



全国中文核心期刊
中国科技核心期刊
中国科学引文数据库来源期刊

ISSN 0366-6964
CODEN CMHPAI

畜牧兽医学报

ACTA VETERINARIA ET ZOOTECHNICA SINICA

CHINESE JOURNAL
OF ANIMAL AND VETERINARY SCIENCES

Vol.54

No.9

2023

中国畜牧兽医学会

CHINESE ASSOCIATION OF ANIMAL
SCIENCE AND VETERINARY MEDICINE



畜牧兽医学报

XUMU SHOUYI XUEBAO

第54卷 第9期 2023年9月

目次

综 述

- 畜禽泛基因组研究进展……………李珂,王宇龙,李栋,史新娥,杨公社,于太永(3595)
- IGF2BP2介导的m⁶A修饰调控动物脂肪沉积的研究进展
……………韩皓哲,帖子航,庞卫军,蔡瑞(3605)
- 蛋鸡卵泡发育及其表观遗传调控机制研究进展
……………茹盟,曾文惠,彭剑玲,曾庆节,殷超,崔勇,魏庆,梁海平,谢贤华,黄建珍(3613)
- 奶水牛发情标记物的研究进展……………余洲,杨柏高,张航,徐茜,张培培,冯肖艺,曹建华,
牛一凡,杜卫华,郝海生,朱化彬,阿布力孜·吾斯曼,赵学明(3623)

遗传育种

- 全基因组选择信号解析剑白香猪和从江香猪的遗传差异
……………袁巍,毕欢,张雨丹,张依裕,顾晓龙,杨红文,陈伟(3631)
- 山羊*FATP2*基因的克隆及对前体脂肪细胞脂质沉积的影响
……………唐崑梅,李琪,李海洋,林亚秋,王永,向华,黄炼,朱江江(3642)
- PSMD9*对山羊前体脂肪细胞脂质沉积的调控作用研究
……………邵鹏,唐崑梅,林亚秋,王永,向华,黄炼,朱江江(3653)
- 华西牛胴体及原始分割肉块重量性状遗传参数估计与全基因组关联分析
……………李柯安宁,杜丽丽,安炳星,邓天宇,梁忙,曹晟,杜悦莹,
徐凌洋,高雪,张路培,李俊雅,高会江(3664)
- 基于主成分分析和因子分析估计新疆褐牛体型性状的遗传参数……………
……………胥磊,张梦华,张涛,耿娟,范守民,杨光维,郭杨,
邓强,李金芝,刘江卫,黄锡霞,王雅春(3677)
- 牛*CART*基因核心启动子鉴定及转录调控分析……………王栋梁,任静,郝琴琴,李鹏飞(3689)
- 利用全基因组重测序数据检测8个鸭品种基因组拷贝数变异
……………林燕,黄敏,李秀金,张续勳,黄运茂,田允波,伍仲平(3700)
- 基于GBS简化基因组测序数据重建麦洼牦牛种群系谱
……………李在文,李响,李小伟,李飙,江明锋(3710)
- 反刍动物Toll样受体多基因家族的分子进化及表达模式分析
……………马淑娟,徐祎洁,何珂,马瑞丰,朱英(3722)

生物技术与繁殖

- 卵母细胞成熟相关激素和生长因子受体在马扩展型和紧凑型卵丘-卵母细胞复合体表达的研究
……………神英超,陶力,任宏,王希生,田书岳,杜明,芒来,格日乐其木格(3735)

营养与饲料

- 猪饲料纤维的利用及其对养分消化的影响……………陈莹,钟儒清,陈亮,张宏福(3745)
- 基于血浆代谢组学筛选日粮纤维影响二花脸猪肉质性状的候选代谢物
……………张兆博,侯黎明,李平华,杜陶然,王中宇,吴承武,黄瑞华(3758)
- 皖南黑猪不同生长阶段血清免疫指标及肠道菌群的特征分析
……………郑先瑞,卓明雪,纪金丽,蒋维虎,邓在双,张吉成,田雅莉,丁月云,张晓东,殷宗俊(3770)

