Capacities/Research Potential
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Project No. 316254

BASTION

"From Basic to Translational Research in Oncology"

Deliverable D3.5

Report on the recruitment of 2 experienced scientists and two IT professionals

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Table of Content:

Attachments:

1. Announcements
2. Assessment of applications
3. Application acceptance and rejection letter templates
4. Interview rating results
5. Candidate acceptance and rejection letter templates

All reports are available on BASTION Webpage: www.bastion.wum.edu.pl

1. Introduction

Deliverable D3.5 corresponds to the task T3.3 in WP3.

A state-of-art bioinformatics unit is envisioned within the BASTION project in order to provide support for Medical University of Warsaw (MUW) to become a leading research and clinical oncology centre in Central Europe. To this end, one of the activities under WP3 carried out by the newly recruited leader of the bioinformatics group, Dr. Radoslaw Zagozdzon, was to recruit top-level scientists with international experience in data mining and analysis.

2. Recruitment process

In this task, we have utilized the previous experience on recruiting new scientist for the BASTION project as well as the standard operating procedures of the Medical University of Warsaw, similarly to the tasks T3.1 and T3.2 in WP3.

Advertisements were published on the online Nature Jobs website (www.nature.com/naturejobs/science/), EURAXESS website (http://ec.europa.eu/euraxess/index.cfm/jobs/index). Both Nature website and EURAXESS website have an extensive job-marketing section and wide European and international coverage. Moreover, advertisements were announced on the Medical University of Warsaw website (www.wum.edu.pl), distributed through email lists to international and domestic research centers (The International Institute of Molecular and Cell Biology IIMCB, Nencki Institute of Experimental Biology, University of Warsaw, Mossakowski Medical Research Centre, Polish Academy of Sciences, Institute of Haematology and Transfusion Medicine**,** Institute of Fundamental Technological Research Polish Academy of Sciences, Jagiellonian University), research partners and collaborators (Dana-Farber Cancer Institute, University of Cambridge, Universite de la Mediterranee, University Hospital of Ulm, Karolinska Institutet) and published in the second highest selling newspaper in Poland (Gazeta Wyborcza paper and electronic version).

The recruitment process was carried out in three rounds.

2.1 Announcements

For each of the announcements, Dr. Zagozdzon, after consultation with the BASTION leader and/or the other team leaders, has specified qualification requirements for an IT professional matching his/her scientific profile.

First round – IT Professional. The announcement was published on 1st November, 2012 with deadline on 16th November, 2012 (attachment 1).

Second round – Postdoctoral scientists. The announcement was published on 2nd January, 2013 with deadline on 22nd February, 2013 (attachment 1). Two positions were covered by this one announcement.

Third round – IT Professional. The announcement was published on 12th January, 2013 with deadline on 22nd February, 2013 (attachment 1).

2.2 Applications

The response to the advertisement for each of the research positions was more than satisfactory, however several candidates were formally ineligible for the positions. The quality of the remaining applicants was outstanding. Dr. Zagozdzon, after consultation with the BASTION Coordinator, has evaluated their suitability for the positions and an assessment processes was focused upon the formal criteria and work-related qualities needed for the positions (attachment 2).

The following initial six selection criteria were used for the **postdoc** positions:

CRITERIA	WEIGHT (TOTAL OF 100)
Motivation letter	5
2 reference letters	5
Publications	50
Experience in the area	20
International experience	10
Additional qualifications	10

The following initial six selection criteria were used for the **IT professional** positions:

CRITERIA	WEIGHT (TOTAL OF 100)
Motivation letter	5
Reference letter	15
Publications	10
Experience in the area	50
International experience	10
Additional qualifications	10

2.3 First round – IT Professional

(full lists have been rejected from the public report)

List of candidates:
6 candidates ()

2.4 Second round – Postdoctoral scientists

List of candidates:
11 candidates

2.5 Third round – IT Professional

List of candidates:
9 candidates

2.6 Interviews and selection

During the interview all applicants were informed about the objectives of BASTION project and were evaluated against the selection criteria for the position and how far they could contribute towards the achievements of the BASTION goals. The selection process was made by a selection committee. The rating scale (1-40) was used when assessing candidates against the selection criteria.

Rating	Description	Points
Highly qualified	The candidate demonstrated experience/expertise above the advertised classification level.	**36-40**
Very qualified	The candidate demonstrated experience/expertise to a high degree as described for the advertised classification level.	**30-35**
Qualified	The candidate demonstrated experience/expertise as described for the advertised classification level.	**25-29**
Not qualified	The candidate demonstrated some aspects of experience/expertise for the advertised classification level.	**20-24**
Not qualified	The candidate failed to provide experience/expertise demonstrative of the requirements of this position.	**1- 19**

Selection criteria

	Skill/Quality	Rating
1	Depth and breadth of experience	**1-5**
2	Technical knowledge	**1-5**
3	Interpersonal skills, teamwork	**1-5**
4	Organization and planning	**1-5**
5	Creativity	**1-5**
6	Project planning, grant applications	**1-5**
7	Written and oral communication skills	**1-5**
8	Coping stress management	**1-5**
	TOTAL	**1-40**

First round – IT Professional

Short list was prepared by the team leader by 19th November, 2012 and candidates were advised via e-mail by WP3 leader about the results and whether they proceeded to the next stage of assessment (acceptance and rejection letter templates attached in attachment 3). Interview took place on 23rd November, 2012 in the Department of Immunology, MUW (interview rating results in attachment 4).

Members of the selection board:

1. Jakub Golab
2. Dominika Nowis
3. Krystian Jazdzewski
1. Radoslaw Zagozdzon
2. Magdalena Winiarska
3. Iwona Drozdowska-Rusinowicz

List of invited candidates:

1. Slawomir G.
2. Piotr S.
3. Ewa S–Ł.

Results were announced on 28th November, 2012. All invited candidates were informed about the results (candidate acceptance and rejection letter templates attached in attachment 5).

Selected candidate:

Piotr Stawinski

Second round – Postdoctoral scientists

Short list was prepared by the team leader by 26th February, 2013 and candidates were informed via e-mail by WP3 leader about the results. Interview took place on 11th March, 2013 in the Department of Immunology, MUW (interview rating results in attachment 4).

