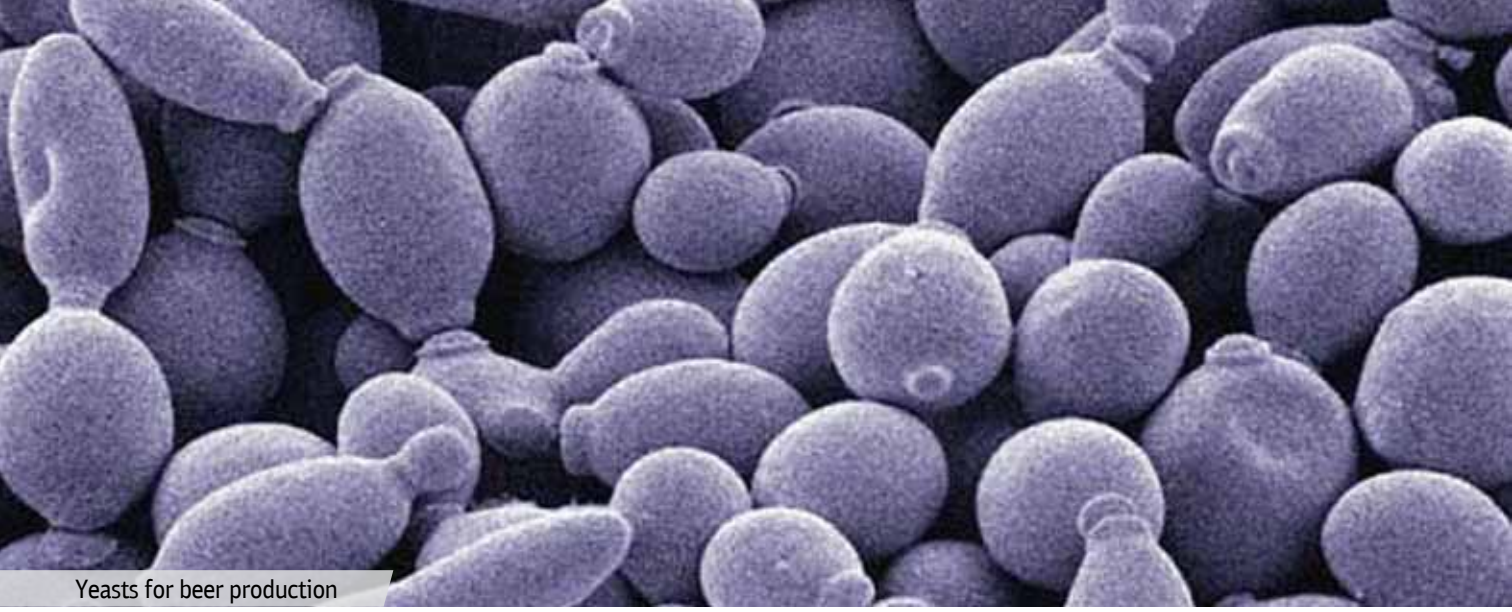
Ural Federal University

- Program duration: 2 years, full -time, 120 credits
- Language of Instruction: English
- Number of Places: 15
- Application Deadline: August 16, 2014
- Program start: September, 2014

MASTER'S PROGRAM IN FOOD BIOTECHNOLOGY

Implemented on the basis of UrFU Institute of Chemical Engineering, Department of Technology for Organic Synthesis



