



# 商业生产中的营养应用研究

## Nutrition Application R&D on Commercial Research Farm

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# 实验硬件

Experimental hardware

## R&D Farm

PART 1

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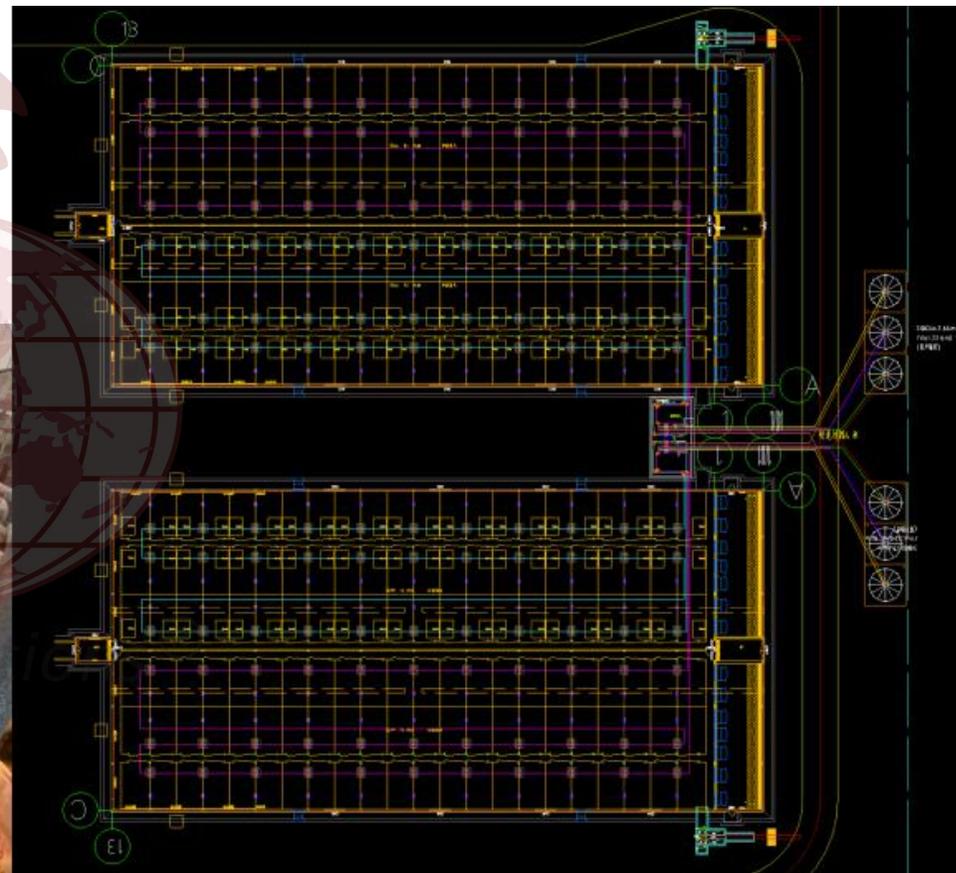


# 实验舍设计 Farm Design

- 正常生产经营设计

Normal production and operation design

- 每栏独立料槽
- Independent trough for each pen
- 舍内地磅或走廊地磅，个体（繁殖猪） / 整栏（G-F）称重
- Weigh individual pigs (breeding pigs) or entire pens (G-F) using the on-site weighbridge or the corridor weighbridge
- 温湿度、水表等基础数据记录监测
- Record and monitor basic data such as temperature, humidity, and water meter readings



# 实验舍 Trial Barn



# 实验舍料线与称重系统

## The feeding line and weighing system of the trial barn

- 足够的料塔数量 ( $\geq 6$ 个) · 人工称量记录投料 Sufficient number of feed towers ( $\geq 6$ ). Manual weighing and recording of feeding
- 自动称量混合送料系统 Automatic weighing, mixing, and feeding system
  - 自动称量 - Automatic weighing
  - 自动混合 - Automatic mixing
  - 自动记录 - Automatic recording
- 饲料称重系统 (剩料) Feed weighing system (remaining feed)



