



**Biotechnology  
Summer School**

**ABSTRACT BOOK**



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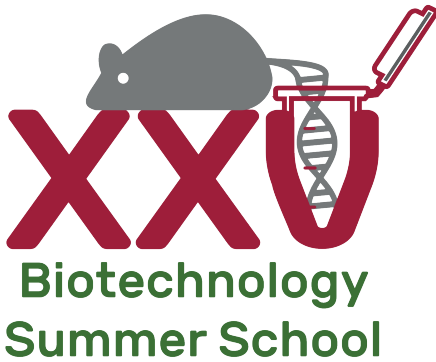
Gdańsk, 2019

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## XXV Biotechnology Summer School



The aim of Biotechnology Summer School is to promote knowledge about the newest biotechnological achievements and building a vast scientific network between students, PhD students and young scientists together with many experienced researchers from the leading institutions from Poland and abroad. We also want to encourage young scientists to improve their skills in the area of science communication.

### Targeted audience

XXV BSS is dedicated to students and young scientists interested in experimental sciences, life sciences, especially in translational research. The Summer School will supplement existing knowledge with valuable practical and applied training, and allow to discuss research in depth with the academics who are leading experts in their area. It will prepare and enhance appeal to potential employers and graduate schools. International study will enable to gain a deeper understanding of another culture, make lifelong friends from a wide variety of backgrounds and benefit from globally-renowned academic excellence.

### Before we start...

- Every ID was given a colour which follows the code below:

**PARTICIPANT**

**SPEAKER**

**ORGANIZER**

**GUEST**

Please remember to have your ID always on you, especially during the meals. Inside your ID there is a short version of BSS programme.

- Attending the workshops requires signing up for them. If you did not choose a group during the registration at the event, ask organizers to sign-up on the list.
- Please pay attention to the organizers' announcements during the whole event.
- Check out a **Facebook group** we made for this year's event. Meet other participants and share info! You can find this group by scanning the QR code on the right or typing the following web address:

<http://tiny.cc/hpxuaz>



## About Biotechnology Summer School

Biotechnology Summer Schools are organized annually since 1994. The idea of Biotechnology Summer School (BSS) came from the late Professor Anna J. Podhajska (1938–2006), who implied that students and young scientists should actively participate in obtaining knowledge and establishing contacts with scientists from all over the world, not only in formal conditions but also outside the University.

That is why the participants of BSS are not only biotechnology students but also students in related biological fields from Poland and from abroad, young scientists and even advanced pupils interested in this topic. The main aim of this event is to provide students with a wide range of courses which are not available in the standard syllabus. We create a relaxed learning environment and give Polish and foreign students a chance to meet highly renowned specialists during lectures as well as in rather informal circumstances. Moreover, Biotechnology Summer Schools give Polish and foreign scientists chance to develop cooperative relationships and create a forum for integration.

Topics of BSS vary from year to year. Prof. Anna Podhajska gained many people's support over her initiative. The number of sponsors increased every year and thanks to all these companies and institutions the organization of Biotechnology Summer School has been possible. BSS was also supported by big projects like MOBI4Health, which fully financed the XX BSS.



Biotechnology Summer Schools were honored with the presence of many eminent scientists such as professors: Ewa and Ernest Bartnik, Stanisław Bielecki, Charles Cantor, Klaus Halhlbrock, Waleria Hryniewicz, Robert Huber (Nobel Prize winner in Chemistry in 1988), Berndt Jastorf, Adam Jaworski, Roman Kaliszan, Władysław Kunicki Goldfinger, Andrzej Legocki, Janusz Limon, Mirosław Małuszyński, Jerzy Paszkowski, Andrzej Płucienniczak, Richard P. Sinden, Piotr Stępień, Wacław Szybalski, Dan Tawfik, Tomasz Twardowski, Jacques H. Weil, Robert Wells, Paul Williams, Brigitte Wittman - Liebold, Maciej Zenkter, Maciej Żylicz.



No less important than learning is having fun. Many entertaining activities for Summer Schools are always planned. A fancy-dress party, a bonfire with singing, field games, sports, playing on words, integrational workshops are the part of every School. These events are conducive to socializing among the participants. We also organize some visits in local, historical places and regional trips.

We hope that this year's Biotechnology Summer School will be as successful as previous ones and will be an unforgettable experience for all participants.

### Visit us on the web:



[www.bss.ug.edu.pl](http://www.bss.ug.edu.pl)



**BiotechnologySummerSchool**



**bss\_ifb**



## 25 years of BSS - memories

For the 25th anniversary of Biotechnology Summer School we collected some memories from participants and lecturers of previous Summer Schools.



**Dr IMRICH BARÁK**

Institute of Molecular Biology, Slovak Academy of Sciences  
Bratislava, Slovak Republic

*„I was participating as a speaker at XXII Biotechnology Summer School 5 - 9 July 2016, Wielimowo, Poland. It was a great experience and many ways more stimulating than any other scientific conference. Especially, I greatly enjoyed the interactions and conversations with highly motivated students and young researchers during special discussion sessions but also during culture program.”*

**Prof. GRZEGORZ WĘGRZYN**

Faculty of Biology, University of Gdańsk  
Gdańsk, Poland



*„I have participated in Biotechnology Summer Schools from the very beginning - in fact, this was quite natural, as I was the first vice-dean of the Faculty of Biotechnology, so I participated in organization of these Schools. I remember outstanding atmosphere of these schools and a great enthusiasm of organizers, lecturers, and students. We all had feeling that we are performing something special, excellent and totally novel in the Polish education system. This was true, indeed, and now the tradition of Biotechnology Summer Schools shows that there are really special events which combine science, education and great relationships between all participants.”*



**Prof. BILL ASHRAF**

Macquarie University  
Sydney, Australia

*„Twenty-five years ago, I attended the first Biotechnology Summer as part of Bradford-Gdansk EU funded staff student exchange program!*

*So many fond memories of working with so many fantastic staff and students in Poland and beyond. I travelled to Poland, so often, my daughter's first words were 'daddies gone to Polandddd'. My Polish language skills developed so I can now order a beer in Polish.*

*I wish everyone involved in the forthcoming and future Summer Schools all the best.”*



**Prof. ÁFRICA GONZÁLEZ FERNÁNDEZ**

Director of Centro de Investigaciones Biomédicas (CINBIO),  
Universidad de Vigo  
Vigo, Spain

*„I participated as speaker in the Biotechnology Summer School (July 5-9th 2016) and it was an astonishing and marvellous experience. The place, the environment but over all the students. They were really interested, in a very creative and motivated environment. The BSS was perfectly organized, with time for talks and discussions, but also for games and tourism. After this experience, I received some students in the Centro de Investigaciones Biomédicas (CINBIO) in the University of Vigo.*

*I strongly recommend the assistance to the BSS.*

*Congratulations for the 25th anniversary and I hope you will continue with this nice initiative.”*

**Dr hab. MARCIN OKRÓJ**

Intercollegiate Faculty of Biotechnology  
University of Gdansk & Medical University of Gdansk  
Gdańsk, Poland

