

Nina Filipczak

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SUMMARY:

Dynamic researcher with an extensive research experience with a total number of citations of 542 according to google scholar (h-index 12). Holds a broad set of analytical and technical skills in multiple areas of research that utilizes *in vivo*, *ex vivo* and *in vitro* abilities. Proven ability to manage challenging research schedules while working in complex and highly demanding environments. Good strategist able to focus on key issues and make necessary decisions to see them through with a proven history of collaboration. Peer reviewer for several national and international journals and served as a guest editor for MDPI Pharmaceutics Journal.

CORE QUALIFICATIONS:

- 10-year research experience in formulation and development of antibody-functionalized co-delivery systems for small molecules and oligonucleotides as well as mammalian cell culture
- Outstanding in project management and design of experiments. Lead multiple projects in the lab setting.
- Adept at strategic analysis and cross-functional team collaboration to resolve challenges in projects
- Significant experience in biological/analytical techniques including: polymer/lipid-based nano/microparticles preparations, HPLC, ELISA, flow cytometry, confocal imaging, cel electrophoresis, Western blot,
- Significant hands-on experience with murine animal studies

EDUCATION:

University of Wroclaw, Faculty of Biotechnology, Wroclaw, Poland 10/2011 – 11/2017

Ph.D. in Biotechnology

Major Research Area: Transferrin-functionalized lipid-based drug delivery system for the co-delivery of natural substances and small molecule antitumor drugs

University of Wroclaw, Faculty of Biotechnology, Wroclaw, Poland 10/2008 – 07/2010

M.S. in Biotechnology

University of Wroclaw, Faculty of Biotechnology, Wroclaw, Poland 10/2004 – 09/2008

B.S. in Biotechnology

POSTDOCTORAL WORK EXPERIENCE :

CPBN, Northeastern University Boston, MA

Post-Doctoral Research Associate / Visiting scholar

04/2018 to present

2C5 antibody-functionalized delivery system for neutrophil extracellular traps

- Developing the platform that specifically recognizes the neutrophil extracellular traps and successfully delivers DNase
- Assessed the efficacy of the platform with various analytical methods, including Western blot, flow cytometry and gel electrophoresis
- Co-lead the project and established experimental protocols

Hypoxia sensitive co-delivery system for oligonucleotide and chemotherapeutics

- Delivered chemotherapeutic agents and downregulated P-glycoprotein simultaneously to reverse multidrug resistance effect in resistant cancer cells
- Assessed the efficacy of the platform in tumor xenograft mice study

- Assessed the efficacy of the platform with various analytical methods, including HPLC, flow cytometry and gel electrophoresis
- Lead the project and established experimental protocols

G4 PAMAM dendrimers-based co-delivery system for oligonucleotide and chemotherapeutics

- Delivered chemotherapy and downregulated level of P-glycoprotein simultaneously to reverse multidrug resistance effect in resistant cancer cells
- Assessed the efficacy of the platform in tumor xenograft mice study with the blood samples collection
- Assessed the efficacy of the platform with various analytical methods, including HPLC, flow cytometry and gel electrophoresis
- Supervising role of the project and established experiment protocols

WORK EXPERIENCE:

University of Wroclaw, Faculty of Biotechnology,

Associate professor- non full-time position

Wroclaw, Poland

12/13/2017 – 03/31/2020

Awarded scholarship under “Mobilnosc Plus” Program founded by Ministry of Higher Education, Republic of Poland for post-doctoral fellowship in US.

RESEARCH EXPERIENCE:

Biophysics Laboratory, Wroclaw University

Grant Researcher

Wroclaw, Poland

01/2017 to 03/2018

ABCA1 transporters and the influence of amphotericin B

- Hybridoma cell culture and antibody isolation
- Transfection of cells with ABCA1 transporter as well as clone harvesting and analyzing by flow cytometry

Lipids and Liposomes Laboratory, Wroclaw University

Ph.D candidate

Wroclaw, Poland

10/2011 to 11/2017

Liposome-based co-delivery system for natural substances and chemotherapies

- Formulated and characterized liposome-based formulation with HPLC, Zeta-sizer and investigated the efficacy with cell-based assays.
- Prepared liposome-based drug formulation by active/passive loading, reverse encapsulation, ethanol injection as well as freeze and thaw methods.
- Successfully delivered targeted liposomes into monolayer cell culture and 3-D spheroids tumor model
Prepared manuscript.
- Leading role of the project and established experiment protocols

CPBN, Northeastern University

Visiting scholar

Boston, MA

05/2016 to 11/2016

Awarded scholarship under "Etiuda" program founded by National Center of Knowledge, Republic of Poland

Cytochrome C/Cardiolipin Nanocomplex (CytCL)

- Formulated and characterized micelle-like formulation with Zeta-sizer and investigated the efficacy with cell-based assays.
- Tested the efficacy of the platform with various analytical methods such as flow cytometry, cell cytotoxicity assays and BCA.