复方中药超微粉对蛋鸡抗氧化性能及相关基因表达的影响
..... 韩坤良, 兰 伟, 胡 新, 崔亚东, 孔祥峰(3784)

预防兽医

RaeR 对鸭疫里默氏杆菌外排泵 RaeC-RaeA-RaeB 的调控作用研究
... 李倩倩, 林 馨, 韦依琳, 崔昊宇, 邹荣华, 吴晓妮, 葛家振, 黄国梁, 张丽娟, 郑福英, 蔺国珍(3793)

基于 RT-RAA 的禽流感 H5 亚型核酸 CRISPR-Cas13a 检测方法的建立
..... 杨芷翊, 王新凯, 史玉婷, 付思源, 张钰妍, 曹琛福, 贾伟新(3803)

2021—2022 年我国部分地区猪繁殖与呼吸综合征病毒 ORF5 基因变异分析
..... 王志远, 刘博奇, 许志颖, 徐思佳, 邢家宝, 张桂红, 王 衡, 孙彦阔(3812)

SYNGR2 影响猪圆环病毒 2 型体外增殖的研究
..... 梁凯欣, 钟海文, 宋长绪, 杨化强, 黄思秀, 徐 铮(3824)

藏猪呼吸道疾病临床样本中病毒的宏基因组学分析
..... 范燕迪, 杨丹娇, 叶忠明, 张 敏, 蓝 岚, 王靖皓, 周 茜,
康润敏, 于吉锋, 张志东, 李彦敏, 周 洸(3836)

七种猪常见病毒核酸磁-纳米微粒可视化快速检测技术的建立与应用
..... 赵永攀, 郑芳芳, 尹俊卿, 杜 谦, 童德文, 黄 勇(3848)

宁夏地区肉牛腹泻相关病毒感染状况的分析
..... 姜玲玲, 牛小霞, 刘 强, 张 刚, 王 璞, 李 勇(3863)

基础兽医

基于 SourceTracker 分析牧场环境对乳房炎乳菌群的影响
..... 孟 璐, 胡海燕, 董 蕾, 郑 楠, 王加启(3872)

基于串联亲和和层析法纯化并鉴定猪初乳中 SIgA
..... 杨 悦, 王 锐, 甘 源, 郝 飞, 谢 星, 张 磊, 邵国青, 孟庆国, 陈 蓉, 冯志新(3884)

二肽那秦激活 ACE2 对非酒精性脂肪肝病大鼠肝线粒体影响研究
..... 张亚峰, 朱 斌, 马 畅, 张源淑(3895)

大蒜辣素对肉鸡肝组织中 CYP1A2 mRNA 表达及其酶动力学的影响
..... 袁何玲, 方 词, 黄金虎, 王晓明, 肖文浚, 刘睿婷, 史荣梅, 王丽平(3905)

临床兽医

小鼠黑色素细胞沉默及过表达色素上皮衍生因子对黑色素合成的影响
..... 梁 睿, 范小瑞, 张晋强, 庞全海(3916)

利用牛乳腺细胞和小鼠乳腺组织分析异绿原酸 C 通过 NF- κ B 信号通路对乳腺炎症反应的抑制效应
..... 陈喜宏, 路桂聪, 王浩磊, 苟少校, 王永雄, 林 涛, 蒋曹德(3931)

高聚合度菊粉通过调节肠-脂肪组织轴改善高脂饮食诱导的犬肥胖
..... 陆 江, 朱道仙, 卢劲晔, 刘 莉, 郝福星, 吴 植, 卢 炜, 刘 静(3941)

葛根素干预软骨氧化应激和 Nrf2/HO-1 通路改善 PTOA 大鼠软骨退变的机制
..... 陈 鸿, 阮红日, 马天文, 李亚楠, 苗 雪, 杨雯越, 高 利, 魏成威(3951)

胫骨平台水平化截骨术治疗犬前交叉韧带疾病的手术效果和并发症分析
..... 石 磊, 马裔寒, 袁占奎, 孙艺虹, 王 琥, 张 彬, 乔康佳(3964)

