



**School of Biosciences, MACFAST**  
Organizes a Workshop on

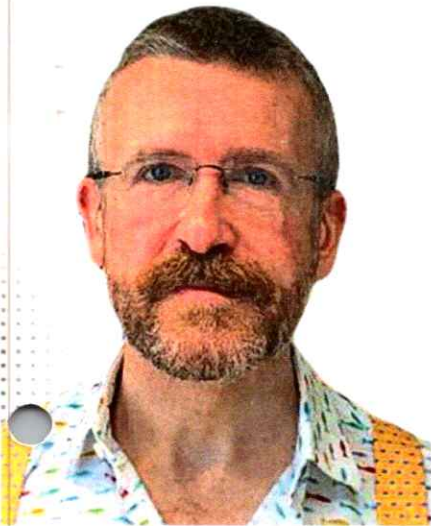
# Research Methodology

**Resource Person**

**Dr. Michael Sauer**

Department of Biotechnology,  
BOKU University of Natural Resources and  
Applied Life Sciences, Vienna.

**DATE: 8<sup>th</sup> January 2018**





MAR ATHANASIOS COLLEGE FOR ADVANCED STUDIES TIRUVALA

(MACFAST)

Thiruvalla - 689101


### School of Biosciences

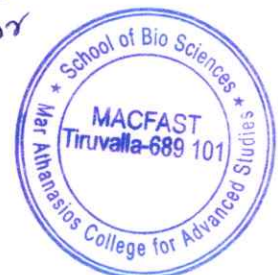
#### Report on workshop on Research Methodology by Dr. Michael Sauer

The Research Methodology workshop was organized by the School of Biosciences on the 8th of January 2018, at the MACFAST auditorium. The program was mainly aimed at bioscience students. The program was coordinated by Dr. Jenny Jacob, School of Biosciences. 90 students and participants from various departments were part of this workshop. The Workshop was handled by Dr. Michael Sauer Assoc. Prof., Department of Biotechnology, BOKU University of Natural Resources and Applied Life Sciences, Vienna. He started the session by giving an introduction to research, different types of research, experimental design, the need for finding an unanswered problem to start research, and the importance of literature review. Various online catalogs and search engines used for research purposes, various statistical approaches, reference formats, and software were also included in his talk. He also emphasized the purpose of the research proposal, the required features, and also highlighted the contents that should be included while writing a research proposal. As a part of the workshop training, the students were grouped and were asked to write a model proposal. Dr. Michael Sauer also evaluated a few randomly selected proposals and gave suggestions to improve the same. The talk was very informative and gave the student a general idea of how to select a research topic for their MSc dissertation and also became aware of the path that they should follow while performing research.



  
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JENNY JACOB  
Coordinator



Assoc. Prof. Priv.-Doz. Dipl.Natw. ETH FH-Prof. Dr. Michael Sauer

Institute of Microbiology and Microbial Biotechnology

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BOKUonline-Visitenkarte

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## Curr. Vitae

- 2021 - Associate Professor (Industrial Microbiology)
- 2014 - Co-founder Syconium Lactic Acid GmbH
- 2014 - Head of the Christian Doppler-Laboratory for Biotechnology of Glycerol
- 2012 - Venia Docendi for Industrial Microbiology
- 2010 - Senior Scientist, Department of Biotechnology, BOKU
- 2008 - Prof (FH)
- 2004 - 2010 FH Campus Wien, School of Bioengineering
- 2003 - 2004 PostDoc, BOKU, IAM
- 2001 - 2003 Patentsachbearbeiter, Frankfurt am Main
- 1999 - 2001 PostDoc, University of Milano-Bicocca, Dip. of Biotechnology and Biosciences
- 1996 - 1998 PhD, Biochemistry, University of Vienna, Institute of Molecular Biology
- 1990 - 1995 Studies Biotechnology, ETH Zürich

## Statistik Austria, science classification

biochemistry; biotechnology; biotechnology; microbiology; genetic engineering; ethics;

## Expertise

Biotechnology; Molecular Biology; Bioethics; White Biotechnology; Industrial Microbiology;

