



Animal and Bioscience Research Department

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Overview



- Established 2008
- Encompasses fertility, breeding, health and welfare, nutrition and product quality.
- Staff Locations: Grange, Moorepark and Athenry.
- Animals & Animal Facilities: Grange, Moorepark, Athenry & farms.
- Well-equipped laboratories: Grange (mainly) Athenry (parasitology & proteomics).
- Strong, highly collaboratively-linked research programme
- Strong links to industry and KT staff
- Skilled, dedicated, motivated and productive staff
- High levels of external funding

Objectives

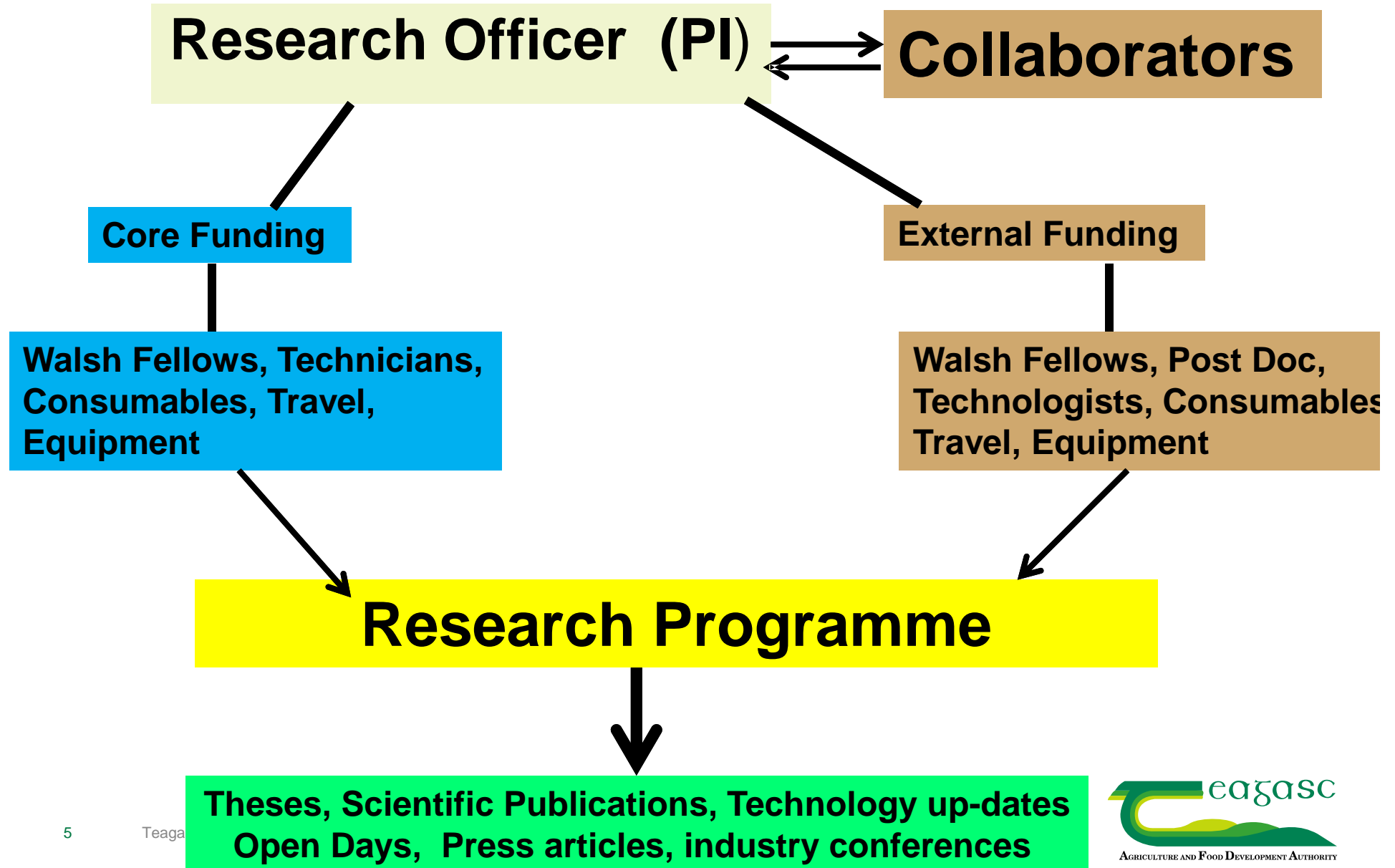
- To produce **profitable animals** and the corresponding **management strategies** to deliver the **productivity, sustainability** and **product quality** targets set out in **the Food Harvest 2020** and **FoodWise 2025** visions.
- Within this to be **highly focused, relevant, collaborative, international, recognised, dynamic, well-financed, productive and give “value for money”**