Yeasts for beer production

PROGRAM OVERVIEW

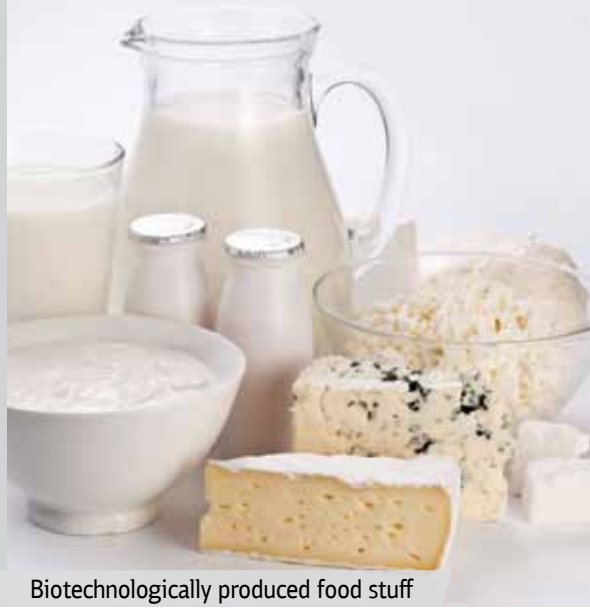
Biotechnology is a globally expanding area with respect to both research and production. **Food Biotechnology** is a branch of food science in which modern biotechnological techniques are applied; on the other hand, it is an essential part of biotechnology aimed at developing new varieties of food involving biological systems in their processing. Different biotechnological processes used to create and improve new food and beverage products include fermentation, food additives, plant and animal cultures, and genetically modified food.

Master's Program in Food Biotechnology is covering different aspects of studies of microorganisms, cell cultures of animals and plants, biological active substances, processes of homeostasis and human nutrition, conversion of raw materials to products using biocatalysts, e.g. enzymes and microorganisms, principals of genetic and metabolic engineering and techniques for determination of effects of genetic-modified products on bio-objects.

Special attention is paid to application of specific equipment for studying properties of microorganisms and cell cultures produced using different substances in laboratory and industry, training in engineering calculations of apparatus and equipment for implementing biotechnological processes of food and biological additives production, biocatalysis and biocatalytic technologies and to methods of quality control of raw materials, half-finished and final products.

Another focus of the program is in-depth studying of such biotechnological processes as manufacturing of beer and low-alcohol drinks, milk products production and conversion of plant raw materials and food additives.

Microbial experiments on food species in Petri dishes



Biotechnologically produced food stuff

COURSES

Compulsory courses: Economics, Management and Innovations in Biotechnology (7 credits); Philosophical Problems of Natural Sciences (4 credits); Modern Problems of Biotechnology (3 credits); Information Technologies in Science and Education (2 credits); Foreign Language (Russian) (8 credits). Homeostasis and Human Nutrition (3 credits); Methodological Fundamentals in Biotechnological Research (4 credits); Design and Equipment of Food Production in Biotechnology (7 credits); Quality Control of Biotechnological Products (5 credits); Biocatalysis and Biocatalytic Technologies (3 credits); Metabolic Engineering in Food Biotechnology (5 credits);

Elective courses: Genetic Engineering and Food Products/ Molecular Genetic Fundamentals of Biotechnology (3 credits); Beer and Low-alcohol Beverages/ Dairy Products Processing (5 credits); Biotechnological Processing of Plant Materials/ Biotechnological Production and Application of Food Additives (5 credits).

There are approximately 20 contact hours per week.

Students working in the Laminar Flow Benches

Students performing microbiological experiments in a laboratory

LEARNING AND RESEARCH ACTIVITIES

The integrated program of lectures, tutorials, seminars, laboratory assignments, scientific, practical, pedagogical trainings, case studies and research perspectives is aimed at enhancing student's knowledge and understanding. Master's program in Food Biotechnology is supported by seminars delivered by industry specialists and international experts and by visits to food bio-technology laboratories and industries. Upon completion of the taught component of the Master's program in Food Biotechnology, a student will have an opportunity for work-based learning or **project** work with the frames of preparing a final research project. It may be undertaken in a research institute or university research laboratory, or food biotechnology company. The project phase of the Master's program in Food Biotechnology is designed to allow students to apply the knowledge they obtained in practice.

AFTER COMPLETING THIS PROGRAM GRADUATES WILL BE ABLE:

- To study enzymes, microorganisms, cell cultures of animals and plants, as well as the products of their biosynthesis and biotransformation;
- To develop modern technologies of food products and biologically active additives manufacturing using microbiological synthesis, biocatalysis, gene engineering and nanobiotechnologies;
- To develop scientific and technical documentation and production procedures for biotechnological production manufacturing;
- To design new biotechnological manufactures as well as to improve current ones according to regulations of the national and international standards;
- To organize and to carry out quality control of raw materials, intermediate and final products.