## Appointments/Memberships in Professional Societies

- 2019 - Open Science/Vienna Open Lab  
member of the managing board
- 2016 - IBA-IFIBiop - International Association of Bioprocessing  
member
- 2016 - Austrian Association of Molecular Life Sciences and Biotechnology  
member of the managing board
- 2015 - FEMS Federation of European Microbiological Societies  
delegate
- 2009 - 2019 Section of Microbial Physiology European Federation of Biotechnology  
secretary
- 2009 - Austrian Association of Molecular Life Sciences and Biotechnology  
member
- 2008 - Society of Industrial Microbiology (SIM)  
member

## Editorial board appointments for scientific journals

- 2018 - Bioengineered:  
Editorial Board Member
- 2017 - Bioresource Technology:  
Editorial Board Member
- 2016 - Journal of Microbiology and Biotechnology:  
Editorial Board Member
- 2016 -2018 Frontiers in Microbiology: Microbial Physiology and Metabolism  
1st level below top level (Associate Editor)
- 2014 - Microbial Cell Factories:  
1st level below top level (Associate Editor)
- 2011 - FEMS Microbiology Letters: Section Editor (Synthetic Biology and Biotechnology)  
Editorial Board Member

## Reviewer for scientific journals

- 2019 - Nucleic Acids Research
- 2015 - Scientific Reports
- 2014 - Molecular Biotechnology
- 2013 - Biotechnology For Biofuels
- 2012 - Biotechnology Advances
- 2011 - Journal of Industrial Microbiology & Biotechnology
- 2011 - Bioresource Technology
- 2011 - Applied Microbiology and Biotechnology
- 2010 - Journal of Cleaner Production
- 2010 - Metabolic Engineering
- 2010 - Biotechnology and Bioengineering
- 2010 - Microbiology
- 2009 - MYCOL RES
- 2009 - Journal of Basic Microbiology
- 2009 - Trends in Biotechnology
- 2009 - Journal of Biotechnology
- 2009 - Process Biochemistry
- 2008 - Bioprocess and Biosystems Engineering
- 2007 - Fems Yeast Research
- 2007 - Biotechnology Progress
- 2006 - Microbial Cell Factories
- 2003 - FEMS Microbiology Letters

## Reviewer/Expert funding organizations

- 2019 -2019 Europäische Kommission - European Union
- 2018 -2018 Bundesministerium für Bildung und Forschung, Deutschland - Germany
- 2018 -2018 Europäische Kommission - European Union
- 2018 -2018 National Science Centre, Poland - Poland
- 2017 -2018 Innovation and Technology Fund - Hong Kong - China
- 2016 -2016 National Research Foundation of Korea (NRF) - Republic of Korea
- 2015 -2015 Estonian Research Council - Estonia
- 2015 -2015 US-Israel Binational Science Foundation - United States (USA)

- 2013 -2016 Suomen Akatemia, Academy of Finland - Finland  
2010 -2012 ÖAD - Österreichischer Austauschdienst - Austria

### **Organizer of scientific conferences, Chairs**

- 2020 International Conference on Yeasts (IYC15)  
Member of the Organisation Committee
- 2019 FEMS Congress  
Member of the Organisation Committee
- 2018 10th ÖGMBT Annual Meeting  
Organiser
- 2018 14th International Conference on Renewable Resources and Biorefineries  
Scientific Member of the Advisory Board
- 2018 4th Congress on Applied Synthetic Biology in Europe  
Member of the Organisation Committee
- 2017 13th International Conference on Renewable Resources and Biorefineries  
Scientific Member of the Advisory Board
- 2015 Microbial Stress - From Molecules to Systems III  
Organiser
- 2015 6th International Conference On Analysis Of Microbial Cells at the Single Cell Level  
Member of the Organisation Committee
- 2012 Microbial Stress - From Molecules to Systems  
Organiser
- 2011 6th Recombinant Protein Production Meeting, A Comparative View on Host Physiology  
Member of the Organisation Committee
- 2009 Microbial Stress - From Molecules to Systems  
Organiser
- 2006 4th Recombinant Protein Production Meeting, A Comparative View on Host Physiology  
Member of the Organisation Committee

## Sauer Michael

### Publications

**Year and Type of Publication**    First Author (alphabetical order)    Request for reprints

Scientific publications from BOKU scientists, especially those which are published in SCI / SSCI journals, or in other refereed journals, proceedings, monographs as well as articles in collected volumes are listed under PUBLICATIONS.

