

**Name**

Anita Rywińska (Ph.D.)

**Academic Rank**

Associate Professor

**Degrees in Agricultural Engineering**

2011	D.Sc.	Wroclaw University of Environmental and Live Sciences, Poland
2002	Ph.D.	Agricultural University of Wroclaw, Poland
1994	M.Sc.	Agricultural University of Wroclaw, Poland

**Membership of Professional Societies**

1994-Present      The Polish Society of Food Technologists

**Courses Currently Teaching**

Biochemistry  
New trends in food biotechnology  
Enzymology  
Apparatus in biotech industries

**Research Areas**

- Biosynthesis of organic acids and polyols by *Yarrowia lipolytica* yeast
- Valorization of raw materials from agriculture and industry by biotechnology methods into value-added-products
- Production of microbial enzymes and their applications

**Training and grants**

Greece, University of Patras: 1 st Workshop, Microbiology and Biotechnological Applications: Challenges and Opportunities I, 10.04.2014.

Greece, University of Patras: 2 st Workshop, Microbiology and Biotechnological Applications: Challenges and Opportunities II, 26.05.2015.

Greece, University of Patras, postdoctoral fellowship, 5 May – 8 June 2015.

**2006-2010:** participation as experienced researcher in 3 grants funded by Polish Ministry of Higher Education

**2010-2013:** participation as experienced researcher in research project PO IG 01.01.02-00-074/09 „Biotechnological conversion of glycerol to polyols and dicarboxylic acids” the acronym „GREEN CHEMISTRY” implemented within the Operational Programme - Innovative Economy, 2007 - 2013, co-founded by EU

**2011-2014:** project leader - project No. N N312 256640: „Glycerol metabolism to erythritol by *Yarrowia lipolytica* yeast” funded by the National Science Centre (Poland)

**2012-2014:** participation as experienced researcher in 2 grants funded by The National Centre for Research and Development

### **Reviewer**

African Journal of Biotechnology, African Journal of Microbiology Research, Annals of Microbiology, Applied Biochemistry and Biotechnology, Brazilian Journal of Chemical Engineering, Biomass and Bioenergy, Biotechnology Advances, British Biotechnology Journal, Engineering in Life Sciences, Food Technology and Biotechnology, Journal of Applied Microbiology, Journal of Ecology and Natural Environment, Maejo International Journal of Science and Technology, New Biotechnology, Preparative Biochemistry and Biotechnology, World Journal of Microbiology and Biotechnology (>20 invitations)