Profilin 1 expression profile in cell compartments and ovocystatin influence

- Leading role of the project and established experiment protocols
- Performed isolation of cells nuclei and cell lysate preparation as well as Western blot analysis
- Used immunocytochemistry technics and confocal imaging

PUBLICATIONS:

- Hypoxia-sensitive drug delivery to tumors. **Filipczał N**, Joshi U, Attia SA, Berger Fridman I, Cohen S, Konry T, Torchilin V. *J Control Release* 2022 Jan;341:431-442.
- Recent advancements in liposome technology. **Filipczał N**, Pan J, Yalamarty SSK, Torchilin VP. *Adv. Drug. Deliv Rev.* 2020; 156:4-22
- Monoclonal antibody 2C5 specifically targets neutrophil extracellular traps. Mendes LP, Rostamizadeh K, Gollomp C, Myerson JW, Marcos-Contreras OA, Zamora M, Luther E, Brenner JS, **Filipczał N**, Li X, Torchilin VP. *MAbs.* Jan-Dec 2020;12(1):1850394
- Modification of Nanoparticles with Transferrin for Targeting Brain Tissues. Attia SA, Li X, **Filipczał N**, Costa DF, Torchilin VP. *Methods Mol Biol.* 2021; 2355:49-56.
- Monoclonal antibody 2C5-modified mixed dendrimer micelles for tumor-targeted co-delivery of chemotherapeutics and siRNA. Pan J, Attia SA, Subhan MA, **Filipczał N**, Palmerston Mendes L, Li X, Yalamarty SSK, Torchilin VP. *Mol Pharm.* 2020 May 4;17(5):1638-1647.
- A Triple Co-Delivery Liposomal Carrier That Enhances Apoptosis via an Intrinsic Pathway in Melanoma Cells. **Filipczał N**, Jaromin A, Piwoni A, Mahmud M, Sarisozen C, Torchilin V, Gubernator J. *Cancers (Basel).* 2019 Dec 9;11(12).
- Lipid-chitosan hybrid nanoparticles for controlled delivery of cisplatin. Khan MM, Madni A, Torchilin V, **Filipczał N**, Pan J, Tahir N, Shah H. *Drug Deliv.* 2019 Dec;26(1):765-772.
- MDM2 antagonist-loaded targeted micelles in combination with doxorubicin: effective synergism against human glioblastoma via p53 re-activation. Sarisozen C, Tan Y, Liu J, Bilir C, Shen L, **Filipczał N**, Porter TM, Torchilin VP. *J Drug Target.* 2019 Jun - Jul;27(5-6):624633.
- ABCA1 transporter reduces amphotericin B cytotoxicity in mammalian cells. Wu A, Grela E, Wójtowicz K, **Filipczał N**, Hamon Y, Luchowski R, Grudziński W, Raducka-Jaszul O, Gagoś M, Szczepaniak A, Chimini G, Gruszecki WI, Trombik T. *Cell Mol Life Sci.* 2019 May 27.
- Polymeric Co-Delivery Systems in Cancer Treatment: An Overview on Component Drugs' Dosage Ratio Effect. Pan J, Rostamizadeh K, **Filipczał N**, Torchilin VP. *Molecules.* 2019 Mar 15;24(6)
- Polyamidoamine dendrimers-based nanomedicine for combination therapy with siRNA and chemotherapeutics to overcome multidrug resistance. Pan J, Mendes LP, Yao M, **Filipczał N**, Garai S, Thakur GA, Sarisozen C, Torchilin VP. *Eur J Pharm Biopharm.* 2019 Mar;136:18-28.
- Synthesis and Antioxidant Activity of Caffeic Acid Derivatives. Sidoryk K, Jaromin A, **Filipczał N**, Cmoch P, Cybulski M. *Molecules.* 2018 Aug 30;23(9)
- The Cytotoxic Action of Cytochrome C/Cardiolipin Nanocomplex (CytCL) on Cancer Cells in Culture. Vladimirov YA, Sarisozen C, Vladimirov GK, **Filipczał N**, Polimova AM, Torchilin VP. *Pharm Res.* 2017 Jun;34(6):1264-1275.
- Long-Circulating Curcumin-Loaded Liposome Formulations with High Incorporation Efficiency, Stability and Anticancer Activity towards Pancreatic Adenocarcinoma Cell Lines In Vitro. Mahmud M, Piwoni A, **Filipczał N**, Janicka M, Gubernator J. *PLoS One.* 2016 Dec 9;11(12): 2016.
- Ovocystatin affects actin cytoskeleton organization and induces proapoptotic activity. MalickaBłaszczewicz M, **Filipczał N**, Gołał K, Juszczyńska K, Sebzda T, Gburek J. *Acta Biochim Pol.* 2014;61(4):753-8.
- Anacardic acid enhances the anticancer activity of liposomal mitoxantrone towards melanoma cell lines - in vitro studies. Legut M, Lipka D, **Filipczał N**, Piwoni A, Kozubek A, Gubernator J. *Int J Nanomedicine.* 2014 Jan 23;9:653-68

