

MAŁGORZATA WŁODARCZYK-BIEGUN

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Nationality

Polish

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RESEARCH INTEREST:

- 3D bioprinting
- Melt Electrowriting
- Tissue regeneration
- Designer materials
- Bioinspiration
- Hydrogels
- Bio-instructive materials

EDUCATION AND RESEARCH EXPERIENCE

Scientific output: H-index: 10, publications: 19; citations: 406; 4 book chapters; funding: €1.2M in individual grants like NWO VENI, NWO XS; NCN OPUS, NAWA Polish Returns,

2021 – *Assistant Professor*, Biofabrication and Bio-inspired Materials, Biotechnology Centre, Silesian University of Technology, Gliwice, Poland

Projects:

- OPUS NCN grant: 3D printing of gradient hybrid scaffolds with bio-instructive properties for interface tissue engineering
- NAWA Polish Returns: Homing grant

2020 – *Postdoctoral Researcher*, Polymer Science, Zernike Institute for Advanced Materials University of Groningen, Groningen
Advisor: M. Kamperman

Projects:

- NWO VENI grant: Melt electrowriting of hard-soft interfaces inspired by deep-sea sponges
- NWO XS grant: 3D Printed Human Trabecular Meshwork
- NWO XS grant: Gelling by printing: Bioinks based on the shear induced gelation for 3D bioprinting

- 2016 – 2020 *Postdoctoral Researcher*, Dynamic Materials, INM-Leibniz Institute for New Materials, Saarbrücken, Germany
Advisor: A. del Campo
- Projects and responsibilities:
- Development of printable tissue adhesives and hydrogel-based bioinks
 - Melt Electrowriting for Human Trabecular Meshwork reconstruction
 - Coordination Dynamic Biomaterials group activities in the Interreg Project IMPROVE-STEM on MSCs expansion
 - Setting up and supervision of a Bioprinting lab at INM
 - Supervision of the works related to bioprinting in the Institute (4 PhD students, 2 Master Student, 2 Bachelor, 1 HIWI)
 - Supervision of rheology measurements (TA, Discovery-HR3)
- 2011-2015 **PhD, Laboratory of Physical Chemistry and Soft Matter, WUR University, Wageningen, The Netherlands**
Thesis: Silky gels for cells: Silk-inspired protein based polymers for use in tissue engineering.
Thesis Promotor: Prof.dr. M.A. Cohen Stuart
Thesis Co-Supervisors: dr. Marleen Kamperman & dr. Sander Leeuwenburgh
PhD thesis defended with mark *very good*: 18th January 2016
- Thesis discusses the design, production and physicochemical characterization of silk-inspired recombinant protein based polymers. These silk-inspired polymers were shown to self-assemble into fibrils and form hydrogel matrices. Hydrogels were functionalized with bioactive domains and the mechanical and biological properties were tested. The potential use of the hydrogels in tissue engineering was evaluated by 2D and 3D cell culture studies.
- Research involved work in 3 departments:
- Wageningen University, Physical Chemistry and Soft Matter: physico-chemical material characterization (including: SDS-PAGE, MALDI, DLS, AFM, rheology, confocal microscopy, spectrophotometry)
 - Wageningen UR, Food & Biobased Research: protein production in fermentation process, protein purification
 - Radboud University Medical Centre, Nijmegen, Department of Biomaterials: cell culture studies
- 2009 – 2011 **Master of Science, Multidisciplinary School of Engineering in Biomedicine, field of Biomedical Engineering, specialization Engineering of Biomaterials, AGH University of Science and Technology in Krakow, Poland**
Thesis: Next-generation hydrogel biomaterials for the treatment of bone tissue defects
Thesis Promotor: Prof. dr. hab. inż. Elżbieta Pamuła
Thesis Co-Supervisor: dr. Timothy Douglas
Thesis defended with mark *very good*
- Thesis presents the work on mineralizable materials for potential use in bone tissue engineering applications. I prepared hydrogels from polysaccharide gellan gum materials and showed the principle of using the enzyme alkaline phosphatase (ALP) for mineralization *in situ*. The obtained hydrogel-ceramic composites were extensively characterized to determine the nature and the distribution of the formed mineral.
- 2005 – 2010 **Master of Science. Psychology, Faculty of Philosophy in the framework of Interfaculty Individual Studies in the Humanities, Jagiellonian University in Krakow, Poland**
Thesis: An attempt at empirical validation of selected attention models using the cueing task.
Thesis Promotor: dr. hab. Piotr Wolski
Thesis defended with mark *very good*
- Thesis describes empirical verification of two computer models of exogenous human attention. The work combined expertise in the fields of biopsychology and computer modelling.
- 2006 – 2009 **First degree studies, Multidisciplinary School of Engineering in Biomedicine, field of Biomedical Engineering, AGH University of Science and Technology in Krakow, Poland** Inżynier (engineer) degree obtained
Thesis: Badanie degradacji polimerowych włókien resorbowlalnych [eng: Degradation study of resorbable polymer fibers]
Thesis Promotor: Prof. dr hab. inż. Marta Błażewicz
Thesis defended with mark *very good*