Strategy

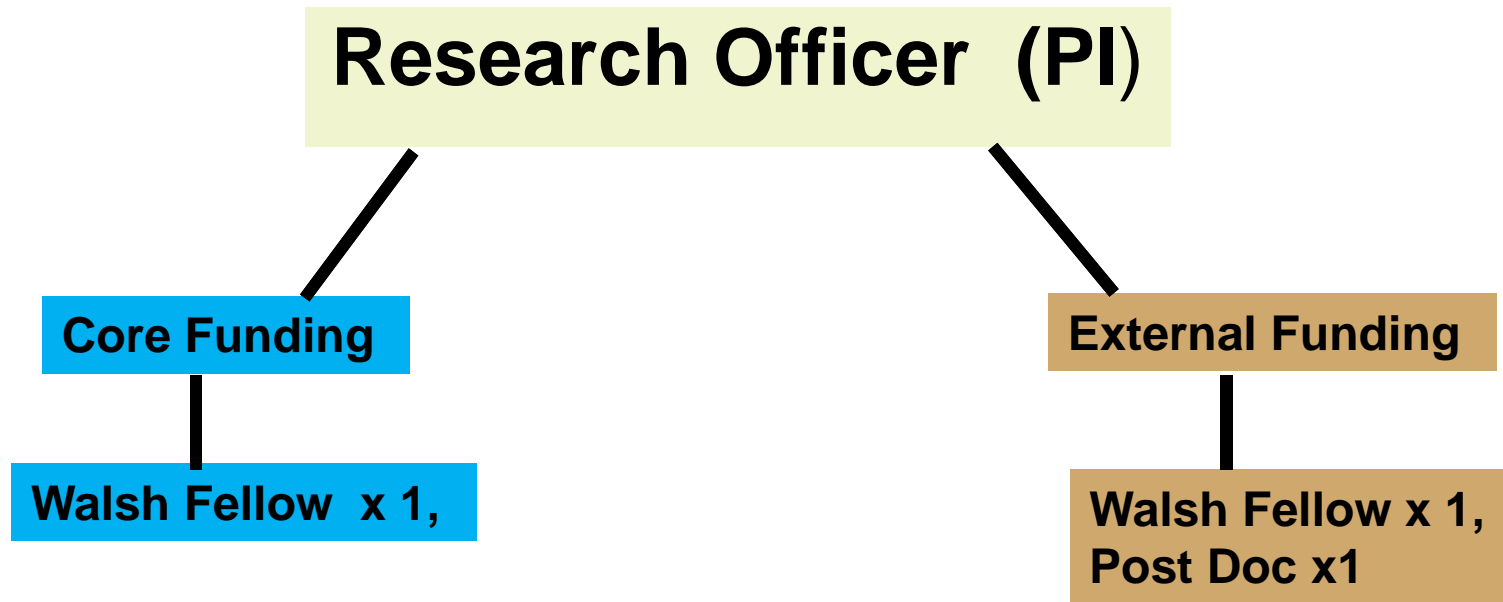
Increasing animal *production efficiency, profitability* and *sustainability*.