3D 打印模型辅助手术治疗犬髌骨 IV 级内脱伴前交叉韧带断裂
..... 张 彬, 张 晗, 石 磊, 袁占奎(3977)

研究简报

毒害艾美耳球虫和产气荚膜梭菌双重 PCR 检测方法的建立
..... 陈 曦, 王 一, 王佳丽, 杨 新, 宋军科, 赵光辉(3985)

猪流行性腹泻病毒 RAA-CRISPR/Cas13a 检测方法的建立与初步应用
..... 刘 华, 殷冬冬, 邵 颖, 宋祥军, 王振宇, 潘孝成, 涂 健, 何长生, 朱良强, 祁克宗(3991)

一例安德鲁貂尾尖软骨样脊索瘤的组织病理学观察及分析
..... 龙美贞, 李浩运, 董玉慧, 南 岳, 周向梅(3998)

ACTA VETERINARIA ET ZOOTECHNICA SINICA
CHINESE JOURNAL OF ANIMAL AND VETERINARY SCIENCES

Published Monthly:

Chinese Association of Animal Science and Veterinary Medicine

Beijing, China

Vol. 54 No. 9 (Sept. 2023)

CONTENTS

REVIEW

Advances in Pan-genome Study of Livestock and Poultry

..... LI Ke, WANG Yulong, LI Dong, SHI Xine, YANG Gongshe, YU Taiyong(3595)

Advances of *IGF2BP2*-Mediated m⁶A Modification on Animal Fat Deposition

..... HAN Haozhe, TIE Zihang, PANG Weijun, CAI Rui(3605)

Research Progress on Follicles Development of Hens and Its Epigenetic Regulatory Mechanism

..... RU Meng, ZENG Wenhui, PENG Jianling, ZENG Qingjie, YIN Chao, CUI Yong,
WEI Qing, LIANG Haiping, XIE Xianhua, HUANG Jianzhen(3613)

Research Progress of Estrus Markers in Dairy Buffalo

..... YU Zhou, YANG Baigao, ZHANG Hang, XU Xi, ZHANG Peipei, FENG Xiaoyi, CAO Jianhua,
NIU Yifan, DU Weihua, HAO Haisheng, ZHU Huabin, ABULIZI Wusiman, ZHAO Xueming(3623)

ANIMAL GENETICS AND BREEDING

Deciphering Genome-wide Selection Signals Reveals Genetic Differences between Jianbai and Congjiang Xiang Pigs

..... YUAN Wei, BI Huan, ZHANG Yudan, ZHANG Yiyu,
GU Xiaolong, YANG Hongwen, CHEN Wei(3631)

Cloning of the Goat *FATP2* Gene and Its Regulatory Effect on Lipid Deposition in Precursor Adipocytes

..... TANG Yinmei, LI Qi, LI Haiyang, LIN Yaqiu, WANG Yong,
XIANG Hua, HUANG Lian, ZHU Jiangjiang(3642)

Regulation Effect of *PSMD9* on Lipid Deposition in Goat Precursor Adipocytes

..... SHAO Peng, TANG Yinmei, LIN Yaqiu, WANG Yong, XIANG Hua,
HUANG Lian, ZHU Jiangjiang(3653)

Genetic Parameter Estimation and Genome-Wide Association Study for Carcass Traits and Primal Cuts Weight Traits in Huaxi Cattle

..... LI Keanning, DU Lili, AN Bingxing, DENG Tianyu, LIANG Mang, CAO Sheng,
DU Yueying, XU Lingyang, GAO Xue, ZHANG Lupei, LI Junya, GAO Huijiang(3664)

Genetic Parameter Estimates for Body Conformation in Xinjiang Brown Cattle Based on Principal Component Analysis and Factor Analysis

..... XU Lei, ZHANG Menghua, ZHANG Tao, GENG Juan, FAN Shoumin, YANG Guangwei,
GUO Yang, DENG Qiang, LI Jinzhi, LIU Jiangwei, HUANG Xixia, WANG Yachun(3677)

