



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.51

No.11

2020

中国畜牧兽医学会

CHINESE ASSOCIATION OF ANIMAL
SCIENCE AND VETERINARY MEDICINE

ISSN 0366-6964



畜牧兽医学报

XUMU SHOUYI XUEBAO

第 51 卷 第 11 期 2020 年 11 月

目 次

综 述

CRISPR/Cas 系统及其在结核分枝杆菌研究中的应用

…………… 宋禹昊,李 东,孙江洋,时 坤,李健明,宗 颖,赵 丹,曾范利,杜 锐(2613)

口蹄疫病毒利用自身蛋白逃逸宿主天然免疫应答的研究进展

…………… 李 显,张富东,张中旺,张永光,潘 丽(2622)

拷贝数变异在家禽育种中的研究进展

…………… 张 易,白 皓,毕瑜林,路 奥,黄艳丽,陈国宏,常国斌(2633)

人造肉类技术特点和需求分析…………… 王圣楠,马月辉,赵桂苹,蒋 琳(2641)

遗传育种

猪 *CCAR1* 基因细胞定位、表达特性及对细胞增殖的影响

…………… 张宁芳,吴怡琦,成志敏,杨晓伟,李 萌,杨 阳,刘 宏,
高鹏飞,蔡春波,郭晓红,李步高,曹果清(2651)

鸡胰岛素样生长因子 2 基因 (*IGF2*) 外显子区功能性 SNP 预测与分析

…………… 李玉冬,王伟佳,李紫薇,李瑞楚,张长超,王 宁,李 辉,王守志(2665)

WGCNA 鉴定奶山羊妊娠至泌乳期乳腺发育关键基因…………… 高慧杰,郑惠玲(2679)

miR-17-3p 靶向 *KCTD15* 调控延边黄牛前体脂肪细胞分化

…………… 邵 静,张珈溯,尹宝珍,张洛萌,夏广军(2689)

生物技术与繁殖

TGF β 和 *PPP3CA* 基因在黔北麻羊性腺轴组织表达及对卵巢颗粒细胞的调控研究

…………… 敖 叶,陈 祥,周志楠,骆金红,韦仕南,张 艳,惠茂茂,吴 雨,杨沛方(2699)

整合素 *α v* 在牦牛繁殖周期输卵管不同部位中的表达与定位

…………… 杨珊珊,何翊焯,潘阳阳,段宏伟,刘敏清,高泽川,
赵 凌,韩小红,王亚营,崔 燕,余四九(2710)

T1R1 和 T1R3 在从江香猪附睾发育中的表达模式

…………… 蒙利洁,王维勇,杨 艺,徐永健,冯贤辘,黄 泳,高 艺,龚 婷(2720)

营养与饲料

叶酸补饲对隐性乳房炎奶牛免疫力及产奶性状相关基因表达的影响

…………… 刘雪琴,王 迪,米思远,张瑞强,史良玉,俞 英(2731)

全株甘蔗的奶牛瘤胃降解特性及其替代奶牛饲粮苜蓿、燕麦草及精料的应用研究

…………… 郑宇慧,都 文,黄文明,李胜利(2743)

不同氨气浓度对肉牛生产性能、免疫和抗氧化能力的影响

…………… 刘 明,张 磊,安小鹏,张恩平,宋宇轩(2757)

预防兽医

鹅星状病毒的分离鉴定及全基因组序列分析

…………… 张玉杰,孙 宁,刘 东,于 静,刘红祥,于可超,任衍倍,高天佐,杨少燕,
宫 晓,邹 敏,张宇龙,王玉超,钟 声,马 冬,杜元钊(2765)

伪狂犬病病毒野毒感染猪场的 gE 抗体阳性头胎母猪生产成绩调查

…………… 于学祥,朱娴静,孙 琪,库旭钢,罗 锐,范盛先,何启盖(2778)

犬源奇异变形杆菌噬菌体分离、鉴定及对生物被膜的作用

…………… 宋 军,徐若洋,靳育琦,陈 立,王宇辉,阮红日,郑家三,武 瑞(2785)