*„I participated in six editions of Biotechnology Summer School when I was an undergraduate student and also during my PhD studies. Those days BSS was a 2-weeks event with dozens of lectures and many opportunities of interactions with invited guests and participants from other universities. Although it was 20 years ago and now I am the academic teacher, I still use some of the arguments heard during the lectures for teaching my students, simply because they were very good! I perceived BSS as a "must be" event during my holidays. Friendship and contacts from there still work!”*





## BSS timeline

No	Place	Year	Topic examples
I	Wilga	1994	Miscellaneous
II	Łączyń	1995	Miscellaneous
III	Stegna	1996	Miscellaneous
IV	Stegna	1997	Miscellaneous
V	Gołuch	1998	Plant biotechnology, molecular medicine
VI	Łączyń	1999	Fundamentals for bioprocess engineering
VII	Twardy Dół	2000	Genetic modifications in plants and animals
VIII	Łączyń	2001	Ethical aspects of biotechnology
IX	Sobieszewo	2003	Bioinformatics (molecular evolution and protein structure)
X	Sobieszewo	2004	Biotechnological applications in agriculture
XI	Sobieszewo	2005	Bioprocess engineering
XII	Łapino	2006	Immunotherapy (cancer research), clinical stages
XIII	Łapino	2007	Cancer causes, diagnosis and therapy
XIV	Sobieszewo	2008	Virology, mostly involved with HCV
XV	Gdańsk	2009	Plants as a "green factory"
XVI	Sobieszewo	2010	Viral research - HCV, influenza virus
XVII	Górki Zach. (Gdańsk)	2011	Biochemistry and biotechnology of plant lipids
XVIII	Jurata	2012	Current scientific research and its practical application
XIX	Gdańsk	2013	Molecular evolution
XX	Stegna	2014	Model organisms
XXI	Kadyny	2015	Biotech innovations
XXII	Wielimowo	2016	Biotechnologists love every bit of life
XXIII	Stężycza	2017	Iron metabolism; Biological plant protection
XXIV	Sobieszewo	2018	Responsible Research and Innovation

## BSS then and now

### THEN









# NOW









## XXV BSS venue



XXV Biotechnology Summer School takes place on 3–7 September 2019 in the "u Stolëma" Recreation Center located in a picturesque area of Kashubian Lake District in Ostrzyce, close to the beach by the lake Ostrzyce.

U Stolëma recreation centre is a perfect hot spot for sightseeing both Kashubian and the Tri-city area. Ostrzyce is a tourist town located along the Kashubian Road near the most important viewpoints in the region. Wieżyca peak (329 meters above sea level) with a 30-meter vantage point is situated 6km from Ostrzyce. From there you can see the breathtaking Szymbark hill panorama. The next noteworthy viewpoint located just 4 km from "U Stolëma" is *Złota Góra* (eng. Golden Mountain) where the Kashubian Partisan monument is erected. From the mountain, You can also see *Jezioro Wielkie Brodno* (eng. Great Lake Brodno) and Wieżyca hills. The Tri-city region is located only 50 km away from the recreation centre.

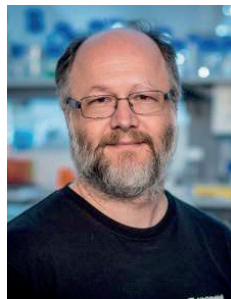
Lake Ostrzyce is one of the Radunian Circle which is a part of ten interconnected lakes. This makes it a perfect place for kayaking and fishing. Location close to the wooded Szymbark hills, which Wieżyca is a part of, is an excellent spot for seasoned mushroom pickers and Nordic Walking enthusiasts. U Stolëma is located 3 km from the ski lifts that make the resort perfect for winter sports enthusiasts.



## Organizing committee

### Scientific supervision

#### Prof. Michał Obuchowski



Vice Dean for Science at Intercollegiate Faculty of Biotechnology UG & MUG. Head of the Laboratory of Molecular Bacteriology.

His group research is related to protein phosphorylation and the formation of spores and spore application for the use as carriers of antigens, a research model is *Bacillus subtilis*.

Contact [michal.obuchowski@biotech.ug.edu.pl](mailto:michal.obuchowski@biotech.ug.edu.pl)

#### Dr hab. Rafał Sądej



Dr Rafał Sądej has been working in cancer research for nearly 20 years. He is interested in mechanisms of breast cancer progression and resistance to anticancer drugs. His group is studying the role of growth factor receptors in the communication within the tumour microenvironment. This investigation involves detailed molecular and clinical analyses as well as animal model studies. He is a beneficiary of multiple Polish and international grants and a committee member of European Network for Breast Development and Cancer (ENDBC labs).

Contact: [rafal.sadej@gumed.edu.pl](mailto:rafal.sadej@gumed.edu.pl)

#### Dr hab. Anna Żaczek



Anna Żaczek, PhD, DSc has 10+ years experience in translational research in cancer. Her research focuses on biology of cancer, particularly on dissecting the role of circulating tumor cells, epithelial-mesenchymal transition and tumor-stroma crosstalk in tumor progression. Her team is carrying out multidisciplinary projects dedicated to identification and development of new molecular markers, including liquid biopsy approach, for better cancer diagnosis, prognosis and prediction of treatment response.

Contact: [azaczek@gumed.edu.pl](mailto:azaczek@gumed.edu.pl)

#### Dr hab. Marcin Okrój



Marcin Okrój, PhD, DSc, Group leader at IFB UG & MUG. His main scientific interest focuses on innate immunity and the complement system. Author of >40 peer reviewed publications, book chapters, academic handbook, named as inventor in 2 patents. His research group focuses on human proteins which support cytotoxic activity of immunotherapeutics. Other activities involve investigation of rare autoimmune and inflammatory diseases as well as development of screening/diagnostic assays for their recognition.

Contact: [marcin.okroj@gumed.edu.pl](mailto:marcin.okroj@gumed.edu.pl)

## Organizing team

### Angelika Michalak



Plant addict, PhD candidate at Laboratory of Biologically Active Compounds and activist involved in integration of young researchers community by organizing events, meetings and workshops.

In the meantime she's a woman of multiple passions: DIY of any kind, climbing, photography. It is hard to catch on what she's involved with right now! From 2013 involved in organization of BSS.

Contact: [angelika.michalak@biotech.ug.edu.pl](mailto:angelika.michalak@biotech.ug.edu.pl)

### Marta Matuszewska



PhD candidate at Laboratory of Biological Plant Protection.

Microbiologist by day, graphic designer by night. Since 2011 she's involved in organization of various scientific events and festivals, thus BSS organization comes to her naturally. As a result of adapting Italian lifestyle, she drinks lots of coffee, eats huge amounts of pasta and is happy to help anyone who asks her to.

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### Michał Pierański



PhD candidate in Laboratory of Molecular Diagnostics. Performs tasks concerning social and cultural part of XXV BSS.

He splits his life between discovering microbial universes and singing in the choir. Both his passions require telling a story and that's their part that satisfies Michał the most.