Members of the selection board:

4. Jakub Golab
5. Radoslaw Zagozdzon
6. Dominika Nowis
7. Tomasz Stoklosa
8. Piotr Stawinski
9. Rafal Ploski
10. Magdalena Winiarska

List of invited candidates:

1. Malgorzata B.
2. Maria S.
3. Magdalena J.
4. Pawel G.

Results were announced on 13th March, 2013. All invited candidates were informed about the results.

Selected candidates:

1. Malgorzata Bajor
2. Pawel Gaj

Third round – IT Professional

Short list was prepared by team leaders by 26th February, 2013 and candidates were informed via e-mail by WP3 leader about the results. Interview took place on 11th March, 2013 in the Department of Immunology, MUW (interview rating results in attachment 4).

Members of the selection board:

1. Jakub Golab
2. Radoslaw Zagozdzon
3. Dominika Nowis
4. Tomasz Stoklosa
5. Piotr Stawinski
6. Rafal Ploski
7. Magdalena Winiarska

List of invited candidates:

1. Michal T.
2. Slawomir G.

Results were announced on 13th March, 2013. All invited candidates were informed about the results.

Selected candidate:

Slawomir Gruca

3. Presentation of selected candidates

3.1. IT professional no 1 (Piotr Stawinski)

DATE (YEARS)	DEGREE/ EXPERIENCE	PLACE	SUPERVISOR
2009	B.Sc.	Faculty of Biology, University of Warsaw	Professor Mirosława Włodarczyk
2008	M.Sc.	Faculty of Mathematics, Informatics and Mechanics, University of Warsaw	Professor Andrzej Skowron

3.1.1. Biosketch

I completed my M.Sc. degree at the Warsaw University, Faculty of Mathematics, Informatics and Mechanics in 2008. In 2009 I've completed my bachelor's degree at the Faculty of Biology, University of Warsaw. In 2006 I've undertaken one year Erasmus scholarship at the bioinformatics program at the Uppsala University via the Linnaeus Centre for Bioinformatics in Sweden. After finished my studies I started a sole proprietorship, mainly concerned on huge linguistic databases processing. In 2012 I received a bioinformatics position at the Department of Medical Genetics, Medical University of Warsaw, where I was responsible for the Next Generation Sequencing data analysis. In 2013 I joined the Bastion Bioinformatics group where I continue NGS data analysis.

3.1.2. Selected publications

1. L. Dziewit, J. Baj, M. Szuplewska, A. Maj, M. Tabin, A. Czyzkowska, G. Skrzypczyk, M. Adamczuk, T. Sitarek, **P. Stawinski**, A. Tudek, K. Wanasz, E. Wardal, E. Piechucka, and D. Bartosik. Insights into the transposable mobilome of Paracoccus spp. (Alphaproteobacteria). PLoS ONE, 7(2):e32277, 2012.

3.1.3. Awards/Fellowships

N/A

3.1.4. Current research interests

Next Generation Sequencing (NGS) is a great technique, that produces huge amount of genetics data in a very short period of time. Currently NGS have a lot of applications, to mention targeted sequencing, ChIP seq, RNA-seq, *de novo* sequencing. NGS data processing requires both deep computer science knowledge, including High Performance Computing and

programming skills, as well as deep understanding of the biology beneath the data received. My current research interest is in data processing of Whole-exome sequencing and Reduced representation bisulfite sequencing experiments. The former includes Single and Multi Nucleotide Polymorphisms detection and their biological interpretation as well as Copy Number Variation analysis, the latter includes Methylome data extraction, interpretation and identification of differentially methylated regions.

3.1.5. 3.Research activity in BASTION project

Publications	1. R. Ploski, A. Pollak, S. Müller, M. Franaszczyk, E. Michalak, J. Kosinska, **P. Stawinski**, M. Spiewak, H. Seggewiss, and Z. T. Bilinska. Does p.Q247X in TRIM63 Cause Human Hypertrophic Cardiomyopathy? Circ. Res., 114(2):e2–5, Jan. 2014. 2. I. Chojnicka, K. Gajos, K. Strawa, G. Broda, S. Fudalej, M. Fudalej, **P. Stawiński**, A. Pawlak, P. Krajewski, M. Wojnar, and R. Płoski. Possible association between suicide committed under influence of ethanol and a variant in the AUTS2 gene. PLoS ONE, 8(2):e57199, 2013.
Participation in courses/trainings/workshops	Cancer genetics for medical community Workshop organized by the Medical University of Warsaw in the project BASTION, Warsaw, Poland, 17 June 17, 2013.

Grant number	Title	Function	Duration	Funding	Awarding institution
2013/11/N/NZ 2/02544	Novel computational approaches for analysis of the Next Generation Sequencing data: development of the indel calling algorithm	Project Leader	2014-2017	Submitted, project pending	National Science Center

3.1.6. Envisioned career path

In the next few years I am planning to complete my PhD in the field of Whole-Exome Sequencing data analysis for clinical purposes. I am also planning to publish current results in peer reviewed journal and make my data processing software available online for other researchers.

3.2. Postdoc – researcher no 1 (Pawel Gaj)

DATE (YEARS)	DEGREE/ EXPERIENCE	PLACE	SUPERVISOR
2005-2013	Research Scientist	Department of Gastroenterology and Hepatology at Medical Centre of Postgraduate Education	Professor Jerzy Ostrowski
2005-2009	PhD in medical sciences	Department of Gastroenterology and Hepatology at Medical Centre of Postgraduate Education	Professor Jerzy Ostrowski
2003-2004		Hiroshima University, JAPAN; Hiroshima University Study Abroad Program	Proffesor Taiji Hotta
2001-2005	M.Sc.	Warsaw Agricultural University, Department of Plant Genetics Breeding and Biotechnology	Professor Stefan Malepszy