WORK EXPERIENCE

- Additive manufacturing techniques: Extrusion, Melt Electrowriting, Drop-on-Demand (GeSiM, RegenHu, Felix Printers, Cellink)
- Material characterization techniques: SDS-PAGE, MALDI, DLS, AFM, rheology, FTIR, fluorescence microscopy, confocal microscopy, spectrophotometry)
- Fermentation and cloning
- Protein purification
- Cell culture studies (2D, 3D, microcarriers in dynamic culture)
- Working in the international environment and intradisciplinary groups, including work in Interreg Project

AWARDS, SCHOLARSHIPS and FUNDING

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| 2020 | XS NWO grant 2020, round 5 (50 000 EUR) |
| 2020 | NCN OPUS polish research grant (1.629.592 PLN: ca. 400 000 EUR) |
| 2020 | Rosalind Franklin Fellowship tenure track position, University Medical Centre Groningen, The Netherlands (declined due to other career opportunities) |
| 2020 | XS NWO grant 2020, round 4 (50 000 EUR) |
| 2019 | NAWA Polish Returns 2019 (1.830.000 PLN: ca. 450 000 EUR) |
| 2019 | NWO VENI grant 2019 (275 000 EUR total) |
| 2018 | L'Oréal-UNESCO for Women in Science fellowship and CNV Foundation Scholarship |
| 2017 | The Mentoring Programme for Female Scholars at Leibniz Institutes 2017/2018 (Admittance only after competitive selection) |
| 2012 | Award for the best Master thesis defended in 2011 in Poland in the field of Biomedical Engineering, organized by Polish Society of Biomedical Engineering |
| 2012 | "AGH Diamonds" award for the best Master thesis at AGH University of Science and Technology in Krakow, Poland |
| 2011 | 3 months scholarship in the Department of Biomaterials, UMC Radboud, Nijmegen, The Netherlands, within the scope of the Erasmus Exchange program |
| 2010 | Scholarship of the Polish Ministry of Science and Higher Education for academic achievement in the academic year 2009/2010 |
| 2009 | Laureate of Polish regional competition: "Student's Nobel Prize 2009" |
| 2007-2010 | Student Scholarship for academic performance, AGH University of Science and Technology in Krakow, Poland |
| 2007-2009 | Rector Scholarship for outstanding academic performance, AGH University of Science and Technology in Krakow, Poland |