### **Research Papers in ISI Journals** (\*corresponding author)

- 1 Rymowicz W., **Rywińska A.**, Żarowska B., Juszczuk P. 2006. Citric acid production from raw glycerol by acetate mutants of *Yarrowia lipolytica*. Chemical Papers 60 (5) 391-394.
- 2 Rymowicz W., **Rywińska A.**, Gładkowski W. 2008. Simultaneous Production of Citric Acid and Erythritol from Crude Glycerol by *Yarrowia lipolytica* Wratlavia K1. Chemical Papers 62(3), 239-246.
- 3 \***Rywińska A.**, D. Witkowska, P. Juszczuk, W. Rymowicz, A. Kita. 2008. Waste frying oil as substrate for lipase production by *Geotrichum candidum* strains. Polish Journal of Environmental Studies 17(6), 925-931.
- 4 Rymowicz W., **Rywińska A.**, Marcinkiewicz M. High yield production of erythritol from raw glycerol in fed-batch cultures of *Yarrowia lipolytica*. Biotechnology Letters 31, 377-380, 2009.
- 5 \***Rywińska A.**, Rymowicz W., Żarowska B., Wojtatowicz M. Biosynthesis of citric acid from glycerol by acetate mutants of *Yarrowia lipolytica* in fed-batch fermentation. Food Technology and Biotechnology 47, 1-6, 2009.
- 7 \***Rywińska A.**, Rymowicz W., Żarowska B., Skrzypiński A. 2010. Comparison of citric acid production from glycerol and glucose by different strains of *Yarrowia lipolytica*. World Journal of Microbiology and Biotechnology, 26, 1217-1224.
- 8 \***Rywińska A.**, Rymowicz W., Marcinkiewicz M. 2010. Valorization of raw glycerol for citric acid production by *Yarrowia lipolytica* yeast. Electronic Journal of Biotechnology, DOI: 10.2225/vol13-issue4-fulltext-1
- 9 \***Rywińska A.**, Rymowicz W. 2010. High-yield production of citric acid by *Yarrowia lipolytica* on glycerol in repeated-batch bioreactors. Journal of Industrial Microbiology and Biotechnology, 37, 431-435.
- 10 Rymowicz W., Fatykhova A., Kamzolova S.V., **Rywińska A.**, Morgunov I. G. 2010. Citric acid production from glycerol-containing waste of biodiesel industry by *Yarrowia lipolytica* in batch, repeated batch and cell recycle regimes. Applied Microbiology and Biotechnology, 87(3), 971-979.
- 11 **Rywińska A.**, Juszczuk P., Wojtatowicz M., Rymowicz W. 2011. Chemostat study of citric acid production from glycerol by *Yarrowia lipolytica*. Journal of Biotechnology 152, 54-57.
- 12 \***Rywińska A.**, Musiał I., Rymowicz W., Żarowska B., Boruckowski T. 2012. Effect of agitation and aeration on the citric acid production by *Yarrowia lipolytica* grown on glycerol. Preparative Biochemistry and Biotechnology. 42 (3), 279-9.
- 13 **Rywińska A.**, Komorowska A., Piegza M., Witkowska D. 2012. Biosynthesis of phytases and phosphatases by *Aspergillus niger* 551. African Journal of Biotechnology, 11 (14), 3333-3338.
- 14 Tomaszewska L., **Rywińska A.**, Gładkowski W. 2012. Production of erythritol and mannitol by *Yarrowia lipolytica* yeast in media containing glycerol. Journal of Industrial Microbiology and Biotechnology. 39, 1333-1343.
- 15 \***Rywińska A.**, Tomaszewska L., Rymowicz. 2013. Erythritol biosynthesis by *Yarrowia lipolytica* yeast under various culture conditions. African Journal of Microbiology Research, 7(27), 3511-3516.
- 16 Tomaszewska L., Rymowicz W., **Rywińska A.** 2014. Mineral supplementation increases erythrose reductase activity in erythritol biosynthesis from glycerol by *Yarrowia lipolytica*. Applied Biochemistry and Biotechnology, 172(6), 3069-78.

- 17 Tomaszewska L., **\*Rywińska A.**, Rymowicz W. 2014. High selectivity of erythritol production from glycerol by *Yarrowia lipolytica*. *Biomass and Bioenergy*, 64, 309–320.
- 18 Tomaszewska L., Rakicka M., Rymowicz W., **\*Rywińska A.** 2014. A comparative study on glycerol metabolism to erythritol and citric acid in *Yarrowia lipolytica* yeast cells. *FEMS Yeast Research* 14, 966–976.
- 19 Mirończuk A. M., Dobrowolski A., Rakicka M., **Rywińska A.**, Rymowicz W. 2015. Newly isolated mutant of *Yarrowia lipolytica* MK1 as a proper host for efficient erythritol biosynthesis from glycerol. *Process Biochemistry*, 50, 61-68.
- 20 **\*Rywińska A.**, Marcinkiewicz M., Cibis E., Rymowicz W. 2015. Optimization of medium composition for erythritol production from glycerol by *Yarrowia lipolytica* using response surface methodology. *Preparative Biochemistry and Biotechnology*. 45, 6, 515-529.

#### **Review Articles in ISI Journals (\*corresponding author)**

1. **\*Rywińska A.**, Juszczak P., Wojtatowicz M., Robak M., Lazar Z., Tomaszewska L., Rymowicz W. 2013. Glycerol as a promising substrate for *Yarrowia lipolytica* biotechnological applications. *Biomass and Bioenergy*, 48, 148-166.

#### **Chapters in books (\*corresponding author)**

1. **\*Rywińska A.**, Rymowicz W. Citric acid production from raw glycerol by *Yarrowia lipolytica* Wratislavia 1.31. In: *Microbial Conversion of Raw Glycerol* (Ed: George Aggelis), Nova Science Publishers Inc. New York, 19-30, 2009.

