Prospective supervisor's form

Name of the supervisor: Grzegorz Cholewiński

Academic title: PhD.Sc.Eng.

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Faculty of Chemistry

Gdańsk University of Technology **Department of** Organic Chemistry

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Discipline[i] chemical sciences [NCh] none

Optional

Key words (obligatory four key words describing research interests / expertise):

organic synthesis

medicinal chemistry

immunosuppressive activity

anticancer activity

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 29/30
2. Citations excluding self-citations WoS 252 Scopus 260
3. Hirsch index WoS 9 Scopus 10

1. The number of PhD students who have graduated under your supervision: 2
2. The number of PhD students currently supervised:
   a. within the current doctoral school 0
   b. within doctoral studies (previous syste 2
3. Are you currently accepting new PhD students:
   a. Polish *Yes/No* Yes
   b. Foreign *Yes/No* Yes

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Research interests or topics offered for PhD research (no more than 2000 characters)[ii]

My research focuses on synthesis of novel compounds with promising antiproliferative properties. Immunusuppressants are aplied in transplantology in prophylasis of organ transplant rejection and autoimmune disorders treatment. Despite of progress in transplantalogy, the risk of graft rejection has been not eliminated so far. One of the coumpounds that provide such drugs is mycophenolic acid (MPA). In 1995 morpholine ester of mycophenolic acid – mycophenolate mofetil (MMF, CellCept, Roche AG) was approved by FDA as a drug in solid organ transplantation (kidney, liver, heart) for decrease risk of rejection. The second form of the drug is mycophenolic acid sodium salt (MPS, Myfortic, Novartis Farma AG). Both forms are applied together with other immunosuppressants, like cyclosporine, tacrolimus. MPA is an uncompetitive and reversible inhibitor of inosine-5'-monophosphate dehydrogenaze (IMPDH) via blocking binding site of NAD/H2O cofactor placed near to active center of the enzyme. Lymphocytes biosynthesis together with DNA construction depend on this pathway, since it involves nucleotides biosynthesis de novo. Other cells use both de novo and solvage pathway (when already existed nucleobases are recycled). As a result, MPA selectively inhibits proliferation of lymphocytes B and T. The planned research include synthesis of novel MPA derivatives, followed by their characterization and antiproliferative activity investigations. The structure of target compounds will be designed according to previous results and literature data. Since mycophenolic acid possesses also anticancer, antibacterial activities, such extensions in cooperation with specialized research group is not excluded.

Funding or special equipment needed to carry out a PhD project[iii]:

1. Is funding available for experimental work: *Yes/No/not needed* — Yes
2. Is the equipment needed to complete a PhD project available in your lab/department: *Yes/No/not needed* — Yes

Most important publications – no more than 5 published after 1.01.2018

No	Authors/title/journal	Number of points according to the current list of the Ministry of Science and Higher Education	Publication year
1.	Siebert A., Cholewiński G., Trzonkowski P., Rachoń J./ Immunosuppressive properties of amino acid and peptide derivatives of mycophenolic acid/Eur. J. Med. Chem., 2020, 189, 112091.	140	2020
2.	A. Siebert, M. Wysocka, B. Krawczyk, G. Cholewiński, J. Rachoń/ Synthesis and antimicrobial activity of amino acid and peptide derivatives of mycophenolic acid/Eur. J. Med. Chem. 2018, 143, 646-655.	140	2018

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3.	A. Siebert, G. Cholewiński, D. Garwolińska, A. Olejnik, J. Rachoń, J. Chojnacki/The synthesis and structure of a potential immunosuppressant: N-mycophenoyl malonic acid dimethyl ester/J. Mol. Struct., 2018, 1151, 218-222.	70	2018
4.			
5.			

Most recent externally funded projects you were involved in – no more than 3

No	Project title, the name of the Principal Investigator (PI) and the institution the project was carried out	Years	Role in the project [i]
1.	Novel potential immunosuppressive drugs based on the structure of adenosine and mycophenolic acid - synthesis and biologicval activity, prof. K. Dzierzbicka, NCN.	2014-2017	R
2.	Syntesis of novel analogs of batracylin as potenctial anticancer drugs, prof. K. Dzierzbicka, NCN	2013-2016	R
3.	Synthesis and biological activity investigation of novel derivatives of mycophenolic acid, G. Cholewiński, NCBiR	2011-2014	PI

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Additional relevant information – (no more than 1600 characters)[v]

PhD student will be involved in synthesis of designed compounds. In the next stage, the doctorate can be interdisciplinary and researcher is invited to participation in initial activity investigation of obtained compounds in cooperation with specialized research lab. I am in the course of the application for financial support to enable extended synthesis according to molecular modeling and materials needed to perform biological tests.

[i] You may select up to two disciplines out of 12 disciplines represented in the Doctoral School

[ii] Observe the limit of not more than 2000 characters

[iii] Leave only one answer

[iv] Select the role in the project: PI stands for principal investigator (refers to the holder of an independent grant and the lead researcher for the grant project), Co-I for co-investigator (Co-I assists the principal investigator in the management and leadership of the research project), R for researcher

[v] Add any other relevant information e.g. awards for PhD students whom you supervised (no more than 1600 characters)