Contact: [michal.pieranski@phdstud.ug.edu.pl](mailto:michal.pieranski@phdstud.ug.edu.pl)

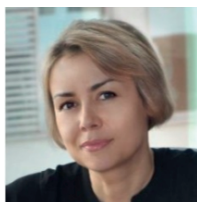
## IFB Dean's Office

Behind-the-scenes IFB staff doing all the administrative and financial work of the event. Also responsible for contact with the participants and lecturers.



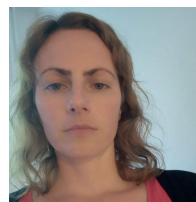
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## Intercollegiate Faculty of Biotechnology UG & MUG

The Intercollegiate Faculty of Biotechnology of the University of Gdansk and Medical University of Gdansk (IFB UG & MUG) has been established in 1993 by the decision of the Senates of both universities. The initiators of the Faculty were Prof. Karol Taylor, Prof. Anna Podhajska and Prof. Wacław Szybalski.



IFB

The idea of the Faculty was based on conviction that close interaction between research and teaching activities of the two universities will form a special, creative academic centre, using innovative methods of education and basing on top-level standards of research. Integration of the local scientific community remains a key element of our mission. Faculty continues tradition of molecular biology introduced in Gdańsk by Prof. Karol Taylor.

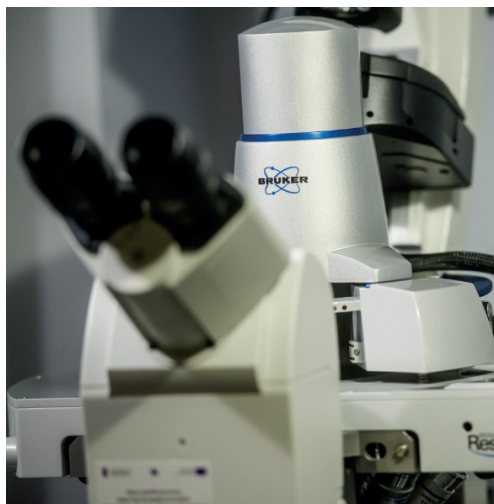
The Faculty is a unique institution in Poland created by two universities. This leads to the **interdisciplinary character of the conducted research and teaching by combining biomedical and bio-molecular issues and their applications in biotechnology for health and life quality**. The intercollegiate character of the Faculty allows for the use of infrastructure and expertise provided by two universities, and therefore combining the best international standards of research with the highest quality of teaching. Our research and teaching is performed in well-equipped modern laboratories at the newly built Institute of Biotechnology and the Tri-City Central Animal Laboratory.



The aim of our Faculty is to provide possibly the highest standard of education based on early integration of students into research activities of the faculty units. Since 1999, the IFB has had the rights to confer the degree of doctor, and since 2010 – the scientific degree of habilitated doctor in the area of biological sciences – discipline of biochemistry.

We are leaders in research at **molecular level** in the area of chaperone proteins, molecular virology, neoplasm growth and metastases, bacterial plant pathogens, and in developing new therapeutic and diagnostic methods.

Both the research and the educational programs at IFB have an interdisciplinary character and are based on international cooperation. Our strategic partners are: the International Institute of Molecular and Cell Biology (Poland) and the association ScanBalt BioRegion. Moreover, IFB cooperates with numerous international and regional research centers like: Karolinska Institut, CIB Madrid, University of Wisconsin, Cornell University, Polish Academy of Sciences.



We have created a unique education system in which students are involved in research and teaching based on international cooperation. We believe that involvement of the students in the specific projects greatly supports the individualized system of study and facilitates formation of a unique, well-integrated academic community. IFB is a leading research and teaching institution that since 2002 has had the status of the **European Centre of Excellence in Molecular Biomedicine**.

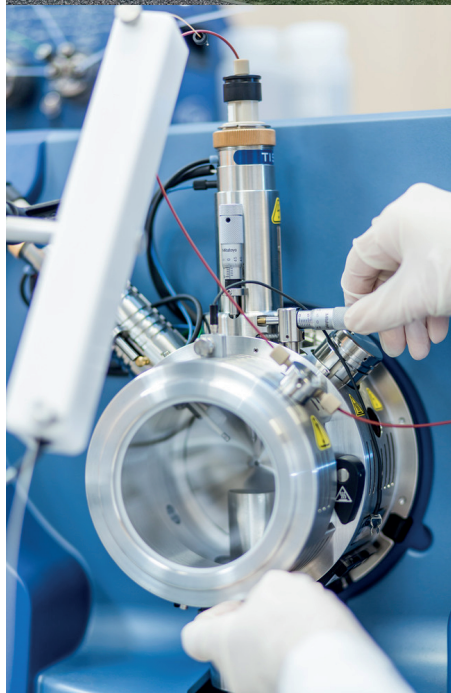


In 2017, in a parametric assessment of the Ministry of Science and Higher Education regarding scientific effectiveness, the Faculty was granted best possible **category A+** status. The quality of teaching at the Faculty is evaluated as the highest in Poland. In 2011, the Polish Accreditation Committee awarded the Faculty with a **distinction for the quality of teaching**, and in 2012 the Ministry of Science and Higher Education granted the specialty of BIOTECHNOLOGY at the IFB the title of **The Best Major**.





IFB staff members are also laureates of prestigious programmes and awards, including awards for young scientists (EMBO YIP, HHMI, Polish national programmes such as: LIDER, InnoDoktorant, TOP 500 Innovators, MISTRZ, START, HOMING PLUS). Publications by IFB staff have received numerous awards and distinctions for the best work conducted in Polish laboratories, granted by the Committee of Microbiology of Polish Academy of Science, Polish Genetic Society or Polish Biochemical Society.



From 2016 Faculty has new premises. This investment has received a 15 million EUR funding from the Operational Programme Infrastructure and Environment within Structural Funding of the EU. The building is a modern research-teaching complex. The usable area is 7900 m<sup>2</sup> and covers 5 levels. It includes a specialized core facility zone, an area of research laboratories, seminar rooms, computer rooms, an auditory for 180 people, rooms for our Student Scientific Association, a reading room, a room for the Faculty Council, new technical systems (audio-visual systems, access control systems etc.). The new building is one of the most modern research and teaching buildings, with its core facility laboratories such as: Bioinformatics Laboratory, Laboratory of Biomolecular Analysis, Laboratory of In Vitro Plant Breeding, Phytotron Facilities, Laboratories for work in BSL3 standard, Isotope Laboratory Type III. It also guarantees a modern space for students and PhD students. The new building is situated on the premises of the Gdansk University campus in Gdansk-Oliwa close to the Chemistry and Biology buildings. It contributes to the integration of the university and facilitate the conducting of joint programmes and research work.

