

## Press release

### New strategies for worm control in ruminants

– „Treat as few as possible and as many as required!“

That was the message emerging from the final meeting of the PARASOL (Parasite solutions) project, which was held in Edinburgh recently. The findings from the three year EU-funded project were presented to the numerous invited guests including policy makers and representatives from industry and agriculture.

The development of anthelmintic resistance by gastro-intestinal nematodes of ruminants to the commonly used anthelmintics is a major problem which threatens the sustainability of livestock production in many countries worldwide.

The aim of the PARASOL project was to identify novel, sustainable approaches to the control of these parasites and to exploit the principles of Targeted Treatment (TT) ) where the entire flock/group is treated based on diagnostic information and Targeted Selective Treatment (TST) where only those individuals which will benefit in some way are treated.

These approaches are very different to current whole herd treatment strategies and through the use of these methods it may be possible to limit the development of anthelmintic resistance as well as provide sustainable worm control for optimal performance and animal health.

On the basis of their research, the PARASOL-team made specific recommendations for changes in the way the drugs are used. They demonstrated that the TT and TST approaches are effective, practicable, reduce selection for resistance and are economically competitive.

Several practical methods were presented to identify those animals in need of treatment. These methods measure the infection or production status of the animal or herd to reveal those that are underperforming because of worm infections and need treating. Recommendations from the project were that, TT or TST approaches should be promoted to allow effective and sustainable worm control and slow the development of anthelmintic resistance, and anthelmintic efficacy should be monitored regularly.

Introducing these new approaches to worm control will require the active co-operation of veterinarians, agricultural advisory services, farmers and the animal health industry.

Current results, specific recommendations and background information concerning the PARASOL-project can be seen on the PARASOL-website ([www.parasol-project.org](http://www.parasol-project.org)) and are ready for download.

### **Further information:**

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### **Notes for the editor:**

- 1. European Framework 6 Program (FP6):** The Framework Program (FP) is the European Union's main instrument for funding research in Europe. Six Framework Programs (FPs) have been implemented since 1984, each covering a period of five years with the last year of one FP and the first year of the following FP overlapping. The current sixth FP (FP6) aims to contribute to the creation of a true "European Research Area" (ERA). ERA is a vision for the future of research in Europe, an internal market for science and technology. It fosters scientific excellence, competitiveness and innovation through the promotion of better co-operation and coordination between relevant actors at all levels. The biggest part of FP budget will be spent on focussing and integrating future research activities on seven thematic priority areas such as Food Quality and Safety.
- 2. Gent University, Faculty of Veterinary Medicine, Laboratory of Parasitology, Merelbeke, Belgium**  
The Laboratory of Parasitology of the Gent University, Faculty of Veterinary Medicine, employs a total of about 22 veterinarians, biotechnologists and laboratory technicians with expertise ranging from parasite epidemiology and immunology to helminth molecular biology. The research group has extensive experience with the epidemiology and control of gastrointestinal nematode infections in cattle and small ruminants in Belgium and the tropics and strong expertise in a broad range of biochemical and molecular techniques including anthelmintic resistance. Laboratory techniques such as ELISA, (Real-Time) PCR, polymorphism and proteomic techniques, recombinant protein production and chromatography are applied routinely.
- 3. University of Bath, Department of Biology & Biochemistry, Bath, England, U.K.**  
The Department of Biology & Biochemistry at Bath has a total of about 150 staff plus about 70 postgraduate research students. The Department has a major strength in invertebrate biology and is a leader in studying macrocyclic lactone action in parasitic nematodes, and in developing functional assays, using ligand-binding and electrophysiology techniques. This expertise is now being applied to all the major groups of anthelmintics. The Dept of Biology & Biochemistry carries out international quality science on insecticide and antibiotic resistance. It contains a wide range of modern equipment and a genomics unit with high-throughput DNA sequencing and microarray readers, together with a dedicated bioinformatics server. The nematode laboratory is well equipped for molecular biology, including real-time PCR. We have facilities for electrophysiology on *Xenopus* oocytes and pharmacological analysis via radioligand binding, making us ideally suited to the work proposed, determining the basis of ML resistance in *Haemonchus contortus* and other species, and using this information to develop and test novel molecular diagnostics. The Department has played a role in several EU projects, currently including HPRN-CT-2002-00258 and is a Marie Curie Training Site 'Post-genomic analysis of microbial virulence' Contract: HPMT-CT-2001-00288.
- 4. University of Bristol, School of Veterinary Medicine, Bristol, England, U.K.**  
Driven by the needs of the European farming community, the Bristol group has been a leader and vocal advocate for studies on anthelmintic resistance for many years. In

1994, they organised an EU funded conference on anthelmintic resistance in Brussels. They have considerable expertise in the isolation and production of parasites, in field and laboratory anthelmintic trials and in the development and optimisation of biological assays for resistance, being first to describe the larval development test. They have been responsible for many of the first reports of anthelmintic resistance in the U.K., including triple resistant worms in goats and the isolation of the first macrocyclic lactone-resistant cattle parasites in the northern hemisphere. They are the first veterinary school in Europe to purchase and study New Zealand Romney sheep that are resilient to nematodes. The group also has expertise in the population dynamics of ruminant nematodes, which equips them to assess the epidemiological consequences of altered anthelmintic treatment strategies. Being in probably the most intensive cattle and sheep producing area of Europe, Bristol vet school is ideally suited to the work in research on cattle and sheep nematodes and the development and standardisation of tests for resistance.

**5. Moredun Research Institute, Penicuik, Edinburgh, EH26 0PZ, Scotland, U.K.**

Moredun Research Institute is a disease research institute that specialises in diseases of livestock, particularly sheep. The institute has two farms and excellent animal breeding, rearing, and accommodation together with very modern laboratory facilities. The parasitology division (30 staff) maintains 8 different species of ovine gastrointestinal nematodes together with a number of anthelmintic resistant isolates. The majority of its Veterinary, Biology and Molecular Biology researchers are engaged on nematode research on vaccines, anthelmintic resistance, alternative approaches to control and immunoparasitology. The research group has extensive experience in the field of anthelmintic resistance particularly with regard to its epidemiology, prevalence and diagnosis. More recently the laboratory has begun to characterise a local triple resistant isolate of *Teladorsagia circumcincta* using *in vivo* (CET, FECRT) and *in vitro* (LMIA, LDA, LFIA) bioassays and molecular approaches (multiplex PCR, sage, microsatellite markers). Moredun Research Institute has held previous EU grants in a number of different research areas concerned with infectious diseases and parasitology. The group used in PARASOL has been involved in 3 parasitological programmes (Fair 3 CT 96-1485; QLRT – 2000-1843 WORMCOPS and a STREP REPLACE).

**6. Innovis™ Ltd mission is:-** ‘To provide the livestock industry of the UK with a first class artificial breeding service for livestock and to use this established customer base to introduce new complimentary services in, scrapie genotyping; parasitology; disease monitoring; breeding consultancy and reference databases; electronic identification and traceability.’ The company has evolved from a spin-out company (CBS Technologies) from the University of Wales Aberystwyth in 2002, acquiring at the time the Edinburgh Genetics’ Malvern Centre. In 2005 Innovis acquired Britbreed Ltd in Scotland providing the opportunity to extend the services to clients in Scotland and the North of England. Innovis™ Limited currently employs 50 staff, operating out of five (5) sites in Wales, England and Scotland. The company’s main office is at Peithyll Centre, Aberystwyth, Ceredigion, Wales, SY23 3HU.