- **Hypothesis-driven** research
- **Peer review publications**
- Participative **national & international collaborations**
- National & International **external funding**
- Significant **Walsh Fellow** training.
- Continuous **staff training / re-training**
- Be **efficient – dynamic - responsive**
- Continuously **keep abreast** new national and international **developments**
- **Work collaboratively** with colleagues in other Teagasc research departments
- Work closely with Teagasc KT **specialists, advisors and veterinarians**
- Retain **strong emphasis on impact** at industry level.
- Promote **collegiality**

Structure



Targets for PIs



Lead a Research Programme

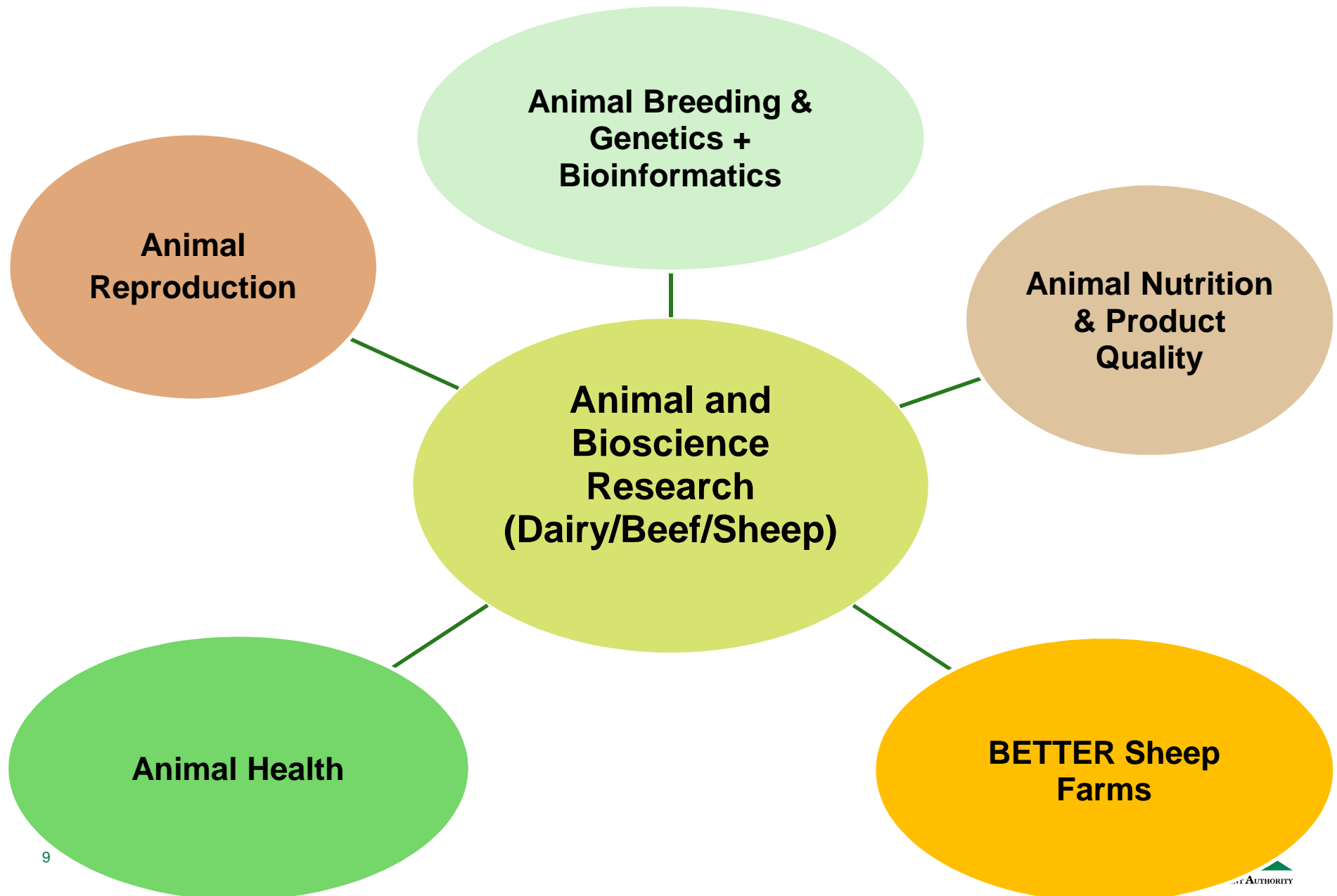
Department Structure & Staffing

- ***Across Enterprises & Centres – Dairy, Beef, Sheep***
- **17 Research staff,**
- **3 Contract Research**
- **9 Post Docs**
- **7 Technologists (3 Permanent)**
- **7.4 Technicians, (6.4 Permanent)**
- **47 Walsh Fellows across – Moorepark, Grange, Athenry,**
- **47 Research Projects**
- **0.2 Administration**
- **Budget 2018 Core €2.748 million**
- **External funding 2018 €1.588 million**

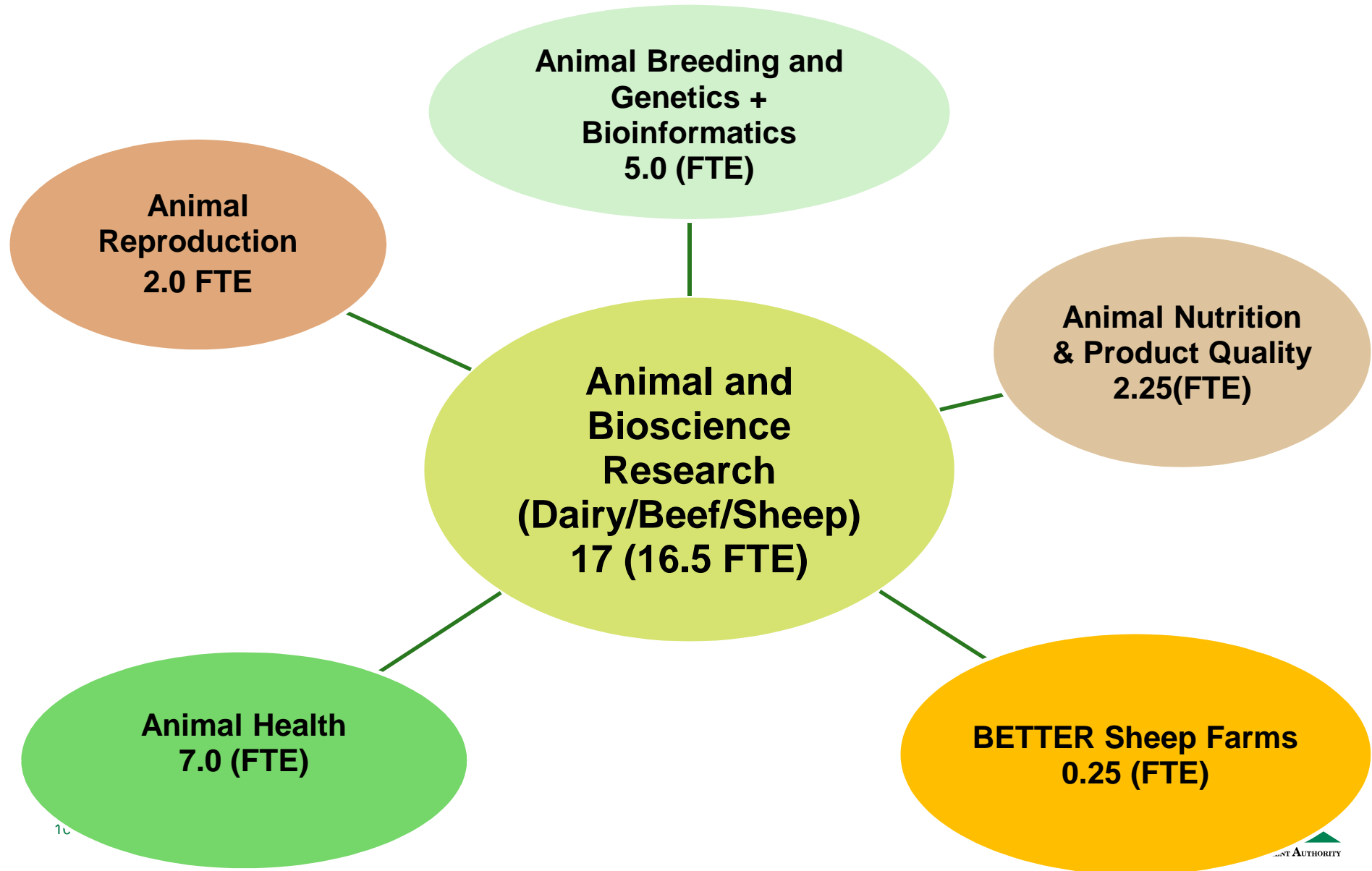
Staff by Centre (FTE)