3.2.1. Biosketch

The character of my research has evolved over time from purely laboratory oriented work towards my present profile of a person who is involved in both the laboratory work and computational analyses of the experimental data. My research interests focused mainly on genomics, i.e. genome-wide association studies (GWAS) in various types of complex diseases: colorectal cancer, prostate cancer, breast cancer and late-onset Alzheimer's disease. The aim of my research was the identification of new and verification of already described polymorphic markers (SNPs) involved in modified susceptibility to the sporadic Alzheimer's disease as well as . During this study I have not only had a chance to use various readily available bioinformatic tools, including PLINK, Haploview, R-project, but I have also had an opportunity to develop a simple Perl language-based analytical approach for analysis of pooled-DNA sample GWAS data. This cost-effective genetic variation screening method has let me identify several genetic polymorphisms differentially represented in the groups of Alzheimer's disease patients and control subjects. After TaqMan® validation of the GWAS results I was able to identify a novel candidate SNP marker on chromosome 9 (9q21.33), which showed association with LOAD in a manner independent from the one described by the already known APOE ε4 variant (DOI: 10.3233/JAD-2012-120520). During the course of this study I highly enjoyed both working at the laboratory and running all of the statistical analyses.

Besides the population based studies I am also interested in resolving genetic background of very rare syndromes, with the use of emerging availability of next generation sequencing techniques. Recently, I have had a chance to apply an analytical Genome Analysis Toolkit (GATK) based workflow to an Exome-seq experimental data obtained from a family diagnosed with a condition resulting in exceptionally high levels of serum amino-transferases. This work enabled me to identify non-synonymous single nucleotide variants (SNV), as well as short frameshift insertions/deletions in the coding portion of the human genome.

3.2.2. Selected publications

1. Attinkara R, Mwinyi J, Truninger K, Regula J**, Gaj P**, et al. (2012) Association of genetic variation in the NR1H4 gene, encoding the nuclear bile acid receptor FXR, with inflammatory bowel disease. BMC Res Notes 5: 461. doi:10.1186/1756-0500-5-461.
2. Bielinska B, **Gaj P**, Kluska A, Nowakowska D, Balabas A, Dabrowska M, Niwinska A, Gruchota J, Zub R, Skasko E, Steffen J, Ostrowski J, Siedlecki JA. Association of the BRCA1 promoter polymorphism rs11655505 with the risk of familial breast and/or ovarian cancer. Fam Cancer. 2013 Dec;12(4):691-8. doi: 10.1007/s10689-013-9647-6.
3. **Gaj P**, Kluska A, Nowakowska D, Bałabas A, Piątkowska M, et al. (2012) High frequency of BRCA1 founder mutations in Polish women with nonfamilial breast cancer. Fam Cancer. doi:10.1007/s10689-012-9560-4.
4. Scharl M, Mwinyi J, Fischbeck A, Leucht K, Eloranta JJ, et al. (2012) Crohn's disease-associated polymorphism within the PTPN2 gene affects muramyl-dipeptide-induced cytokine secretion and autophagy. Inflamm Bowel Dis 18: 900–912. doi:10.1002/ibd.21913.
5. **Gaj P**, Maryan N, Hennig EE, Ledwon JK, Paziewska A, et al. (2012) Pooled Sample-Based GWAS: A Cost-Effective Alternative for Identifying Colorectal and Prostate Cancer Risk Variants in the Polish Population. PLoS ONE 7: e35307. doi:10.1371/journal.pone.0035307.
6. **Gaj P**, Paziewska A, Bik W, Dąbrowska M, Baranowska-Bik A, et al. (2012) Identification of a late onset Alzheimer's disease candidate risk variant at 9q21.33 in polish patients. J Alzheimers Dis 32: 157–168. doi:10.3233/JAD-2012-120520.
7. Mikula M, **Gaj P**, Dzwonek K, Rubel T, Karczmarski J, et al. (2010) Comprehensive analysis of the palindromic motif TCTCGCGAGA: a regulatory element of the HNRNPK promoter. DNA Res 17: 245–260. doi:10.1093/dnares/dsq016.
8. **Gaj P**, Mikula M, Wyrwicz LS, Regula J, Ostrowski J (2008) Barrett's esophagus associates with a variant of IL23R gene. Acta Biochim Pol 55: 365–369.
9. **Gaj P**, Habior A, Mikula M, Ostrowski J (2008) Lack of evidence for association of primary sclerosing cholangitis and primary biliary cirrhosis with risk alleles for Crohn's disease in Polish patients. BMC Med Genet 9: 81. doi:10.1186/1471-2350-9-81.
10. Ostrowski J, Mikula M, Karczmarski J, Rubel T, Wyrwicz LS, et al. (2007) Molecular defense mechanisms of Barrett's metaplasia estimated by an integrative genomics. J Mol Med 85: 733–743. doi:10.1007/s00109-007-0176-3.

11. Wyrwicz LS**, Gaj P**, Hoffmann M, Rychlewski L, Ostrowski J (2007) A common cis-element in promoters of protein synthesis and cell cycle genes. Acta Biochim Pol 54: 89–98.
12. Tagashira N, Plader W, Filipecki M, Yin Z, Wiśniewska A, et al. (2005) The metabolic profiles of transgenic cucumber lines vary with different chromosomal locations of the transgene. Cell Mol Biol Lett 10: 697–710.
13. Malinowski R, Filipecki M, Tagashira N, Wiśniewska A, **Gaj P**, et al. (2004) Xyloglucan endotransglucosylase/hydrolase genes in cucumber (Cucumis sativus) - differential expression during somatic embryogenesis. Physiol Plant 120: 678–685. doi:10.1111/j.0031-9317.2004.0289.x.

3.2.3. Awards/Fellowships

N/A

3.2.4. Current scientific interests

My present scientific interests focus on various subjects mainly involving application of bioinformatic methods in the analysis of RNA-seq data, generated in the New Generation Sequencing (NGS) experiments.

I have also been interested in data mining of publically available data sets. These activities focus primarily on subjects like i.e. tumorgenesiss of breast cancer, multiple myeloma as well as mature B-cell lymphoma malignancies.

