

## 科研成果

### 一、 科研项目

2016 至今，本团队承担竞争性项目（国家级&省部级）共 39 项，留所经费达 2000 多万。

编号	项目名称	项目类别	主持人	留所经费 (万元)
1	口蹄疫口服活载体疫苗制剂的研发	国家外专局引进国外技术、管理人才项目	郭慧琛	21.28
2	Atg5-Atg12 自噬复合体对口蹄疫病毒复制影响的研究	中国博士后科学基金面上项目	郜原	5
3	猪 O/A 型口蹄疫广谱多表位双价疫苗和乳酸菌介导口蹄疫黏膜免疫疫苗的研制	甘肃省科技支撑计划项目	潘丽&邵军军	16
4	重大动物疫病快速筛查和防治技术的研发	兰州市科技发展计划项目	邵军军	15
5	口蹄疫疫苗免疫效果评估方法研究	“十三五”国家重点研发计划课题	潘丽	155
6	种畜场口蹄疫综合防控与净化技术集成	“十三五”国家重点研发计划课题	王永录	265
7	种畜场口蹄疫净化技术集成与示范	“十三五”国家重点研发计划项目	张永光	0
8	强制性免疫病防控	国家生猪产业体系项目	张永光	350
9	口蹄疫疫苗纳米佐剂的研发	国家外专局引进国外技术、管理人才项目	张韵	1.38
10	口蹄疫病毒 3B 蛋白通过 VISA 蛋白调控宿主天然免疫反应的分子机制研究	国家自然科学基金青年基金项目	赵付荣	23
11	口蹄疫病毒调控 CD59 表达时响应蛋白的筛选与功能分析	国家自然科学基金青年基金	魏衍全	24
12	基于稀土发光微球的免疫层析技术用于口蹄疫病毒抗体检测的研究	甘肃省科技计划(创新基地和人才计划)青年科技基金	茹嘉喜	3
13	miR-361 和 miR-34a 在口蹄疫病毒感染 PK15 细胞中的免疫调控作用研究	国家自然科学基金青年基金	郜原	24
14	猪流行性腹泻病毒变异株对仔猪致病性减弱的分子机制	国家自然科学基金青年基金项目	刘新生	19
15	口蹄疫病毒化学发光免疫与重要细菌病 POCT 诊断试剂盒的创制开发	甘肃省重点研发项目	赵付荣	40
16	仿生矿化优化口蹄疫病毒样颗粒耐热抗逆性研究	国家自然科学基金面上项目	郭慧琛	61
17	牛羊疫苗新型佐剂及工艺研究	“十三五”国家重点研发计划课题	郭慧琛	271
18	重大跨境动物疫病防控新产品的合作创制与应用研究	“十三五”国家重点研发计划战略性新兴产业国际科技创新合作重点专项子课题	李彦敏&孙世琪	30
19	区分免疫与感染的畜禽重大疫病标记疫苗创制	“十三五”国家重点研发计划子课题	刘在新&孙世琪	25
20	动物重大疫病新概念防控产品研发项目	“十三五”国家重点研发计划子课题	刘在新&潘丽	20

21	牛羊重大动物疫病基因工程疫苗及防控研究	“十三五”国家重点研发计划课题	常惠芸	233
22	战略性国际科技创新合作重点专项，重大跨境动物疫病防控新产品的合作创制与应用研究	“十三五”国家重点研发计划子课题	李彦敏&常惠芸	0
23	ID1 (Inhibitor of DNA binding1)在口蹄疫病毒感染中作用机制的研究	国家自然科学基金面上项目	孙跃峰	62
24	猪繁殖与呼吸综合症分子诊断试剂盒研制	甘肃省特派员项目	张杰	24
25	边境地区家养动物外来口蹄疫监测溯源技术研究	“十三五”国家重点研发计划子课题	张杰	50
26	在中波农业科技中心框架下开展的重要动物疫病诊断技术交流与合作	农业农村部对外经济合作中心项目	张杰	20
27	表达 Var2 株 S 基因的重组传染性支气管炎病毒的构建及其特性分析	中国-波兰科技合作委员会第37届例会交流项目	魏衍全	9
28	口蹄疫病毒样颗粒靶向树状细胞的免疫优化及机制研究	国际科学自然基金国际(地区)合作与交流项目	郭慧琛	10
29	双重靶向 APCs 的载壳聚糖 PLGA 纳米微球增强黏膜免疫的分子机制	国家自然科学基金面上项目	潘丽	61
30	万人计划特殊支持	万人计划特殊支持	郭慧琛	80
31	“科技助力经济 2020”重点专项口蹄疫防控与净化技术的推广应用	国家科技专项	潘丽	0
32	塞内卡病毒 VP1 蛋白 B 细胞表位和 T 细胞表位图谱的绘制	甘肃省自然基金	张中旺	4
33	热休克蛋白 HSP60 参与口蹄疫病毒形态发生的作用及其机制	国家自然科学基金面上项目	孙世琪	58
34	DExD/H-box RNA 解旋酶介导 FMDV-IRES 依赖性翻译和复制及其在抗病毒免疫中的作用机制	国家自然科学基金青年基金项目	吴金恩	24
35	CD44 蛋白参与口蹄疫病毒巨胞饮方式入侵细胞的机制	国家自然科学基金面上项目	郭慧琛	58
36	口蹄疫仿生纳米颗粒诱导免疫应答的分子机制	甘肃省自然基金	刘伟	4
37	动物疫病综合防控关键技术研发与应用	“十四五”国家重点研发计划课题	孙世琪	950
38	猪口蹄疫 0 型多表位基因工程疫苗工艺创新及产业化	兰州市重大专项	邵军军	100
39	口蹄疫病毒样颗粒疫苗的成果转化与应用	甘肃省科技重大专项	郭慧琛	50

## 二、获奖情况:

序号	获奖名称	奖励类别	获奖时间
1	口蹄疫 A 型灭活疫苗	甘肃省专利二等奖	2016
2	牛羊等反刍动物口蹄疫 O、A 型双价灭活疫苗	甘肃省专利一等奖	2017
3	牛羊等反刍动物口蹄疫 O、A 型双价灭活疫苗	第二十届中国专利银奖	2018
4	口蹄疫病毒样颗粒及制备方法和用途	甘肃省专利一等奖	2019
5	口蹄疫病毒样颗粒及制备方法和用途	甘肃省专利发明人奖	2020

6	口蹄疫病毒样颗粒及制备方法和用途	中国农业科学院成果转化奖	2020
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### 三、新兽药情况:

类别	名称	证书号码	授权或批准部门
一类新兽药	猪口蹄疫O型病毒样颗粒疫苗	中华人民共和国农业农村部第471号公告新兽药证字57号(2021.9.9)	农业农村部
一类新兽药	牛口蹄疫O型病毒样颗粒疫苗	中华人民共和国农业农村部第471号公告新兽药证字58号(2021.9.9)	农业农村部
二类新兽药	口蹄疫O、A、Asia1型三价灭活疫苗 工艺变更注册	中华人民共和国农业部第2550号公告(2017.7.17)	农业农村部
二类新兽药	口蹄疫O、A、Asia1型三价灭活疫苗 组分变更注册	中华人民共和国农业农村部第5号公告(2018.4.4)	农业农村部