TEACHING EXPERIENCE

- **Project supervisor**, Silesian University of Technology (2021 -), 2 PhDs Students
- **Project supervisor**, University of Groningen (2020 -), created research projects and supervised work of 3 PhDs and 2 Master Students
- **Project supervisor**, INM- Leibniz Institute for New Materials (2016-2019), created research projects and mentored the research in the bioprinting lab for 3 PhDs from INM, 2 guests PhDs (3-4 months stays), 2 Master students (1-month internship research programme), 3 Bachelors, 1 research assistant
- **Project supervisor**, Wageningen University (2013-2015), created research projects and supervised work of 1 Master and 1 Bachelor student (in physical chemistry/biomaterials)
- **Teacher and lecturer**, INM Leibniz Institute for New Materials (Saarland University; 2016-2019), Biopolymers course: preparation of laboratories and lectures
- **Teaching assistant**, Wageningen University (2011-2015), Soft Mater course: laboratories on Rheology
- **Teaching qualifications**, Jagiellonian University, Poland (2009) - a diploma of education which allows to work as a teacher in the Polish education system

PROFESSIONAL SERVICE

- Reviewer for international journals including: Biofabrication, Biomedical materials, Frontiers of Mechanical Engineering, Acta Biomaterialia, Frontiers in Bioengineering and Biotechnology (IOP Trusted Reviewer status obtained in September 2020)
- External reviewer of the doctoral thesis (Spain, 2019)
- Member of poster evaluation committee at ESB 2019

ADDITIONAL SCIENCE-RELATED ACTIVITIES

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| 2019 | Alumna of EMBO Laboratory Leadership course for Group Leaders, DE |
| 2018 | Alumna International Summer School on Technology Transfer in Life Sciences, DE |
| 2018/2019 | Mentor in Mentoring Programme for women in STEM: CyberMentor initiative, DE |

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2020 – Netherlands society for Biomaterials and Tissue Engineering (NBTE)
2018 – European Society of Biomaterials (ESB)
2018 – The International Society for Biofabrication (ISBF)

