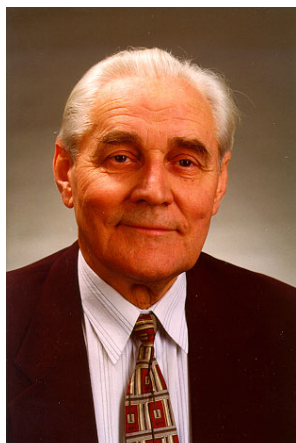


**CURRICULUM VITAE****MARTINS BEKERS****Full Member, Latvian Academy of Sciences, Prof., D.Sc.**

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University of Latvia  
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**Linguistic ability:** Latvian, English, Russian, GermanE-mail: [mbek@latnet.lv](mailto:mbek@latnet.lv)Webpage: <http://www.lza.lv/scientists/bekersm.htm>**Birth date and place:** August 31, 1928, Madona, Latvia**Interests**

Food and Environmental Biotechnology: Fermentation Processes, Cell Immobilisation  
Industrial Microbiology: Yeasts, Lactic Acid Bacteria, Acetic Acid Bacteria, *Zymomonas mobilis*  
Physiology of Primary Metabolites Producers, Osmotolerance  
Anabiosis of Microorganisms  
Biofuel Problems – Bioethanol, Biogas  
Closed Biotechnological Systems  
Functional food production

**Education**

1979 – D.Sc. Institute of Food Technology, Kiev, Ukraine,  
1959 – Ph.D. Latvian Academy of Sciences,  
1953 – M.S. Latvian University of Agriculture (Faculty of Food Technology),

**Experience**

2000 – present State Emeritus Scientist  
1993 – present Professor, Head of Laboratory of Industrial Microbiology and Food Biotechnology, Institute of Microbiology and Biotechnology  
1993 – 1997 Director, Institute of Microbiology and Biotechnology, University of Latvia  
1972 – 1995 Professor, Faculty of Chemical Technology, Riga Technical University  
1962 – 1991 Deputy Director, Institute of Microbiology  
1962 – 1993 Senior Researcher, Head of Laboratory of Industrial Microbiology, Institute of Microbiology, Latvian Academy of Sciences  
1959 – 1962 Engineer and Researcher, Latvian Food Technology and Design Office  
1953 – 1959 Engineer, Riga Yeast Factory

**Academic Appointments**

1993 Full Member, Academy of Agriculture and Forestry Science of Latvia  
1989 Honorary Doctoral Degree, Dr.h.c. (Food Technology)  
Latvian University of Agriculture  
1978 Full Member, Latvian Academy of Sciences  
1973 Corresponding Member, Latvian Academy of Sciences  
Honorary Member, All-Union (USSR) Society of Microbiology

**Awards**

- 2000 – present State Emeritus Scientist  
2008 The award of the University of Latvia the Development of scientific school  
2003 The Three Star Order of the Republic of Latvia  
2000 The Latvian Academy of Sciences and Joint-stock Company “Aldaris” Prize  
2000 The Latvian Academy of Sciences Grand Medal  
1998 The Latvian Academy of Sciences H. Skuja Prize  
1984 S. Vavilov Medal (All-Union Scientific Society)  
1970 – 1980 The Latvian Academy of Sciences Presidium Award (4)  
1965, 1980 The Latvian SSR State Prize  
1986 The Latvian Academy of Sciences A. Kirchensteins Prize  
1978 The Merited Scientist of Latvia  
1970 – 1980 The Gold (2) and Silver (3) Medals of USSR Exhibition of National Economy Achievements