#### 四、论文： 2022 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	The biomineralization of virus-like particles by metal-organic framework nanoparticles enhances the thermostability and immune responses of the vaccine	Journal of Materials Chemistry B	Zhidong Teng, Fengping Hou, Manyuan Bai, Jiajun Li, Jun Wang, Jinen Wu, Jiayi Ru, Mei Ren, Shiqi Sun, Huichen Guo	6.331
2	Flower-like mesoporous silica nanoparticles as an antigen delivery platform to promote systemic immune response	Nanomedicine. 2022 Feb 16;42:102541.	Hou F, Teng Z, Ru J, Liu H, Li J, Zhang Y, Sun S, Guo H.	5.307
3	Development of a competitive ELISA method based on VLPs detecting the antibodies of serotype A FMDV	J Virol Methods. 2022 Feb;300:114406.	Yun Zhang, Rui Wang, Manyuan Bai, Xuefei Wang, Hu Dong, Jiajun Li, Suyu Mu, Haisheng Miao, Jianling Song, Shiqi Sun, Huichen Guo	2.014
4	Establishment and application of a solid-phase blocking ELISA method for the detection of antibodies against classical swine fever virus	J Vet Sci, 2022, 23 (2): e22	Yuying Cao, Li Yuan, Shunli Yang, Youjun Shang, Bin Yang, Zhizhong Jing, Huichen Guo*, shuanghui Yin	1.672
5	Antigenic and immunogenic properties of recombinant proteins consisting of two immunodominant African swine fever virus proteins fused with bacterial lipoprotein OprI	Virol J. 2022, 19(1):16.	Guanglei Zhang, Wei Liu, Zhan Gao, Yanyan Chang, Sicheng Yang, Qian Peng, Sudan Ge, Bijing Kang, Junjun Shao, Huiyun Chang	4.099
6	Global phosphoproteomics analysis of IBRS-2 cells infected with senecavirus A	Frontiers in Microbiology.	Jieyi Li; Zhongwang Zhang; Jianliang Lv; Zhongyuan Ma; Li Pan; Yongguang Zhang.	5.64

#### 2021 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
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1	Structural and molecular basis for foot-and-mouth disease virus neutralization by two potent protective antibodies.	Protein Cell.2021(Pt 3)	Dong H, Liu P, Bai M, Wang K, Feng R, Zhu D, Sun Y, Mu S, Li H, Harmsen M, Sun S, Wang X, Guo H.	14.87
2	A heat-induced Mutation on VP1 of FMDV Serotype O Enhanced Capsid Stability and the Immunogenicity.	J Virol.2021 May 19;JV1.00177-21.	Dong H, Lu Y, Zhang Y, Mu S, Wang N, Du P, Zhi X, Wen X, Wang X, Sun S, Zhang Y, Guo H.	5.107
3	Bi-functional gold nanocages enhance specific immunological responses of foot-and-mouth disease virus-like particles vaccine as a carrier and adjuvant.	Nanomedicine-Nanotechnology Biology and Medicine.2021 Apr;33:102358	Teng Z, Sun S, Luo X, Zhang Z, Seo H, Xu X, Huang J, Dong H, Mu S, Du P, Zhang Z, Guo H.	6.458
4	Nucleolin promotes IRES-driven translation of foot-and-mouth disease virus by supporting the assembly of translation initiation complexes	J Virol.2021 Jun 10;95(13):e0023821.	Han S, Wang X, Guan J, Wu J, Zhang Y, Li P, Liu Z, Abdullah SW, Zhang Z, Jin Y, Sun S, Guo H.	5.107
5	Ribosomal Protein L13 Participates in Innate Immune Response Induced by Foot-and-Mouth Disease Virus	Frontiers in Immunology. 2021 May 20;12:616402.	Junyong Guan, Shichong Han1, Jin'en Wu, Yun Zhang, Manyuan Bai,Sahibzada Waheed Abdullah, Shiqi Sun , Huichen Guo	7.561
6	Identification of a new cell-penetrating peptide derived from the african swine fever virus CD2v protein	Drug Deliv.2021 Dec;28(1):957-962.	Yang S, Zhang X, Cao Y, Li S, Shao J, Sun S, Guo H, Yin S.	6.419
7	Development and validation of a competitive ELISA based on virus-like particles of serotype Senecavirus A to detect serum antibodies.	AMB Express.2021 Jan 6;11(1):7.	Bai M, Wang R, Sun S, Zhang Y, Dong H, Guo H.	3.298
8	Four kinds of biom mineralization improve thermostability and immunogenicity of foot-and-mouth disease virus-like particles vaccine Authors	Vaccines.2021, 9, 891	Mengnan Guo, Jiajun Li, Zhidong Teng, Mei Ren, Hu Dong, Yun Zhang, Jiayi Ru, Ping Du, Shiqi Sun, Huichen Guo *	4.422
9	Sec62 regulates endoplasmic reticulum stress and autophagy balance to affect foot-and- mouth disease virus replication	Front. Cell. Infect. Microbiol. 2021,11:707107.	Jin'en Wu,Zhihui Zhan, Zhidong Teng, Sahibzada Waheed Abdullah1, Shiqi Sun, Huichen Guo,	5.293
10	DDX21, a host restriction factor of FMDV-IRES dependent translation and replication	Viruses 2021, 13, 1765.	Sahibzada Waheed Abdullah, Jin'en Wu, Yun Zhang, Manyuan Bai, Junyong Guan, Xiangtao Liu, Shiqi Sun , Huichen Guo	5.048
11	Evaluation of four commercial vaccines for the protection of piglets against the highly pathogenic Porcine Reproductive and Respiratory Syndrome Virus (hp-PRRSV) QH-08 strain	Vaccines.2021 .9.1020	Yaozhong Ding* , Ashenafi Kiros Wubshet , Xiaolong Ding , Zhongwang Zhang, Qian Li, Junfei Dai, Qian Hou, Yonghao Hu, Jie Zhang	4.422

12	Immune Responses to Orally Administered Recombinant <i>Lactococcus lactis</i> Expressing Multi-Epitope Proteins Targeting M Cells of Foot-and-Mouth Disease Virus	Viruses 2021,13, 2036.	Fudong Zhang, Zhongwang Zhang, Xian Li, Jiahao Li, Jianliang Lv, Zhongyuan Ma, Li Pan	5.048
13	Development of an Indirect Chemiluminescence Immunoassay Using a Multi-epitope Recombinant Protein To Specifically Detect Antibodies against Foot-and-Mouth Disease Virus Serotype O in Swine	J Clin Microbiol. 2021 Feb 18;59(3):e02464-20.	Liu W, Shao J, Zhang G, Chang Y, Ge S, Sun Y, Gao Z, Chang H.	5.944
14	Development of an indirect ELISA to specifically detect antibodies against African swine fever virus: bioinformatics approaches	Virol J. 2021 May 5;18(1):97.	Gao Z, Shao JJ, Zhang GL, Ge SD, Chang YY, Xiao L, Chang HY.	4.091
15	Development of a competitive chemiluminescence immunoassay using a monoclonal antibody recognizing 3B of foot-and-mouth disease virus for the rapid detection of antibodies induced by FMDV infection.	Virol J. 2021 Sep 26;18(1):193.	Wei Liu, Guanglei Zhang, Sicheng Yang, Junhui Li, Zhan Gao, Sudan Ge, Huihui Yang, Junjun Shao, Huiyun Chang	4.094