Identification and Transcriptional Regulation Analysis of Core Promoter of Bovine *CART* Gene

..... WANG Dongliang, REN Jing, HAO Qinqin, LI Pengfei(3689)

Uncovering Genome-wide Copy Number Variations in 8 Duck Breeds Using Whole Genome Resequencing Data

..... LIN Yan, HUANG Min, LI Xiujin, ZHANG Xumeng, HUANG Yunmao,
TIAN Yunbo, WU Zhongping(3700)

The Pedigree Reconstruction of the Maiwa Yak Preserved Population Based on GBS Technology

..... LI Zaiwen, LI Xiang, LI Xiaowei, LI Biao, JIANG Mingfeng(3710)

Molecular Evolution and Expression Patterns of a Multigene Family of Toll-like Receptors in Ruminants

..... MA Shujuan, XU Yijie, HE Ke, MA Ruifeng, ZHU Ying(3722)

ANIMAL BIOTECHNOLOGY AND REPRODUCTION

Differential Expression of Oocyte Development-related Hormone and Growth Factor Receptors in Equine Expanded and Compact Cumulus-oocyte Complexes

..... SHEN Yingchao, DAVSHILT Toli, REN Hong, WANG Xisheng, TIAN Shuyue,
DU Ming, DUGARJAVIIN Manglai, BOU Gerelchimeg (3735)

ANIMAL NUTRITION AND FEEDS

Utilization of Dietary Fiber and Its Impact on Nutrient Digestion of Pigs

..... CHEN Ying, ZHONG Ruqing, CHEN Liang, ZHANG Hongfu(3745)

Screening Candidate Metabolites of Dietary Fiber Affecting Meat Quality Traits of Erhualian Pigs Based on Plasma Metabolomics

..... ZHANG Zhaobo, HOU Liming, LI Pinghua, DU Taoran, WANG Zhongyu,
WU Chengwu, HUANG Ruihua(3758)

Characteristics of Serum Immune Indices and Intestinal Microbiota of Wannan Black Pigs at Different Growth Stages

..... ZHENG Xianrui, ZHUO Mingxue, JI Jinli, JIANG Weihu, DENG Zaishuang, ZHANG Jicheng,
TIAN Yali, DING Yueyun, ZHANG Xiaodong, YIN Zongjun(3770)

Effects of Compound Chinese Herb Ultrafine Powder on Antioxidant Ability and Related Gene Expression in Laying Hens
..... HAN Kunliang, LAN Wei, HU Xin, CUI Yadong, KONG Xiangfeng(3784)

PREVENTIVE VETERINARY MEDICINE

Study on the Role of *RaeR* in the Regulation of Efflux Pump *RaeC-RaeA-RaeB* of *Rimerella anati pestifer*
..... LI Qianqian, LIN Xin, WEI Yilin, CUI Haoyu, ZOU Ronghua, WU Xiaoni, GE Jiazhen,
HUANG Guoliang, ZHANG Lijuan, ZHENG Fuying, LIN Guozhen(3793)

Establishment of Nucleic Acid Detection Methods for Avian Influenza H5 Subtype Based on CRISPR-Cas13a and RT-
RAA YANG Zhiyi, WANG Xinkai, SHI Yuting, FU Siyuan, Zhang Yuxin, CAO Chenfu, JIA Weixin(3803)

Analysis of ORF5 Gene Variation of Porcine Reproductive and Respiratory Syndrome Virus in Local Regions of China
from 2021 to 2022 WANG Zhiyuan, LIU Boqi, XU Zhiying, XU Sijia, XING Jiabao,
ZHANG Guihong, WANG Heng, SUN Yankuo(3812)

Study on the Effect of SYNGR2 on PCV2 Replication

..... LIANG Kaixin, ZHONG Haiwen, SONG Changxu, YANG Huaqiang, HUANG Sixiu, XU Zheng(3824)

Metagenomic Analysis of Viruses in Clinical Samples of Respiratory Diseases in Tibetan Pigs