Importantly, the analyses conducted so far by other research teams were based on the biopsy tissue material. These approaches have both advantages and shortcomings. The obvious downside of studying the tissue samples in the transcriptomic context is (i) the fact that the clinical diagnosis for the analyzed cases was made in each of the patients ad hoc, which could introduce a bias related to the diagnostic criteria discrepancies and (ii) the biopsy tissue sample specimens contain variable proportions of the cancer cells, a factor which has a strong potential to decrease power of the study. Both of these factors are likely to effectively bias the resulting gene signature composition, and can lead to a lesser degree of confidence in the discovery part of a study.

The bioinformatics approach that I developed allowed us to overcome both of the mentioned shortcomings of the discovery stage of the project by using a training set consisting of 38 cell lines classified as B-cell lymphoma originating from the mature B lymphocytes that included a panel of 11 BL and 18 DLBCL cell lines. The significant advantage of this approach comes from the fact that, as opposed to the clinical biopsy samples, cell lines consist of a pure population of cancer cells and therefore the differential expression effects are unlikely to be masked by the variable amounts of healthy tissue cells, usually sampled together with the cancer cells in the biopsy material. Secondly, the cell lines are by their nature very well described in terms of their phenotypes and their identity and their sub-classification has been validated multiple times by independent research groups leaving virtually no chance for their miss-classification. Hence in this way our approach substantially gains in terms of the discovery power as compared with the previously described studies. We have successfully identified a gene expression signature in the context of lymphomas originating from the

mature stage B lymphocytes. Then, we have singled-out the gene signature to select a small number of 11 genes with strong differential expression levels allowing for precise discrimination between the BL and DLBCL cell lines. There were four genes with a previously identified role in BL pathogenesis, in addition to seven newly identified ones, among the allocated genes.

3.2.5. Research activity in BASTION project

Publications	1. **Pawel Gaj**, Radoslaw Zagozdzon. In silico analysis of microRNA-510 as a potential oncomir in human breast cancer. Breast Cancer Res (*accepted*) 2. Patrick C. O'Leary, Marta Terrile, Malgorzata Bajor, **Pawel Gaj**, Bryan T. Hennessy, Gordon B. Mills, Agnieszka Zagozdzon, Darran P. O'Connor, Donal J. Brennan, Kate Connor, Jane Li, Ana Maria Gonzalez-Angulo, Han-Dong Sun, Jian-Xin Pu, Fredrik Pontén, Mathias Uhlén, Karin Jirström, Dominika A. Nowis, John P. Crown, Radoslaw Zagozdzon*, and William M. Gallagher*. Peroxiredoxin-1 protects estrogen receptor α from oxidative stress-induced suppression and is a protein biomarker of favorable prognosis in breast cancer. Breast Cancer Res [*equal senior and corresponding authors] (*submitted, decision pending*)
Book chapters	1. Radoslaw Zagozdzon**, Pawel Gaj**. Modern methods of risk assessment and infections diagnosis in patients after transplantation. in 'Transplantologia praktyczna', vol. 5: 'Zakażenia w transplantologii'. Eds. Leszek Pączek, Krzysztof Mucha, Bartosz Foroncewicz; PWN, Warsaw 2013 [*in Polish*] 2. **Pawel Gaj,** Radoslaw Zagozdzon. Modern biomarkers of allograft survival. in 'Transplantologia praktyczna', vol. 6: 'Wyniki odlegle transplantacji narzadow'. Eds. Leszek Pączek, Krzysztof Mucha, Bartosz Foroncewicz; PWN, Warsaw 2013 [*in Polish*]
Participation in courses/trainings/workshops	Cancer genetics for medical community Workshop organized by the Medical University of Warsaw in the project BASTION, Warsaw, Poland, 17 June 17, 2013.
International training	Visiting Researcher in Conway Institute, University College Dublin, Ireland - each person 2 weeks, 3-17 July 2013.

Grant number	Title	Function	Duration	Funding	Awarding institution
2013/11/D/NZ2/02769	Analysis and evaluation of significance of molecular differences between Burkitt's lymphoma and diffuse large B-cell lymphoma	Project Leader	2014-2017	Submitted, project pending	National Science Center

3.2.6. Envisioned career path

My future career path will focus on continuous development of my bioinformatics skills in terms of finding causative relationships and correlations between the molecular signatures of cancer tissues, the clinical outcomes and possible differences in efficacy of therapeutic agents. In a long perspective I am going to focus on studies taking advantage of emerging accessibility of the high-throughput -omics experimental techniques i.e. Next Generation Sequencing in various fields of biology. In parallel to the computational data analysis work, I am going to get involved in wet-lab activities elucidating significance of selected mutation events on the structure and function of the subject proteins.

3.3. Postdoc – researcher no 2 (Malgorzata Bajor)

DATE (YEARS)	DEGREE/ EXPERIENCE	PLACE	SUPERVISOR
2003	M.Sc.	University of Maria Curie-Sklodowska, Lublin, Poland	Prof. dr hab. Magdalena Fikus
2010	PhD	Institute of Biochemistry and Biophysics Polish Academy of Sciences, Warsaw, Poland	Prof. dr hab. Michał Dadlez
2008-2010	Predoc	The Nencki Institute, Warsaw, Poland	Prof. dr hab. Leszek Kaczmarek
2011-2012	Postdoc		
2012/2013 (6 months)	Postdoc	Peninsula College of Medicine and Dentistry University of Exeter, Exeter, United Kingdom	Prof. Robert Pawlak

3.3.1. Biosketch

I have gained my Master's degree in Biotechnology from the Department of Biology and Earth Sciences, University of Maria Curie-Sklodowska in Lublin, Poland in 2003. During

my M.Sc. research work I used molecular biology and genetics techniques to study role of genes involved in translation termination in yeast.