2020 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	NLRP3 inflammasome activation by Foot-and-mouth disease virus infection mainly induced by viral RNA and non-structural protein 2B	RNA Biol.2020, 17(3):335-349	Zhi, XY; Zhang, Y; Sun, SQ; Zhang, ZH; Dong, H.; Luo, X.; Wei, YQ; Lu, ZJ; Dou, YX; Wu, R; Jiang, ZF; Weng, CJ; Seo, HS; Guo, HC *	5.477
2	Ribosomal Protein L13 Promotes IRES-Driven Translation of Foot-and-Mouth Disease Virus in a Helicase DDX3-Dependent Manner	J Virol. 2020, 94(2):e01679-19.	Han SC#,Sun SQ#, Li PH, Liu Q, Zhang ZH, Dong H, Sun MM, Wu WX, Wang XJ*, Guo HC*	4.324
3	The immune response to a recombinant <i>Lactococcus lactis</i> oral vaccine against foot-and-mouth disease virus in mice	Biotechnol Lett. 2020;1 - 11.	Xinsheng Liu, Linlin Qi, Jianliang Lv, Zhongwang Zhang, Peng Zhou, Zhongyuan Ma, Yonglu Wang, Yongguang Zhang, Li Pan	2.154
4	Comparison of immune responses in guinea pigs by intranasal delivery with different nanoparticles-loaded FMDV DNA vaccine	Microbial pathogenesis. 2020,142:104061	Huabing Zheng, Li Pan, Jianliang Lv, Zhongwang Zhang, Yuanyuan Wang, Wenfa Hu, Xinsheng Liu, Peng Zhou, Yonglu Wang, Yongguang Zhang	2.581
5	A chemiluminescence immunoassay for rapid detection of classical swine fever virus E2 antibodies in pig serum samples	Transboundary and Emerging Diseases. 2020,00:1-7	Zhongyuan Ma, Jianliang Lv, Zhongwang Zhang, Ye Zhao, Li Pan, Yongguang Zhang	3.554
6	Evaluation of the immune response in conventionally weaned pigs infected with porcine deltacoronavirus	Arch Virol. 2020;165(7):1653 - 1658.	Donghong Zhao, Xiang Gao, Peng Zhou, Liping Zhang, Yongguang Zhang, Yonglu Wang, Xinsheng Liu	2.261

7	Rapid and visual detection of porcine deltacoronavirus by recombinase polymerase amplification combined with a lateral flow dipstick	BMC Vet Res. 2020;16(1):130	Gao X, Liu X, Zhang Y, Wei Y, Wang Y.	1.792
8	Characterization, pathogenicity and protective efficacy of a cell culture-derived porcine deltacoronavirus	Virus Res. 2020;282:197955	Xiang Gao, Donghong Zhao, Peng Zhou, Liping Zhang, Mingxia Li, Weiyang Li, Yongguang Zhang, Yonglu Wang, Xinsheng Liu	2.736

## 2019 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	Host microRNA miR-1307 suppresses foot-and-mouth disease virus replication by promoting VP3 degradation and enhancing innate immune response	Virology, 2019, 535, 162-170	Linlin Qi, Kailing Wang, Haotai Chen, Xinsheng Liu, Jianliang Lv, Shitong Hou, Yongguang Zhang*, Yuefeng Sun*	2.657
2	Basal level p53 suppresses antiviral immunity against foot-and-mouth disease virus	Viruses, 2019, 11, E727	Tianliang Zhang, Haotai Chen, Xinsheng Liu, Linlin Qi, Xin Gao, Kailing Wang, Kaishen Yao, Jie Zhang, Yuefeng Sun*, Yongguang Zhang* and Run Wu*	3.811
3	Antiviral activity of brequinar against foot-and-mouth disease virus infection in vitro and in vivo.	Biomedicine & Pharmacotherapy. 2019, 116: 108928.	Shi-fang Li, Mei-jiao Gong, Yue-feng Sun, Jun-jun Shao, Yong-guang Zhang, Hui-yun Chang*.	3.743
4	Antiviral effects of IMPDH and DHODH Inhibitors against foot and mouth disease virus.	Biomedicine & Pharmacotherapy 2019,118: 109305.	Mei-jiao Gong, Shi-fang Li, Yan-yan Chang, Jun-jun Shao, Yue-Feng Sun, Ting-ting Ren, Yong-guang Zhang, Hui-yun Chang*.	3.743
5	Immunogenicity and protective efficacy of recombinant proteins consisting of multiple epitopes of foot-and-mouth disease virus fused with flagellin	Applied Microbiology and Biotechnology, April 2019, Volume 103, Issue 8, pp 3367-3379	Baofeng Cui, Xinsheng Liu, Peng Zhou, Yuzhen Fang, Donghong Zhao, Yongguang Zhang, Yonglu Wang,	3.67
6	Identification of three linear B cell epitopes against non-structural protein 3ABC of FMDV using monoclonal antibodies.	Appl. Microbiol. Biotechnol. 2019,,103(19): 8075-8086.	Wei Liu, Junjun Shao, Dalian Chen, Yanyan Chang, Huiyun Chang*, Yongguang Zhang*	3.67
7	Antiviral activity of merimepodib against foot and mouth disease virus in vitro and in vivo.	Molecular Immunology, 2019,114:226-232	Shi-fang Li, Mei-jiao Gong, Jun-jun Shao, Yue-feng Sun, Yong-guang Zhang, Hui-yun Chang*.	3.064
8	In Vitro and In Vivo Antiviral Activity of Mizoribine Against Foot-And-Mouth Disease Virus.	Molecules 2019, 24:1723.	Shi-Fang Li, Mei-Jiao Gong, Yue-Feng Sun, Jun-Jun Shao,	3.060

			Yong-Guang Zhang*, Hui-Yun Chang*.	
9	Evaluation and comparison of immunogenicity and cross-protective efficacy of two inactivated cell culture-derived GIIa-and GIIb-genotype porcine epidemic diarrhea virus vaccines in suckling piglets.	Veterinary Microbiology, Volume 230, March 2019, Pages 278-282	Xinsheng Liu, Liping Zhang, Qiaoling Zhang, Peng Zhou, Yuzhen Fang, Donghong Zhao, Jiaxin Feng, Weiyan Li, Yongguang Zhang, Yonglu Wang.	2.791
10	A newly isolated Chinese virulent genotype GIIb porcine epidemic diarrhea virus strain: biological characteristics, pathogenicity and immune protective effects as an inactivated vaccine candidate	Virus Res. 2019 Jan 2;259:18-27.	Liu X, Zhang Q, Zhang L, Zhou P, Yang J, Fang Y, Dong Z, Zhao D, Li W, Feng J, Cui B, Zhang Y, Wang Y	2.736
11	A novel type I interferon,interferon alphaomega, shows antiviral activity against foot-and-mouth disease virus in vitro.	Microbial Pathogenesis, 2019,127:79-84.	Shi-fang Li, Mei-jiao Gong , Yin-li Xie, Jun-jun Shao, Fu-rong Zhao, Yong-guang Zhang, Hui-yun Chang*.	2.581
12	A novel type I interferon,interferon alphaomega, shows antiviral activity against foot-and-mouth disease virus in vitro.	Microbial Pathogenesis, 2019,127:79-84.	Shi-fang Li, Mei-jiao Gong , Yin-li Xie, Jun-jun Shao, Fu-rong Zhao, Yong-guang Zhang, Hui-yun Chang*.	2.581
13	Application of built-in adjuvants for epitope-based vaccines.	PeerJ. 2019,6:e6185 DOI10.7717.	Yao Lei , Furong Zhao, Junjun Shao, Yangfan Li , Shifang Li, Huiyun Chang*, Yongguang Zhang*.	2.353
14	Biological characterization and pathogenicity of a newly isolated Chinese highly virulent genotype GIIa porcine epidemic diarrhea virus strain.	Archives of Virology, May 2019, Volume 164, Issue 5, pp 1287–1295	Liping Zhang, Xinsheng Liu, Qiaoling Zhang , Peng Zhou, Yuzhen Fang, Zhaoliang Dong, Donghong Zhao, Weiyan Li, Jiaxin Feng, Yongguang Zhang, Yonglu Wang.	2.261
15	Evaluation of the Efficacy of a Recombinant Adenovirus Expressing the Spike Protein of Porcine Epidemic Diarrhea Virus in Pigs.	Biomed Res Int, Volume 2019, Article ID 8530273, 8 pages	Xinsheng Liu , Donghong Zhao, Peng Zhou, Yongguang Zhang, Yonglu Wang.	2.197
16	Artificially designed hepatitis B virus core particles composed of multiple epitopes of type A and O foot-and-mouth disease virus as a bivalent vaccine candidate.	J Med Virol. 2019,91:2142-2152	Yao Lei, Junjun Shao, Furong Zhao, Yangfan Li, Chenglin Lei, Feifei Ma, Huiyun Chang, Yongguang Zhang*	2.049
17	Review on Outbreak Dynamics, the Endemic Serotypes, and Diversified Topotypic Profiles of Foot and Mouth Disease Virus Isolates in Ethiopia from 2008 to 2018	Viruses 2019, 11, 1076	Ashenafi Kiros Wubshet, Junfei Dai, Qian Li, Jie Zhang	3.811



