

Workplan

TITLE: In vitro study approaches to examine rumen metabolism.

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1. BACKGROUND:

The object of my Ph.D. study is improving nitrogen utilization by ruminants with the emphasis on techniques employing fermentation of rumen liquid in vitro. Various diet adjustments (NPN, protein level, additives and specifically treated feed) for ruminants are examined by mean of different in-vitro rumen and intestinal fermentation techniques in our laboratory.

Since my study is mostly focused on diet manipulation in order to achieve better nitrogen utilization, observing this problem more intently from environmental safety view and the role of ruminal microbial population, specifically protozoa will enable to have a comprehensive and integrate view of this topic. Having as a foundation an information (out of scientific articles previously read) about work carried by research group of the University of Aberystwyth, visiting the laboratory will enable me to see it working in practice.

2. AIMS:

The main aim of this Short Term Scientific Mission is to establish a collaboration between University of Udine (Italy) and University of Aberystwyth(UK) via an exchange visit of two weeks to laboratory of the University of Aberystwyth in United Kingdom. Another critical target is a mutual benefit obtained through an open exchange of knowledge and practices, which facilitates discovering new viewpoints and ideas. Practical experience in foreign laboratory helps better understanding of an idea or a concept and make it easier to see the advantages of integrating new practices and gained experience into own work circumstances.

3. WORK TIME TABLE:

Two weeks: 22nd Feb – 7th March.

Day 1:

Arrival and accommodation.

Visit of host University/laboratory and acquaintance with the research group. Final planning of two-week visit laboratory activity. Discussion about results expected. Assessment of possible envisioned shortcomings and ways to overcome them. Safety instructions.

Day 2-10:

Introduction into the work of the laboratory.

Active integration and following of the trial being held. Making a notes about features and peculiarities of the methods applied.

Day 6-10:

Taking probes, making some of laboratory analyses, pertaining to the theme of my visit. Daily discussion of the work done.

Day 7:

Summing up the first week, a draft report for the first half of the visit. Effective follow-up and reporting will give a brief summary, augmented by information from the discussions and information collected.

Day 10-12:

Collecting data obtained during held experiment and exchange visit in total. Final discussion about future collaboration between laboratories, exchange of ideas and contacts.

Day 1-14:

Learning and identifying new knowledge and ideas in order to use and adapt them after the exchange visit. Discussions, meetings, observations of work done, site visits, etc.

Day 15:

Summing up the second week, writing a draft report for the entire visit. Returning to the home University.

4. EXPECTED OUTPUTS:

- Established collaboration between home and host laboratories.
- Familiarity with another continuous culture fermenter system (RUSITEC) and with working methods of the laboratory.
- Better understanding of: methods to decrease methane and nitrogen excretion from ruminants, role of rumen microbial population in digestion and molecular biology of ruminal microorganisms.
- New ideas future work.
- Enhancing laboratory effectiveness and work quality via learning from each other.
- Possible applying of new practices to our own laboratory environment.
- Future collaboration in a field of ruminant nutrition and anticipated joint projects and publications.
- Changes in attitude, encouraging open mindedness.

5. LINK WITH THE OBJECT WITH THE COST ACTION:

The enhancement of rumen nitrogen efficiency is a strategy to mitigate the environmental impact of dairy farms and improve their productivity and sustainability. New and innovative approaches are available to study the rumen metabolism, which have been developed by several universities' research groups. A collaboration between Universities/laboratories working in the same area through the exchange visits is extremely important. This encourages comprehensive approaches in solving problems arising in front of the contemporary Dairy industry.