Publications with special focus on transfer of knowledge ("social impact") to practitioners as well as the interested public can be found under the menu item:

>> Transfer of Knowledge

\*\* Publications listed in SCI/SSCI - Journals (published in Web of Science)

\* Peer-reviewed publication (not listed in SCI/SSCI)

Only: Full paper/article, Review, Proceedings Paper

= Open Access - Publications

2021

### Journal Articles

\*\* Ellena, V; Bucchieri, D; Arcalis, E; Sauer, M; Steiger, MG Sclerotia formed by citric acid producing strains of *Aspergillus niger*: Induction and morphological analysis.

FUNGAL BIOL-UK. 2021; 125(6): 485-494. WoS PubMed FullText FullText\_BOKU

\*\* Hoheneder, R; Fitz, E; Bischof, RH; Russmayer, H; Ferrero, P; Peacock, S; Sauer, M Efficient conversion of hemicellulose sugars from spent sulfite liquor into optically pure L-lactic acid by *Enterococcus mundtii*.

BIORESOURCE TECHNOL. 2021; 333, 125215 WoS PubMed FullText FullText\_BOKU

\*\* Totaro, D; Radoman, B; Schmelzer, B; Rothbauer, M; Steiger, MG; Mayr, T; Sauer, M; Ertl, P; Mattanovich, D; Microscale Perfusion-Based Cultivation for *Pichia pastoris* Clone Screening Enables Accelerated and Optimized Recombinant Protein Production Processes..

Biotechnol J. 2021; 16(3):e2000215 WoS PubMed FullText FullText\_BOKU

2020

\*\* Erian, AM; Egermeier, M; Rassinger, A; Marx, H; Sauer, M Identification of the citrate exporter Cex1 of *Yarrowia lipolytica*.

FEMS YEAST RES. 2020; 20(7), foaa055 WoS PubMed FullText FullText\_BOKU

\*\* Gassler, T; Sauer, M; Gasser, B; Egermeier, M; Troyer, C; Causon, T; Hann, S; Mattanovich, D; Steiger, MG; The industrial yeast *Pichia pastoris* is converted from a heterotroph into an autotroph capable of growth on CO<sub>2</sub>.

Nat Biotechnol. 2020; 38(2):210-216 WoS PubMed FullText FullText\_BOKU

\*\* Li, J; Rinnerthaler, M; Hartl, J; Weber, M; Karl, T; Breitenbach-Koller, H; Mülleder, M; Vowinckel, J; Marx, H; Sauer, M; Mattanovich, D; Ata, Ö; De, S; Greslehner, GP; Geltinger, F; Burhans, B; Grant, C; Doronina, V; Ralser, M; Streubel, MK; Grabner, C; Jarolim, S; Moßhammer, C; Gourlay, CW; Hasek, J; Cullen, PJ; Liti, G; Ralser, M; Breitenbach, M; Slow Growth and Increased Spontaneous Mutation Frequency in Respiratory Deficient .

G3 (Bethesda). 2020; 10(12):4637-4648 WoS PubMed FullText FullText\_BOKU

\*\* Lund, PA; De Biase, D; Liran, O; Scheler, O; Mira, NP; Cetecioglu, Z; Fernandez, EN; Bover-Cid, S; Hall, R; Sauer, M; O'Byrne, C Understanding How Microorganisms Respond to Acid pH Is Central to Their Control and Successful Exploitation.

FRONT MICROBIOL. 2020; 11, 556140 WoS PubMed FullText FullText\_BOKU

\*\* Mohan, SV; Varjani, S; Pant, D; Sauer, M; Chang, JS Circular bioeconomy approaches for sustainability Preface.

BIORESOURCE TECHNOL. 2020; 318, 124084 WoS PubMed FullText FullText\_BOKU

\*\* Sauer, M Building Communities-The 8th Congress of European Microbiologists.