18	MicroRNA-34/449 family and viral infections	Virus Research, 2019, 260,1-6	Jianliang Lv, Zhongwang Zhang, Li Pan, Yongguang Zhang	2.745
19	Development and validation of a competitive ELISA based on bacterium-original virus-like particles of serotype O foot-and-mouth disease virus for detecting serum antibodies	Appl Microbiol Biotechnol, 2019, 103(7):3015-3024	Ran XH#, Yang ZY#, Bai MY, Zhang Y, Wen XB, Guo HC, Sun SQ*	3.67
20	Sec62 Suppresses Foot-and-Mouth Disease Virus Proliferation by Promotion of IRE1 $\alpha$ -RIG-I Antiviral Signaling	J Immunol, 2019, 203(2):429-440	Han SC#, Mao LJ#, Liao Y#, Sun SQ, Zhang ZH, Mo YX, Liu HY, Zhi XY, Lin SM, Seo HS, Guo HC*	4.718
21	Hollow mesoporous silica nanoparticles as delivery vehicle of foot - and - mouth disease virus - like particles induce persistent immune responses in guinea pigs	J Med Virol, 2019, 91: 941-948	Bai MY#, Dong H#, Su X, Jin Y, Sun SQ, Zhang YP, Yang YS, Guo HC*	2.049
22	Biom mineralization improves the thermostability of foot-and-mouth disease virus-like particles and the protective immune response induced.	Nanoscale. 2019,11(47):22748-22761	Du P #, Liu RH#, Sun SQ, Dong H, Zhao RB, Tang RK,Dai JW, Yin H,Luo JX, Liu ZX*, Guo HC*	6.97, 封面 文章
23	A naphthalimide-based lysosome-targeting fluorescent probe for the selective detection and imaging of endogenous peroxynitrite in living cells.	Analytical and Bioanalytical Chemistry, 2019, 411: 3929-3939.	Qian J#, Gong DY, Ru JX, Guo YL, Cao T, Liu W, Iqbal A, Iqbal K, Qin WW*, Guo HC*	3.286
24	A ratiometric fluorescent probe for detection of endogenous and exogenous hydrogen sulfide in living cells.	Talanta2019, 198: 185-192	Cao T#, Teng ZD, Gong DY, Qian J, Liu W, Iqbal K, Qin WW*, Guo HC*	4.916
25	Ratiometric fluorescent probe based on ESIPT for the highly selective detection of cysteine in living cells	Talanta, 2019, 194: 717-722	Li XR#, Ma H, Qian J, Cao T, Teng ZD, Iqbal K, Qin WW*, Guo HC*	4.916
26	Uniform dendrimer-like mesoporous silica nanoparticles as a nano-adjuvant for foot-and-mouth disease virus-like particle vaccine	J. Mater. Chem. B, 2019, 7, 3446-3454	Liu ZJ#, Ru JX#, Sun SQ, Teng ZD, Dong H, Song P, Yang YS*, Guo HC*	5.047
27	Synthesis of nitrogen-doped graphene quantum dots (N-GQDs) from marigold for detection of Fe <sup>3+</sup> ion and bioimaging.	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 2019, 217: 60-67	Zhang YP*#, Ma JM, Yang YS*, Ru JX, Liu XY, Ma Y, Guo HC	2.931
28	Self-Assembling Ratiometric Fluorescent Micelle Nanoprobe for Tyrosinase Detection in Living Cells	ACS Appl. Nano Mater, 2019, 2: 3819-3827	Wang JM#, Qian J, Teng ZD, Cao T, Gong DY, Liu W, Cao YP, Qin WW*, Guo HC*, Iqbal A*	

## 2018 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	Development of a chemiluminescence	Transbound Emerg Dis.	Liu ZZ, Zhao FR, Gao SD, Shao JJ,	3.504

	immunoassay using recombinant non-structural epitope-based proteins to accurately differentiate foot-and-mouth disease virus-infected and vaccinated bovines.	2018, 65: 338-344.	Zhang YG, Chang HY.	
2	Antiviral activity of porcine interferon delta 8 against foot-and-mouth disease virus in vitro.	International Immunopharmacology 59 (2018) 47-52.	Li SF, Shao JJ, Zhao FR, Gong MJ, Xie YL, Chang HY, Zhang YG	3.118
3	Antiviral activity of porcine interferon omega 7 against foot-and-mouth disease virus in vitro.	J Med Virol. doi: 10.1002/jmv.25272.	Li SF, Zhao FR, Gong MJ, Shao JJ, Xie YL, Chang HY, Zhang YG.	1.988
4	Transcript Profiling Identifies Early Response Genes against FMDV Infection in PK-15 Cells	Viruses 2018, 10(7), 364.	Zhang Tianliang, Chen Haotai, Qi Linlin, Zhang Jie, Wu Run, Zhang Yongguang, Sun Yuefeng	3.761
5	Roles and applications of probiotic Lactobacillus strains.	Applied Microbiology and Biotechnology. 2018, 102: 8135-8143	Zhang Z, Lv J, Pan L, Zhang Y	3.34
6	A newly isolated Chinese virulent genotype G1b porcine epidemic diarrhea virus strain: biological characteristics, pathogenicity and immune protective effects as an inactivated vaccine candidate.	Virus Research, 2019, 259:18-27	Xinsheng Liu, Qiaoling Zhang, Liping Zhang, Peng Zhou, Jun Yang, Yuzhen Fang, Zhaoliang Dong, Donghong Zhao, Weiyan Li, Jiaxin Feng, Baofeng Cui, Yongguang Zhang <sup>1</sup> , Yonglu Wang.	2.484
7	Flagellin as a vaccine adjuvant..	Expert Rev Vaccines. 2018 ,17(4):335-349	Cui B, Liu X(co-first), Fang Y, Zhou P, Zhang Y, Wang Y.	4.271
8	Adaptation and Constraint in the Atypical Chemokine Receptor Family in Mammals.	BioMed Research International. Volume 2018, Article ID 9065181,9 pages.	Li Pan, Jianliang Lv, Zhongwang Zhang, Yongguang Zhang.	2.583
9	The program of antiviral agents inhibits virus infection	Archives of Microbiology (2018) 200:841-846	Yao-zhong Ding,Jan-liang Lv ,Zhong-wang Zhang,Xiao-yuan Ma,Jie Zhang, Yong-guang Zhang	1.607
10	Development of a new RT-PCR with multiple primers for detecting Southern African Territories foot-and-mouth disease viruses	J Vet Res 62, 000-000, 2018	Ya-Li Liu, Yao-Zhong Ding, Jun-Fei Dai , Bing Ma, Ji-Jun He, Wei-Min Ma, Jian-Liang Lv, Xiao-Yuan Ma, Yun-Wen Ou, Jun Wang, Yong-Sheng Liu, Hui-Yun Chang, Yong-Lu Wan, Qiang Zhang, Xiang-Tao Liu, Yong-Guang Zhang, Jie Zhang	0.811
11	Type I Interferons: Distinct Biological Activities and Current Applications for Viral Infection	Cellular Physiology and Biochemistry, 2018,51:2377-2396	Shi-fang Li, Mei-jiao Gong, Fu-rong Zhao, Jun-jun Shao, Yin-li Xie, Yong-guang Zhang, Hui-yun Chang	5.5
12	Golden-star nanoparticles as adjuvant effectively	Vaccine, 2018, 36:	Teng Z#, Sun S#, Chen H, Huang J,	3.285