# 实验舍猪称量系统

## Pig weighing system

- 母猪单独称量系统
- Sow individual weighing system
- 产房仔猪称重系统
- Piglet weighing system in the delivery room
- 整栏称重系统 (Nursery, G-F)
- Full-pen weighing system (Nursery, G-F)



# 实验采样系统

## Sample collection

- 饲料样品储存柜/室 • Feed sample storage cabinet/room
- 动物屠宰和采样室 • Animal slaughtering and sampling room
- 动物样品处理工具：手术刀、注射器… • Tools for animal sample processing: surgical scalpel, syringe, etc
- 样品处理存储条件：离心机、冰箱…
- Sample processing and storage conditions: centrifuge, refrigerator

## 实验样品分析

## Sample analysis

- 常规样品： 实验室、平行样… • Routine samples: laboratory samples, parallel samples, etc
- 生理生化： 高校合作或专业的检测机构 … • Physiological and biochemical testing: Cooperation between universities or professional testing institutions
- 感官指标： 客户反馈与市场跟踪…
- Sensory indicators: customer feedback and market tracking



# 商业应用实验研究内容

## Research Focus

- 原料评估：原料开发与组合…
- **Raw material evaluation:** raw material development and combination
- 配方模型：配方落地检验…
- **Recipe model:** recipe implementation verification
- 饲养管理：生产管理问题科学评估…
- **Feeding management:** scientific evaluation of production management issues
- 疫苗药物：疫苗及其方案、药物评估…
- **Vaccine and drug:** vaccine and its regimen, drug evaluation
- 环境卫生：水、温湿度、通风…
- **Environmental hygiene:** water, temperature and humidity, ventilation
- 遗传/生产性能评估：生长曲线测定…
- **Genetic/production performance evaluation:** growth curve determination

商业应用>>基础研究

Business Applications >> fundamental research

# 商业应用实验基本要求

## Trial requirements

- . 实验场地: 商业+实验
- . **Experimental site:** commercial + experimental
- . 实验设计: 科学与规范(性别、胎次...)
- . **Experimental design:** science and standardization (gender, parity, etc.)
- . 实验数量: 总数、重复( $\geq 6$  rep pens/trt)
- . **Number of experiments:** total, repeated ( $\geq 6$  reps/treatment)
- . 统计分析: 科学分析与正确模型 (pig\*day)
- . **Statistical analysis:** scientific analysis and correct model (pig\*day)
- . **重复实验:** 季节、地域( $\geq 3$ 次)
- . **Repeat experiments:** season, region ( $\geq 3$  times)
- . **基本规律:** 汇总、分析
- . **Basic principle:** summarize and analyze

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# 商业应用实验影响因素

## Factors on trial result

- **设计影响:** 实验设计的科学性…
- **Design impact:** The scientific nature of experimental design
- **饲料影响:** 日粮设计的科学与精细…
- **Feed impact:** The science and precision of diet design
- **分组影响:** 胎次、性别、体重、批次…
- **Grouping influence:** parity, gender, weight, batch
- **生产影响:** 密度、调栏、免疫、药物…
- **Production impact:** density, pen adjustment, immunity, medication
- **疾病影响:** ASF, PEDV…
- **Disease impact:** ASF, PEDV
- **环境影响:** 贼风、温度、位置…
- **Environmental impact:** draft, temperature, location
- **死淘影响:** 延迟淘汰、极弱猪、科学记录…
- **Impact of death and attrition:** delayed culling, extremely weak pigs, scientific records
- **统计影响:** 数据处理、分析模型…
- **Statistical impact:** data processing, analysis model
- **人为影响:** 盲样实验设计
- **Human influence:** Blind sample experimental design