CAREER PROSPECTS

The program offered will provide students with the knowledge, skills and competencies required to gain employment within the food and drink industry in a range of areas such as production, quality control, product development and innovation, and to manage change in a complex market. The graduates will have access to international job opportunities in small or large multinational companies, government authorities, universities, research institutions and other organizations. Graduates of the Master's program can continue their studies on a Doctoral program.

OUR PARTNERS

Private Companies

- "Zelenyi Bor" (Food Products and Drinks Manufacturing Company), Yekaterinburg, Russia;
- "Urallat" (Milk Products Manufacturing), Berezovsky, Russia;
- "Unimilk-Danone" (Milk Products Manufacturing), Yekaterinburg, Russia;
- "Patra" (Beer and Low-alcohol Beverages Manufacturing), Yekaterinburg, Ruissia

Research institutions

Institute of Organic Synthesis, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russia

ADMISSION REQUIREMENTS AND HOW TO APPLY

Admission Requirements

A BSc/an equivalent BSc/ Engineer Diploma in Biotechnology, Biochemistry, Biochemical Engineering, Biology or in related fields.

How to apply

Contact the International Student Support Center. You can either send us an e-mail (**admission_urfu@ustu.ru**, **oligolub@gmail.com**) or fill in the Admission Form at our official web-site **www.urfu.ru**. For all program details you can contact the program facilitator, Prof. Elena Kovaleva, **e.g.kovaleva@urfu.ru, gek1969@bk.ru**

Tuition Fees

4600 USD per year

The Academician Oleg Chupakhin is delivering a lecture

ABOUT THE INSTITUTE OF CHEMICAL ENGINEERING

The Institute of Chemical Engineering at Ural Federal University (UrFU) is among the leading institutes at the University and also in Ural region and, with more than 800 undergraduates and 85 postgraduates. Founded in 1920, as a Faculty of Chemical Technology of First Ural University, it today consists of 10 departments. The institute offers the undergraduate and postgraduate programs in chemical and biological technologies, including biotechnology, pharmaceuticals, and environmental protection. The research carried out is of high international standard and is world-leading in several areas, such as the chemistry of bioactive heterocyclic substances, luminescent organic and organometallic materials, electrochemical materials technology, fibre optic materials and IR beam guides. The Ural research school in organic chemistry is enjoying international recognition. Triazavirin, a novel antiviral drug, for instance, is one of several unique drugs developed by the scientists of this school at the Institute.

The Institute's graduates find successful employment at companies in the chemical industry, production of equipment for the chemical industry, pharmaceuticals, at companies and organizations aimed at the protection of the environment. The Institute is well equipped with state of the art laboratory equipment. The Bachelor program in Technology of electrochemical manufactures here is the only one in the Ural region to boast the European EUR-ACE® quality mark.

The Academician and Vice-President of the Russian Academy of Sciences (RAS), as well as the Chairman of the Ural Branch of RAS Valery Charushin, and the Academician of RAS and the Head of the Department of Organic Chemistry Oleg Chupakhin, are famous graduates and current staff members of the Institute.

UrFU main building

ABOUT URAL FEDERAL UNIVERSITY

Founded in 1920, **Ural Federal University (UrFU)** is now one of the top ranked educational and scientific centres in Russia training undergraduate and graduate students and carrying out research in natural sciences, engineering, mathematics and IT, economics, social sciences, arts and humanities. The university is comprised of 17 institutes, dozens of research laboratories and centers in the city of Yekaterinburg and Ural region. UrFU offers about 350 programs. The total number of students at UrFU exceeds 50 000 today. More than 2 500 specialists, who graduated from the University, now work in various countries of Europe, Asia and Africa. There are more than a thousand foreign students studying at UrFU nowadays. UrFU positions itself as an internationally-oriented University and every year increases number of foreign students of both undergraduate and graduate level.

Ural Federal University

named after the first President of Russia B.N.Yeltsin

Institute of Chemistry and Technology

CONTACTS

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