	promotes immune response to foot-and-mouth disease virus-like particles vaccine	6752-6760	Du P, Dong H, Xu X, Mu S, Zhang Z, Guo H*	
13	BODIPY-based fluorescent sensor for imaging of endogenous formaldehyde in living cells	Talanta, 2018, 189: 274-280	Cao T, Gong D, Han SC, Iqbal A, Qian J, Liu W, Qin W*, Guo H*.	4.244
14	Two-stage ratiometric fluorescent responsive probe for rapid glutathione detection based on BODIPY thiol-halogen nucleophilic mono-or disubstitution	Sensors and Actuators, B: Chemical, 2018, 258: 72-79	Gong D, Ru J, Cao T, Qian J, Liu W, Iqbal A, Liu W, Qin W*, Guo H*	5.667
15	Heterogeneous synthesis of nitrogen-doped carbon dots prepared via anhydrous citric acid and melamine for selective and sensitive turn on-off-on detection of Hg (II), glutathione and its cellular imaging	Sensors and Actuators, B: Chemical, 2018, 255: 1130-1138	Iqbal A, Iqbal K, Xu L, Li B, Gong D, Liu X, Guo Y, Liu W, Qin W*, Guo H*	5.667
16	Foot-and-mouth disease virus infection stimulates innate immune signaling in the mouse macrophage RAW 264.7 cells	Can J Microbiol. 2018, 64(2):155-166	Zhi XY, Lv JL, Wei YQ, Gao Y, Du P, Chang YY, Zhang Y, Wu R*, Guo HC*	1.243
17	A novel biphenyl-derived salicylhydrazone Schiff base fluorescent probes for identification of Cu <sup>2+</sup> and application in living cells	Spectrochim Acta A Mol Biomol Spectrosc. 2018, 199:202-208.	Yang YS*, Ma SS, Zhang YP*, Ru JX, Liu XY, Guo HC	2.880
18	A chromene pyrazoline derivatives fluorescent probe for Zn <sup>2+</sup> detection in aqueous solution and living cells	Inorganica Chimica Acta, 2018, 479:128-134	Zhang YP*, Xue QH, Yang YS*, Liu XY, Ma CM, Ru JX, Guo HC	2.264
19	A highly selective "turn-on" fluorescent sensor for zinc ion based on a cinnamyl pyrazoline derivative and its imaging in live cells	Anal. Methods, 2018, 10: 1833-1841	Yang YS, Ma CM, Zhang YP*, Xue QH, Ru JX, Liu XY, Guo HC*	2.073

## 2017 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	Chimeric virus-like particles elicit protective immunity against serotype O foot-and-mouth disease virus in guinea pigs	Appl Microbiol Biotechnol, 2017, 101(12):4905-4914	Liu, X.; Fang, Y.; Zhou, P.; Lu, Y.; Zhang, Q.; Xiao, S.; Dong, Z.; Pan, L.; Lv, J.; Zhang, Z	3.42
2	Expression and Immunogenicity of Two Recombinant Fusion Proteins Comprising Foot-and-Mouth Disease Virus Structural Protein VP1 and DC-SIGN-binding glycoproteins	BioMed Research International, 2017, 2017: 7658970	Xinsheng Liu.,; Jianliang Lv.; Yuzhen Fang.,; Peng Zhou.,; YongLu, Wang	2.476
3	Detection and Phylogenetic Analyses of Spike Genes in Porcine Epidemic Diarrhea Virus Strains Circulating in China in 2016-2017	virology journal., 2017, 14:194	Zhang Q, Liu X, Fang Y, Zhou P, Wang Y, Zhang Y	2.119
4	Interferon-omega: Current status in clinical applications	Int Immunopharmacol. 2017 Sep 25;52:253-260	Li SF, Zhao FR, Shao JJ, Xie YL, Chang HY*, Zhang YG	2.956
5	Chemiluminescence immunoassay for the detection of antibodies against the 2C and 3ABC nonstructural proteins induced by infecting pigs with the foot-and-mouth disease virus	Clin Vaccine Immunol. 2017 Aug 4;24(8). pii: e00153-17	Liu Z, Shao J, Zhao F, Zhou G, Gao S, Liu W, Lv J, Li X, Li Y, Chang H*, Zhang Y	2.425

6	Transcriptomic analysis of porcine PBMCs in response to FMDV infection	Acta Trop. 2017 Sep;173:69-75	Zhao FR, Xie YL, Liu ZZ, Shao JJ, Li SF, Zhang YG, Chang HY*	2.218
7	Lithium Chloride inhibits early stages of foot-and-mouth disease virus (FMDV) replication in vitro	J Med Virol. 2017 Nov;89(11):2041-2046	Zhao FR, Xie YL, Liu ZZ, Shao JJ, Li SF, Zhang YG, Chang HY*	1.935
8	eEF1G interaction with foot-and-mouth disease virus nonstructural protein 2B: identification by yeast two-hybrid system	Microbial Pathogenesis, 2017, 112, 111-116	Zhongwang Zhang, Li Pan, Yaozhong Ding, Jianliang Lv, Peng Zhou, Yuzhen Fang, Xinsheng Liu, Yongguang Zhang*, Yonglu Wang*	2.009
9	Interferon-omega: Current status in clinical applications	IntImmunopharmacol. 2017, 52: 253-260	Li SF, Zhao FR, Shao JJ, Xie YL, Chang HY, Zhang YG	
10	Complete Genome Sequence of Variant Porcine Epidemic Diarrhea Virus Strain CH/HNZZ47/2016 Isolated from Suckling Piglets in China	Genome Announcements,2017,5(9): e01744-16	Xinsheng Liu, Qiaoling Zhang, Yuzhen Fang, Peng Zhou, Yanzhen Lu, Shuai Xiao, Zhaoliang Dong, Yongguang Zhang, Yonglu Wang	
11	Foot-and-mouth disease virus infection suppresses autophagy and NF-κB antiviral responses via degradation of ATG5-ATG12 by 3Cpro	Cell Death and Disease. 2017, 8: e2561	Xuxu Fan, Shichong Han, Dan Yan, Yuan Gao, Yanquan Wei, Xiangtao Liu, Ying Liao*,Huichen Guo*,and Shiqi Sun*	5.965
12	Foot-and-mouth Disease Virus-like Particles as Integrin-Based Drug Delivery System Achieve Targeting Anti-tumor Efficacy	Nanomedicine: NBM, 2017, 13: 1061-10706	Dan Yan#, Zhidong Teng#, Shiqi Sun#, Shan Jiang, Hu Dong, Yuan Gao, Yanquan Wei, Wenwu Qin, Xiangtao Liu*,Hong Yin*, Huichen Guo*	5.720
13	Phenylselenium-Substituted BODIPY Fluorescent Turn-off Probe for Fluorescence Imaging of Hydrogen Sulfide in Living Cells	Anal. Chem. 2017, 89: 1801-1807	Deyan Gong, Xiangtao Zhu, Yuejun Tian, Shi-Chong Han, Min Deng, Anam Iqbal, Weisheng Liu, Wenwu Qin*, and Huichen Guo*	6.320
14	The Important Role of Lipid Raft-Mediated Attachment in the Infection of Cultured Cells by Coronavirus Infectious Bronchitis Virus Beaudette Strain	PLoS One. 2017, 12(1):e0170123	Huichen Guo, Mei Huang, Quan Yuan, Yanquan Wei, Yuan Gao, Lejiao Mao, Lingjun Gu, Yong Wah Tan, Yanxin Zhong, Dingxiang Liu, Shiqi Sun	2.806
15	Purification of foot-and-mouth disease virus by heparin as ligand for certain strains	J Chromatogr B, 2017, 1049-1050: 16-23	Du P, Sun S, Dong J, Zhi X, Chang Y, Teng Z, Guo H*, Liu Z*	2.603
16	BODIPY based phenylthiourea derivatives as highly selective MeHg <sup>+</sup> and Hg <sup>2+</sup> ions fluorescent chemodosimeter and its application to bioimaging	Sensors and Actuators B 243 (2017) 195–202	Deng M, Gong D, Han S, Zhu X, Iqbal A, Liu W, Qin W*, Guo H*	5.401
17	A new pyrazoline-based probe of quenched fluorescent reversible recognition for Cu <sup>2+</sup> and its application in cells	Spectrochim Acta A Mol Biomol Spectrosc, 2017, 177: 147-152	Zhang YP*, Dong YY, Yang YS*, Guo HC, Cao BX, Sun SQ	2.536
18	CD59 association with infectious bronchitis virus particles protects against antibody-dependent	J Gen Virol. 2017, 98 (11) :2725-2730	Wei Y, Ji Y, Guo H, Zhi X, Han S, Zhang Y, Gao Y, Chang Y, Yan D, Li	2.514

