



**AUSTRALIAN AND NEW ZEALAND
COLLEGE OF VETERINARY SCIENTISTS**

FELLOWSHIP GUIDELINES

Animal Reproduction (Bovine)

ELIGIBILITY

1. The candidate shall meet the eligibility prerequisites for Fellowship outlined in the *Fellowship Candidate Handbook*.
2. Membership of the College must be achieved prior to the Fellowship examination.
3. Membership may be in any discipline.

OBJECTIVES

To demonstrate that the candidate has sufficient training, experience, knowledge and accomplishment in Animal Reproduction (Bovine), to be recognised as an authority in this field by his/her colleagues in the veterinary profession.

LEARNING OUTCOMES

The candidate will have sufficient training, knowledge and experience in Bovine Reproduction to entitle him/her to be acknowledged by colleagues as a specialist in this area.

The award of a Fellowship in Bovine Reproduction recognises that the awardee has:-

1. Extensive practical experience and accomplishment relevant to Australia and/or New Zealand.
2. Recognition as an authority by veterinary colleagues and other professional people working in the field.
3. **Detailed**¹ knowledge of the normal physiology, endocrinology, anatomy, embryology and immunology of the reproductive tract of cattle.

¹ **Knowledge levels:**

Detailed knowledge — candidates must be able to demonstrate an in-depth knowledge of the topic including differing points of view and published literature. The highest level of knowledge.

Sound knowledge — candidate must know all of the principles of the topic including some of the finer detail, and be able to identify areas where opinions may diverge. A middle level of knowledge.

Basic knowledge — candidate must know the main points of the topic and the core literature.

4. **Detailed** knowledge of the aetiology, clinical signs, pathology, diagnosis, treatment and control measures for infectious and non-infectious diseases affecting reproduction in cattle.
5. **Sound** knowledge of the exotic infectious diseases of cattle which could be introduced into Australia and New Zealand especially as a result of techniques used in reproduction.
6. **Sound** knowledge of the infectious organisms which both directly and indirectly affect reproductive performance in the cow and bull.
7. A broad understanding of comparative reproduction in other domesticated species of at least a “MACVSc” level.
8. A **detailed** knowledge of the core available literature on bovine reproduction.
9. Critically evaluated the relevant literature in the field of bovine reproduction.

This definition includes reproduction as it pertains to both dairy and beef cattle.

SPECIFIC GUIDELINES

1. Anatomy of Reproduction

Development of male and female reproductive tracts, including embryologic development, prepubertal, postpubertal and ageing changes. Anatomy and histology of the reproductive tracts with particular emphasis on the relation between structure and function.

2. Reproductive Physiology

Central control of reproduction, reproductive endocrinology, reproductive cycles, folliculogenesis, spermatogenesis, gamete physiology, gamete transport, coitus, fertilisation, sex determination and differentiation, embryonic development, implantation, placentation, pregnancy, maternal recognition of pregnancy, parturition.

Prenatal foetal physiology and adaptation for survival in the periparturient period.

Postpartum physiology, uterine involution and resumption of cyclicity. Effects of lactation on reproduction.

3. Reproductive Behaviour

Puberty and development of reproductive behaviour, coitus, libido, dominance and social factors affecting reproduction. Abnormalities of reproductive behaviour.

4. Clinical examination of the reproductive system and data collection

Physical examination and explanation of findings, breeding soundness examination libido testing, collection and submission of samples for diagnosis of disease of the reproductive system, semen collection, handling, evaluation and analysis, use of ancillary diagnostic aids.

5. Artificial Breeding

Artificial insemination and semen handling, oestrus detection and synchronisation, super ovulation, embryo recovery, embryo culture, and sexing, micromanipulation, short term storage and transfer of semen and embryos, cryopreservation of gametes and embryos. Current advances in controlling reproductive processes in cattle.

6. Developmental Abnormalities

Inherited abnormalities affecting reproduction, acquired and congenital defects and teratology, and reproductive pathology.

7. Gestation

Physiology, anatomy and endocrinology of pregnancy, pregnancy diagnosis, induction of abortion, disease of pregnancy, diseases of the foetus, embryonic loss and abortion, anatomy, physiology, endocrinology of parturition, disease of parturition, disease of the puerperal period, dystocia and obstetrics, dystocia management as a herd problem, post partum physiology and diseases.

8. Infertility

Infectious, hormonal, environmental, nutritional, congenital, hereditary, management related and miscellaneous causes of infertility. Anoestrus, abnormalities of sexual behaviour, inability to complete coitus, failure of ovulation, fertilisation failure, failure to establish or carry pregnancy and male infertility.

9. Surgery of the reproductive system, including appropriate anaesthesia.

10. Reproductive management

Dairy and beef cattle reproduction systems, breeding and cross-breeding, nutrition, herd health and herd demographics, reproductive disease control and vaccination programs, record keeping, interpretation and analysis, effects of climate, season, housing and geography on reproduction and strategies to optimise reproductive efficiency.

11. Pharmacology of the reproductive system

Oestrus cycle manipulation, treatment of reproductive disorders, induction of oestrus, induction of parturition, induction of lactation and use of antimicrobial drugs.

12. Contraception

13. Miscellaneous

Public health implications of reproductive disease. Exotic disease affecting the reproductive systems. Ontogeny of development of the bovine reproductive system. Reproduction in non-domestic bovidae. Diseases of the mammary gland only as pertinent to reproduction.