After completing my M.Sc. I joined to the group of Prof. Michal Dadlez where I started my PhD studies. My PhD research work was focused on the determination of the impact of S-nitrosylation of S100A1 and S100B proteins on their structural changes and metal binding properties. The obtained results uncovered S-nitrosylation as a novel post-translational modification of S100A1 and S100B proteins which may contribute to their activation by metal ions and may suggest an interplay between several signaling mechanisms in governing function of these proteins in the cell. The second line of my PhD research work was to determine the exact interaction site(s) between S100A1, S100B proteins and Receptor for Advanced Glycation End products. Understanding how these proteins interact with each other will allow to elucidate their biological functions. In the future, they might be used as therapeutic targets for treating in heart failure and neurodegenerative diseases, in which they are involved. During my PhD study I gained a set of new abilities and techniques including: determination of the protocols for efficient protein expression and purification, an extensive knowledge of column chromatography (e.g. HPLC, FPLC, SEC), a wide range of biophysical and biochemical methods for protein characterization and related to them data analysis and finally techniques coupled with mass spectrometry and MS data analysis.

Next, I have worked as an independent research fellow in the Laboratory of Neurobiology at the Nencki Institute in a group of Prof. Leszek Kaczmarek. There, I was involved in project focused on the identification of the matrix metalloproteinase-9 (MMP-9) protein targets at the synapse. I used the two dimensional fluorescence difference gel electrophoresis (DIGE) coupled with mass spectrometry to characterize the changes taking place in synaptodegradome of the wild-type and MMP-9 knockout mice. The extensive research allowed proposing new members of the MMP-9 degradome.

Furthermore, with the support of Short-Term Scientific Mission Grant from the COST Action I spent six months, as a visiting research fellow, at the University of Exeter in group of Prof. Robert Pawlak. I was involved in projects focused on understanding the regulating neuronal activity underlying fear and anxiety. To achieve my goals I used a combination of molecular biology and novel proteomic techniques based on the isotopic labeling of N-terminal ends that allowed for direct identification of the protease dependent protein cleavage sites. Moreover, I was also involved in the project related to PAR1 receptor and its role in mediating contrasting neuronal responses depending on the emotional status of an animal.

3.3.2. Selected publications

1. **Bajor M,** Michaluk P, Gulyassy P, Kekesi AK, Juhasz G & Kaczmarek L (2012) Synaptic cell adhesion molecule 2 and collapsin response mediator protein 2 are novel members of the matrixmetalloproteinase 9 degradome. *J. Neurochem.* 122, 775-788

2. **Bajor M** & Kaczmarek L (2013) Proteolytic remodeling of the synaptic cell adhesion molecules (CAMs) by metzincins in synaptic plasticity. *Neurochem Res.*, 38, 1113–1121

3. Wiera G, Wozniak G, **Bajor M**, Kaczmarek L & Mozrzymas JW (2013) Maintenance of long-term potentiation in hippocampal mossy fiber – CA3 pathway requires fine-tuned MMP-9 proteolytic activity. *Hippocampus*, 23, 529-543

3.3.3. Awards/fellowships

2012 COST Action BM001: Short-Term Scientific Mission Grant (University of Exeter, UK)

2009 IBRO Award: In Europe Short Stay Grant (Eotvos Lorand University, Budapest, Hungary)

2004 National Institute of Health Scholarship Winner for the Best Poster on Conference -Mass spectrometry in Systems Biology; Santa Fe, NM, USA

3.3.4. Current research interests

Currently, I am working as an experienced postdoctoral fellow in the group of Dr. Radosław Zagozdzon. I am studying the role of the one of free radical scavenging systems responsible for removal of the effects of oxidative stress within the tumor cell. Mounting evidence suggests that deregulation of the intracellular redox status along with the changes in the production of reactive oxygen species (ROS) scavengers and the activity of antioxidant enzymes are associated with various human diseases. My current research interest is related to interrogation of the precise molecular mechanism(s) of one of the crucial redox-dependent processes in breast cancer, namely, the regulation of estrogen receptor (ER) alpha function by oxidative stress.

Breast cancer is a heterogeneous disease driven by a continuum of mutations and abnormal gene/protein expression that control the tumorigenic phenotype and molecular mechanisms underpinning the complexity of its clinical behavior. Roughly 70% of breast cancers express estrogen receptor alpha (ERα), but many aspects of regulation of this expression remain insufficiently studied. Understanding these processes is a key to find better therapeutic approaches to this disease. Based on, our preliminary results we hypothesized, that one of the most prominent ROS scavenging enzymes within the cell, peroxiredoxin 1 (PRDX1), acts as a protector of dependence of mammary tumors on estrogen-mediated growth stimulation during oxidative and/or nitrosative stress and is an independent predictor of favorable prognosis in estrogen receptor-positive breast cancer. The aim of my work is to elucidate the detailed molecular mechanism(s) of function of the PRDX1 in ER-positive breast cancer. This knowledge will provide an assessment of the link between PRDX1,

oxidative stress and estrogen receptor signaling cascade and can create various opportunities for pharmacological intervention in ER-positive breast cancer. We plan to investigate the mechanisms of the PRDX1-dependent regulation of ERα in response to oxidative stress conditions at three various areas, namely, at the level of transcription, at the protein level and by studying the protein-protein interactions. To achieve our objectives we will use a variety of state-of-the-art approaches including powerful quantitative techniques to study gene expression, genetic engineering of cells using lentiviral vectors, next-generation sequencing, microRNA profiling studies, proteomics approaches to study the redox state in the cell, and protein-protein interaction studies including bioinformatics data analysis for all high throughput transcriptomic studies.