## Intercollegiate Faculty of Biotechnology of UG & MUG



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[biotech.ug.edu.pl](http://biotech.ug.edu.pl)



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[youtube.com/user/IFBUGandMUG](https://www.youtube.com/user/IFBUGandMUG)



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intercollegiate-faculty-of-biotechnology](https://www.linkedin.com/company/intercollegiate-faculty-of-biotechnology)



## XXV BSS support

This year's edition of BSS was kindly supported by



Dynamicznie Nakręcamy Możliwości



żłobki i przedszkola

The non-public MegaMocni nurseries and kindergartens were created as a part of an initiative by the DyNaMo Creative Development Association. The main goal was to stimulate educational activities among children, youth, and adults, in order to promote attitudes that favour comprehensive personal development through competencies building and continuous learning. We believe that these are the foundations for living a successful and happy life, and this is why we want to give the children at the MegaMocni nurseries and kindergartens a head-start. Since we know that the first years play a fundamental role in the development of child's personality, we aim to stimulate intellectual and emotional development at this crucial stage.

We see providing daily safety, education, and play as our prime objective. Thanks to our experience and collaboration with qualified personnel we can offer high level of education, professional care, and an optimum combination of learning and playing.

We use the innovative "Key to Learning" international programme which, through its curriculum modules, introduces the child into the surrounding world, and allows them to develop cognitive, social, emotional, and early academic skills, which later enable them to be successful at school and in other fields. The "Key to Learning" Early Years Educational Programme breaks with the dominating model based on memorising and regurgitating information. Instead, the children are taught independent thinking and quick acquisition of knowledge.

We are also aware of the importance of the physical space that surrounds the child. Its arrangement can be either soothing or stimulating; it can both increase and decrease cognitive activity. The space – same as the type of a particular task, the temper, or the time of the day – can discourage or cause certain behaviours of a child.





Having this in mind, our nurseries and kindergartens have been designed as spacious rooms, which are equipped with objects that draw attention and engage, while not overloading with stimuli, so as not to affect the capacity to focus. We adjust the space around the children to their age and developmental abilities. We support their independence, in order to boost their sense of competence.



Our modern facilities are located in some of the key districts of Gdańsk: Zaspa, Strzyża, Suchanino, Chełm, and Stogi. In response to the growing demand, we will be soon launching a new site in the Jasień district. All of our facilities are adjusted to care requirements for children with chronic diseases, such as asthma, diabetes, and food allergies. Our own kitchen, located at MegaMocni Chełm, is managed by an experienced



catering company that prepares safe and tasty meals, while taking into consideration individual dietary requirements.

There were many roads we could have chosen as a child-care institution, yet we took the one that we can all share: the joy of overcoming difficulties, of reaching the objectives, and of discovering the unknown.

**Feel invited to learn more about our offer at**  
**[www.przedszkolegdansk.pl](http://www.przedszkolegdansk.pl) and [www.zlobekgdansk.pl](http://www.zlobekgdansk.pl).**

## Introduction to Translational Research

Translational research is a rapidly growing area of life science. It is understood as the application of findings from basic research directly to patient, community and population care and to the advancement of the delivery of health services. The term "Translational research" was first introduced in 1993 and referred to efforts specifically devoted to the discovery of the new antitumor genes. It appeared in response to significant increases in basic or clinical science discoveries with little improvement in the provision of healthcare and health outcomes. The primary goal of translational research is to integrate advancements in molecular biology with clinical trials, taking research from the "bench-to-bedside". In other words, it aims to transform scientific discoveries arising from laboratory, clinical or population studies into clinical applications in order to reduce incidence, morbidity, and mortality of various diseases.

One of the first successes of translational research was the HERA (Herceptin Adjuvant Trial) study, which assessed the use of trastuzumab in breast cancer patients treatment. This drug selectively blocks human epidermal growth factor receptor 2 (HER2), which is overexpressed in a subset of breast tumours. The HERA study aimed to compare the complementary treatment with trastuzumab in patients with early HER2-positive breast cancer. The drug turned out to be so effective that after the first year of observation it was found unethical to refuse to give the drug to the patients in the control group.

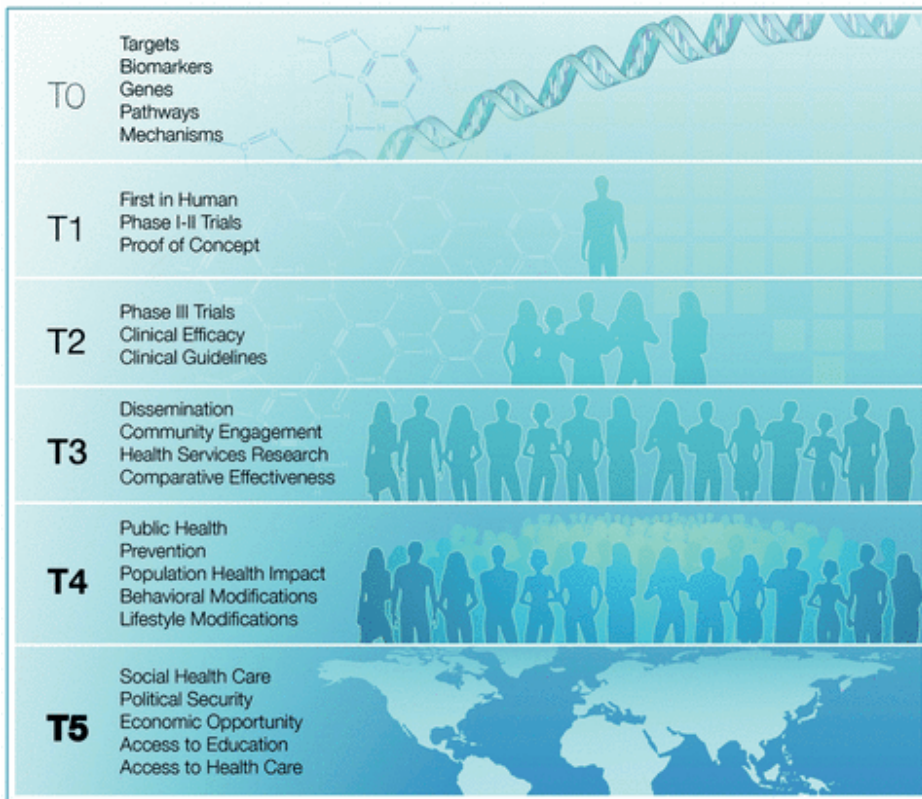
The past decade has witnessed a remarkable acceleration in the pace of translational cancer medicine. A number of novel personalized drugs has been developed, including inhibitors of DNA repair proteins for women with ovarian cancer who carry germline mutations in BRCA1 or BRCA2 genes or EGFR inhibitors for patients with non-small-cell lung cancer harbouring mutations in the EGFR gene. Another novelty is immunotherapy, a breakthrough treatment that activates and strengthens the immune system to fight cancer cells. Immunotherapeutics are currently regarded a new hope for cancer patients with advanced disease.

Although it focuses mainly on cancer, translational research also applies to other fields of medicine. Botulinum neurotoxin is another excellent example of translational studies, where elucidation of its paralyzing mechanism has allowed actual treatment of a series of neurological disorders through its muscle relaxation effects. Thus, botulinum toxin has been used in multiple sclerosis, cerebral stroke, spinal cord injury, traumatic brain injury, and infantile cerebral palsy.