# 知识产权管理

## IP management

- 标准记录系统：生产性能、死淘、环境、免疫治疗…
- Standard recording system: production performance, mortality and culling, environment, immunotherapy, etc
- 记录系统存档：原始记录留存与管理
- Record system archiving: retention and management of original records
- 数据分析统计：标准科研统计分析
- Data analysis and statistics: standard scientific research statistical analysis
- 实验报告标准：标准核心中文期刊模版（AN）
- Experimental report standard: Standard core Chinese journal template (AN)
- 技术应用简报：一页纸应用说明
- Technical application brief: one-page application description

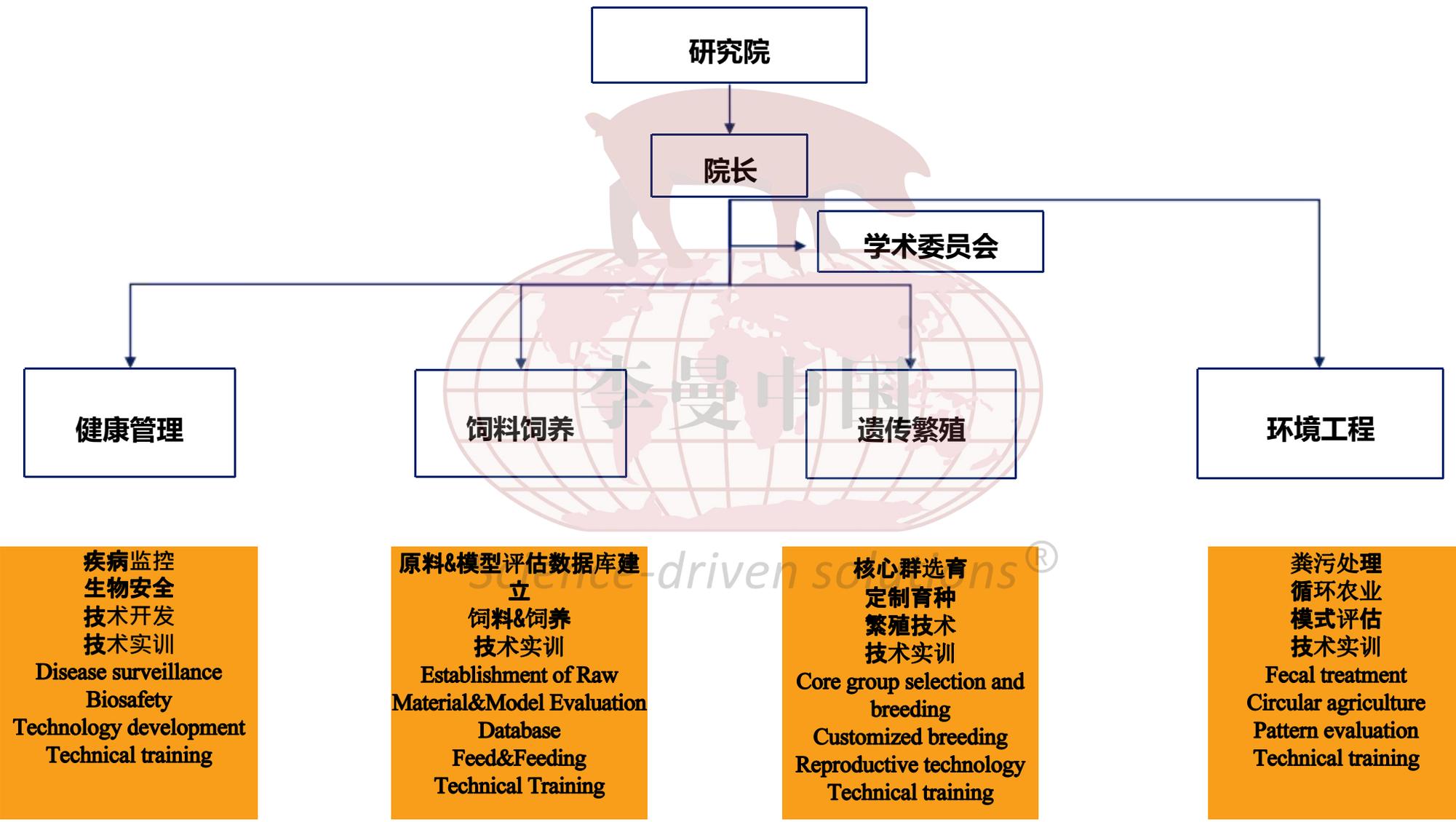


# 研发体系 R&D System

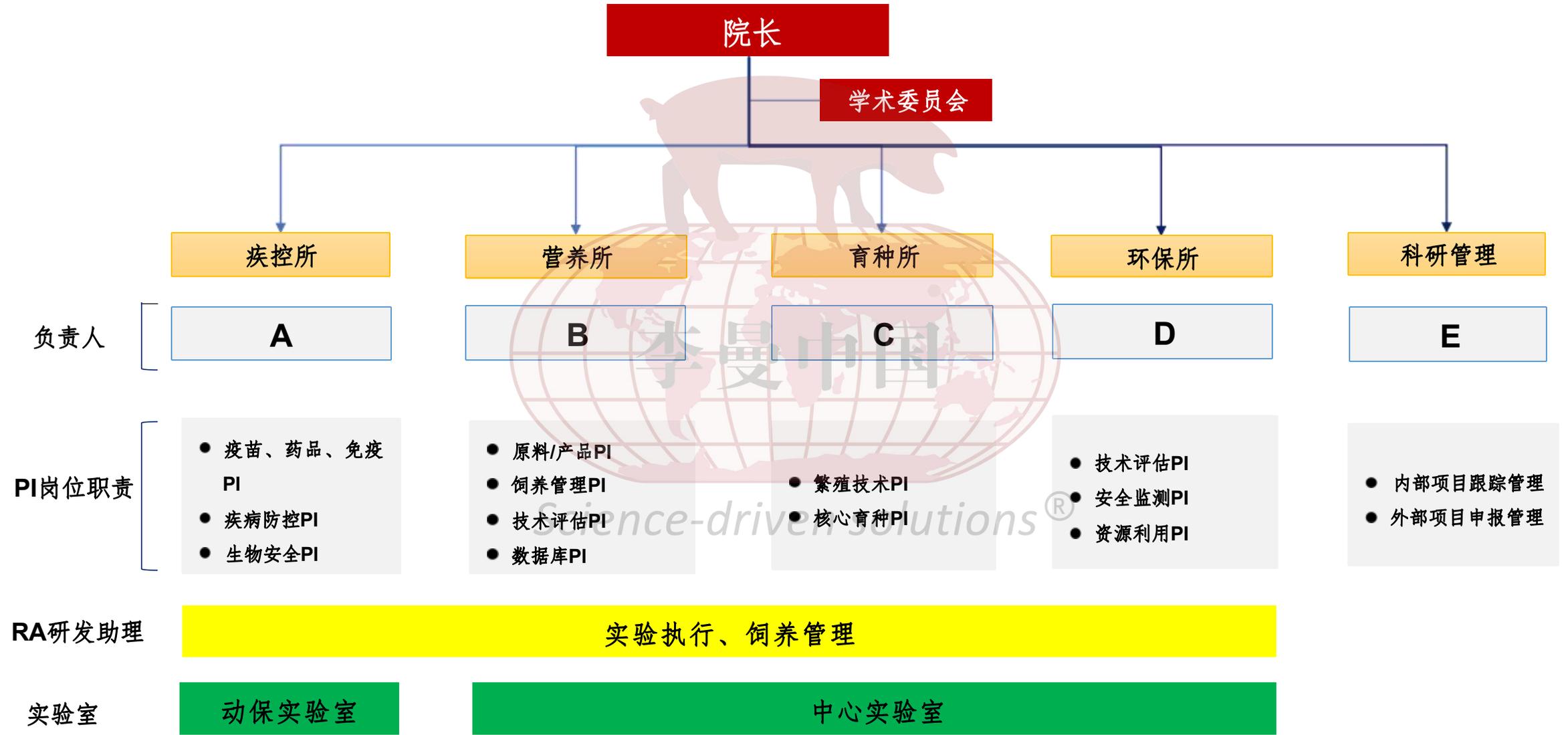
PART 2

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# “研究院” 职能定位 Academy Positioning