**Professional Activities and Memberships**

- 1993 – present Chairman, The Latvian Academy of Sciences Henrichs Skuja Prize (in Biology) Committee  
Chairman, The Latvian Academy of Sciences Paulis Lejins Prize (in Agriculture) Committee  
1990 – present President, Latvian Biotechnology Association - 2002  
Member of Working Party “Environmental Biotechnology”, EFB  
Member of the International Commission on Yeasts and Yeast-like Organisms, Union of Microbiological Societies  
1962 – present Member, Latvian Society of Microbiology  
1991 – 2007 Member, Latvian Council of Science Expert Committee (Molecular Biology, Microbiology and Biotechnology)  
1996 – 2005 Chairman of Scientific Council, Institute of Microbiology and Biotechnology, University of Latvia  
1995 – 2004 Chairman, Latvian Council for State Emeritus Scientists  
1980 – 1999 Representative from Latvia, General Assembly of the European Federation of Biotechnology (EFB)  
1990 – 1998 Member of Working Party “Physiology of Microorganisms”, EFB  
1991 – 1994 Member, Latvian Council of Science  
1962 – 1993 Member of Scientific Council, Institute of Microbiology  
1980 – 1985 Member of Presidium, All-Union (USSR) Society of Microbiology  
1974 – 1982 Member, All-Union (USSR) Problem Council for Physiology and Biochemistry of Microorganisms

**Member of Advisory Boards**

- 1991 – present Biotechnology (Multi-volume comprehensive treatise), 2nd Edition, H. J. Rhem and G. Reed (Eds.)  
1980 – present Acta Biotechnologica  
1981 – 1988 Encyclopaedia of Soviet Latvia  
1974 – 1984 Microbiology, Moscow  
1982 – 1988 Applied Microbiology and Biotechnology  
1980 – 1990 Proceedings of Latvian Academy of Sciences

**Lectures**

- 1999 Functional food. Latvian Academy of Sciences  
1998 Enzymatic and bacterial fermentation of coat mushroom for functional food production. Forum for Applied Biotechnology, Brugge (Belgium)



- 1998 Stabilisation of immobilized cells systems using a modified metal surface, fructose polymer levan and high cell concentration. Symposium, Cordoba
- 1996 Recent research in bioethanol production. Workshop, Sounion, GR
- 1996 Closed biotechnological system for the manufacture of non-food products from grain. Int. Conf. "Cereals: Novel Uses and Processes", Manchester
- 1995 Bioenergy and bioenergy related research in Latvia. IEA Bionergy conference, Oslo
- 1993 Wasteless processing products of photosynthesis and enhancement of soil Microsymposium "Problems of Environmental Biotechnology", Working party Environmental Biotechnology, EFB, Riga
- 1990 Closed and semiclosed biotechnological systems for agriculture. Workshop "Bioprocess Technology for Closed Cycle Production", Graz, Austria
- 1989 Wet green crop fractionation: small-scale operation in the USSR. 3rd Int. Conf. on Leaf Protein Research, Italy - Pisa, Perugia, Viterbo
- 1983 Growth and dehydration of yeasts which use starch-containing substrates. 8th Int. Specialised Symp. on Yeasts, Bombay
- 1980 Anaerobic fermentation of plant juice and evaluation of fermentation products. 6th Int. Fermentation Symp. and 5th Int. Symp. on Yeast, London (Ontario, Canada)
- 1979 Development of microbial and enzyme biotechnology in Latvia. US/USSR Conference, Cambridge, Massachusetts
- 1978 Biomembranes of yeast during dehydration - rehydration. 6th Int. Specialised Symp. on Yeast, Montpellier, France
- 1973 Recovery and growth of dried yeast *Saccharomyces cerevisia*. 3rd Int. Specialised Symp. on Yeasts, Finland
- 1972 Some aspects of submerge culture intensification. Int. Symp. on Advances in Microbial Engineering, Marionske Lazne, Czechoslovakia
- 1970 Mass conversion and heat production during aerobic biosynthesis of L-lysine by *Brevibacterium sp.* X Int. Congress of Microbiology, Mexico

### Courses

- 1995 – present Food Biotechnology, University of Latvia
- 1973 – 1993 Introduction in Biotechnology, Riga Technical University