	complement-mediated lysis		K, Liu DX, Sun S	
19	Fast and Selective Two-Stage Ratiometric Fluorescent Probes for Imaging of Glutathione in Living Cells	Anal. Chem. 2017, 89, 13112-13119	Deyan Gong, ShiChong Han, Anam Iqbal, Jing Qian, Ting Cao, Wei Liu, Weisheng Liu, Wenwu Qin*, and Huichen Guo*	6.320

## 2016 年

序号	论文名称	期刊名称,年,卷(期):页	全部作者	影响因子
1	Features of human-infecting avian influenza viruses and mammalian adaptations	J Infect.2016 Jul;73(1):95-97	Zhao F, Tian J, Lin T, Shao J, Zhang Y, Chen Y, Chang H	4.382
2	Lactic acid bacteria as mucosal delivery vehicles: a realistic therapeutic option	Appl Microbiol Biotechnol. 2016 Jul;100(13):5691-701	Wang M, Gao Z,Zhang Y, Pan L	3.376
3	The Applications of Gold Nanoparticle- Initialed Chemiluminescence in Biomedical Detection	Nanoscale Res Lett. 2016, 11(1):460	Liu Z, Zhao F, Gao S, Shao J, Chang H	2.584
4	Relationship of long noncoding RNA and viruses	Genomics 107 (2016) 150–154	Yao-zhong Ding, Zhong-wang Zhang, Ya-li Liu, Chong-xu Shi, Jie Zhang, Yong-guang Zhang	2.386
5	Dendritic cell targeted vaccines: Recent progresses and challenges	Human Vaccines & Immunotherapeutics. 2016,12(3):612-622	Chen P, Liu X, Sun Y, Zhou P, Wang Y, Zhang Y	2.146
6	Features of human-infecting avian influenza viruses and mammalian adaptations	J Infect.2016 Jul; 73(1): 95-97	Zhao F, Tian J, Lin T, Shao J, Zhang Y, Chen Y, Chang H	4.603
7	The Influence of Porcine Reproductive and Respiratory Syndrome Virus Infection on the Expression of Cellular Prion Protein in Marc-145 Cells	Virol Antivir Res,2016,4:4	Chongxu Shi, Yaozhong Ding, Xiaoyuan Ma, Yali Liu, Yunwen Ou, Bing Ma, Alexei D Zaberezhny, Zygmunt Pejsak, Anna Szczotka-Bochniarz, Laszlo Stipkovits, Susan Szathmary, Yongguang Zhang and Jie Zhang	
8	Development of an Indirect-Elisa to Detect Antibodies against Porcine Reproductive and Respiratory Syndrome Virus Nucleocapsid Protein in Gansu China	Journal of Virology and Antiviral Research. 2016,5:2	Xiaoyuan Ma, Ying Qin, Yaozhong Ding, Yongsheng Liu, Zygmunt Pejsak, Anna Szczotka-Bochniarz, Yunwen Ou, Laszlo Stipkovits, Susan Szathmary, Bing Ma, Huaijie Jia, Jun Wang, Yongguang Zhang* and Jie Zhang	
9	Genome Sequence of a Subgenotype 1a Bovine Viral Diarrhea Virus in China	Genome Announc. 2016 , 14(6)	Gao S, Du J, Tian Z, Xing S, Luo J, Liu G, Chang H, Yin H	
10	Magnetic Resonance Imaging Revealed Splenic Targeting of Canine Parvovirus Capsid Protein VP2	Scientific Reports, 2016, 6: 23392	Ma Y#, Wang H#, Yan D, Wei Y, Cao Y, Yi P, Zhang H, Deng Z, Dai J, Liu X, Luo J, Zhang Z*, Sun S*, and Guo H*	
11	Productive Entry of Foot-and-Mouth Disease Virus	Scientific Reports, 2016, 6:	Han S#, Guo H#, Sun S*, Jin Y, Wei	

	via Macropinocytosis Independent of Phosphatidylinositol 3-Kinase	19294	Y, Feng X, Yao X, Cao S, Liu D, and Liu X
12	Fluorescent glutathione probe based on MnO <sub>2</sub> -phenol formaldehyde resin nanocomposite	Biosensors & Bioelectronics, 2016, 77: 299-305.	Wang X, Wang D, Guo Y, Yang C, Liu X, Iqbal A, Liu W, Qin W*, Yan D, and Guo H*
13	Biological function of Foot-and-mouth disease virus non-structural proteins and non-coding elements	Virology, 2016, 13: 107	Gao Y, Sun S, Guo H*
14	Transcriptome profiling indicating canine parvovirus type 2a as a potential immune activator	Virus Genes. 2016, 52(6):768-779	Fan X, Gao Y, Shu L, Wei Y, Yao X, Cao S*, Peng G, Liu X, Sun S*

## 五、专利：

2022 年

序号	专利名称	类别	授权/批准时间	专利号	全部发明人
1	一种耐热型口蹄疫重组病毒株、由该病毒株制成的灭活疫苗及其应用	国家技术发明专利授权	2022.04.07	ZL202010725839.7	郭慧琛;孙世琪;董虎;卢源录;张韵;白满元;吴金恩;茹嘉喜;尹双辉;冯霞;马军武
2	一种检测 A 型塞内卡病毒的荧光定量 PCR 引物及试剂盒	国家技术发明专利授权	2022.03.22	ZL201910013717.2	郭慧琛;穆素雨;孙世琪;张韵;茹嘉喜;郭笑然;罗建勋;殷宏
3	猪口蹄疫病毒 A 型 Fc 多肽疫苗及其制备方法和应用	国家技术发明专利授权	2022.01.30	ZL201810074694.1	常惠芸, 李扬帆, 邵军军, 张永光
4	用中国仓鼠卵巢细胞表达外源蛋白时信号肽的选择方法及应用	国家技术发明专利授权	2022.01.10	ZL201911052154.4	常惠芸, 孙振文, 邵军军, 张永光
5	一种基于抗猪流行性腹泻病毒变异毒株重组 S2 蛋白的 IgA 抗体 ELISA 检测试剂盒	国家技术发明专利授权	2022.04.12	ZL202011163418.6	刘新生;张莉萍;周鹏;于瑞明;潘丽;吕建亮;张中旺;王永录;张永光;郭慧琛

2021 年

序号	专利名称	类别	授权/批准时间	专利号	全部发明人
1	用于 O 型口蹄疫病毒抗体定量检测的上转换发光免疫层	国家技术发明专利授权	2021.06.01	ZL202010061291.0	郭慧琛;孙世琪;侯风萍;张韵;白满元;