Despite great advances in translational research, implementation of its achievements into clinical practice is still limited. Translational medicine seeks to coordinate the use of new knowledge in clinical practice and to incorporate clinical observations and questions into scientific hypotheses in the laboratory. It also facilitates the characterisation of disease processes and the generation of novel hypotheses based on direct human observation. Without proper communication and cooperation between

basic and clinical scientists at the project design stage, it is unlikely to meet the real clinical needs. Other issues faced at experimental stage include high research costs, lack of funding and difficulties in data interpretation. On the other hand, clinical researchers deal with the regulatory burdens, incompatible databases, practice limitations and fragmented infrastructure.

## The Continuum of Clinical and Translational Science



© Mayo Clinic

Knowledge of many fundamental aspects of biology in health and disease is still insufficient to translate current findings into new and more effective prevention and treatment. The goals of translational medicine can be attained only through continuous investment and advances in basic biomedical research coupled with efficient translational science. Undoubtedly, translational medicine can lead to a better clinical practice.

Illustration: *Clinical and Translational Science: From Bench-Bedside to Global Village* (2010). S. Waldman, A. Terzic, **Clinical and Translational Science**, 3: 254-257.



## XXV BSS Programme

### Tuesday, 3rd September

TBA Departure from Gdańsk (coach transport)

TBA Arrival to Ostrzyce, accommodation, registration

18:30 19:30 Dinner, organizational meeting

20:00 Integration - field game

### Wednesday, 4th September

8:00 9:00 Breakfast

9:30 9:45 Welcome word IFB Dean/BSS Organizing Committee

9:45 10:00 Short introduction to translational research BSS Organizing Committee

10:00 10:45 **L1: From Biology to Physics and back again** **Paweł Zawadzki** (Adam Mickiewicz University of Poznań, Poland)

10:45 11:00 Discussion 1

11:00 11:30 Coffee break

11:30 12:15 **L2: Biomarkers for precision oncology** **Ruben Pio** (Center for Applied Medical Research, University of Navarra, Spain)

12:15 12:25 Discussion 2

12:30 13:15 **L3: Experimental mouse modeling for immune-oncology** **Daniel Ajona** (Center for Applied Medical Research, University of Navarra, Spain)

13:15 13:30 Discussion 3

13:30 14:30 Lunch

14:30 15:15 **L4: Cancer Immunotherapy and the development of living drugs** **Sven Petersen** (Tessa Therapeutics, Singapore)

15:15 15:25 Discussion 4

15:30 17:00 **WORKSHOP 1: Should we be afraid of a rubber duck? Plastic as a threat for humans & other living organisms health.** **WORKSHOP 2: Concepts of specificity, sensitivity, ROC curves and more**  
**(DetoxED, Poland)** **Ruben Pio**  
 (University of Navarra, Spain)

19:00 19:30 Dinner

20:00 Fancy dress party - theme: **translational research**

## Thursday, 5th September

8:00 9:00 Breakfast

9:00	9:45	<b>L5:</b> <i>Orphan drug eculizumab: from patient's bedside to the lab and back</i>	<b>Elena Volokhina</b> (Radboud University Medical Center, Netherlands)
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9:45 9:55 Discussion 5

10:00	10:45	<b>L6:</b> <i>Genomic variants and spectrum of their effects: monogenic phenotypes solved by whole genome sequencing</i>	<b>Tomasz Stokowy</b> (University of Bergen, Norway)
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10:45 11:00 Discussion 6

11:00 11:30 Coffee break

11:30	12:15	<b>L7:</b> <i>My vision of future oncology</i>	<b>Jacek Jassem</b> (Medical University of Gdańsk, Poland)
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12:15 12:30 Discussion 7

13:30 14:30 Lunch

15:00 19:00 Guided trip (boat trip)

20:00 Dinner

## Friday, 6th September

8:00 9:00 Breakfast

9:00	9:45	<b>L8:</b> <i>A New Hope: Biomarker-driven, personalised cancer therapy - CELONKO (part I)</i>	<b>Aleksandra Stańczak</b> (Celon Pharma S.A., Poland)
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9:45 9:55 Discussion 8

10:00	10:45	<b>L9:</b> <i>A New Hope: Biomarker-driven, personalised cancer therapy - CELONKO (part II)</i>	<b>Aleksandra Stańczak</b> (Celon Pharma S.A., Poland)
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10:45 10:55 Discussion 9

11:00 11:30 Coffee break

11:30	12:15	<b>L10:</b> <i>Clinical trials: set-up and management</i>	<b>Eva McGrowder</b> (Institute of Cancer Research, UK)
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12:15 12:25 Discussion 10

13:30 14:30 Lunch

15:00	16:30	<b>WORKSHOP 3:</b> <i>The signatures of mutational processes in cancer</i> <b>Tomasz Stokowy</b> (University of Bergen, Norway)	<b>WORKSHOP 4</b> <i>3 golden rules of science communication</i> <b>Mikołaj Fedorowicz</b> (March for Science Poland)
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16:30 19:00 Free time

19:00 Dinner barbecue, attendance certificate and prizes ceremony

### Saturday, 7th September

8:00 9:00 Breakfast

9:00 10:00 Checking out

10:30 11:00 Departure

Glossary:

L = lecture

W = workshop

Please remember to sign your name on a list for workshops participation.

## Speakers Introduction

### Sven Petersen



Sven Petersen started his career in life sciences with his degree in Biology from the Technical University of Braunschweig, Germany after which he continued with his PhD studies at the University of Birmingham in the UK. Working on B- and T-cell communication via exosomes he gained his first expertise in cancer biology and immunology. This exposure, in turn, paved the way to his subsequent post-doc position at the Karolinska Institute in Stockholm, Sweden where he joint a lab focusing on a primary immunodeficiency disease. Having completed his first post-doc, love did lead Sven all the way to Singapore and his second post-doc position at the National University of Singapore where he got his first exposure to the field of cancer immunotherapy. Now having gotten a real taste for it, he later joined Tessa Therapeutics in Singapore as a Senior Research Scientist. Tessa is a biopharmaceutical company fully focusing on treating solid cancers using adoptive T cell therapy. They employ the understanding of the body's anti-viral immune response to rationally design the next generation of cancer treatments. Tessa's technology redirects the innate and adaptive arms of anti-viral immunity to create a sustained anti-cancer immune response.

**Talk abstract:** see page 41

### Eva McGrowder



Dr Eva McGrowder is a Research Study Coordinator at the Institute of Cancer Research, UK. She graduated from the University of Surrey in 2005 with a 2.1 in Biochemistry with Pharmacology. During her postgraduate employment at Queen Mary University of London, she worked on various clinical trials as a sample coordinator. In 2012, she obtained a PhD in cancer studies from the University of Birmingham. Afterwards, she undertook a postdoctoral position at the University of Oxford investigating DNA repair in bladder tumours. During her time at Oxford, she was actively involved in public engagement, promoting science in lay language to members of the public at events as well as teaching underprivileged school children taking part in Oxford UNIQ summer schools.

Eva is now part of the Oncogenetics Team at the Institute of Cancer Research, where she manages clinical trials and research studies in prostate cancer. She is passionate about spreading awareness of healthcare screening.