### Selected list of publications

#### Books

- Bekers M. Dehydration of Microbial Biomass and Extracellular Metabolites, 1967, Riga, Zinatne, 361 pp. (in Russian).
- Bekere V., M. Bekers. Lysine by Microbial Synthesis, 1974, Riga, Zinatne, 124 pp. (in Russian and Latvian).
- Bekers M. Introduction in Biotechnology, 1974, Riga, Zvaigzne, 211 pp. (in Latvian), 1978, Moscow, Food Industry Press, 231 pp. (in Russian).
- Bekers M. (Ed.) et. al. Biotechnology of Microbial Synthesis, 1980, Riga, Zinatne, 350 pp. (in Russian).
- Bekers M., B. Damberg, A. Rapoport. Anabiosis at Microorganisms, 1981, Riga, Zinatne, 247 pp. (in Russian).
- Bekers M., G. Liepins, J. Raipulis. Horizons of Biotechnology, 1987, Riga, Avots, 219 pp. (in Latvian).
- Bekers M., G. Liepins, J. Raipulis. Biotechnology, 1990, Moscow, Agropromizdat, 333 pp. (in Russian).



- Bekers M. (Ed.) et al. Transformation Products of Photosynthesis, 1984, Riga, Zinatne, 246 pp. (in Russian).
- Bekers M., A. Vigants. Chapter: Production of Alcohol for Fuel and Organic Solvents. - In: Encyclopedia of Life Support Systems (EOLSS) UNESCO, 2001.

### Papers

- Bekers M., A. Rapoport. Conservation of Yeasts by Dehydration. - Biochemical Engineering / Biotechnology, 1987, vol. 35. pp. 127-174.
- Bekers M., J. Shvinka, L. Pankova, M. Laivenieks, I. Mezharde. A Simultaneous Sucrose Conversion into Ethanol and Levan by *Zymomonas mobilis*. - Appl. Biochemistry and Biotechnol., 1990, vol. 24/25, pp. 265-274.
- Vigants A., P. Zikmanis, M. Bekers. Sucrose Medium Osmolality as a Regulator of Anabolic and Catabolic Parameters in *Zymomonas* Culture. - Acta Biotechnologica, 1996, N 4, pp. 321-327.
- Rapoport A., G. Khroustalyova, G. Camanis, M. Bekers. Anhydrobiosis of Yeasts: Permeability of the Plasma Membrane. - Microbiology, 1995, vol. 64, N 1, pp. 229-232 (in English version of the journal).
- Bekers M., P. Zikmanis, A. Vigants et. al. Influence of Growth Medium Osmolality on Levan Production by *Zymomonas mobilis*. - 7th European Congress on Biotechnology. Abstract Book, vol. 4, Nice, 1995, p. 55.
- Marauska M., A. Vigants, A. Klincare, D. Upite, E. Kaminska, M. Bekers. Influence of Water Activity and Medium Osmolality on Growth and Acid Production of *Lactobacillus casei* var. *alactosus*. - Proc. Latvian Acad. Sci., 1996, vol. 50, N 3, pp. 144-146.
- Laukevics J., M. Bekers, A. Danilevics, E. Kaminska, A. Lisovska, D. Upite, A. Vigants. Suitability of Some Sorts of Grain for Ethanol Fermentation in Latvia. - Proc. Latvian Acad. Sci., 1996, vol. 50, N 3, pp. 137-139.
- Linde R., S. Gonta, A. Karsakevich, I. Vīna, M. Bekers. A Method of Purification and Characteristics of *Zymomonas mobilis* 113s Levan. - Proc. Latvian Acad. Sci. 1996, vol. 50, N 3, pp. 140-143.
- Bekers M. Biofuel Production as a Component of Closed Biotechnological System. - Proc. Latvian Acad. Sci, 1995, N 9/10, pp. 113-120.
- Auzina L., R. Kruce, D. Upite, M. Bekers. Apple Juice Fermentation by Liquid and Dry Instant Wine Yeast. - Proc. Latvian Acad. Sci., 1996, vol. 50, N 3, pp. 130-132.
- Klincare A., M. Bekers, I. Ramane, V. Auzina, D. Upite, V. Lupmane, I. Leimane, R. Are, Ā. Lisovska. Bacterial Strain *Lactobacillus casei* var. *alactosus* - Producer of L(+) Lactic Acid. - LV 5677, 1992, Int. Cl. C12P7/56.
- Bekers M., J. Svinka, J. Raipulis, M. Laivenieks, L. Pankova, I. Mezharde. *Zymomonas mobilis* Strain 113s. - LV 5709, 1993. Int. Cl. C12P19/04.
- Bekers M., J. Laukevics, D. Upite, E. Kaminska, A. Karsakevica, I. Vīna, E. Ventina, A. Vigants, S. Gonta, R. Linde. Inoculation of Microbial Cells Culture Immobilized in Poreous Carrier. - LV 11973 B, 1997. Int. Cl. C12N11/00.
- Bekers M., M. Marauska, J. Laukevics, M. Grube, D. Karklina, U. Viesturs, A. Vigants. Production of Polyfunctional Food Products from Grain. - LV 123304 B, 1999.
- Karsakevich A., E. Ventina, I. Vīna, M. Bekers, S. Gonta, R. Linde, E. Kaminska. The Effect of Chemical Treatment of Stainless Wire Surface on *Zymomonas mobilis* Cell Attachment and Product Synthesis. - Acta Biotechnologica, 1998, vol. 18, N 2, pp. 255-265.