3.3.5. Research activity in BASTION project

Publications	Patrick C. O'Leary, Marta Terrile, **Malgorzata Bajor**, Pawel Gaj, Bryan T. Hennessy, Gordon B. Mills, Agnieszka Zagozdzon, Darran P. O'Connor, Donal J. Brennan, Kate Connor, Jane Li, Ana Maria Gonzalez-Angulo, Han-Dong Sun, Jian-Xin Pu, Fredrik Pontén, Mathias Uhlén, Karin Jirström, Dominika A. Nowis, John P. Crown, Radoslaw Zagozdzon*, and William M. Gallagher*. Peroxiredoxin-1 protects estrogen receptor α from oxidative stress-induced suppression and is a protein biomarker of favorable prognosis in breast cancer. Breast Cancer Res [*equal senior and corresponding authors] (*submitted, decision pending*)
Participation in courses/trainings/workshops	Cancer genetics for medical community Workshop organized by the Medical University of Warsaw in the project BASTION, Warsaw, Poland, 17 June 17, 2013.
Supervising students, master students, PhD students	Radoslaw Zagozdzon, **Malgorzata Bajor:** Supervising the students of the Students' Scientific Group at the Department of Immunology, the Medical University of Warsaw: - Pawel Koczara - Paulina Nadkowska

Grant number	Title	Function	Duration	Funding	Awarding institution
2013/11/D/NZ5/03173	Interrogating the mechanisms of function of peroxiredoxin 1 (PRDX1) in estrogen receptor-positive breast cancer	Project Leader	2014-2017	Submitted, project pending	National Science Center

3.3.6. Envisioned career path

Considering that REGPOT Program does not support research activities directly, I have already submitted two grants, one to The National Science Center entitled "Interrogating the mechanisms of function of peroxiredoxin 1 (PRDX1) in estrogen receptor-positive breast cancer" and the second is the Young Researcher grant application to the Warsaw Medical University entitled "Investigation of the mechanisms of regulation of estrogen receptor by S-nitrosylation in breast cancer". My scientific work is focusing on the explaining the precise molecular mechanisms of actions of PRDX1 and PRDX2 proteins in estrogen receptor-positive breast cancer as well as evaluation of newly identified inducers of oxidative stress as potential antitumor agents versus tumorigenicity promoters in breast cancer. The results of my projects should allow development of my research carrier in the field of cancer biology and therapy. In the near future I am also planning to present my results at the international conferences, publish the results of my project in peer-review journals and participate in other projects of Dr Zagozdzon's group.

3.4. IT Professional no 2 (Slawomir Gruca)

DATE (YEARS)	DEGREE/EXPERIENCE	PLACE	SUPERVISOR
1997-2002	M.Sc. in Engineering in Electronics and Telecommunications	Poznan University of Technology, Poland	Dr inż. Janusz Kleban
2001-2002	M.En in Telecommunication Engineering	Dublin City University, Ireland	Dr. Derek Molloy
2003-2006	investigating technologies, programming, Sun Solaris and GNU/Linux system administration	Research and Academic Computer Network (NASK), Warsaw, Poland	not applicable
2006-2007	M.Sc. in Bioinformatics	Dublin City University, Ireland	Dr. Mary O'Connell

3.4.1. Biosketch:

After obtaining the degree in Electronics and Telecommunications I joined Research and Academic Computer Network. The assigned position provided me with possibilities for deepening knowledge and gaining experience in many areas of engineering. My activities predominantly involved computer programming, operating system administration and investigating technologies for future deployment. Shortly after being hired, I was assigned to projects regarding computer systems that were of a major importance to the organization. As the work involved server room hardware, I additionally received training regarding power infrastructure. Although my position was a technical one, on occasions I handled soft tasks as well, sometimes influencing important policies of the organization. Thanks to collaboration with many internal teams and participation in international conferences and meetings I had a chance to enrich my interpersonal skills. After gaining professional experience as an engineer, I decided to revive my passion for the sciences and went to Dublin, where successfully completed a postgraduate course in bioinformatics. After returning Poland I had

been engaged in several personal projects that resulted in gaining new knowledge in the areas of electronic hardware, programming, GNU/Linux system administration, databases, and also biology.

3.4.2. Awards/fellowships

Best technical project in "Academy of Internet Banking – a project under an aegis of the president of Poland"

3.4.3. Selected publications

N/A

3.4.4. Current research interest

The first major task, I have been responsible for since I joined the BASTION project, has been to design an IT infrastructure for bioinformatics laboratory. Analysis of bio-data often involves processing large volumes of information and thus benefits from computing systems of high performance, equipped with fast and reliable mass storage of high capacity. When I was researching and evaluating candidate technologies, apart from budget constraints, I also considered aspects of future upgrades to the system and an integration with an existing computer network infrastructure. As the solution is thought to become an universal bioinformatics platform, able to efficiently cope with tasks of Next Generation Sequencing and digital pathology data processing, it has to possess strengths on multiple levels: pure processing power, memory size, storage and networking speed. The design process also included elements of server room air conditioning and power infrastructure. Having completed the design I am about to supervise the installation of the hardware and when it has been completed, I will handle setting-up of the whole system.

Apart from working on the design of the computer cluster and the IT infrastructure surrounding it, I am involved in an evaluation of a microscopic slide scanner solutions. Our group is about to acquire such a device, which, in conjunction with aforementioned computing infrastructure, will enable us to establish a research-oriented digital pathology facility. Most likely, having background in computer vision topics, I will be engaged in creating solutions for computer image analysis which is an inherent element of digital pathology platforms. I am also looking forward to tackling topics related to data analysis of Next Generation Sequencing experiments.

3.4.5. Research activity in BASTION project

Participation in courses/trainings/workshops	1. Cancer genetics for medical community Workshop organized by the Medical University of Warsaw in the project BASTION, Warsaw, Poland, 17 June 17, 2013. 2. "Jak to powiedzieć w R" [*How to say this in R*]; Interdysciplinary Centre for Mathematical and Computational Modelling, University of Warsaw, Warsaw, Poland, 21-22 Nov 2013;
International training	Visiting Researcher in Conway Institute, University College Dublin, Ireland - each person 2 weeks, 3-17 July 2013.

3.4.6. Envisioned career path

Because of the engagement in a vital task of designing and coordinating installation of an IT infrastructure for the bioinformatics laboratory and evaluating hardware and software solutions for a planned digital pathology facility, I effectively was not able to devote substantial time to other activities. Nevertheless, as the engineering work is about to lessen, over the next year I would like to get involved in biological and medical science more. I consider at least two areas for my research, namely Next Generation Sequencing and digital pathology. What is important, pursuing any of the two could bring results complementing the work of other scientists of the BASTION project.