#### **Participation in international conferences**

1. Rymowicz W., Robak M., **Rywińska A.**, Musiał I., Żarowska B. Continuous citric acid production by *Yarrowia lipolytica* yeast in a membrane reactor. *Journal of Biotechnology – Bringing Genomes to Life*, poster JB79, S114, Abstract 12<sup>th</sup> European Congress on Biotechnology, Copenhagen, Denmark, 21-24.08.2005.
2. Rymowicz W., **Rywińska A.**, Żarowska B., Juszczak P., Citric acid production from Raw glycerol by acetate mutants of *Yarrowia lipolytica*. Poster pp. 95. 33<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 22-26.05.2007.
3. Rymowicz W., **Rywińska A.** Simultaneous production of citric acid and erythritol from crude glycerol. Poster pp. 100. 34<sup>th</sup> International Conference of SSCHE, 21-, Tatranske Matliare, Slovakia, 25.05.2007.
4. **Rywińska A.**, Rymowicz W., Wojtatowicz M., Żarowska B. Crude glycerol as substratum for high-yield production of citric acid by *Y. lipolytica* Wratislavia 1.31 under fed-batch conditions. Poster pp. 101. 34<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 21-25.05.2007.
5. Rymowicz W., **Rywińska A.**, Żarowska B. Biosynthesis of citric acid from crude glycerol by *Yarrowia lipolytica* in repeated-batch cultivations. Poster 131S. Symbiosis Science, Industry and Society 13<sup>th</sup> European Congress on Biotechnology, Abstract Journal of Biotechnology S133-S187., Barcelona, Spain, 16-19.08.2007.
6. Juszczak P., Rymowicz W., **Rywińska A.**, Marcinkiewicz M., Musiał I. Production of citric acid, erythritol and single-cell-protein from raw glycerol by *Yarrowia lipolytica*. Fourth international conference on Renewable Resources and Biorefineries RRB4, WTC Rotterdam, The Netherlands, 1-4.06.2008.
7. **Rywińska A.**, Marcinkiewicz M., Rymowicz W. Effect of culture conditions on the production of citric acid from glycerol by acetate negative mutant of *Yarrowia lipolytica* Wratislavia AWG7. Poster pp. 233. 36<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 25-29.05.2009.
8. **Rywińska A.**, Rymowicz W., Żarowska B. Enhanced of citric acid production from crude glycerol by *Yarrowia lipolytica* in repeated-batch bioreactors. Poster pp. 177. 36<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 25-29.05.2009.
9. Marcinkiewicz M., **Rywińska A.**, Rymowicz W. Factors affecting the production of erythritol by