- Bekers M., R. Linde, A. Danilevich, E. Kaminska, D. Upite, A. Vigants, R. Scherbaka. Sugar Beet Diffusion Juice and Syrup as Media for Ethanol and Levan Production by *Zymomonas mobilis*. - Food Biotechnology, 1999, vol. 13, N 1, pp. 107-119.
- Bekers M., M. Marauska, M. Grube, U. Viesturs, J. Laukevics, A. Vigants, D. Karklina. Oat Based Polyfunctional Food. - In: Proc. 13th Forum for Applied Biotechnology. Gent, Sept. 22-23, 1999, Part II, pp. 589-592.
- Bekers M., E. Ventina, A. Karsakevica, I. Vina et al. Attachment of Yeast to Modified Stainless Steel Wire Spheres, Growth of Cells and Ethanol Production. - Process Biochemistry, 2000, vol. 35, pp. 523-530.
- Bekers M., A. Vigants, J. Laukevics, M. Toma, A. Rapoport, P. Zikmanis. The Effect of Osmoinduced Stress on Product Formation by *Zymomonas mobilis* on Sucrose. - Int. J. Food Microbiol., 2000, N 55, pp. 147-150.
- Vina I., A. Karsakevich, M. Bekers. Stabilization of Anti-leukemic Enzyme L-asparaginase by Immobilization on Polysaccharide Levan. - J. Mol. Catalysis B: Enzymatic, 2001, pp. 551-558.
- Bekers M. Bioconversion of Agricultural Biomass into Protein, Lysine, Biofuel and Valuable Food Products. - Proc. Latv. Acad. Sci., B, 2001, vol. 55, N 2/3, pp. 117-123.
- Bekers M., R. Linde, D. Upite, E. Kaminska, U. Viesturs. Sugar Beet Juice Fermentation by *Zymomonas mobilis* Attached to Stainless Steel Wire Spheres. - Acta Biotechnologica, 2001, vol. 21, pp. 89-96.
- Bekers M., M. Marauska, J. Laukevics, M. Grube, A. Vigants, D. Karklina, L. Skudra, U. Viesturs. Oats and Fat-free Milk Based Functional Food. - Food Biotechnology, 2001, vol. 15, N 1, pp. 1-12.
- M. Grube, M. Bekers, D. Upite, E. Kaminska. IR-spectroscopic Studies of *Zymomonas mobilis* and Levan Precipitate. - Vibrational Spectroscopy, 2002, vol. 28, pp. 277-285.
- Bekers M., D. Upite, E. Kaminska, M. Grube, J. Laukevics, I. Vina, A. Vigants, P. Zikmanis. Fructan Biosynthesis by Intra- and Extracellular *Zymomonas mobilis* Levansucrase after Simultaneous Production of Ethanol and Levan. - Acta Biotechnologica, 2003, N 1, pp. 85-93.
- Bekers M., D. Upite, E. Kaminska, J. Laukevics, R. Ionina, A. Vigants. Catalytic Activity of *Zymomonas mobilis* Extracellular "Levan-levansucrase" Complex in Sucrose Medium. - Proc. of 17th Forum for Applied Biotechnology, Gent, Part I, 2003, pp. 321-324.
- Vigants A., S. Marx, R. Linde, S. Ore, M. Bekers, I. Vina, H. Hicke. A Novel and Simple Method for the Purification of Extracellular Levansucrase from *Zymomonas mobilis*. - Current Microbiology, 2003, vol. 47, N 3, pp. 198-202.
- Bekers M., M. Marauska, M. Grube, D. Karklina, M. Duma. New Prebiotics for Functional Food. - Acta Alimentaria, 2004, vol. 33, N 1, pp. 31-37.
- Semjonovs P., M. Marauska, M. Bekers, M. Grube, R. Linde. Utilisation of Fructans by *Bifidobacterium lacticum* 12. - Engineering in Life Sciences, 2004, vol. 4, pp. 433-437.
- Bekers M., D. Upite, E. Kaminska, J. Laukevics, M. Grube, A. Vigants, R. Linde. Stability of Levan Produced by *Zymomonas mobilis*. - Process Biochemistry, 2005, vol. 40, N 5, pp. 1535-1539.
- Bekers M., M. Grube, D. Upite, E. Kaminska, R. Linde, R. Scherbaka, A. Danilevich. Carbohydrates in Jerusalem artichoke powder suspension. Nutrition and Food Science, 2007, vol. 37, N 1, pp. 42-49.
- Semjonovs P., P. Zikmanis, M. Bekers. An influence of Fructan containing concentrate from Jerusalem Artichoke Tubers on the Development of Probiotic Dairy Starter on Milk and Oat – based Substrates. Food Biotechnology, 2007, 21(4), pp. 349-363.