INTERNATIONAL REFEREED PUBLICATIONS

- 2020 **Faithful Scanning Electron Microscopic (SEM) visualization of 3D printed alginate-based scaffolds**, Koch M., Włodarczyk-Biegun M.K., *Bioprinting*, 2020, DOI: 10.1016/j.bprint.2020.e00098
- 2020 **3D printing of a reactive hydrogel bioink using a static mixing tool**, Puertas-Bartolomé M., Włodarczyk-Biegun M.K., del Campo A., Vázquez-Lasa B., San Roman J., *Polymers*, 2020;
- 2020 **Thiol-Methylsulfone Based Hydrogels: Enhanced Control on Gelation Kinetics for 3D Cell Encapsulation**, Paez J., Farrukh A., Vaublena Mendoza R., Włodarczyk-Biegun M.K., del Campo A., *ACS Appl. Mater. Interfaces.*, 2020; DOI: 10.1021/acsami.0c00709
- 2020 **Effects of microcarriers addition and mixing on WJ-MSC culture in bioreactors**, Sion C., Loubière C., Włodarczyk-Biegun M.K., Davoudi N., Müller-Renno Ch., Guedon E., Chevalot I., Olmos E., *Biochem. Eng. J.*, 2020; DOI: 10.1016/j.bej.2020.107521
- 2020 **Printability study of metal ion crosslinked PEG-catechol based inks**, Włodarczyk-Biegun M.K., Paez J., Villiou M., Feng J., del Campo A., *Biofabrication*, 2020; DOI: 10.1088/1758-5090/ab673a
- 2019 **Methacrylated gelatin-chitosan 3D printed scaffolds with improved shape fidelity and biological features using glycerylphosphate as ionic crosslinker**, Mora-Boza, A., Włodarczyk-Biegun, M.K., del Campo A., Vázquez-Lasa B., San Roman J., *Biomater.Sci.*, 2020; DOI: 10.1039/C9BM01271K
- 2018 **Functional Polymeric Materials Inspired by Geckos, Mussels, and Spider Silk**, Yang J., Włodarczyk-Biegun M.K., Filippov A., Akerboom S., Dompé M., van Hees I.A., Mocan M., Kamperman M., *Macromol. Chem. Phys.*, 2018; DOI: 10.1002/macp.201800051
- 2017 **3D bioprinting of structural proteins**, Włodarczyk-Biegun M.K., del Campo A., *Biomaterials*, 2017; DOI: 10.1016/j.biomaterials.2017.04.019
- 2016 **Injectable hybrid delivery system composed of gellan gum, nanoparticles and gentamicin for the localized treatment of bone infections**, Posadowska U., Brzychczy-Włoch M., Drożdż A., Krok-Borkowicz M., Włodarczyk-Biegun M., Dobrzyński P., Chrzanowski W., Pamuła E., *Expert Opin Drug Deliv.*, 2016; DOI: 10.1517/17425247.2016.1146673
- 2016 **Nanofibrillar hydrogel scaffolds from recombinant protein-based polymers with integrin- and proteoglycan-binding domains**, Włodarczyk-Biegun M.K.*, Werten M.W.T.*, Posadowska U., Storm I.M., de Wolf F.A., van den Beucken J.J.J.P., Leeuwenburgh S.C.G., Cohen Stuart M.A., Kamperman M., *Biomed. Mater. Res. Part A*, 2016; DOI:10.4A:3082–3092
- 2016 **Fibrous Hydrogels for Cell Encapsulation: A Modular and Supramolecular Approach**, Włodarczyk-Biegun M.K., Kambiz F., Werten M.W.T., Slingerland C.J., de Wolf F.A., van den Beucken J.J.J.P., Leeuwenburgh S.C.G., Cohen Stuart M.A., Kamperman M., *PLoS ONE*, 2016; DOI: 10.1371/journal.pone.0155625
- 2016 **Heparin as a Bundler in a Self-Assembled Fibrous Network of Functionalized Protein-Based Polymers**, Włodarczyk-Biegun M.K., Slingerland C.J., Werten M.W.T., van Hees I.A., de Wolf F.A., de Vries R., Cohen Stuart M.A., Kamperman M., *Biomacromolecules*, 2016; DOI: 10.1021/acs.biomac.6b00276
- 2015 **Injectable nanoparticle-loaded hydrogel system for local delivery of sodium alendronate**, Posadowska U., Parizek M., Filova E., Włodarczyk-Biegun M., Kamperman M., Bacakova L., Pamula E., *Int. J. Pharm.*, 2015;485(1-2):31-40; DOI: 10.1016/j.ijpharm.2015.03.003.
- 2014 **Genetically engineered silk-collagen-like copolymer for biomedical applications: Production, characterization and evaluation of cellular response**, Włodarczyk-Biegun M.K., Werten W.T.W., de Wolf F.A., van den Beucken J.J.J.P., Leeuwenburgh S.C.G., Kamperman M., Cohen Stuart M.A., *Acta Biomater.*, 2014;10(8):3620-3629; DOI: 10.1016/j.actbio.2014.05.006.
- 2014 **Dilute Self-Healing Hydrogels of Silk-Collagen-Like Block Copolypeptides at Neutral pH**, Golinska M.D., Włodarczyk-Biegun M.K., Werten W.T.W., Cohen Stuart M.A., de Wolf F.A., de Vries R., *Biomacromolecules*, 2014;15(3):699-706; DOI: 10.1021/bm401682n.
- 2012 **Enzymatic mineralization of gellan gum hydrogel for bone tissue-engineering applications and its enhancement by polydopamine**, Douglas T., Włodarczyk M., Pamula E., Declercq H., de Mulder E., Bucko M., Balcaen L., Vanhaecke F., Cornelissen R., Dubruel P., Jansen J., Leeuwenburgh S., *J Tissue Eng Regen Med.*, 2014;8(11):906-918; DOI: 10.1002/term.1616.

INTERNATIONAL REFEREED CONFERENCE PAPERS

- 2014 **Włodarczyk-Biegun, M. K.**, Werten, M. W. T., Leeuwenburgh, S. C. G., Cohen Stuart, M. A., Kamperman, M., **Silk-collagen-inspired copolymer: promising biomaterial produced by yeasts**, 24th Conference on Biomaterials in medicine and veterinary medicine : 9-12 October 2014, Rytro, Poland, *Engineering of Biomaterials (2014)*, 17.