- Vitamin C-driven epirubicin loading into liposomes. Lipka D, Gubernator J, **Filipczak N**, Barnert S, Süß R, Legut M, Kozubek A. *Int J Nanomedicine*. 2013;8:3573-85.
- Book chapter: Dendrimers for drug delivery purposes. Pan J, Attia SA, **Filipczak N**, Torchilin VP. *Nanoengineered Biomaterials for Advanced Drug Delivery*, Elsevier
- Book chapter: Directing Therapies to Lysosomes. Yalamarty SSK, Torchilin V, Li X, **Filipczak N**. *Organelle and Molecular Targeting*, CRC Press

CONFERENCE PRESENTATIONS:

1. Yalamarty SSK., Pan J., **Filipczak N.**, Pathrikar T., Cotter C., Torchilin V.: Simultaneous delivery of siRNA and chemotherapeutic drug using 2C5 antibody-targeted mixed dendrimer micelles for multidrug resistant cancers. October 2021 Philadelphia PA, USA
2. **Filipczak N.**, Joshi U., Torchilin V.: Hypoxia sensitive co-delivery system for siRNA and doxorubicin, September 2019 Cambridge MA, USA
3. Gubernator J., **Filipczak N.**, Mahmud M., Lipka D., Janicka M. : Zastosowanie liposomów w leczeniu nowotworów. 8 Sympozjum Współczesna myśl techniczna w naukach medycznych i biologicznych, June 2017 Wrocław, Poland
4. **Filipczak N.**, Sarisozen C., Torchilin V., Gubernator J. : Targeting of liposomes loaded with mitoxantrone, into melanoma cells in a 3D spheroid model. 2nd International Conference and Exhibition on Nanomedicine and Drug Delivery, May 2017 Osaka, Japan
5. Mahmud M., Janicka M, Zaremba-Czogalla M, **Filipczak N.**, Gubernator, J : Alpha lipolic acid-loaded liposome formulation enhance the activity of liposomal epirubicin toward metastatic pancreatic cancer cell line. NanoOstrava 2017 , May 2017 Ostrava, Czech Republic
6. **Filipczak N.**, Mahmud M., Piwoni A., Gubernator J. : Apoptosis mediated by ROS on melanoma cells after treatment by liposomal anacardic acid, vitamin C and mitoxantrone cocktail . X Parnas Conference, July 2016, Wrocław, Poland
7. Piwoni A., Terepka D., **Filipczak N.**, Stasiuk M., Gubernator J.: Paracetamol hepatotoxicity: Is there any chance for protection? X Parnas Conference, July 2016, Wrocław, Poland
8. Mahmud M., **Filipczak N.**, Gubernator, J.: "Liposomal forms of the natural bioactive substances in pancreatic cancer treatment" 8th International Conference of Contemporary Oncology, Cancer Genomics, Immunotherapies and Targets March 2016 Poznań, Poland
9. **Filipczak N.**, Mahmud, M., Piwoni, A., Gubernator, J.: "Apoptosis of the melanoma cells after treatment by liposomal anacardic acid, vitamin C and mitoxantrone cocktail: intrinsic or extrinsic pathway?" LIPOSOME ADVANCES ILS 2015 MEETING, December 2015 London, UK
10. **Filipczak N.**, Gubernator J.: "Hepatotoxicity and cardiotoxicity of mitoxantrone, vitamin C and anacardic acid 1. Liposomal formulation. " NanoOstrava 2015 May 2015 Ostrava, Czech Republic
11. **Filipczak N.**, Gubernator J.: "The influence of anacardic acid on cell cycle and apoptosis." IV International Conference of Biophysics Students May 2015 Cracow, Poland
12. Lipka D., Gubernator J., **Filipczak N.**, Kozubek A.: "Novel folate- targeted liposomal formulation of epirubicin" BioNanoMed 2013 March 2013 Krems, Austria
13. Lipka D., Gubernator J., **Filipczak N.**, Kozubek A.: "Encapsulation method affects liposomal epirubicin in vitro activity but not its stability" BioNanoMed 2013 March 2013 Krems, Austria
14. Piwoni A., Lipka D., **Filipczak N.**, Kozubek A.: "New method of isolation of anacardic acid and examined its supramolecular forms" II International Conference of Biophysics Students May 2013 Cracow, Poland
15. Legut M., Lipka D., **Filipczak N.**, Gubernator J., Kozubek A.: "Liposomal formulation of mitoxantrone with the use of a vitamin C gradient and its effect on the activity of anti-tumor. Symbioza April 2013 Warsaw, Poland
16. Malicka-Błaszkiwicz M., **Filipczak N.**, Gołąb K., Juszczyńska K., Sebzda T., Gburek J.: "Cystatin affects 5. actin 7. cytoskeleton organization" PTBioch-The First Polish-German Biochemical Societies Joint Meeting September 2012 Poznań, Poland

TEACHING EXPERIENCE:

Biophysics Lab for undergraduate students

Wroclaw University

Structure and function of lipids lab course for undergraduate students

Wroclaw University

CO-CURRICULAR EXPERIENCE:

Member of PhD Student Committee

Wroclaw University

09/2012 to 09/2017

Vice Chair of Ph.D. Committee

Wroclaw University

03/2015 to 10/2015

Attended biweekly Graduate Committee meeting as the Biotechnology Department Ph.D. student representative