**Talk abstract:** see page 46

## Tomasz Stokowy



Dr Tomasz Stokowy works as a Senior Engineer at Genomics Core Facility University of Bergen, Norway. He holds a MSc in automatic control and robotics (2009) and PhD in bioinformatics (2013), both from Silesian University of Technology, Gliwice Poland. He took part in scholarships in European and American scientific institutions, including Leipzig University, Institute of Oncology, Gliwice, Poland, Radboud University Nijmegen, The Netherlands and Yale School of Medicine.

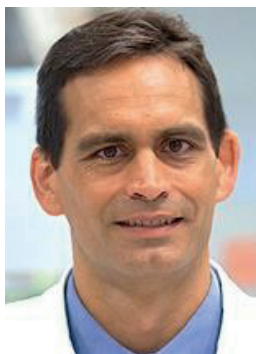
Tomasz Stokowy works in the field of human genetics and oncology, with special focus on the human genome analysis. He develops diagnostic tools based on the methods of molecular medicine and bioinformatics. He discovered causes of several rare disorders, including keratolytic winter erythema and LEMD2 associated nuclear envelopathy. He presented results of his work at Stanford University, Yale University and in Cold Spring Harbor Laboratory and is an author of 35 scientific publications.

He collaborates with Medical University of Gdansk for more than 5 years, focusing on introduction of novel medical technologies in Poland.

**Talk abstract:** see page 43

**Workshop abstract:** see page 48

## Ruben Pio



Dr Ruben Pio received a Pharmacy degree with Honors from the University of Navarra, where he also obtained his PhD in 1998. He later moved to the Department of Cell and Cancer Biology at the National Cancer Institute (NIH, Bethesda, USA) for his postdoctoral training. There, he contributed to the understanding of adrenomedullin biology, a peptide hormone with an important role in tumor promotion and progression. In 2001 he joined the University of Navarra, where he established as an independent researcher. In 2012 he was appointed Full Professor of Biochemistry and Molecular Biology. He is also the Director of the Program

in Solid Tumors at the Center for Applied Medical Research (CIMA). The goal of his studies is to understand the molecular alterations that drive or are associated with lung carcinogenesis, in order to identify new strategies for lung cancer early detection and new therapies. He is especially interested in the implication of complement activation in lung cancer progression, as well as its capacity to potentiate the efficacy of cancer immunotherapy. He has co-authored more than 100 peer-reviewed articles, is co-inventor in 7 patent applications, has participated in numerous research projects and has contributed to several national and international meetings. He is member of the International Association for the Study of Lung Cancer (IASLC), the Spanish Association for Cancer Research (ASEICA) and the European Association for Cancer Research

(EACR). He has received several awards for his research. Among them, he received the AACR-Cancer Research and Prevention Foundation Career Development Award in Translational Lung Cancer Research, and he was the senior author of publication awarded with the VI Prof. Durantez- LAIR Foundation Award of anti-viral immunity to create a sustained anti-cancer immune response.

**Talk and workshop abstract:** see page 39

## Daniel Ajona



Dr. Daniel Ajona graduated from the University of Navarra in a double degree in Biochemistry (2000) and Biology (2001). In 2005 he obtained his PhD degree in Biology (University of Navarra). His thesis focused on the molecular mechanisms of lung tumor cells to evade complement effectors. From 2006 to 2009 he was a postdoctoral fellow in the Cancer Sciences Division of the University of Southampton. During this period he specialized in cancer immunotherapy. His results demonstrated the critical role of Fc RIIB and complement in anti-CD40 immunotherapy. In 2009 he joined to the Center for Applied Medical Research (CIMA) where

he established as a scientist of the Program of Solid Tumors of CIMA. His research is currently focused on how the tumor microenvironment affects effector function and how this could be manipulated to result in tumor regression. He is particularly interested in the development of appropriate strategies to enhance the therapeutic activity of immunostimulant antibodies. His research is reflected in 28 peer-reviewed papers in top-ranked journals, 2 patent applications, 35 contributions to scientific meetings and the participation in a number of research projects. Recently, he has been awarded with a New Investigator award (ECTS, 2016), the VI Prof. Durantez- LAIR Foundation Award (2018), and was the first author of the publication awarded with the Best Respiratory Tract Tumors Program Ciberonc research article (2019).

**Talk abstract:** see page 40

## Paweł Zawadzki



After obtaining an interdisciplinary PhD in 2009, he spent multiple years as a postdoc at Oxford University in Departments of Biochemistry, Physics and Oncology. From 2017, as an assistant Professor at Department of Physics, Poznan University, he leads a research group focusing on DNA metabolism.

Author of numerous publications in prestigious journals. Now building MNM Diagnostics to help people use information encoded in their genomes to improve their health.

**Talk abstract:** see page 38

## Aleksandra Stańczak



Dr Aleksandra Stańczak is a Clinical Oncology Team Leader in Celon Pharma S.A. She obtained the Bachelor of Science and Master of Science degrees with distinctions, in Biotechnology from Warsaw University, in 2003 and 2005, respectively. During her study, she obtained Socrates-Erasmus Scholarship and studied at Paris VII Denis Diderot University. Dr Stańczak is a graduate of Medical University of Lodz, Faculty of Biomedical Science and Postgraduate Training. Her PhD thesis was devoted to Prognostic Significance of Beta-catenin, E-cadherin and WNT-1 Expression in Advanced Colorectal Carcinoma.

Dr Stańczak is an employee of R&D Department of Celon Pharma since 2007. Initially as Molecular Biology Scientist, then, since 2009, as Project Leader responsible for management of cancer biomarker studies. In 2013, she assumed the position of Head of Oncology Research Group. Since 2018, as Clinical Oncology Team Leader, she supervises oncological programs in Clinical Research Department.

Dr Stańczak possesses a broad experience in molecular oncology, drug discovery and development, as well as in biomarker studies. She manages two oncology projects (CELONKO, UBA), coordinating of preclinical studies. Dr Stańczak, is an author and co-author of scientific papers published in international journals, conference posters and international patents and patent applications. Since 2012 Dr Stańczak is a member of ESMO, EHA (since 2014) and AACR (since 2015), actively participating in the work on development of novel anticancer therapies.

**Talk abstract:** see page 45

## Jacek Jassem



Jacek Jassem is a Professor of Clinical Oncology and Radiotherapy and Head of the Department of Oncology and Radiotherapy at the Medical University of Gdansk, Poland. He received his MD and PhD from the Medical University of Gdańsk and undertook training at the Karolinska Institute in Stockholm, Sweden and the National Cancer Institute in Amsterdam, The Netherlands.

He is a former chairman of the EORTC Breast Cancer Group and the EORTC Executive Committee, a former chairman of the ASCO International Affairs Committee and a former president of the Polish Oncological Society. He is a member of the Academia

Europea, European Academy of Cancer Sciences and the Polish Academy of Art and Sciences. He served in the executive boards of ESTRO and ESMO and in a number of different editorial boards including Lancet Oncology, European Journal of Cancer, Cancer Treatment Reviews, Radiotherapy and Oncology and Journal of Thoracic Oncology.