BOOK CHAPTERS

- 2009 **M. Włodarczyk**, *Rezonans Magnetyczny [eng. Magnetic Resonance]*, In: Tadeusiewicz, R., Augustyniak, P. (ed.). *Podstawy inżynierii biomedycznej*, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Krakow 2009, Poland.
- 2009 **M. Włodarczyk**, *PET, czyli co łączy tomografię i zwierzęta domowe [eng. PET (Positron emission tomography) – what tomography has to do with pets]*, In: Tadeusiewicz, R., Augustyniak, P. (ed.). *Podstawy inżynierii biomedycznej*, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Krakow 2009, Poland.
- 2008 **M. Włodarczyk**, *Obrazowanie rezonansowe [eng. Magnetic Resonance Imaging]*, In: Tadeusiewicz, R. (ed.). *Inżynieria biomedyczna. Księga współczesnej wiedzy tajemnej w wersji przystępnej i przyjemnej*, Uczelniane

Wydawnictwa Naukowo-Dydaktyczne AGH, Krakow 2008, Poland.

- 2008 **M. Włodarczyk**, *PET to nie zwierzętko, tylko metoda obrazowania [eng. PET is not an animal, it is an imaging technique]*, In: Tadeusiewicz, R. (ed.). Inżynieria biomedyczna. Księga współczesnej wiedzy tajemnej w wersji przystępnej i przyjemnej, Uczelniane Wydawnictwa Naukowo-Dydaktyczne AGH, Krakow 2008, Poland.