BIOTECHNOL J. 2020; 15(7), 2000222 WoS PubMed FullText FullText\_BOKU

\*\* Totaro, D; Rothbauer, M; Steiger, MG; Mayr, T; Wang, HY; Lin, YS; Sauer, M; Altvater, M; Ertl, P; Mattanovich, D Downscaling screening cultures in a multifunctional bioreactor array-on-a-chip for speeding up optimization of yeast-based lactic acid bioproduction.

BIOTECHNOL BIOENG. 2020; 117(7): 2046-2057. WoS PubMed FullText FullText\_BOKU

\*\* Wiltschi, B; Cernava, T; Dennig, A; Casas, MG; Geier, M; Gruber, S; Haberbauer, M; Heidinger, P; Acero, EH; Kratzer, R; Luley-Goedl, C; Muller, CA; Pitzer, J; Ribitsch, D; Sauer, M; Schmolzer, K; Schnitzhofer, W; Sensen, CW; Soh, J; Steiner, K; Winkler, CK; Winkler, M; Wriessnegger, T Enzymes revolutionize the bioproduction of value-added compounds: From enzyme discovery to special applications.

BIOTECHNOL ADV. 2020; 40, 107520 WoS PubMed FullText FullText\_BOKU

\* Ellena, V; Sauer, M; Steiger, MG; (2020): The fungal sexual revolution continues: discovery of sexual development in members of the genus *Aspergillus* and its consequences..

Fungal Biol Biotechnol. 2020; 7(1):17 PubMed FullText FullText\_BOKU

## Conference & Workshop Proceedings, Paper, Abstract

Gassler, T; Egermeier, M; Gasser, B; Sauer, M; Steiger, MG; Mattanovich, D (2020): A synthetic Calvin cycle enables autotrophic growth in yeast .

[5th Applied Synthetic Biology Conference in Europe 2020, Delft, Netherlands, NOV, 2-4, 2020]

In: EFB (Hrsg.), 5th ASB Europe 2020 - abstract book

Sauer, M (2020): Diversity of Lactic Acid Bacteria, useful for Industrial Chemical Production .

[IUMS 2020, Daejeon, South Korea, NOV 16-20, 2020]

In: IUMS (Eds.), IUMS 2020 Abstract Book

Sauer, M (2020): Communication and Dissemination in COST Actions.

[EuroMicroPH - Open Conference run by Cost Action CA18113, Lisbon, Portugal, FEB 12-14, 2020]

In: COST Action CA1811 (Eds.), EuroMicroPH - 1st open meeting - Book of Abstracts FullText

Sauer, M (2020): Diversity complements metabolic engineering for microbial chemical production.

[Doctoral Program in Applied and Environmental Microbiology - 8th DP\_AEM Workshop, Braga, Portugal, FEB 11, 2020]

In: DP\_AEM (Eds.), 8th DP\_AEM Workshop - Abstract Book

## Journal Articles

\*\* Egermeier, M; Sauer, M; Marx, H; Golden Gate-based metabolic engineering strategy for wild-type strains of *Yarrowia lipolytica*..

FEMS Microbiol Lett. 2019; 366(4): WoS PubMed FullText FullText\_BOKU

\*\* Russmayer, H; Egermeier, M; Kalemasi, D; Sauer, M Spotlight on biodiversity of microbial cell factories for glycerol conversion.

BIOTECHNOL ADV. 2019; 37(6-7), 107395 WoS PubMed FullText FullText\_BOKU

\*\* Russmayer, H; Marx, H; Sauer, M Microbial 2-butanol production with *Lactobacillus diolivorans*.

BIOTECHNOL BIOFUELS. 2019; 12(1), 262 WoS PubMed FullText FullText\_BOKU

\*\* Steiger, MG; Rassinger, A; Mattanovich, D; Sauer, M; Engineering of the citrate exporter protein enables high citric acid production in *Aspergillus niger*..

Metab Eng. 2019; 52:224-231 WoS PubMed FullText FullText\_BOKU

## Conference & Workshop Proceedings, Paper, Abstract

Altvater, M; Schmelzer, B; Mattanovich, D; Sauer M (2019): Recycling of yeast biomass in lactic acid production at low pH. [Poster]

[SIMB 2019 - Annual Meeting, San Francisco, CA, USA, JUL 21-24, 2019]

In: SIMB (Ed.), SIMB Annual Meeting and Exhibition 2019 - Abstract Book

Ellena, V; Arcalis, E; Sauer, M; Steiger, MG (2019): Engineering of the citrate exporter protein enables high citric acid production in *Aspergillus niger*.