His main scientific interests are medical oncology, specifically lung and breast cancer, combined modality treatment with chemotherapy and radiation, as well as molecular oncology. He has authored or co-authored over 800 full articles, books and book chapters in these fields. The cumulated impact factor of his full publications is 1975, with over 18,000 citations and h-index of 54 (Web of Science). He has claimed or licensed 11 patents and directed 19 basic science and clinical-related PhD thesis. He is the recipient of a number of Polish and international scientific awards.

Prof. Jassem has been involved with nationwide public health initiatives, such as authoring the Polish anti-tobacco legislation to limit smoking in public places (introduced in 2010) and the coordination of Cancer Control Strategy for Poland 2015–2024.

**Talk abstract:** see page 44

## Elena Volokhina



Elena Volokhina was born in Novosibirsk, Russia. She started her education as biologist at the Novosibirsk State University and later obtained MSc degree from the University of Amsterdam in 2003. She then continued her training as a PhD student at Utrecht University where she studied biogenesis of outer membrane proteins of *Neisseria meningitidis*. In 2009 dr. Volokhina has joined the Department of Pediatrics at the Radboud university medical center for a postdoctoral fellowship and focused on pathophysiology of complement-mediated renal disorders.

Her research was supported by prestigious grants from the Dutch Kidney Foundation, ERA-EDTA and ZonMw. Dr. Volokhina has spent early postdoctoral years in frequent stays abroad to build expertise and professional network. The obtained basis has helped her to grow as a scientist and to co-found a diagnostic unit for complement-mediated disorders at the Radboudumc.

Currently dr. Elena Volokhina is an assistant professor at the Department of Pediatrics at the Radboudumc. The center is a part of The European Rare Kidney Disease Reference Network. In her current position dr. Volokhina continues to further develop her research line on complement-mediated renal diseases with direct translation to diagnostics and patient care. In 2017 she was elected as a member of scientific board of the European Complement Network.

**Talk abstract:** see page 42





## Aleksandra Zofia Rutkowska



Innovator, inventor, and scientist. Doctor of medical science, specialist in molecular biology. She graduated from the Intercollegiate Faculty of Biotechnology of the University of Gdansk and the Medical Academy in Gdansk (currently Medical University of Gdansk) and from the Postgraduate School of Molecular Medicine in Warsaw. She conducted scientific research on designing a unique antibacterial vaccine and on the role of the

oestrogen receptor gene in women. An academic teacher and an author of a handbook regarding immunology for biotechnology students at the Medical University of Gdansk, tutoring at the Department of Histology and Immunology and Department of Clinical and Experimental Endocrinology. Currently, as an adjunct professor of the Gdansk Medical University and in cooperation with the Gdansk University of Technology, she works on the role of EDs in women's health disorders including the pathogenesis of polycystic ovary syndrome (PCOS) and breast cancer. An author of the Polish Society of Endocrinology position statement on EDs. Co-inventor and coordinator in 3 patent applications.

Creator and coordinator of a social campaign increasing the awareness of PCOS and a Facebook campaign Detoxed Lifestyle Challenge aiming at reducing human exposure to EDs. Passionate about her work, she was also honoured at many international scientific conferences and received a Novo Nordisk (Danish multinational pharmaceutical company) scholarship for conducting her studies.

Her main hobbies are cooking, spending time in the nature, traveling, and IGP training of German Shepherds

**Workshop abstract:** see page 47

## Aleksandra Konieczna



R&D specialist at DetoxED. Doctor of Health Science, registered dietitian. She graduated from Pomeranian Medical University in Szczecin and Gdansk Medical University.

Since 2013 she has been conducting a research studies on exposure to EDs (dietary and non-dietary) and their impact on women's hormonal profile in women with PCOS. She was presenting her results on many international conferences

for young scientists, dietitians, and endocrinologists. A nutritional consultant in a social campaign increasing the awareness of PCOS and a co-founder of Facebook campaign Detoxed Lifestyle Challenge. Co-inventor in 3 patent applications. Her main interests are hiking, sports – mainly basketball and running, sports nutrition, and Swedish language and culture.

**Workshop abstract:** see page 47

## Mikołaj Fedorowicz



Biotechnologist, Ph.D. student in Institute of Biochemistry and Biophysics PAS and science communicator. He started his science communication journey some time ago, in such institutions as the School of Science Festival or Copernicus Science Center. He took part in such events as FameLab, Science Slam and Science Picnic of Polish Radio and CSC.

As a member of the Association of Science Advocates and the co-chair of the Polish March for Science he communicates science in all kind of media. Communication for him is a pure pleasure because he loves to talk. Often too much and too loud.

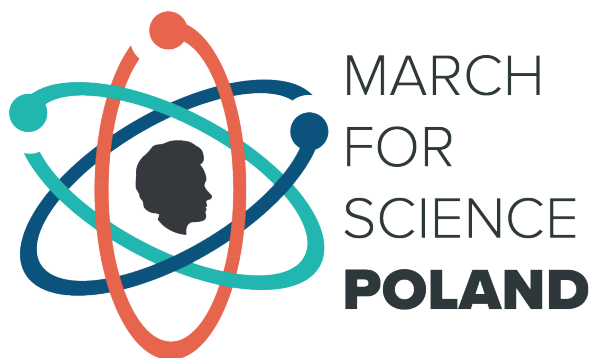
In rare moments when he does not talk, he scuba dives, dances rock'n'roll and tries to juggle.

**Workshop abstract:** see page 49

## March for Science Poland

The March for Science is an affirmation of knowledge.

It does not only concern scientists and academic lecturers, but also affects the very important role that they play in everyone's life. It is a global, pro-scientific and pro-social initiative that was founded in 2017 and took place on Earth Day.



We would like to show our support to the research work and convenience the society that scientists should actually engage in public activities.

Our goal is to increase awareness of the value of science as a universal tool that in the ocean of spurious information reveals the truth and supports society and politics in making decisions.

As the March organizers' we want to emphasize the role of the following issues:

- Reminding society how important science is as a human activity
- Emphasizing the role of scientists in society
- Encouraging greater financial and logistical outlays on Polish science and education
- Expressing support for science-based public activities in particular on issues such as smog, medicine and vaccinations, energy, GMOs and agriculture, climate, nature management and environmental protection, human sexuality and denying fake news.

Join our movement and help us show others that science is both incredibly interesting and crucial!

For more information, check <http://www.marszdlanauki.pl>

## Abstracts

### Lecture 1: From biology to physics and back again

**Paweł Zawadzki, PhD**

**Faculty of Physics, Adam Mickiewicz University; MNM Diagnostics, Poland**

Interdisciplinary research is becoming more and more important as easy scientific problems have been solved and the difficult ones require the collaboration between researchers from different disciplines.

My scientific journey from master thesis in biotechnology, PhD in Biology/Chemistry/Physics, postdoctoral training at Departments of Biochemistry, Physics and Oncology lead me to establish an interdisciplinary research team at the Physics Department, which focuses on the mechanisms of DNA repair and its application in the diagnostics of human disease. This work requires close collaboration of biologists, physicist, programmers and engineers.

