhao Han, He Kaili, Li Jianbin, Huang Jinming*. Production of an aberrant splice variant of CCL5 is not caused by genetic mutation in the mammary glands of mastitis-infected Holstein cows. ***Molecular Medicine Reports***. 2019, 19: 4159-4166. (SCI 四区，IF 2.952)

43. Zhang Leying, Xue Jie, Wang Qingkai, Lv Wan, Mi Hao, Liu Yong, **Yang Ling***. Changes in expression of ISG15, progesterone receptor and progesterone-induced blocking factor in ovine thymus during early pregnancy. ***Theriogenology***. 2018, 121: 153-159. (SCI 二区，top 期刊，IF 2.74)

44. **Yang Ling***, Wang Yongxiang, Li Shujing, Zhu Meixia, He Kaili, Yao Xiaolei, Zhang Leying. Differential expression of interferon-gamma, IL-4 and IL-10 in peripheral blood mononuclear cells during early pregnancy of the bovine. ***Reproductive Biology***. 2018, 18:312-315. (SCI 四区，IF 2.376)

45. **Yang Ling***, Guo Runqing, Yao Xiaolei, Yan Jinkun, Bai Ying, Zhang Leying. Expression of progesterone receptor and progesterone-induced blocking factor in the spleens during early pregnancy in ewes. ***Livestock Science***. 2018, 209:14-19. (SCI 三区，IF 1.943)

46. **Yang Ling**, Liu Zhichao, Li Jianbin*, He Kaili, Kong Lingna, Guo Runqing, Liu Wenjiao, Gao Yundong, Zhong Jifeng. Association of expression of Th cytokines

with peripheral CD4 and CD8 lymphocyte subsets after vaccinated with FMD vaccine in Holstein young sires. ***Research in Veterinary Science***. 2018, 119: 79-84. (SCI三区，IF 2.534)

47. **Yang Ling***, Liu Yong, Lv Wan, Wang Pengda, Wang Bin, Xue Jie, Zhang Leying. Expression of interferon‐stimulated gene 15-kDa protein, cyclooxygenase (COX) 1, COX-2, aldo-keto reductase family 1, member B1, and prostaglandin E synthase in the spleen during early pregnancy in sheep. ***Animal Science Journal***. 2018, 89:1540-1548. (SCI 三区，IF 1.749)

48. **Yang Ling***, Zang Shengqin, Bai Ying, Yao Xiaolei, Zhang Leying. Effect of early pregnancy on the expression of progesterone receptor and progesterone-induced blocking factor in ovine lymph node. *Theriogenology*. 2017, 93:78-83. (SCI 二区，top 期刊)

49. Zhang Leying, Mi Hao, Yan Jinkun, Yan Xianxi, **Yang Ling***. Pregnancy-associated changes in expression of progesterone receptor and progesterone-induced blocking factor genes in bone marrow of ewes. *Animal Reproduction Science*. 2017, 186:77-84. (SCI 三区)

50. **Yang Ling***, Yao XiaoLei, Li ShuJing, Chen Kai, Wang YongXiang, Chen Long, Zhang LeYing. Expression of genes associated with luteolysis in PBMCs during early pregnancy in cattle. *Molecular Reproduction and Development*. 2016, 83(6):509-515. (SCI 三区)

51. **Yang L**, Wang XL, Wan PC, Zhang LY, Wu Y, Tang DW, Zeng SM. Up-regulation of expression of interferon-stimulated gene 15 in the bovine corpus luteum during early pregnancy. *Journal of Dairy Science*. 2010, 93:1000-1011. (SCI 一区，top 期刊)