Category	Moorepark	Grange	Athenry	total
Permanent Research	7	7	3	17
Contract	2	0	0	2
Post Docs	4	4	1	7
Technicians (Permanent)	2	2	2.4	6.4
Technologists (Permanent)	0	3	0	4
Technologists(Contract)	3	3	1	7
Administration	0	0.2	0	0.2
	18	19.2	7.4	43.6

Research Programme Areas



Research resources (PIs) to Programme Areas



Collaborations

National

**RVLS, ICBF, Sheep Ireland, AI industry, AHI
Wetherbys**



Universities

UCC , UCD, NUIG, Trinity, UL

Institutes of Technology

Cork IT, Waterford IT, Tallaght IT



Northern Ireland

AFBNI & Queens University

UK

Aberystwyth University, AHDB, Moredun



France

INRA:Theix, Nouzilly & Rennes

Sweden

SLU

USA:

University of Missouri, University of Wisconsin,



Canada

University of Alberta, Livestock Gentec.

New Zealand

AgResearch, LIC, DairyNZ, Cognosco Animal Health, Massey University.



Australia

University of Melbourne, AgriBio La Trobe University

Netherlands

Wageningen University



Waterford Institute of Technology



Cu tners



Programme Impact

- Peer reviewed publications
- Linkages to industry
- Funding record
- Direct impact at industry

Summary of Publications 2012-2016






















Total Publications	474
Total citations	4256
Citations/Publication	9.00
Total Permanent FTE researcher years	79
Publications /Permanent FTE researcher	6.01
Average Impact Factor	2.86

J. Dairy Sci. 2016 Impact Factor:=**2.474**; 5-Year Impact Factor: **2.855**

Industry Links

- Working with KT colleagues in Teagasc
- Active participation Open Days and farmer conferences
- Department of Agriculture, Food and Marine
- ICBF and Sheep Ireland
- Animal Health Ireland (AHI)
- Cattle Association of Veterinary Ireland (CAVI)
- AI industry
- Wetherbys
- Meat industry Ireland and Meat Factories
- Farm organisations and breed societies
- Farming Press

Genetics & Breeding – Impact
























- **Economic Breeding Index (EBI)** -    
- **Dairy Genomic Selection** -    
- **Beef Terminal and Maternal indices**  
- **“STAR System” for ram evaluations**   
- **Beef and sheep (2018) genomic indices (new)** 
- **Breed and crossbreed comparisons**   
- **Development of C.O.W. index (new)**
- **IDB SNP Chip Version 4 in preparation**    

Frequently developed in conjunction with ICBF and Sheep Ireland and implemented in conjunction with KT colleagues






Health and Welfare

- Guidelines for **castration, weaning, housing, and short and long distance transport** on the welfare of animals.    
- **Codes of practice for animal welfare** at national and European level    
- **Anthelmintic resistance (sheep)**    
- Strategies to **minimise calf losses**    
- Strategies for **Johne's Disease** in dairy herds  
- **Impact of Leptospirosis and neospirosis on reproduction** in beef herds.(New)
- There is at least one Teagasc scientist on each of the **AHI working groups**: BVD, CellCheck, Johne's Disease, IBR, CalfCare, Biosecurity and Parasite Control.    
- **Teagasc Sheep Disease Working Group** (report due spring 2018)