CONFERENCES AND SEMINARS

- 2021 1st Conference on Computational oncology and personalized medicine, Priority Research Area, POB1, Gliwice, Poland (on-line); **plenary lecture: 3D (bio)printing for personalized medicine**
- 2021 Educational e-Seminar Series on Translational Biomedical Engineering, February 2021; **invited talk: 3D printing for regenerative medicine: from advanced materials to advanced designs**
- 2019 International Conference on Adhesion in Aqueous Media: From Biology to Synthetic Materials, Dresden, Germany; **oral presentation: Printability of tissue adhesives based on dynamic catechol-metal crosslinking**
- 2019 30th European Conference on Biomaterials, ESB2019, Dresden, Germany; **oral presentation: Printable formulations based on dynamic catechol-metal crosslinking**
- 2019 The 13th International Symposium on Frontiers in Biomedical Polymers, Puerto de la Cruz, Tenerife, Spain, **invited talk: 3D printing of PEG-based hydrogels with dynamic metal coordination crosslinking**
- 2019 Lecture series "Meetoza" of Scientific Association of Biotechnology Students, Warsaw, Poland, **Invited talk: 3D (bio)printing for medical applications**
- 2018 Annual CNV foundation meeting, Tübingen, Germany, oral presentation: *3D (bio)printing for medical applications*
- 2018 The International Conference on Biofabrication 2018, Würzburg, Germany, **oral presentation: Melt Electrostatic Writing of a Human Trabecular Meshwork**
- 2018 Polymers Specialized Group (GEP) of the RSEQ and RSEF meeting, Punta Umbria, Spain, **oral presentation: Is this a good bioink? Designing printable medical adhesive**
- 2018 3rd Conference on 3D printing in Medicine, Mainz, Germany, **oral presentation: Printable tissue adhesives**
- 2018 3rd Conference on 3D printing in Medicine, Mainz, Germany, **oral presentation: Melt Electrostatic Writing of a complex hierarchical structures for Human Trabecular Meshwork reconstruction**
- 2017 Formnext 2017, powered by TCT conference, Frankfurt, Germany, **oral presentation: 3D BioPrinting of Medical Glues**
- 2017 Bionection 2017, Jena, Germany, **oral presentation: 3D BioPrinting of Medical Glues**
- 2017 SPP Berlin Meetup 2017, Berlin, Germany, **poster presentation: 3D Bioprinting**
- 2017 Biofabrication for Hierarchical in Vitro Tissue Models, 2017, Hernstein, Austria, **oral presentation: Medical adhesives for 3D printing**
- 2017 3D printing in Science European Congress, organised by SelectBio, 2017, Hannover, Germany, **oral presentation: Catechol-PEG based Bioinks for 3D Printing and Gluing**
- 2015 27th European Conference on Biomaterials, organized by ESB2015, AGH University of Science and Technology; Cracow, Poland, **oral presentation: Silk-collagen inspired artificial proteins for 3D cell culture study**
- 2015 The 11th Frontiers in Biomedical Polymers Symposium, organized by FBPS, University of Trento; Riva del Garda, Italy, **oral presentation: RGD and KRSR functionalization of artificial proteins to enhance cell behaviour in 2D culture**
- 2015 Dutch Polymers Days Lunteren, organised by KNCV, NWO, PTN; Lunteren, The Netherlands, **oral presentation: Artificial proteins for biomedical scaffolds with precisely controlled properties**
- 2014 Annual NBTE (Netherlands society for Biomaterials and Tissue Engineering) meeting; organized by NBTE; Lunteren, The Netherlands, **poster presentation: Functionalized recombinant protein polymers for tissue engineering**
- 2014 Conference Biomaterials in Medicine and Veterinary Medicine, organized by AGH University of Science and Technology in Krakow; Rytro, Poland, **oral presentation: Silk-collagen-inspired copolymer promising biomaterial produced by yeasts**
- 2014 NIRM (Netherlands Institute for Regenerative Medicine) Consortium meeting, organized by NIRM; Rotterdam, The Netherlands, **poster presentation: Cell guidance by recombinant protein polymer functionalization**
- 2014 Dutch Polymers Days Lunteren, organised by KNCV, NWO, PTN; Lunteren, The Netherlands, **poster presentation: Functionalized engineered protein polymers for bone regeneration**
- 2014 Grodon Conference: Bioinspired materials, Sunday River Resort in Newry ME, USA, **poster presentation: Silk-collagen-like copolymer for use in regenerative medicine**
- 2013 BMM/TerM/DCTI Annual Meeting 2013, organized by BMM/TerM/DCTI; Ermelo, The Netherlands
- 2013 NIRM (Netherlands Institute for Regenerative Medicine) Consortium meeting, organized by NIRM; Utrecht, The Netherlands, **poster presentation: Artificial protein polymers for tissue engineering scaffolds**
- 2013 Delft Discussions on Soft Matter Science and Technology, organized by TU Delft, KNCV, NWO; Delft, The Netherlands
- 2012 3 Ogólnopolska Konferencja Edukacyjno-Szkoleniowa Inżynieria Biomedyczna – Edukacja [eng. 3rd Polish Educational and Training Conference Biomedical Engineering – Education]; Krakow, Poland, **invited talk: Next-generation hydrogel biomaterials for the treatment of bone tissue defects**
- 2012 International Society of Differentiation Conference, organized by ISD, Amsterdam, The Netherlands, **poster presentation: Protein polymer hydrogels scaffolds for bone tissue regeneration**
- 2011 Biofuture 2011: Young European biomaterial scientists designing a view for the future, organized by PBM and Universiteit Gent, Ghent, Belgium, **oral presentation: Enzymatic mineralization of gellan gum hydrogels with ALP loaded gelatin particles**

