

### **Magnetic separation of animal cells for the use in biomedicine and agricultural fields**

Project coordinator: **Prof.Ing. Peter Chrenek, DSc.**

The objective of the project was magnetic separation of rabbit's semen (not heterospermy) for the insemination purposes, and magnetic separation of stem cells from blood and marrow of rabbits.

### **Influence of body condition and some immunologic factors (CD molecules) on fertilization process in cattle**

Project coordinator: **RNDr. Alexander Makarevič, DSc.**

The objective of the project was to evaluate the influence of nutrition level, assessed by the degree of body condition, on production, biological quality of gametes and embryos in connection with maintenance of optimum fertility.

### **Application of biotechnological methods to preserve animal genetic resources**

Project coordinator: **Prof.Ing. Peter Chrenek, DSc.**

The objective of the project was updating of breeds' state for cryoconservation of samples to create the deposit for the Slovak Pinzgau breed, Valachian breed, Oravka breed and Nitra rabbit; DNA isolation and molecular genetic analysis; testing of genetic variability (ASAG/FAO); paternity verification; testing of genetic markers; cryoconservation of insemination doses of Pizgau breed; cryopreservation of embryos of Pinzgau breed and of rabbits; quality evaluation of vitrified stem cells.

### **Plant substances as natural regulators of ovarian functions in farm animals (ReproPlant)**

Project coordinator: **Assoc.Prof.RNDr Alexander Sirotkin, DSc.**

The objective of the project was to determine the character, mechanisms of influence and spheres of possible utilization of selected prospective matters of plant origin in control of different female reproduction processes. The task was to describe in-vitro and in-vivo effects of green tea and curcumine on proliferation, apoptosis, secretion activity of ovarian cells, growth, differentiation, development and ovulation of ovarian follicles, oocyte ripening, embryo development, their quality as well as extra and intra cellular mechanisms of these effects in farm animals (cattle, pigs and rabbits).

### **Safety of therapeutically and commercially used nanoparticles (NanoRepro)**

Project coordinator: **Assoc.Prof.RNDr Alexander Sirotkin, DSc.**

The objective of the project:

- to develop a method of toxicological analysis of the polymer nanoparticle „simil-opiod peptide- decorated PLGA“ the surface of which is intentionally constructed for brain therapy
- to test and evaluate reproduction toxicity of therapeutically and commercially used nanoparticles with different physical and chemical properties using in vitro and in vivo models
- to determine fitting biological/biochemical parameters that could be used at safety nanoparticles screening with the aim to improve the therapeutic potential of the already used medicaments and to give new information applicable in development of new nano medicaments

- to test a number of selected substances of plant origin with antioxidant and hormonal activity the use of which would prevent the negative influence of nanoparticles on the studied processes

### **Influence of outer and inner factors on emissions and concentrations of harmful gases in housing for pigs, chickens and dairy cows**

Project coordinator: **Assoc.Prof.Ing. Jan Brouček, DSc.**

The objective of the project was exact assessment of emission factors in ammonia and greenhouse gases with pigs; determination of season, age and hybrid combination influence in chickens on ammonia and carbon dioxide concentrations; study of season, milk yield and litter type influence on concentrations of ammonia and greenhouse gases in dairy cows breeding.

### **Quality of lambs in different weight categories assessed on the basis of fatty acids spectrum and physical-chemical properties of meat and fat**

Project coordinator: **Assoc.Prof.RNDr. Milan Margetín, PhD.**

The objective of this project was to evaluate qualitative properties in slaughter lambs in different weight categories on the basis of fatty acids spectrum and physical-chemical properties of meat and fat.

### **Multiplex molecular-genetic analyses in identification of unknown samples of free-living game**

Project coordinator: **Assoc.Prof.Ing. Jaroslav Slamečka, CSc.**

The objective of this project is to map genetic variety in brown hare using the modern molecular-genetic techniques.

### **Laboratory methods for feed evaluation**

Project coordinator : **Ing. Mária Chrenková, PhD., Dr. Jovanka Levcić**

The objective of the project was to obtain more information about starch degradability in heat treated feeds.

### **Utilization of alginit to stabilize and stimulate the effect of probiotic biopreparations in medicine and healthy nutrition**

Project coordinator : **MVDr. Rudolf Žitňan, DSc.**

The objective of this project was to elaborate and test methods of laboratory extracts preparation from alginit, optimum alginit skeleton preparation for “solid state” fermentation of useful bacteria to produce cultivation media with alginit and humates. Selected products of these methods will be tested in experiments in the in vivo conditions.

### **Probiotic microorganisms and control of cytokine response in prevention of immunopathological changes during enteral bacterial infections in poultry**

Project coordinator : **MVDr. Rudolf Žitňan, DSc.**

The objective of the project is to evaluate cytokines expression and immunopathological changes in intestine and in blood of hens and chickens during acute phase of infection with pathogens – *Salmonella enterica* or *Campylobacter* spp.without probiotics application and after probiotic application in the experiments in vivo. To test probiotic microorganisms mainly from the viewpoint of qualitative parameters of immunocompetent cell reactions in the in vitro experiments.

**Influence of fermentation processes and aerobic stability in maize silages on content and digestibility of neutral detergent fibre and starch**

Project coordinator: **Ing. Ľubica Rajčáková, PhD., Ing. Radko Loučka, CSc.**

The objective of the project was research of maize silage quality, namely the influence of fermentation processes and aerobic degradation processes on the content and digestibility of neutral detergent fibre and starch using modern detection analytical methods and sophisticated computer programmes, first of all the correlation of multidimensional data.