..... FAN Yandi, YANG Danjiao, YE Zhongming, ZHANG Min, LAN Lan, WANG Jinghao, ZHOU Han,
KANG Runmin, YU Jifeng, ZHANG Zhidong, LI Yanmin, ZHOU Long(3836)

Establishment and Application of Magnetic Nanoparticle Visualization Technique for Nucleic Acid Detection of Seven
Common Swine Viruses

..... ZHAO Yongpan, ZHENG Fangfang, YIN Junqing, DU Qian, TONG Dewen, HUANG Yong(3848)

Analysis of Infection Status of Beef Cattle Diarrhea-related Virus in Ningxia

..... JIANG Lingling, NIU Xiaoxia, LIU Qiang, ZHANG Gang, WANG Pu, LI Yong(3863)

BASIC VETERINARY MEDICINE

Influence of Dairy Farm Environment on Mastitis Milk Microbiota via SourceTracker

..... MENG Lu, HU Haiyan, DONG Lei, ZHENG Nan, WANG Jiaqi(3872)

Purification and Identification of SIgA in Porcine Colostrum based on Tandem Affinity Chromatography

..... YANG Yue, WANG Rui, GAN Yuan, HAO Fei, XIE Xing, ZHANG Lei, SHAO Guoqing,
MENG Qingguo, CHEN Rong, FENG Zhixin(3884)

The Research on the Effects of ACE2 Activated by Diminazene Aceturate on Mitochondria in the Liver of Rats with
Non-alcoholic Fatty Liver Disease ZHANG Yafeng, ZHU Bin, MA Chang, ZHANG Yuanshu(3895)

Effects of Allicin on mRNA Expression of *CYP1A2* and Its Enzyme Kinetics in Broilers Liver Tissue

..... YUAN Heling, FANG Ci, HUANG Jinhu, WANG Xiaoming, XIAO Wenjun,
LIU Ruiting, SHI Rongmei, WANG Liping(3905)

CLINICAL VETERINARY MEDICINE

Effects of Mouse Melanocyte Silencing and Overexpression of Pigment Epithelium-Derived Factor on Melanin Synthesis
..... LIANG Rui, FAN Xiaorui, ZHANG Jinqiang, PANG Quanhai(3916)

Isochlorogenic Acid C Inhibits Mammary Inflammatory Response through NF- κ B Signaling Pathway Using Bovine
Mammary Gland Cells and Mouse Mammary Gland Tissue

..... CHEN Xihong, LU Guicong, WANG Hao lei, GOU Shaoxiao, YU Yongxiong, LIN Tao, JIANG Caode(3931)

Inulin with High Degree of Polymerization Improves High-fat Diet Induced Obesity in Dogs by Regulating the Gut-
adipose Tissue Axis

..... LU Jiang, ZHU Daoxian, LU Jinye, LIU Li, HAO Fuxing, WU Zhi, LU Wei, LIU Jing(3941)

The Mechanism of Puerarin Improving Cartilage Degeneration in PTOA Rats by Interfering with Oxidative Stress and
Nrf2/HO-1 Pathway of Cartilage CHEN Hong, RUAN Hongri, MA Tianwen, LI Yanan, MIAO Xue,
YANG Wenyue, GAO Li, WEI Chengwei(3951)

Analysis of Surgical Effect and Complications of Tibial Plateau Leveling Osteotomy for the Treatment of Cranial Cruci-
ate Ligament Disease in Dogs

..... SHI Lei, MA Yihan, YUAN Zhankui, SUN Yihong, WANG Xiao, ZHANG Bin, QIAO Kangjia(3964)

Clinical Application of 3D-Printed Model for Surgical Planning and Treatment of Grade IV Medial Patellar Luxation and
Cranial Cruciate Ligament Rupture in a Dog ZHANG Bin, ZHANG Han, SHI Lei, YUAN Zhankui(3977)

RESEARCH NOTES

Establishment of Duplex PCR Methods for Detection of *Eimeria necatrix* and *Clostridium perfringens*