CONTRIBUTED PRESENTATIONS

- 2019 30th European Conference on Biomaterials, ESB2019, Dresden, Germany; (poster): Jun Feng; Printed Biocompatible and Degradable Optical Waveguides for Light Delivery
- 2019 The 12th European Congress of Chemical Engineering and the 5th European Congress of Applied Biotechnology (ECCE12 & ECAB5), Florence, Italy; Presenter (poster): Caroline Sion; Impact of beads collisions on WHJ-MS culture performance
- 2018 3rd Conference on 3D printing in Medicine, Mainz, Germany; Presenter (oral): Ana Mora Boza; Novel bioactive crosslinker for hydrogel 3D bioprinting
- 2017 WoPhyS 2017, University of Nebraska, US; Presenter (poster): Jena Ott; Melt Electrostatic Writing (MEW) of a Human Trabecular Meshwork Scaffold
- 2017 N² Science Communication Conference, Berlin, Germany, 2017; Presenter (poster): Jun Feng; 3D Bioprinting of Optical Waveguides
- 2017 Gordon Research Conference and Seminar, Molecular Insight to Understand Fracture and Adhesion, Mount Holyoke College South Hadley, MA, USA, 2017; Presenter (poster): Maria Villiou; Bioinspired Adhesives for Tissue Regeneration
- 2017 Doktorandentag "Doktorandinnen/Doktoranden der Naturwissenschaftlich-Technischen Fakultät stellen ihre Promotionsthemen vor", Saarbrücken, Germany, 2017; Presenter (poster): Maria Villiou; Design of Bioinspired Adhesives for Soft Tissue Engineering

MEDIA APPEARANCES

- 2021 Invited Guest, *Future Insight* | 07.04.2021 | Guest: *Malgorzata Wlodarczyk-Biegun* | Poland In; <https://www.youtube.com/watch?v=KjeYUxt1Zz8>
- 2019 *Ten reasons to move to Germany as a researcher*, D. Hruby, **Nature** 567 (2019) S44-S45; doi: 10.1038/d41586-019-00912-5.
- 2019 *Kryształki Zwierciadła – konkurs!* [eng. *Kryształki Zwierciadła – competition!*], **Zwierciadło** 05/2019 (2019) 56-57; <https://zwierciadlo.pl/lifestyle/krysztaalki-zwierciadla-konkurs-2>, 11 April 2019.
- 2019 *Małgorzata Włodarczyk-Biegun. Bez szwów* [eng. *Małgorzata Włodarczyk-Biegun. Without stitches*], A. Gumowska, **Zwierciadło** 02/2019 (2019) 53-54.
- 2018 *Polka z nagrodą L'Oréal w Niemczech; droga do Polski wciąż wyboista* [eng. *Polish woman with the L'Oréal prize in Germany; way back to Poland still not easy*], E. Krajczyńska, **PAP-Nauka w Polsce**, <http://naukawpolsce.pap.pl/aktualnosci/news%2C30079%2Cpolka-z-nagroda-loreal-w-niemczech-droga-do-polski-wciaz-wyboista.html>, 02 July 2018.
- 2018 *Förderung für Frauen in der der Wissenschaft* [eng. *Promotion for Women in Science*], L'Oréal, <https://www.loreal.de/medien/news/2018/juni/for-women-in-science-preisverleihung-in-berlin>, 05 June 2018.
- 2017 *Małże inspirują naukowców drukujących tkanki* [eng. *Mussels inspire scientists printing tissues*], E. Krajczyńska, **PAP-Nauka w Polsce**, <https://www.pap.pl/aktualnosci/news%2C1137732%2Cmalze-inspiruja-naukowcow-drukujacych-tkanki.html>, 24 October 2017.
- 2016 *New protein gel for tissue regeneration*, WUR News, <https://www.wur.nl/en/newsarticle/New-protein-gel-for-tissue-regeneration-.htm>, 20 January 2016.

REFERENCES:

- 1) Prof. dr. Marleen Kamperman, University of Groningen, Faculty of Science and Engineering, marleen.kamperman@rug.nl
- 2) Prof. dr. ir. Sander Leeuwenburgh, Radboud University Nijmegen, Faculty of Medical Sciences, sander.leeuwenburgh@radboudumc.nl
- 3) Dr. Timothy Douglis, Lancaster University UK, Engineering Department, t.douglas@lancaster.ac.uk