	析试纸条及其制备方法				柳海云;高震东;殷宏
2	一种口蹄疫病毒样颗粒体外组装的方法及应用	国家技术发明专利授权	2021.07.06	ZL202010116531.2	郭慧琛;孙世琪;柳海云;董虎;张韵;白满元;吴金恩;茹嘉喜
3	一种基于病毒样颗粒的 C 型口蹄疫病毒抗体竞争 ELISA 检测试剂盒	国家技术发明专利授权	2021.08.03	ZL201811492145.2	孙世琪, 白满元, 郭慧琛, 张韵, 茹嘉喜, 杨志元
4	猪塞内加谷病毒、猪塞内加谷病毒灭活疫苗的制备方法、猪塞内加谷病毒灭活疫苗和应用	国家技术发明专利授权	2021.04.09	ZL201910137696.5	吕建亮, 方鹏飞, 潘丽, 李妍, 马中元, 吴学婧, 张中旺, 李捷, 刘新生, 严欢, 周鹏, 王永录, 张永光
5	一种尼莫地平在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.02.19	ZL201910202396.0	李世芳, 常惠芸, 龚美娇, 邵军军, 常艳燕, 张永光
6	一种咪唑立宾在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.02.19	ZL201910175969.5	常惠芸, 李世芳, 龚美娇, 邵军军, 赵付荣, 常艳燕, 张永光
7	一种 AVN-944 在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.02.19	ZL201910180670.9	龚美娇, 常惠芸, 李世芳, 邵军军, 常艳燕, 张永光
8	Inauhzin 在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.02.26	ZL201910178107.8	李世芳, 常惠芸, 龚美娇, 邵军军, 常艳燕, 张永光
9	一种常山酮在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.02.26	ZL201910202391.8	常惠芸, 李世芳, 龚美娇, 邵军军, 常艳燕, 张永光
10	一种吡唑啉菌素在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.03.16	ZL201910175549.7	常惠芸, 李世芳, 龚美娇, 邵军军, 常艳燕, 张永光
11	一种 Merimepodib 在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.04.16	ZL201910175967.6	常惠芸, 李世芳, 龚美娇, 邵军军, 赵付荣, 常艳燕, 张永光
12	一种 SB203580 在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.04.20	ZL201910175576.4	常惠芸, 李世芳, 龚美娇, 邵军军, 常艳燕, 张永光
13	一种 PF-4708671 在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.04.30	ZL201910178189.6	常惠芸, 龚美娇, 李世芳, 邵军军,

	应用				常艳燕, 张永光
14	一种特立氟胺在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.06.08	ZL201910180665.8	李世芳, 常惠芸, 龚美娇, 邵军军, 常艳燕, 张永光
15	一种阿米洛利在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.06.22	ZL201910175934.1	龚美娇, 常惠芸, 李世芳, 邵军军, 常艳燕, 张永光
16	一种表达 eGFP 的同源重组载体、重组细胞及其制备方法和应用	国家技术发明专利授权	2021.06.01	ZL201910886881.4	常艳燕, 常惠芸, 邵军军, 李扬帆, 张永光
17	利用多表位串联蛋白检测猪口蹄疫 O 型抗体的化学发光检测试剂盒	国家技术发明专利授权	2021.04.13	ZL202010037597.2	常惠芸, 刘伟, 邵军军, 常艳燕
18	检测口蹄疫非结构蛋白抗体的单抗竞争化学发光试剂盒	国家技术发明专利授权	2021.06.15	ZL202010149812.8	常惠芸, 刘伟, 邵军军
19	一种非洲猪瘟病毒重组抗原及其应用	国家技术发明专利授权	2021.07.16	ZL 202010255206.4	常惠芸, 高瞻, 邵军军, 常艳燕
20	一种布喹那在制备预防口蹄疫病毒感染的药物中的应用	国家技术发明专利授权	2021.07.23	ZL 201910175972.7	常惠芸, 李世芳, 龚美娇, 邵军军, 赵付荣, 常艳燕, 张永光
21	猪口蹄疫病毒 O 型 Fc 多肽疫苗及其制备方法和应用	国家技术发明专利授权	2021.07.27	ZL 201810074696.7	邵军军, 常惠芸, 李扬帆, 张永光
22	核糖体蛋白 RPL13 抑制剂在制备抑制 IRES-依赖性翻译的病毒复制的药物中的应用	国家技术发明专利授权	2021.08.18	ZL201910610793.1	郭慧琛;王晓佳;孙萌萌;韩世充;孙世琪;张韵;茹嘉喜
23	Kit for detecting antibody against Foot-and-mouth Disease Virus 2C	国际专利授权	2021. 8. 19	2021106008	陈豪泰;尹双辉;冯霞;张韵;丁耀忠
24	Visualized Rapid detection Kit for type A Foot-and-mouth Disease Virus and preparation method thereof	国际专利授权	2021. 8. 18	2021105751	陈豪泰;尹双辉;冯霞;张韵;丁耀忠
25	Visualized Rapid detection Kit for type O Foot-and-mouth Disease Virus and preparation method thereof	国际专利授权	2021. 8. 18	2021105824	陈豪泰;尹双辉;冯霞;张韵;丁耀忠
26	Visualized Rapid detection Kit for swine fever Virus antibody and application thereof	国际专利授权	2021. 8. 18	2021105785	陈豪泰;尹双辉;冯霞;张韵;丁耀忠

2020 年

序号	专利名称	类别	授权/批准时间	专利号	全部发明人
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1	口蹄疫病毒样颗粒在作为重组质粒运载体中的作用	国家技术发明专利授权	2020.7.3	ZL201610929291.1	郭慧琛, 孙世琪, 郜原, 靳野, 魏衍全, 张韵, 刘湘涛, 李杰林, 马军武, 冯霞
2	金纳米颗粒作为佐剂在制备病毒样颗粒疫苗中的应用	国家技术发明专利授权	2020.11.10	ZL201710553111.9	郭慧琛, 孙世琪, 张智军, 滕志东, 黄洁, 陈浩, 徐小雨, 茹嘉喜, 常艳燕, 冯霞, 刘湘涛, 殷宏
3	矿化口蹄疫病毒样颗粒及其制备方法和应用	国家技术发明专利授权	2020.10.16.	ZL201710539048.3	郭慧琛, 孙世琪, 杜平, 滕志东, 唐睿康, 赵瑞波, 茹嘉喜, 魏衍全, 张韵, 郜原, 马军武, 刘湘涛, 殷宏
4	MINERALIZED FOOT-AND-MOUTH DISEASE VIRUS LIKE PARTICLES, AND PREPARATION METHOD AND USE THEREOF	国际专利授权	2020.1.14	US 10532092B2	郭慧琛, 孙世琪, 杜平, 靳野, 滕志东, 茹嘉喜, 魏衍全, 张韵, 郜原, 马军武, 刘湘涛, 殷宏
5	VIRUS-LIKE PARTICLE OF SENECAVIRUS A	国际专利授权	2020.1.14	US 10532077B2	郭慧琛, 孙世琪, 韩世充, 董虎, 郭笑然, 殷宏, 罗建勋;
6	METHOD FOR PREPARING FOOT-AND-MOUTH DISEASE VIRUS-LIKE PARTICLES, AND TEST STRIP FOR DETECTING FOOT-AND-MOUTH DISEASE	国际专利授权	2020.11	US10829741B2	孙世琪;郭慧琛;张韵;常艳燕;魏衍全;茹嘉喜;智晓莹;杜平;刘湘涛;殷宏;罗建勋
7	Kit for detecting anti-foot-and-mouth disease virus 3ABC antibody and detection method thereby	国际专利授权	2020.7.22	2020101144	陈豪泰, 张永光, 孙跃峰, 祁林林, 张杰, 潘丽
8	Kit for detecting foot-and-mouth disease virus type Asia1 antibody and detection method	国际专利授权	2020.7.29	2020101172	陈豪泰, 张永光, 孙跃峰, 祁林林, 张杰, 潘丽
9	一种虫草素在制备预防口蹄疫	国家技	2020.11.3	ZL201910181159.0	常惠芸, 龚美娇,