[30th Fungal Genetics Conference, Pacific Grove, CA, USA, MAR 12-17, 2019]

In: FGC (Eds), Abstract Book of the 30th Fungal Genetics Conference

Ellena, V; Sauer, M (2019): Analysis of sclerotia formation and morphology in *Aspergillus niger*.

[ESIB 2019, Graz, Austria, NOV 19, 2019]

In: ACIB (Ed.), ESIB 2019

Ergoth, S; Russmayer, H; Sauer, M; Marx, H (2019): 3-hydroxypropionic acid production from crude glycerol with *Lactobacillus diolivorans*. [Poster]

[Biochemical and Molecular Engineering XXI, Mont-Tremblant, Quebec, Canada, JUL 14-18, 2019]

In: ECI (Ed.), Proceedings Biochemical and Molecular Engineering XXI FullText

Gassler, T; Gasser, B; Sauer, M; Steiger, M; Mattanovich, D (2019): A synthetic Calvin cycle enables autotrophic growth in the yeast *Pichia pastoris*. [Poster]

[RPP 10, Crete, Greece, APR 24-27, 2019]

In: efb (Ed.), RPP 10 - A comparative view on host physiology - abstract book

Gassler, T; Gasser, B; Sauer, M; Steiger, M; Mattanovich D (2019): A synthetic yeast for efficient assimilation of carbon dioxide.

[47th Annual Conference on Yeasts, Smolenice, Slovak Republic, MAY 12-15, 2019]

In: ACY (Ed.), 26 ACY - Abstract Book

Hoheneder, R; Bischof, RH; Sauer, M (2019): Microbial upgrading of a side stream from cellulose fiber production. [Poster]

[SIMB 2019, San Francisco, CA, USA, JUL 21-24, 2019]

In: SIMB (Ed.), SIMB Annual Meeting and Exhibition 2019 - Abstract Book

Jeschek, D; Steiger, MG; Mattanovich, D; Sauer, M (2019): A toolbox to express and characterize membrane transport proteins. [Poster]

[RPP10, Crete, Greece, APR 24-27, 2019]



08/01/2018

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Invited lecture by Dr. Michael Sauer  
Workshop on Research Methodology

- |     |                     |          |          |
|-----|---------------------|----------|----------|
| 1.  | Annu S George       | S4 BIF   | Annu     |
| 2.  | Litty Thomas        | S4 BT    | Litty    |
| 3.  | Mamija Madhu        | S4 FTQA  | Mamija   |
| 4.  | Teena Joseph        | S4 FTQA  | Teena    |
| 5.  | Nadiga Nazer        | S4 FST   | Nadiga   |
| 6.  | Arjali S            | S4 BC    | Arjali   |
| 7.  | Aiyama Keesha       | S4 FST   | Aiyama   |
| 8.  | Chippy Mathew       | "        | Chippy   |
| 9.  | Shan Elizabeth      | "        | Shan     |
| 10. | Anil T. Lulu        | "        | Anil     |
| 11. | Farwar Gopal        | "        | Farwar   |
| 12. | Vandana S. Kumar    | "        | Vandana  |
| 13. | Fathima Rahim       | "        | Fathima  |
| 14. | Fathima Nazeer      | "        | Fathima  |
| 15. | Reemina M. Shajahan | "        | Reemina  |
| 16. | Gopika. Rey. P      | "        | Gopika   |
| 17. | Mishel Elizabeth    | "        | Mishel   |
| 18. | LITTY ELSA ABRAHAM  | "        | Litty    |
| 19. | Kesava Jay.         | S4 BIF   | Kesava   |
| 20. | Delna T             | " "      | Delna    |
| 21. | Dalaya Simon.       | " "      | Dalaya   |
| 22. | Maria Joy           | S4 BT    | Maria    |
| 23. | Ratheesh A          | S4 FST   | Ratheesh |
| 24. | Abhijith A          | S4 FST   | Abhijith |
| 25. | Rahul Krishnan      | S, BC    | Rahul    |
| 26. | AMALI P.K.          | S, PHYTO | Amali    |
| 27. | Seena B.S           | S, PBT   | Seena    |
| 28. | Denina Mary Tom     | S4 FST   | Denina   |
| 29. | Abhisami S. Nair    | "        | Abhisami |
| 30. | Fathimi Shamma      | "        | Fathimi  |