- Yarrowia lipolytica* Wratislavia K1 from glycerol. Poster pp. 178. 36<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 25-29.05.2009.
10. **Rywińska A.**, Juszczak P., Rymowicz W. Continuous citric acid production from crude glycerol by *Yarrowia lipolytica* in membrane reactor. Poster pp. 323. 37<sup>th</sup> International Conference of SSCHE, Tatranske Matliare, Slovakia, 24-28.05.2009.
  11. **Rywińska A.**, Wojtatowicz M., Juszczak P., Rymowicz W., Zyzak A. Biosynthesis of citric acid from glycerol by the mutant of *Yarrowia lipolytica* Wratislavia AWG7 yeast strain in chemostat cultures. Poster pp. 88. Sixth international conference on Renewable Resources and Biorefineries RRB6, Düsseldorf, Germany, 7-9.06.2010.
  12. Rymowicz W., Musiał I., **Rywińska A.**, Juszczak P. Optimization of erythritol production from glycerol by *Yarrowia lipolytica* yeast using response surface methodology. Poster pp. 112. Sixth international conference on Renewable Resources and Biorefineries RRB6, Düsseldorf, Germany, 7-9.06.2010.
  13. Rymowicz W., **Rywińska A.**, Musiał I., Juszczak P., Wojtatowicz M. Utilization of crude glycerol into polyols and citric acid by *Yarrowia lipolytica* yeasts. Abstracts, IV Congress of Polish Biotechnology, IV EUROBIOTECH 2011, Kraków, Poland, October 12th-15th, 2011. Acta Biochimica Polonica. Vol. 58 Supplement 4/2011, P16.8, p. 135.
  14. Tomaszewska L., **Rywińska A.** Utilization of glycerol into polyols by *Yarrowia lipolytica* yeasts. Poster pp. 594. European Biotechnology Congress 2011, Istanbul, Turkey, 28.09-01.10 2011.
  15. Tomaszewska L., **Rywińska A.**, Musiał I., Rymowicz W., Juszczak P. Effect of vitamins source on erythritol biosynthesis by *Yarrowia lipolytica* Wratislavia K1. Poster pp. S94. European Biotechnology Congress 2011, Istanbul, Turkey 28.09-01.10 2011.
  16. Musiał I., Wojtatowicz M., Juszczak P., **Rywińska A.** Erythritol production by *Yarrowia lipolytica* DN I W 2a and its UV mutants on media containing glycerol. Poster pp. S94. European Biotechnology Congress 2011, Istanbul, Turkey 28.09-01.10 2011.
  17. Musiał I., Marcinkiewicz M., Cibis E., **Rywińska A.**, Juszczak P., Rymowicz W. Optimization of erythritol production from glycerol by *Yarrowia lipolytica* Wratislavia K1. Poster pp. S94-S95. European Biotechnology Congress 2011, Istanbul, Turkey 28.09-01.10 2011.
  18. Musiał I., Juszczak P., **Rywińska A.**, Rymowicz W. Improvement of selectivity in erythritol production from glycerol by *Yarrowia lipolytica* Wratislavia K1. Poster pp. 272. 38<sup>th</sup> International Conference of SSCHE, Tatranské Matliare, Slovakia, 23–27.05.2011.
  19. **Rywińska A.**, Musiał I., Juszczak P., Rymowicz W., Utecht M. Production of erythritol from glycerol by various *Yarrowia lipolytica* strains. Poster pp. 135. Seventh International Conference on Renewable Resources and Biorefineries. 8- Bruges, Belgium, 10.06.2011.
  20. **Rywińska A.**, Furgala J., Juszczak P., Mirończuk A., Rymowicz W. Enhanced production of erythritol by *Yarrowia lipolytica* on glycerol in repeated-batch bioreactors. Final Program & Abstract Book, Poster 43, pp. 137. Eight International Conference on Renewable Resources and Biorefineries. Toulouse, France, 4-6.06.2012,.
  21. Rymowicz W., Kita A., **Rywińska A.**, Mirończuk A. Enhanced erythritol biosynthesis from glycerol by *Yarrowia lipolytica* in fed-batch processes. Proceedings pp. 99. 3<sup>rd</sup> Annual International Conference on Advance in Biotechnology (BioTech 2013). Singapur, Singapore 18-19.03.2013.
  22. Tomaszewska L., **Rywińska A.**, Rymowicz W. The effect of Zn, Mn and Cu ions on erythritol production from glycerol by *Yarrowia lipolytica* yeast. Proceedings pp. 97. 3<sup>rd</sup> Annual International Conference on Advance in Biotechnology (BioTech 2013). Singapur, Singapore 18-19.03.2013.
  23. **Rywińska A.**, Tomaszewska L., Bąk M., Mirończuk A., Cybulski K., Rymowicz W. Erythritol production from glycerol by *Yarrowia lipolytica* in batch, fed-batch and repeated-batch regimes. Oral presentation. Proceedings pp. 97. 3<sup>rd</sup> Annual International Conference on Advance in Biotechnology (BioTech 2013). Singapur, Singapore 18-19.03.2013.
  24. Tomaszewska L., **Rywińska A.**, Rymowicz W. Reduction of by-products in erythritol biosynthesis from glycerol by *Yarrowia lipolytica*. Poster pp. 41. 10<sup>th</sup> Anniversary World Congress on Industrial Biotechnology. Canada, Montreal, 16-19.06.2013.
  25. Rymowicz W., **Rywińska A.**, Mirończuk A., Juszczak P. Scale-up of erythritol production from crude glycerol by a mutant *Yarrowia lipolytica*. Poster pp. 40. 10<sup>th</sup> Anniversary World Congress