4. Summary of recruiting activity

BASTION project has fully used its opportunity to recruit nine top-level qualified researchers with high ability to increase research potential in basic and translational oncology at Medical University of Warsaw. The technological expertise and scientific background of all nine recruits fits BASTION effort to strengthen the existing areas of excellence in oncology research. Moreover, each individual will bring in know-how and experience in translational oncology work and will help to bridge the gaps and create links among research groups working at MUW. All leaders have succeeded in recruiting extremely diligent and hardworking postdocs showing a great enthusiasm for their work in the field of experimental oncology. We are completely sure that newly employed researchers will contribute to the success of BASTION project.

Working space:
All recruited researchers have been provided with research and office space in a dedicated room within the Department of Immunology, MUW.

Research funding:
BASTION project does not directly provide research support for newly employed post docs. However, all four researchers are eligible for applying for respective national funding from National Science Centre (NCN), The National Centre for Research and Development (NCBiR), The Foundation for Polish Science (FNP) and Ministry of Science and Higher Education. Importantly, the team of Dr. Zagozdzon has already gained support from NCN under the OPUS program.

Status of recruited researchers:
All hired researchers are employed for 24 months. Number of faculty positions at Medical University of Warsaw is regulated by a quota of teaching hours (pensum). Thus, according to the recruitment policy of Medical University of Warsaw recruited researchers are employed at the university as experienced research specialists. They are entitled to all benefits of governmental employees.
The research team provides a number of comprehensive and versatile biotechnological approaches to the tasks delineated under the BASTION program. In more details, Drs Malgorzata Bajor and Radoslaw Zagozdzon are responsible for generating and analyzing the biological and biomedical data. Dr Pawel Gaj is mainly responsible for in silico analyses of the results generated within our team, by the collaborators or originating from the publically available datasets. Mr. Piotr Stawinski provides bionformatic support for Next Generation Sequencing data acquired mainly by the group of Prof. Rafal Ploski. Mr. Slawomir Gruca is mainly responsible for purchasing, installation and maintenance of the computer cluster and computer workstations. Additionally, Dr Zagozdzon along with Dr Dominika Nowis have also initiated a close collaboration with the Oncology Institute, Warsaw, in order to provide a bioinformatics support for the analysis the databases of clinical information from cancer patients. The efforts of our group have resulted so far in authorships or co-authorships of four original and one review publications as well as two book chapters. Currently, three other publications are submitted (please see the scientific report for the details).

5. Conclusions

By completion of a successful recruitment process and hiring two Postdocs and two IT Professionals we achieved Milestone 1 of BASTION project and established a new bioinformatics research group at MUW. Currently, the team provides a broad support for the activities of other BASTION members, as well as the BioInfo researchers carry out their own studies. The team is constantly developing thanks to the funding support under the BASTION project as well as the funds for external sources.

For further information regarding Dr. Zagozdzon's team, please refer to BASTION's website: http://bastion.wum.edu.pl/en/zespol-badawczy-radoslawa-zagozdzona/

6. Corresponding estimated/* budget

PERSONNEL, AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY "1" FOR 18M			
	Item description	Amount [EUR]	Explanations
WP3 Task 3.3	Personnel costs	163 362,00	Salaries of recruitment committee members (0,55 PM); 2 Postdocs - experienced researchers (21,05 PM) and 2 IT-Specialists (24,33 PM)
	Travel	0,00	
	Organization of events	0,00	
	Remaining direct costs	0,00	
TOTAL DIRECT WP3 COST		163 362,00	

/* - exact costs for M1-M18 will be presented in the Ist Period Report and Form C (April 2014)

Dr. Magdalena Winiarska, WP3 Leader
Dr. Radosław Zagozdzon, BioInfo Group Leader

Prof. Jakub Golab, BASTION Project Coordinator

Warsaw, February 2014

Attachment 1 Announcements

First round - Announcement for IT professional position

Medical University of Warsaw, Poland

REGPOT-2012-2013-1 Program EU FP7

Project BASTION (From Basic to Translational Research in Oncology)

is looking for a

IT PROFESSIONAL

Nr ref. APK2/1210-22/2012

Mandatory requirements:

- Ph Minimum Bachelor of Science degree in Computer Science and Bachelor of Science degree in Biology,
- research activities supported by at least one scientific publication,
- advanced experience with Linux working in command-line environment,
- experience in creating, developing and administrating database systems (including MySQL) – please indicate min. 3 functioning example(s),
- advanced knowledge of Java programming language within a Linux environment (minimum 2 years of professional experience, please indicate minimum 3 functioning examples of applications),
- knowledge of Perl language and R framework,
- experience in Next Generation Sequencing data processing and analysis,
- fluency in English.

In addition, evidence of the following will significantly enhance an application:

- practical experience in dealing with clinical information
- experience in generation of new bioinformatic tools
- experience in work with international partners
- proficiency in other languages.

Required documents and declarations:

- motivation letter
- CV
- copy of degree diplomas
- reference letter(s)
- contact information, including e-mail address and phone number
- the candidates may include additional information or copies of documents/certificates in support of the application,
- copy of certificate of employment,
- declaration about authorization for personal data processing: „I hereby authorize you to process my personal data included in my job application for the needs of the recruitment process (in accordance with the Personal Data Protection Act, Journal of Laws of 2002, no 101, item 926 as amended).

Applications should be submitted by 3p.m. (*Warsaw time*) on 16th November 2012, *to* magdalena.winiarska@wum.edu.pl with a note in the e-mail subject: „*Competition for the position of IT Professional in "BASTION" project*"

For more information on the project including expectations from a new group leader and admission procedures please visit our website at http://bastion.wum.edu.pl/en/start

Please be advised that only selected candidates will be contacted, and sent documents will not be returned.

Second round – Announcement for postdoctoral positions

Medical University of Warsaw, Poland
REGPOT-2012-2013-1 Program EU FP7

Project BASTION (From Basic to Translational Research in Oncology)
is looking for a

POSTDOCTORAL FELLOW

in the project on the role of immune response and endoplasmic reticulum stress in the therapeutic outcomes of antitumor photodynamic therapy – beginning in the first quarter of 2013

Ref. no: APK2/1210-03/2013

Requirements:

- PhD degree (or equivalent) in immunology, molecular biology, biochemistry, biology, or medical sciences,
- extensive experience in the field of molecular biology, immunology and experimental oncology (minimum two-year post-doctoral employment),
- outstanding publication record,
- experience in flow cytometry, assays to monitor the activity of lymphocytes, macrophages and neutrophils,
- high motivation demonstrated via joint publications, references of the candidate's thesis tutor, previous post-doctoral positions different from the PhD awarding institutions,
- proficiency in English.