重组产气荚膜梭菌 β 毒素突变体的表达与免疫保护性分析

…………… 杜吉革,朱 真,徐中清,李倩琳,姚文生,李启红,
印春生,杨 柳,付利芝,陈小云,刘 莹,薛 麒(2794)

89 株副猪嗜血杆菌临床分离株血清型、基因型鉴定与分析

…………… 王 迪,陈 章,邢 刚,何长生,刘晓露,魏建忠,孙 裴,刘雪兰,李 郁(2802)

大熊猫粪便中微生物与寄生虫的宏转录组学分析

…………… 邓雯文,李才武,晋 蕾,李 果,吴虹林,张贵权,魏荣平,陈 锐,
王明磊,何永果,李 侗,李德生,张和民,黄 炎,邹立扣(2812)

基础兽医

与鸭 C4 结合蛋白互作的鸭疫里默菌外膜蛋白的筛选及鉴定

…………… 李德龙,谷九龙,徐兴胜,王思媛,刘 婷,陈思怀,高继业,李继祥(2825)

急性非洲猪瘟的实验病理学研究

…………… 邓 桦,李 慧,杨 鸿,周兆海,梁浩钊,徐志高,巫辅达,李樵锋,黄璐琦(2836)

高铜对大鼠肾细胞炎性因子和细胞增殖的影响

…………… 于晴晴,钟高龙,万 方,宁芷君,伍少峰,蒋璇璇,唐兆新,何 颖,胡莲美(2849)

姜黄素固体分散体在猪体内的比较药动力学研究 …… 刘子瑶,黄春梅,许 颖,郭春娜,黄显会(2858)

临床兽医

三氧化二砷对鸡肝脏氧化应激和蛋氨酸亚砷还原酶表达的影响

…………… 伍少峰,钟高龙,万 方,宁芷君,蒋璇璇,胡 婷,陈忠伟,
赵 武,卢冰霞,唐兆新,何 颖,胡莲美(2867)

基于网络药理学探讨葛根芩连汤治疗猪腹泻的靶点与通路…………… 王春花,孙雪芳(2875)

肾复康颗粒对人工诱发鸡肾肿病理模型的炎性细胞因子及 IL-1R/NF- κ B 信号通路的影响

…………… 罗艺晨,杨庆昌,林春发,叶芮伶,尚杨斐,胡 宇,刘 娟(2886)

研究简报

牛支原体 NOX2 的原核表达及黏附特性

…………… 包世俊,朱彩宏,邢小勇,丁小琴,温峰琴,武小椿,薛惠文(2895)

牛源金黄色葡萄球菌生物被膜与毒素基因检测及 *agr* 分型

…………… 张 行,李新圃,武小虎,丁学智,严作廷,王胜义,李宏胜(2903)

CONTENTS

REVIEW

- CRISPR/Cas System and Its Application in the Study of *Mycobacterium tuberculosis*
..... SONG Yuhao , LI Dong , SUN Jiangyang ,SHI Kun , LI Jianming ,
ZONG Ying ,ZHAO Dan , ZENG Fanli , DU Rui (2613)
- Recent Advance on Foot-and-Mouth Disease Virus Utilizes Self-proteins to Evade Innate Immunity Response of Host
..... LI Xian ,ZHANG Fudong ,ZHANG Zhongwang ,ZHANG Yongguang ,PAN Li (2622)
- Research Progress of Copy Number Variation in Poultry Breeding
..... ZHANG Yi , BAI Hao , BI Yulin , LU Ao , HUANG Yanli , CHEN Guohong , CHANG Guobin(2633)
- Technical Characteristics and Demand Analysis of Artificial Meat
..... WANG Shengnan , MA Yuehui , ZHAO Guiping , JIANG Lin(2641)