- on Industrial Biotechnology. Canada, Montreal, 16-19.06.2013.
26. **Rywińska A.**, Tomaszewska L., Rymowicz W. Changes of enzymes activity during erythritol biosynthesis by *Yarrowia lipolytica*. Poster pp. 40. 10th Anniversary World Congress on Industrial Biotechnology. Canada, Montreal, 16-19.06.2013.
  27. Wojtatowicz M., Tomaszewska L., Rymowicz W., Cybulski K., Rakicka M., Żarowska B., **Rywińska A.** Effect of nitrogen source on erythritol production from glycerol by *Yarrowia lipolytica*. Final Program & Abstract Book, Poster 38, pp. 167, 9th International Conference on Renewable Resources and Biorefineries, Antwerp, Belgium, 5-7.06.2013.
  28. Rakicka M., Rymowicz W., **Rywińska A.** Erythritol biosynthesis from glycerol by *Yarrowia lipolytica* in chemostat culture. Final Program & Abstract Book, Poster 38, pp. 164, 9th International Conference on Renewable Resources and Biorefineries, Antwerp, Belgium, 5-7.06.2013.
  29. Rymowicz W., **Rywińska A.**, Mirończuk A., Juszczuk P. Waste from degumming process as a potential substrate for erythritol production by *Yarrowia lipolytica*. Final Program & Abstract Book, Poster 40, pp. 166, 9th International Conference on Renewable Resources and Biorefineries, Antwerp, Belgium, 5-7.06.2013..
  30. Żarowska B., **Rywińska A.**, Rymowicz W. Increased production of erythritol from *Yarrowia lipolytica* by the addition of various surfactants. Final Program & Abstract Book, Poster 42, pp. 168, 9th International Conference on Renewable Resources and Biorefineries, Antwerp, Belgium, 5-7.06.2013.
  31. Cybulski K., Tomaszewska L., Rakicka M., **Rywińska A.** Pyruvic and  $\alpha$ -ketoglutaric acid production from crude glycerol by *Yarrowia lipolytica* A-10 strain. 8th PhD Students and Young Scientists R&D Conference. Warszawa, Polska 16-18.09.2013.
  32. Tomaszewska L., Rakicka M., Cybulski K., **Rywińska A.** The effect of nitrogen sources on erythritol biosynthesis from glycerol by *Yarrowia lipolytica* yeast. 8th PhD Students and Young Scientists R&D Conference. Warsaw, Poland 16-18.09.2013.
  33. Rakicka M., Tomaszewska L., Cybulski K., **Rywińska A.** Erythritol biosynthesis from glycerol by A-6 strain of *Y. lipolytica* in bioreactor batch cultures. 8th PhD Students and Young Scientists R&D Conference. Warsaw, Poland 16-18.09.2013.
  34. Rakicka M., Tomaszewska L., Cybulski K., **Rywińska A.** The effect of surfactant on erythritol production by *Yarrowia lipolytica*. XV OASSB CONFERENCE IN WROCLAW, Wroclaw, Poland, 22-24.11.2013.
  35. Rymowicz W., **Rywińska A.**, Juszczuk P., Cybulski K., Rakicka M. Glycerin from hydrogenation process of animal fats as a good substrate for the production of various products by *Yarrowia lipolytica*. Final Program & Abstract Book, Poster 41, pp. 167. 10<sup>th</sup> International Conference on Renewable Resources and Biorefineries. Valladolid, Spain, 5-7.06.2014.

### Publications and Citations (excluding self-citations)

Total number of publications	Research of Papers in Journals	Total impact in ISI factor**	Review Articles in Journals	Chapters in books	Sum of Times Cited without self-citations*	Hirsch Index
<b>57</b>	<b>20</b>	<b>34.087</b>	<b>1</b>	<b>1</b>	<b>306</b>	<b>11</b>

\*Web of Science July 2015

\*\*impact factor of all manuscripts is for the year of publication

### Contact

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