EXAMINATIONS

Refer to the *Fellowship Candidate Handbook*.

TRAINING PROGRAM

Refer to the *Fellowship Candidate Handbook*.

The activity log must indicate that the candidate has been responsible for the investigation and reproductive problems of individual or herds and that these investigations were of a sufficiently substantial nature and number to satisfy sections 3.8 and 3.9 of the *Fellowship Candidate Handbook*.

TRAINING IN RELATED DISCIPLINES

Refer to the *Fellowship Candidate Handbook*.

It is recognised that the study of reproduction is a specialist area. However, the candidate needs to demonstrate that he or she has been instructed in medical and surgical techniques relevant to the reproductive tract. The use of advanced diagnostic modalities such as ultrasound, should be demonstrated to be part of the training program.

It is expected that the candidate will have some formal training in gross pathology and clinical pathology as these disciplines relate to the diagnosis of reproductive disease.

EXTERNSHIPS

Refer to the *Fellowship Candidate Handbook*.

All candidates must complete at least one externship. Chapters which have specific requirements with respect to externships which exceed the requirements stipulated in the Blue Book should list them here. Examples might include

- more than one externship
- externships in specific subspecialties within the discipline

ACTIVITY LOG CATEGORIES

The activity log submitted by the candidate should outline relevant activities undertaken during the training program. These can be roughly sub-divided as follows:

Clinical disease – by sex
 herd investigation
 individual animals
 reduced fertility

Each subject must have categories for candidates to divide case material for the Activity Log Summary (see section 4 and 5 of the *Fellowship Candidate Handbook* and the relevant appendices) Each chapter should list here the relevant categories. For example, Small Animal Surgery may divide case material by body system.

RECOMMENDED READING LIST

The candidate is expected to read widely within the discipline, paying particular attention to areas not part of their normal work experiences. This list of books and journals is intended to guide the candidate to some core references, including comparative texts, and other source material. Candidates also should be guided by their supervisor. The list is not comprehensive and is not intended as an indicator of the content of the examination.

Texts

Reproduction in Farm Animal (1987). ESE Hafez (ed). 5th edition. Lea and Febiger, Philadelphia, PA.

Physiology of Reproduction (1991) Marshall

Veterinary Reproduction and Endocrinology (1989) LE McDonald and MH Pineda (eds). Lea and Febiger, Philadelphia.

Current Therapy in Theriogenology I and II (1980, 1986). DA Morrow (ed), WB Saunders Co. Philadelphia

Veterinary Obstetrics and Genital Diseases (1986). SJ Roberts, published by the author, Woodstock, Vermont.

Laboratory Diagnosis of Livestock Abortion (1990) Ca Kirkbridge (ed). Iowa State University Press, Ames, Iowa.

Pathology of Domestic Animals (1985) KVF Jubb, PC Kennedy and N. Palmer. Academic Press Inc. London

Bovine and Equine Urogenital Surgery (1980) DF Walker and JT Vaughan. Lea and Febiger, Philadelphia, PA

Surgery of the Reproductive Tract of Large Animals (1982) JE Cox, Liverpool University Press, Liverpool.

Reproductive Pathology of Domestic Mammals (1990) K. McEntee, Academic Press Inc. San Diego, CA

Abnormal Morphology of Bovine Spermatozoa (1989) AD Barth and RJ Oko. Iowa State University Press, Ames, Iowa.

Large Animal Internal Medicine (1996) BP Smith (ed) Mosby-Year Book, Ontario, Canada.

Current Therapy in Food Animal Practice (1992). J. Howard (ed) W.B. Saunders Co. Philadelphia PA

Herd Health (1985) OM Radostitis and DC Blood. WB Saunders, Co. Philadelphia, PA.

Journals –Research

Journal of Reproduction and Fertility

Biology of Reproduction

Endocrinology

Journal of Endocrinology

Reproduction and Development

Animal Reproduction (Bovine) Fellowship Guidelines 2006

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Animal Reproduction Science

Journals – clinical relevance

Theriogenology

Journal of Animal Science

Journal of Dairy Science

American Journal of Veterinary Research

Journal of American Veterinary Medical Association

Australian Veterinary Journal

Veterinary Record

British, New Zealand, Canadian, South African Veterinary Journals

Journals – review articles

Compendium on Continuing Education in Veterinary Practice

Veterinary Medicine

Veterinary Clinics of North America

Symposia

Proceedings of the Society of Theriogenology Annual Meeting

Proceedings of the University of Sydney Post-Graduate Committee in Veterinary Science

Proceedings Animal Disease Research Workers Meeting

Proceedings of the International Congress on Animal Reproduction

Supplements to the Journals of Reproduction and Fertility

Selective reading for an exam such as this is an acquired art. Many books will contain the same information, some will be out of date. Some journals will contain more information than is needed. The exam requires a comprehensive clinical understanding with a sound basis in physiology. The best approach is to study the basics from books and supplement with comprehensive and recent review articles. Many of the listed journals are strictly scientific publications which should be scanned to glean:

1. Significant advances in understanding bovine reproduction
2. Up to date clinical applications of recent knowledge without necessarily studying all reproductive research.

FURTHER INFORMATION

For further information contact the College Office

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