ANIMAL GENETICS AND BREEDING

- Cellular Localization , Expression Patterns of *CCAR1* Gene , and Its Effect on Cell Proliferation in Pig
..... ZHANG Ningfang , WU Yiqi , CHENG Zhimin , YANG Xiaowei , LI Meng , YANG Yang , LIU Hong ,
GAO Pengfei , CAI Chunbo , GUO Xiaohong , LI Bugao , CAO Guoqing (2651)
- Prediction and Analysis of Functional SNP on Exon Region of Insulin-like Growth Factor 2 Gene (*IGF2*) in Chickens
..... LI Yudong , WANG Weijia , LI Ziwei , LI Ruichu ,
ZHANG Changchao , WANG Ning , LI Hui , WANG Shouzhi (2665)
- Identification of Key Genes of Mammary Gland Development from Pregnancy to Lactation in Dairy Goats by WGCNA
..... GAO Huijie , ZHENG Huiling (2679)
- miR-17-3p Regulates Preadipocyte Differentiation by Targeting *KCTD15* in Yanbian Yellow Cattle
..... SHAO Jing , ZHANG Jiasu , YIN Baozhen , ZHANG Luomeng , XIA Guangjun (2689)

ANIMAL BIOTECHNOLOGY AND REPRODUCTION

- Expression of *TGFβ2* and *PPP3CA* Genes in Gonadal Axis of Qianbei Ma Goat and Their Regulation on Ovarian Granulosa Cells
..... AO Ye , CHEN Xiang , ZHOU Zhinan , LUO Jinhong , WEI Shinan ,
ZHANG Yan , HUI Maomao , WU Yu , YANG Peifang (2699)
- Expression and Localization of Integrin αv in Different Parts of the Fallopian Tube in Reproduction Cycle of Yak
..... YANG Shanshan , HE Honghong , PAN Yangyang , DUAN Hongwei , LIU Mingqing ,
GAO Zechuan , ZHAO Ling , HAN Xiaohong , WANG Yaying , CUI Yan , YU Sijiu (2710)
- Expression Patterns of T1R1 and T1R3 in the Congjiang Xiang Pig during Epididymal Development
..... MENG Lijie , WANG Weiyong , YANG Yi , XU Yongjian ,
FENG Xianzhou , HUANG Yong , GAO Yi , GONG Ting (2720)

ANIMAL NUTRITION AND FEEDS

- The Effect of Folic Acid Supplementation on the Expression of Genes Related to Immunity and Milking Traits in Sub-clinical Mastitis Cows
..... LIU Xueqin , WANG Di , MI Siyuan , ZHANG Ruiqiang , SHI Liangyu , YU Ying (2731)
- The Rumen Degradation Characteristics of Whole Sugarcane for Dairy Cows and Its Application in Substituting Alfalfa , Oat Hay and Concentrate in Dairy Cows' Diets
..... ZHENG Yuhui , DU Wen , HUANG Wenming , LI Shengli (2743)
- Effects of Different Ammonia Concentrations on Growth Performance , Immunity and Antioxidant Capacity of Beef Cattle
..... LIU Ming , ZHANG Lei , AN Xiaopeng , ZHANG Enping , SONG Yuxuan (2757)

PREVENTIVE VETERINARY MEDICINE

Isolation , Identification and Complete Genomic Sequence Analysis of Goose Astrovirus

..... ZHANG Yujie , SUN Ning , LIU Dong , YU Jing , LIU Hongxiang , YU Kechao , REN Yanbei ,
GAO Tianzuo , YANG Shaoyan , GONG Xiao , ZOU Min ,ZHANG Yulong ,WANG Yuchao ,
ZHONG Sheng , MA Dong , DU Yuanzhao (2765)

Investigation on the Production Performance of gE Antibody Positive Sows in Pig Farms Infected with Wild Type Pseu-
dorabies Virus

..... YU Xuexiang , ZHU Xianjing , SUN Qi , KU Xugang , LUO Rui , FAN Shengxian , HE Qigai (2778)

Isolation and Identification of Lytic Phages Infecting *Proteus mirabilis* from Canine-derived and Their Effects on Bio-
film SONG Jun , XU Ruoyang , JIN Yuqi , CHEN Li , WANG Yuhui ,
RUAN Hongri , ZHENG Jiasan , WU Rui (2785)

