

## **Analytic Profile of MDA Competence Division at Liebefeld**

The three research groups of the MDA Competence Division are housed on the Liebefeld site:

Biochemistry of Milk and Microorganisms

Fermentation Organisms

Ingredients

These three research groups primarily conduct analyses of foods of animal origin (milk-, meat- and honey products) and the non-pathogenic microorganisms associated with them, as well as of bodily fluids. Through their activities, they support the inspection and enforcement tasks of agricultural legislation, the Agroscope research programmes and projects, and policy consultation. Furthermore, they train the up-and-coming generation of academic and technical staff, and share their practical and scientific knowledge in the form of publications (peer-reviewed and practice-oriented), presentations, and expert- and teaching activities.

### **‘Biochemistry of Milk and Microorganisms’ Research Group**

Specialising chiefly in the study of milk, dairy products, and food-grade-quality microorganisms, this research group comprises the following three laboratories:

Biochemistry of Milk & Dairy Products

Metabolites & Proteins

Bacterial Metabolism

The scientific research group ‘Biochemistry of Milk & Microorganisms’ offers an efficient platform for the qualitative and quantitative analysis of proteins and metabolites using modern biochemical methods. The main focuses of its research activities are as follows:

- Physiological and biochemical processes and effects on human health of the consumption of dairy products;
- Microbial metabolic activity in lactic-acid and propionic bacteria (e.g. formation of flavourings, gas and biogenic amines);
- Characterisation of the totality of proteins and metabolites in milk and lactic-acid bacteria (proteomics and metabolomics);
- Biochemical ripening processes in cheese (e.g. the determination of lactic acid, amino acids and enzymatic activities);
- Supporting the National Reference Laboratory for Raw-Milk Quality (determining cell count and identifying inhibitors).

### **‘Fermentation Organisms’ Research Group**

The ‘Fermentation Organisms’ Research Group provides scientific support mainly to the Agroscope research groups dealing with issues of cheese quality, authenticity, microbial cultures and bees. It develops and applies various molecular-biological and microbiological methods in order to establish the presence of, identify, and count and type microorganisms in milk, cheese and honey.

Thus, the group develops e.g. methods for analysing the microbial diversity of starter cultures, cheeses and honeys. It also establishes diagnostic tools for identifying brood diseases in bee research or unwanted microorganisms in cheese research. For this, the group takes part in cheese trials as needed, and responds to issues arising from practice. It is also responsible for the maintenance of Agroscope's strain collection at the Liebefeld site.

### **'Ingredients' Research Group**

The 'Ingredients' Research Group develops methods for quantitatively determining chemical test criteria in foods of animal origin: lipids, proteins and protein fractions, protein- and fat degradation products, drying loss, inorganic cations and anions. Freezing point is determined within the context of the National Reference Laboratory for Raw-Milk Quality. In addition, semi-volatile metabolites are identified in various matrices (including blood serum and urine).

In exceptional cases, special testing methods are also made available to external clients at full-cost rates.

Experience gained from methodology development and use is fed into national and international expert panels.