31	Sera Piresa	S4 FST	Sera <del>Anna</del>
32	Annu	u	
33	Aucha	u	Testa Aucha
34	Testa	u	Sera
35	Atthiva Aravind	S1 BC	<del>Atthiva</del>
36	Atthiva Thomas	S1 PMS	Atthiva
37	Lekshmi S. Kumar	S3 PBT	Lekshmi
38	Anjuresh K.P	S3 BT	Anjuresh
39	Anju C. Anand	S4 BC	Anju
40	Gayabhi U	S4 BT	Gayabhi
41	Vinitha Francis	S4 BC	Vinitha
42	Ria Elza Varghese	S4 BC	Ria
43	Jain Sarah	S4 FST	Jain
44	ATIIRA RAJAN	S1 FST	ATIIRA
45	Keerthana Roop	S1 FST	Keerthana
46	Saishma S. Suresh	S1 BC	Saishma
47	Rajmol M.R	S4 BC	Rajmol
48	Chimju Varghese	S4 BC	Chimju
49	Reshma Shaji	S4 BC	Reshma
50	Jisha George Thytkadavil	S1 PBT	Jisha
51	Ummiraya G.	S1 PBT	Ummiraya
52	Stella Stanley	S1 BT	Stella
53	Mohammed Saheed	S1 FST	Mohammed
54	Atin George	S1 FST	Atin
55	Amali M Thomas	S4 FST	Amali
56	SIBIN BABU	S4 FST	SIBIN
57	Nikhil A.N	S4 FST	Nikhil
58	Jubin J. Kurichiyil	S4 FST	Jubin
59	Ajali Prakash	S4 POST	Ajali
60	Chandhini Tharakan	S1 Biochem	Chandhini
61	Aaja C. Mitra	S1 BT	Aaja
62	Sudeekshmi BS	S1 FST	Sudeekshmi
63	SUSATHNA Joy	S1 FST	SUSATHNA
64	Sana George	u	Sana

65	Jwanka Jose	S, FST	<del>Amal Jose</del>
66	Shesim Sabu Thomas	S, FST	<del>Shesim</del>
67	Christiana Sily	S, FST	<del>Christiana</del>
68	Jessica Jacob	S, PMS	<del>Jessica</del>
69	Kamalaprige M	S, PBT	<del>Kamalaprige</del>
70	Neera Keishran	S, BC	<del>Neera</del>
71	Akshaya S.S	S, BC	<del>Akshaya</del>
72	Anjali G	S, BC	<del>Anjali</del>
73	Ashlin Mary Jose	"	<del>Ashlin</del>
74	Sneeha S. Kumar	S, BC	<del>Sneeha</del>
75	Asha Jose	"	<del>Asha</del>
76	Basma Yousef	"	<del>Basma</del>
77	AKSbag B.C	"	<del>AKSbag B.C</del>
78	Appas.	S, PBT	<del>Appas</del>
79	Anupama T	S, PBT	<del>Anupama</del>
80	Greya Antony	S, BT	<del>Greya</del>
81	Ashifa N.	S, BT	<del>Ashifa</del>
82	Durga Venugopal	S, BT	<del>Durga</del>
83	Aswathy A.S	S, PBT	<del>Aswathy</del>
84	Neha Lakshmi	S, PBT	<del>Neha</del>
85	Ajmi	S, PBT	<del>Ajmi</del>
86	Jinsa Sara Kurian	S, PBT	<del>Jinsa</del>
87	Sangeetha Soman	S, PBT	<del>Sangeetha</del>
88	Mery Jose	S, FST	<del>Mery Jose</del>
89	Aleena T. Mathews	"	<del>Aleena</del>
90	Anaswara Gyan	S, PBT	<del>Anaswara</del>

*BT*