..... CHEN Xi, WANG Yi, WANG Jiali, YANG Xin, SONG Junke, ZHAO Guanghui(3985)

Detection of Porcine Epidemic Diarrhea Virus by Recombinase Aided Amplification Combined with CRISPR/Cas13a

..... LIU Hua, YIN Dongdong, SHAO Ying, SONG Xiangjun, WANG Zhenyu, PAN Xiaocheng,
TU Jian, HE Changsheng, ZHU Liangqiang, QI Kezong(3991)

A Case Report on Pathological Diagnosis and Analysis of Chondroid Chordoma in *Anglo mink*

..... LONG Meizhen, LI Haoyun, DONG Yuhui, NAN Yue, ZHOU Xiangmei(3998)

《畜牧兽医学报》第六届编辑委员会成员

顾 问 张子仪 刘守仁 吴常信 夏咸柱 刘秀梵

主任委员 陈焕春

副主任委员 阎汉平 汪 明 苏振环 时建忠

编委成员 (按姓名英文字母/汉字笔画排序)

Chris Anderson David Lindsay Graham Gardner W. Bruce Currie

马月辉 王加启 方维焕 宁宜宝 卢德勋 朱士恩 朱兴全 刘湘涛 余锐萍

杜立新 芮于明 陆承平 陈溥言 陈瑶生 李 奎 李庆章 李学伟 李德发

沙玉圣 张 涌 张仲秋 张家骅 沈建忠 杨 宁 罗绪刚 孟庆翔 郑友民

周继勇 姜 平 赵兴绪 赵茹茜 夏国良 涂长春 郭万柱 黄维义 崔治中

童光志 蒋小松 舒鼎铭

名誉主编 陈幼春 蒋金书

主 编 文 杰

副 主 编 张 沅 时建忠 汪 明 杨汉春 于康震 王立贤 任 鹏

编辑部主任 孟 培

主编 文 杰

广告部主任 程金华 本期责任编辑 白永平

畜牧兽医学报

(月刊,1956年创刊)

2023年 第54卷 第9期

2023年9月23日出版

主 管 中国科学技术协会
主 办 中国畜牧兽医学会
编 辑 《畜牧兽医学报》编委会
中国农业部科学院北京畜牧兽医研究所
地 址 北京海淀区圆明园西路2号
邮 编 100193
电 话 010-62815987 62816996 62893836
网 址 <http://www.xmsyxb.com>
电 子 邮 箱 xmsyxb@caas.cn
出 版 单 位 《中国畜牧兽医杂志》有限公司
印 刷 北京博海升彩色印刷有限公司
国内总发行 中国邮政集团公司北京市报刊发行局
国外总发行 中国国际图书贸易集团有限公司
(中国国际书店)北京399信箱
订 购 全国各地邮局

中国标准连续出版物号 ISSN 0366-6964
CN 11-1985/S

ACTA VETERINARIA ET ZOOTECHNICA SINICA

(Monthly, Started in 1956)

Vol. 54 No. 9 2023

Published on Sept. 23, 2023

Supervised by China Association for Science and Technology
Sponsored by Chinese Association of Animal Science and
Veterinary Medicine
Edited by Editorial Board of the ACTA VETERINARIA
ET ZOOTECHNICA SINICA
Institute of Animal Science, Chinese Academy of
Agricultural Sciences
Address No.2 West Road Yuanmingyuan, Haidian Beijing,
China. Post Code 100193
Telephone 010-62815987 62816996 62893836
Website <http://www.xmsyxb.com>
E-mail xmsyxb@caas.cn
Published by Chinese Journal of Animal Science and
Veterinary Medicine Co., Ltd.
Printed by Beijing Bohai Sheng Color Printing Co., Ltd.
Distributed by Domestic Beijing Post Office, China Post Group Corporation
Overseas China International Book Trading
Corporation, P.O. Box 399

国内定价:50.00元(全年600元)

邮发代号:82-453 国外代号:M446

广告发布登记证号:京海工商广登字20170255号