	病毒感染药物中的应用	未发明专利授权			李世芳, 邵军军, 常艳燕, 张永光
10	猪口蹄疫病毒 O 型、A 型 Fc 多肽双价疫苗及其制备方法和应用	国家发明专利授权	2020.11.17	ZL201810074700.3	常惠芸, 邵军军, 李扬帆, 张永光
11	一种吉西他滨在制备预防口蹄疫病毒感染的药物中的应用	国家发明专利授权	2020.12.25	ZL201910175580.0	常惠芸, 官美娇, 李世芳, 邵军军, 赵付荣, 常艳燕, 张永光
12	一株猪德尔塔冠状病毒毒株及其应用	国家发明专利授权	2020.8.28	ZL201910394213.X	刘新生, 王永录, 方玉珍, 周鹏, 张永光

2019 年

序号	专利名称	类别	授权/批准时间	专利号	全部发明人
1	CHIMERIC FOOT-AND-MOUTH DISEASE VIRUS-LIKE PARTICLE AND PREPARATION METHOD THEREOF.	国际专利授权	2019.10.2	2019101002	XINSHENG LIU
2	PRIMER SET, KIT, AND METHOD FOR DETECTING PORCINE ELTACORONAVIRUS.	国际专利授权	2019.9.18	2019100972	XINSHENG LIU
3	PRIMER SET, KIT, AND METHOD FOR DETECTING PORCINE EPIDEMIC DIARRHEA VIRUS.	国际专利授权	2019.9.25	2019100992	XINSHENG LIU
4	RECOMBINANT SHUTTLE PLASMID CONTAINING PORCINE EPIDEMIC DIARRHEA VIRUS S GENE, RECOMBINANT ADENOVIRUS, AND APPLICATION THEREOF.	国际专利授权	2019.9.25	2019100990	XINSHENG LIU
5	一种猪口蹄疫 3ABC 和 2C 抗体化学发光检测试剂盒	国家发明专利授权	2019.01.25	ZL 201611051539.5	常惠芸, 刘泽众, 邵军军, 赵付荣, 李秀梅, 张永光

6	一种牛口蹄疫3ABC抗体化学发光检测试剂盒。	国家技术发明专利授权	2019.03.19	ZL 201611052512.8	常惠芸, 刘泽众, 邵军军, 赵付荣, 李秀梅, 张永光
7	氯化锂抑制口蹄疫病毒的用途。	国家技术发明专利授权	2019.	ZL 201710146292.3	赵付荣, 常惠芸
8	一种快速显色一步法检测美洲型高致病性猪繁殖与呼吸综合征的RT-LAMP试剂盒	国家技术发明专利授权	2019.7.26	ZL201610760227.5	张杰,刘永生,丁耀忠,马炳,陈豪泰,贾怀杰,邵军军,潘丽,常惠芸,张永光
9	一种快速显色一步法检测猪细小病毒的LAMP试剂盒	国家技术发明专利授权	2019.7.26	ZL201610760067.4	张杰,张永光,刘永生,丁耀忠,陈豪泰,常惠芸,吕建亮,林彤,潘丽,刘新生,王永录
10	一种快速显色一步法检测猪圆环病毒2型的LAMP试剂盒	国家技术发明专利授权	2019.7.26	ZL201610760228.X	张杰,刘永生,丁耀忠,陈豪泰,张永光,马丽娜,潘丽,王永录,常惠芸,邵军军,张中旺,吕建亮,林彤,刘新生
11	用于快速检测南非型口蹄疫病毒的特异性引物组及包含有该引物组的试剂盒	国家技术发明专利授权	2019.3.29	ZL201610398763.0	张杰,张永光,刘亚丽,王永录,方玉珍,丁耀忠,潘丽,常惠芸,吕建亮,周鹏
12	PRRSVN蛋白的原核可溶性表达方法	国家技术发明专利授权	2019.10.18	ZL201810149238.9	张杰,张永光,丁耀忠,刘永生,代君飞,王俊,马炳,欧云文,孙跃峰,吕建亮,邵军军,周鹏
13	一种A型寨卡病毒病毒样颗粒及其制备方法和用途	国家技术发明专利授权	2019.12.24	ZL-201810483236.3	郭慧琛, 孙世琪, 韩世充, 董虎, 郭笑然, 殷宏, 罗建勋
14	一种O型口蹄疫病毒样颗粒及其制备方法和用途	国家技术发明专利授权	2019.07.02	ZL-201610929279.0	孙世琪, 郭慧琛, 杜平, 靳野, 张韵, 魏衍全, 朱向涛, 刘湘涛, 殷宏

2018年

序号	专利名称	类别	授权时间	专利号	全部发明人
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1	RT-RPA 与侧向流动层析技术相结合的猪喘病毒快速检测方法及其检测试剂盒	国家技术发明专利授权	2018.09.28	201710984183.9	刘新生、方玉珍、王永录、张永光、潘丽、吕建亮、周鹏、张中旺、邵军军、赵付荣、陈豪泰、孙跃峰、常惠芸
2	同时鉴定三种猪流行性腹泻病毒毒株的引物组合和通用型半套式 RT-PCR 方法	国家技术发明专利授权	2018.09.07	201510901924.3	刘新生、张永光、王永录、方玉珍、周鹏、刘占旭
3	一种高效表达口蹄疫病毒抗原基因的重组乳酸杆菌及其制备方法和应用	国家技术发明专利授权	2018.06.08	ZL201510256221.X	潘丽,张永光,王淼,张中旺,王永录,方玉珍,吕建亮,周鹏,刘新生
4	一种共表达口蹄疫病毒 VP1 基因与免疫佐剂 IL-6 基因的重组乳酸杆菌及其制备方法和应用	国家技术发明专利授权	2018.08.10	ZL201510258195.4	潘丽,张永光,张中旺,吕建亮,王永录,方玉珍,周鹏,刘新生
5	一种肿瘤药物靶向载体及制备方法与应用	国家技术发明专利授权	2018.07.06	ZL-201510128809.7	孙世琪,郭慧琛,闫丹,董虎,魏衍全,刘湘涛

#### 2017 年

序号	专利名称	类别	授权时间	专利号	全部发明人
1	免疫兔血清中猪圆环病毒 PCV2 抗体水平间接 ELISA 检测试剂盒及其检测方法和应用	国家技术发明专利授权	2017.08.29	ZL201510141663.X	张杰,陈豪泰,丁耀忠,张永光,王永录,常惠芸,潘丽,邵军军,吕建亮,周鹏
2	牛 A 型口蹄疫广谱多表位疫苗及其制备方法和应用	国家技术发明专利授权	2017.04.12	ZL201310144390.5	常惠芸,邵军军,林彤,丛国正,独军政,高闪电
3	牛 A 型口蹄疫国外流行毒株广谱多表位疫苗及其制备方法和应用	国家技术发明专利授权	2017.04.24	ZL201310146236.1	邵军军,常惠芸,陈建文
4	一种用病毒样颗粒包被量子点的方法	国家技术发明专利授权	2017.08.23	ZL-201510037803.9	孙世琪,郭慧琛,王斌,王海明,徐进,魏衍全,孙德惠,刘湘涛
5	猪圆环病毒 2 型抗体快速检测层析试纸条及其制备方法	国家技术发明专利授权	2017.08.18	ZL-201610190933.0	孙世琪,张韵,郭慧琛,智晓莹,魏衍全,常艳燕,郜原

#### 2016 年

序号	专利名称	类别	授权时间	专利号	全部发明人
1	牛 Asia1/O 型口蹄疫双价多表位疫苗及其制备方法和应用	国家技术发明专利授权	2016.08.24	ZL201410093058.5	邵军军, 常惠芸
2	牛 A 型口蹄疫广谱多表位疫苗及其制备方法和应用	国家技术发明专利授权	2016.09.17	ZL201310144390.5	邵军军, 常惠芸
3	嵌合 IBV 4/91 株纤突蛋白膜外区基因片段的重组传染性支气管炎病毒及其构建方法和应用	国家技术发明专利授权	2016.01.27	ZL-201310573277.9	郭慧琛, 孙世琪, 魏衍全, 董虎, 王海民, 孙德惠, 刘定祥, 方守国, 才学鹏, 殷宏