Expression and Protective Efficacy of *Clostridium perfringens* β toxin Derivative

..... DU Jige ,ZHU Zhen ,XU Zhongqing , LI Qianlin ,YAO Wensheng ,LI Qihong ,YIN Chunsheng ,
YANG Liu ,FU Lizhi ,CHEN Xiaoyun , LIU Ying ,XUE Qi (2794)

Identification and Analysis of Serotype and Genotype of 89 Clinical Isolates of *Haemophilus parasuis*

..... WANG Di ,CHEN Zhang ,XING Gang ,HE Changsheng ,LIU Xiaolu ,
WEI Jianzhong ,SUN Pei ,LIU Xuelan ,LI Yu (2802)

Transcriptome Analysis of Microbiome and Parasites in Feces of Giant Pandas

..... DENG Wenwen ,LI Caiwu ,JIN Lei ,LI Guo ,WU Honglin ,ZHANG Guiquan ,WEI Rongping ,CHEN Rui ,
WANG Minglei ,HE Yongguo ,LI Ti ,LI Desheng ,ZHANG Hemin ,HUANG Yan ,ZOU Likou (2812)

BASIC VETERINARY MEDICINE

Screening and Identification of Outer Membrane Proteins of *Riemerella anatipestifer* Recruited Duck C4b-binding Pro-
tein LI Delong , GU Jiulong , XU Xingsheng , WANG Siyuan , LIU Ting ,
CHEN Sihuai , GAO Jiye , LI Jixiang(2825)

Experimental Pathological Study of Acute African Swine Fever

..... DENG Hua , LI Hui , YANG Hong , ZHOU Zhaohai , LIANG Haozhao ,
XU Zhigao , WU Fuda , LI Qiaofeng , HUANG Luqi (2836)

Effects of High Copper on Inflammatory Factors and Cell Proliferation in Rat Kidney Cells

..... YU Qingqing , ZHONG Gaolong , WAN Fang , NING Zhijun , WU Shaofeng ,
JIANG Xuanxuan , TANG Zhaoxin , HE Ying , HU Lianmei (2849)

Pharmacokinetics of Curcumin Solid Dispersion in Piglets

..... LIU Ziyao , HUANG Chunmei , XU Ying , GUO Chunna , HUANG Xianhui (2858)

CLINICAL VETERINARY MEDICINE

Effects of Arsenic Trioxide Treatment on Oxidative Stress and Methionine Sulfoxide Reductase Expression in Chicken
Liver WU Shaofeng , ZHONG Gaolong , WAN Fang , NING Zhijun , JIANG Xuanxuan , HU Ting ,
CHEN Zhongwei , ZHAO Wu , LU Bingxia , TANG Zhaoxin , HE Ying , HU Lianmei(2867)

The Target and Pathway of Gegen Qinlian Decoction in Treating Swine Diarrhea Based on Network Pharmacology

..... WANG Chunhua , SUN Xuefang (2875)

The Effect of Shenfukang Granule on Content of Inflammatory Cytokines and the Signaling Pathway of IL-1R/NF- κ B
Induced by the Artificial Pathological Model of Chicken Kidney Swelling

..... LUO Yichen ,YANG Qingchang ,LIN Chunfa ,YE Ruiling ,SHANG Yangfei ,HU Yu ,LIU Juan (2886)

RESEARCH NOTES

Prokaryotic Expression of NOX2 of *Mycoplasma bovis* and Its Adherence Characterization

..... BAO Shijun , ZHU Caihong ,XING Xiaoyong , DING Xiaoqin ,
WEN Fengqin , WU Xiaochun , XUE Huiwen (2895)

Investigation of Biofilm Formation , Virulence Genes and *agr* Typing of *Staphylococcus aureus* from Bovine Mastitis
Cases ZHANG Hang , LI Xinpu , WU Xiaohu , DING Xuezhi , YAN Zuoting ,
WANG Shengyi , LI Hongsheng (2903)