**Research Projects**

- 2004 – present M. Bekers (Head of Joint Project). Non-traditional use of biomass. Latvian Council of Science
- 2001 – 2004 M. Bekers (Head of Joint Project). Biofuel Production Technology and the Possibility of its Implementation in Latvia. Latvian Council of Science
- 1997 – 2000 M. Bekers (Head of Programme). The Development of Technology for Biofuel Production in Latvia. Latvian Council of Science
- 1997 – 1999 M. Bekers (Head of Project). Extracellular Product Synthesis by *Zymomonas mobilis* using Immobilised Cell Systems and Physiology of Immobilised Culture. Latvian Council of Science
- 1990 – 1993 M. Bekers (Head of Project). L-lysine Production using Byproducts of Distillery. ALKO, Finland
- 1994 – 1996 M. Bekers (Head of Latvian Part of Project in cooperation with South Jitland University). Plant Juices as Raw Material for Biotechnology
- 1994 – 1995 M. Bekers (Head of Project). Technological Properties of Grain Produced in Latvia. Ministry of Agriculture
- 1991 – 1996 M. Bekers (Head of Project). Biosynthesis of Primary Metabolites and Storage Polymers by *Zymomonas mobilis* and *Lactobacillus*; Influence of Medium Osmolality and Turbidity. Latvian Council of Science
- 1985 – 1993 M. Bekers (Head of Project). Microbial Biosynthesis of Biologically Active Compounds. Latvian Academy of Sciences
- 1976 – 1986 M. Bekers (Head of Project). Transformation Products of Photosynthesis (Leaf Protein, Biogas). Latvian Academy of Sciences
- 1962 – 1985 M. Bekers (Head of Project). The Anabiosis of Microorganisms:- Physiology and Biotechnology. Latvian Academy of Sciences
- 1963 – 1975 M. Bekers (Head of Project). The Development of L-lysine Feed Concentrate Technology. Latvian Academy of Sciences
- 1961 – 1964 M. Bekers (Head of Project). The Development of Vitamin B<sub>12</sub> Technology by Methane Fermentation of Distilleries Wastes. Latvian Ministry of Food Industry
- 1953 – 1958 M. Bekers. Intensification of the Bakers Yeast Dehydration using Fluidised Bed Method. Riga Yeast Factory