Reproduction

- Management strategies for **compact breeding**    
- Causes of **prolonged postpartum anoestrus in beef cows**    
- **Extent and time of embryo and foetal death in cattle.**    
- **Oestrous synchronisation regimens for dairy and beef cows**  
- Impact and **role of sexed semen in dairy herds**  
- Role of **progesterone in embryo survival**    
- **Short and carryover effects of NEB on embryo survival rate (New)**
- **Basis for improved fertility in “High Fert” cows.** 
- Role of the **ovine cervix in the transport of frozen thawed ram semen.** 
- **Mmicro-element nutrition on reproduction in dairy and beef cattle (New)**
- **Breed and early life nutrition on puberty** in both male and female cattle. (New)
- Impact of **environment on expression of oestrus in cattle.**  

Nutrition and Product Quality

- Development of the **rumen microbiome development and its functionality** from birth onwards 
- **Effects of gender** (castrate v ram) on **taint in lamb meat**. (just completed- huge industry interest) 
- Effect of **on-farm factors and the appearance, sensory characteristics and nutritional composition of beef**. 
- Studies related to the **human health implications** and marketing opportunities for beef from a **grass-based** production system. 
- The impact of **alternative concentrate feed** ingredients on the appearance and **sensory characteristics** of beef. 
- Much of the above done in conjunction with Food Centres in Ashtown (meat) and Moorepark (milk)

Future

Objective: To produce **profitable animals** and the corresponding **management strategies** to deliver the **productivity, sustainability** and **product quality....**

Sustainability

- Profitable
- Environment (GHG, water)
- Improved animal welfare
- Food free of “adulteration”

Irish Animal agriculture

- Grass-based,
- Highly seasonal
- Export focussed



Future -1



Genetics

- Index refinement – more profitable animals
- Genetics of health traits – improved indices
- “Big Data”.
- Continue to develop the IDB SNP chip

Reproduction

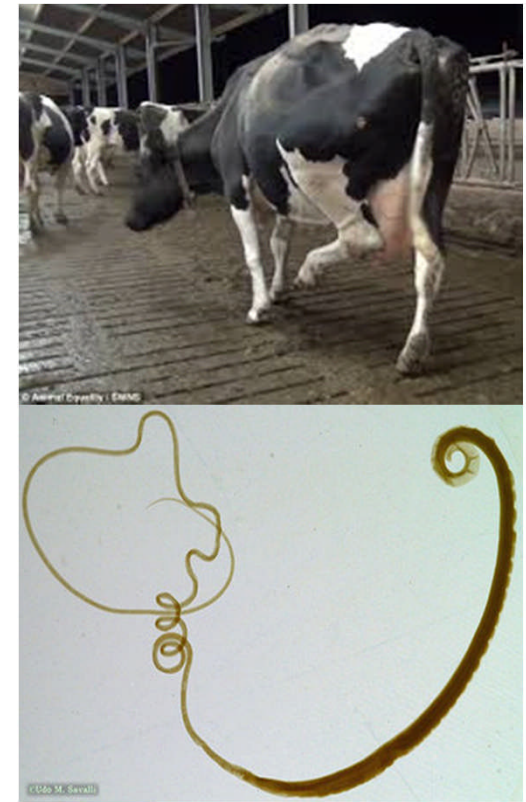
- Reproductive technologies
- “Sexed” Semen
- Puberty in bulls



Future -2

Health and Welfare

- Healthy animals - breeding, vaccines
- Reduce dependence on antibiotics
- Mastitis
- Reduce dependence on anthelmintics
- Lameness



Nutrition and product quality

- Genetics of milk and meat processing
- Improve rumen function and reduce GHG
- Enhance the health promoting benefits of meat and milk
- Field – Fork – Gut



Future -3

Across sub-programmes

- Encourage more staff sabbaticals
- Organisation of choice for visiting scientists
- Strategic staff recruitment (eg. technologists –assays; statistician)
- Staff retention (challenge)
- Recruitment and training Walsh Fellows
- Greater across programme collaboration