# 运营机制 Operation model



# 实验猪场管理 Farm management

- ✓ 经营权：属地 Operational right: territorial
- ✓ 使用权：研究院 Right of use: Research Institute
- ✓ 考核权：属地+研究院 Assessment authority: territorial + research institute
- ✓ 效益补偿：研究院（潜在） Benefit compensation: Research Institute (potential)

## 人员管理 HR

- **PI**: 研究院编制
- PI: Prepared by the Research Institute
- **RA**: 研究院编制
- RA: Research Associate
- 饲养员：属地编制
- Breeder: Locally established

## 猪场&实验运营 Trial operation

- 日常商业：生产运营+生产绩效
- Daily business: production operation + production performance
- 实验操作：PI + RA + 饲养员
- Experimental operation: PI+RA + keeper
- 额外工作：项目实验绩效考核机制
- Additional work: project experiment performance evaluation mechanism

# 管理软环境

## Soft management

附件：研究院岗位任职资格

附件 1：饲料研究院人员

附件 2：研发管理制度

附件 3：入职须知

附件 3：试验设计与操作

附件 4：工作月报表

附件 4：研发报告撰写标准

附件 5：

附件 6：质量管理文件

研究院内控制度 2022.01.21

制度沟通流程 2022.02.21

2.7 科研项目管理组管理办法 (2022.3.24)(1)(1).docx

ADM 中国

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# 内控制度与标准模版

## Internal control

- 2.5 实验绩效管理辦法.docx
- 2.6 政府科技资金奖励及使用管理办法.doc
- 3.1 科研立项工作指引.docx
- 3.2 科研项目跟踪执行情况工作指引.docx
- 3.3 科研项目结题工作指引.docx
- 3.4 科研项目技术应用工作指引.docx
- 3.5 科研基地管理工作指引.docx
- > 科研立项工作指引-附件
- > 科研项目跟踪执行情况工作指引-附件
- > 科研项目技术应用工作指引-附件
- > 科研项目结题工作指引-附件

# 标准记录模版体系

## Recording models

- 集团标准记录模版统一
- Unified Group Standard Record Template
  - 生产性能、饲喂、死淘、治疗、环境
  - Production performance, feeding, mortality, treatment, environment
- 细化到各猪只阶段操作SOP和记录模版
- Refine the SOPs and record templates for each stage of pig operations
- 集团统一记录保留存档
- Unified record retention and archiving by the group

< > 附件3：试验设计与操作  
返回/前进

名称
附件3：如何设计和实施动物试验-石
> G-F Recording System
> Gestation Recording System
> Lactation Recording System
> Nursery Recording System

< > Nursery Recording System  
返回/前进

名称
Nursery BW sheet.xls
Nursery Death sheet.xls
Nursery Feeding Program.xls
Nursery Room humidity and temp.xls
Nursery SOP.doc
Nursery Treatment Table.xls

< > Lactation Recording System  
返回/前进

名称
Farrow day SOP.doc
Lactation SOP.doc
Piglet Death and fallout sheet.xls
Sow Backfat and loin.xls
Sow Body temperature.xls
Sow BW sheet.xls
Sow Farrowing sheet.xls
Sow Feeding Program.xls
Sow humidity and temp.xls
Sow Piglet Treatment Table.xls
Sow Piglet WT .xls
Sow Treatment Table.xls

# 总结 Summary

- ✓ 基于商业生产的 **研发场地** Commercial-Research Farm
- ✓ 基于实际生产的 **应用研究** Production-Oriented Research
- ✓ 基于生产问题的 **动物实验** Question-Driven Trials
- ✓ 基于现场应用的 **行动方案** Farm-Friendly Solutions
- ✓ 基于中国产业的 **专业知识** Chinese Industry Knowledge

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感谢!

Thanks!

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