Admission
The application should contain the following documents/information:

- CV
- Letter-of-intent
- 2 letters of reference
- Copy of PhD diploma
- Copy of certificate/s of employment
- Contact information, including e-mail address and phone number
- Declaration about authorization for personal data processing: „I hereby authorize you to process my personal data included in my job application for the needs of the recruitment process (in accordance with the Personal Data Protection Act, Journal of Laws of 2002, no 101, item 926 as amended)
- The candidates may include additional information or copies of documents/certificates in support of the application.

Selection criteria
A detailed analysis of the received applications will be based on the following evaluation criteria:

- List of publications: 0-50 points
- Professional experience: 0-25 points
- Previous international experience: 0-10 points
- Adequacy of the prepared letter-of-intent with the target-project: 0-5 points
- Reference(s): 0-5 points
- Certificates of extra qualifications that may be of some value for the execution of the project: 0-5 points

Position is offered for 30 months with the possibility of extension.

Applications should be submitted by 3p.m. (*Warsaw time*) on 6th February 2013 to magdalena.winiarska@wum.edu.pl with a note in the e-mail subject:
"Competition for the position of Postdoctoral fellow ref. no* APK2/1210-03/2013 *in "BASTION" project

The admission procedure will be carried out in two steps. First, the applicants are requested to submit application documents. Short listing will be carried out within 3 days after the closing date. Applications will be assessed against person specification criteria and 3-4 applicants will be invited for interview. During the interview candidates will be scored with regard to communication skills, teamwork and project competency. Successful candidates will be offered a position within 2 days after the interview date.

For more information on the project visit our website at http://bastion.wum.edu.pl/
Please be advised that only selected candidates will be contacted, and sent documents will not be returned.

Third round - Announcement for IT professional position

Medical University of Warsaw, Poland
REGPOT-2012-2013-1 Program EU FP7

Project BASTION (From Basic to Translational Research in Oncology)
is looking for a
IT PROFESSIONAL

Ref. no: APK2/1210-06/2013

Mandatory requirements:

- Minimum Bachelor of Science degree in Computer Science/Bioinformatics with following three-year professional experience;
- Experience in creating, developing and administrating database systems (including MySQL);
- Advanced experience with Linux working in command-line environment;
- Advanced knowledge of Java programming language within a Linux environment;
- Knowledge of Perl language and R framework;
- Fluency in English.

In addition, evidence of the following will significantly enhance an application:

- Minimum Bachelor of Science degree in Biology/Medicine/Veterinary;
- Experience in Next Generation Sequencing data processing and analysis;
- Practical experience in dealing with clinical information;
- Experience in generation of new bioinformatic tools;
- Experience in work with international partners;
- Experience in managing computer clusters.

Required documents and declarations:

- motivation letter,
- CV,
- copy of degree diploma(s),
- reference letter(s),
- copy of certificate(s) of employment,
- contact information, including e-mail address and phone number,
- declaration about authorization for personal data processing: „I hereby authorize you to process my personal data included in my job application for the needs of the recruitment process (in accordance with the Personal Data Protection Act, Journal of Laws of 2002, no 101, item 926 as amended).
- the candidates may include additional information or copies of documents/certificates in support of the application,

Position is offered for 24 months with the possibility of extension.

Applications should be submitted by 3p.m. (*Warsaw time*) on 22nd February 2013 to magdalena.winiarska@wum.edu.pl with a note in the e-mail subject:
"Competition for the position of IT professional ref. no* APK2/1210-06/2013 *in "BASTION" project

The admission procedure will be carried out in two steps. First, the applicants are requested to submit application documents. Short listing will be carried out within 3 days after the closing date. Applications will be assessed against person specification criteria and 3-4 applicants will be invited for interview. During the interview candidates will be scored with regard to communication skills, teamwork and project competency. Successful candidates will be offered a position within 2 days after the interview date.

For more information on the project visit our website at http://bastion.wum.edu.pl/
Please be advised that only selected candidates will be contacted, and sent documents will not be returned.

Attachment 2 Assessment of applications

Candidates for the first round – IT professional position:

Rejected from the public report

Candidates for second round – postdoctoral scientists:

Rejected from the public report

Candidates for the third round – IT professional position:

Rejected from the public report

Attachment 3 Application acceptance and rejection letter templates

Warsaw, date

Dear Dr X (candidate),

I am happy to inform you that after the first step of recruitment for the position of the Postdoctoral Fellow in BASTION project you have been shortlisted and invited for an interview. I will be keeping you informed about the details.

Best regards

Magdalena Winiarska (coordinator)

Department of Immunology
Centre for Biostructure Research
Medical University of Warsaw

Warsaw, date

Dear Dr X (candidate),

It is my pleasure to invite you for an interview which will take place at the Department of Immunology (Centre for Biostructure Research, Medical University of Warsaw, 1a Banacha St., building F) on day X at X time (Warsaw time).

Best regards

Magdalena Winiarska (coordinator)

Department of Immunology
Centre for Biostructure Research
Medical University of Warsaw

Attachment 4 Interview rating results

Rejected from the public report

Attachment 5 Candidate acceptance and rejection letter templates

Warsaw, date

Dear Dr X (candidate),

I am pleased to inform you that after careful consideration you have been selected for the postdoctoral fellow position in BASTION project.

Best regards

Magdalena Winiarska (coordinator)

Department of Immunology
Centre for Biostructure Research
Medical University of Warsaw

Warsaw, date

Dear Dr X (candidate),

After careful consideration, we regret to inform you that you have not been selected for the postdoctoral fellow position in BASTION project. We appreciate your interest in this position and wish you success in achieving your career goals.

Best regards

Magdalena Winiarska (coordinator)

Department of Immunology
Centre for Biostructure Research
Medical University of Warsaw