I will talk about the branch of our research where, by analysing the efficiency of DNA repair pathways, we assess the predisposition of particular cancer cells to specific chemotherapeutics. Also, the potential to use this approach as a diagnostic tool in everyday clinical experience will be presented.

#### NOTES

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## Lecture 2 & Workshop 2: Biomarkers for precision oncology

**Ruben Pio, PhD**

**Program in Solid Tumors, CIMA, University of Navarra, Spain**

Over the last years there has been an explosion of information about the molecular biology of cancer. This knowledge has led to improvements in personalized patient care, including early detection and the use of targeted therapies. To that end, development and validation of clinically useful biomarkers has been of upmost importance. Biological markers can be classified according to their clinical utility: risk assessment, diagnosis, prognosis, prediction of response, evaluation of treatment efficacy or monitoring. In this talk, we will define different biomarker types and present their applicability in precision oncology. A review will be provided on the molecular markers that allow for diagnosis, prognosis and management of therapeutic response in cancer patients. Adequate sample types, analytical techniques, and requirements for a successful biomarker will be discussed. In a more practical way, we will learn how to create characteristic (ROC) curves and Kaplan-Meier curves, as well as how to interpret the concepts of sensitivity, specificity, and positive and negative predictive values.

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## Lecture 3: Experimental mouse modelling for immune-oncology

**Daniel Ajona, PhD**

**Program in Solid Tumors, CIMA, University of Navarra, Spain**

Immunotherapy based on the infusion of checkpoint blocking antibodies has demonstrated unprecedented success against lung cancer. However, these treatments are not capable of reversing all resistance mechanisms, and a proportion of patients do not respond adequately. Therefore the development of novel combination therapies to overcome tumor-associated immunosuppression poses a major challenge to cancer treatment. A core hurdle to progress in this field is the availability of mouse models that faithfully recapitulate the complexity of human malignancy and immune networks within the tumor microenvironment. Herein, we will provide an overview of a number of preclinical mouse models mimicking frequent complications associated to the clinical management of lung cancer patients. More specifically, we will discuss the potential utility of mouse models developed for the study of resistance to immunotherapy, metastatic spread, and KRAS-driven lung carcinogenesis.

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## Lecture 4: Cancer Immunotherapy and the development of living drugs

**Sven Petersen, PhD**

**Tessa Therapeutics, Singapore**

Cancer treatments traditionally consisted of three pillars: surgery, chemotherapy and radiotherapy. For the last decades, cancer immunotherapy has advanced, and it is now considered as one of the viable options for cancer treatments. Immunotherapy harnesses the power of the body's own immune response to recognize and fight tumor cells. There are multiple immune-oncology approaches that have been investigated such as cancer vaccines, antibodies, oncolytic viruses, checkpoint inhibitors and cell therapies.

At Tessa Therapeutics, we are interested in developing therapies using adoptive T cells derived from the patient, propagated and differentiated in vitro and re-administered to the patient. In terms of antigen recognition, Tessa has a unique focus that uses viruses as a driver for therapeutic treatments of cancer. Our core platform technology uses a specific subset of immune cells known as Virus-Specific T cells (VSTs) - a type of T cell produced specifically in response to a viral infection. These cells can recognize and kill infected cells while activating other parts of immune system for a coordinated response. The VSTs persist in the body and activate a rapid immune response if the virus is encountered again. Our VSTs have shown compelling clinical results across multiple Tessa and academic clinical trials with strong evidence in clinical benefit, safety profile and persistence. VST efficacies can be improved by genetic modifications and rational combinations with other immuno-oncology technologies.

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## Lecture 5: Orphan drug eculizumab: from patient's bedside to the lab and back

**Elena Volokhina, PhD**

**Radboud University Medical Center, Netherlands**

Complement system is a part of innate immunity. When working well, it helps to protect us from infections. However, complement can attack healthy tissues when its regulation is distorted by genetic abnormalities or autoantibodies. This causes most cases of atypical hemolytic uremic syndrome (aHUS), a severe renal disease.

Eculizumab (humanized monoclonal antibody) was the first therapeutic complement blocker. It was approved to treat aHUS in 2011 and for many patients drastically improved recovery prognosis and quality of life.

At time of approval, eculizumab dosing recommendations were not taking into account the needs of individual patients. The necessity of recommended high doses and life-long treatment were questioned by nephrologists. The extremely high price of such treatment regimen (up to 500 000 euro/patient/year) made eculizumab one of the most expensive medications on the planet and made its reimbursement by the health insurance system uncertain.

This lecture will be dedicated to scientific research on complement blockade by eculizumab and the Dutch national study to optimize eculizumab treatment in aHUS. Furthermore, I will illustrate the process of how laboratory protocols are converted to diagnostic tests and which challenges are faced when diagnostic monitoring of new therapeutic compound is being implemented. The lecture will give beautiful examples of translational research and how clinicians and biochemists work together to provide patients with best possible care.

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## Lecture 6: Genomic variants and spectrum of their effects: monogenic phenotypes solved by whole genome sequencing

***Tomasz Stokowy, PhD***

***University of Bergen, Norway***

Testing of patients with hereditary disorders is in progress of shifting from single gene assays, gene panel sequencing and whole-exome sequencing to whole-genome sequencing (WGS).

To decipher causes of heritable disorders we use DeepVariant - an accurate deep learning-based variant caller. According to our analyses, this method outperforms GATK - current gold standard variant calling tool.

We used methods mentioned above and WGS data to disclose causes of several monogenic disorders, for example keratolytic winter erythema (CTSB, non-coding duplication of enhancer), severe Penttinen syndrome (PDGRFB, de novo substitution) and nuclear envelopathy (LEMD2, de novo substitution).

In my presentation I will show spectrum of effects caused by mutations in human genome and highlight cases, in which genetic diagnosis led to personalized treatment.

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## Lecture 7: My vision of future oncology

**Prof. Jacek Jassem,**

**Medical University of Gdansk, Poland**

Cancer therapy is increasingly based on molecular oncology. Three milestones in its development include discovery of DNA structure and function (1953), identifying and mapping of the entire human genome (2003), and the initiation of Cancer Genome Atlas (2006). Gene fingerprints are increasingly effective to estimate cancer risk. Traditional methods of treatment are gradually replaced by personalised approaches. An example are targeted therapies which block the growth of cancer cells by interfering with specific targeted molecules needed for carcinogenesis and tumour growth.

Currently, established kinase inhibitors covers only 15% of the entire kinome, leaving a big potential for new targets. Immunotherapeutics enormously augment the ability to recognize and destroy cells carrying mutations and provide unprecedented effects across many tumours. Out of ~30 ligands and receptors involved in the immune response, only two (CTLA-4 and PD-1/PD-L1) are currently used in clinics, thus leaving a big potential for further developments. A technology that may dramatically increase treatment efficacy is an artificial intelligence, which expedite in minutes all available evidence into real benefits. Discovery of new therapeutics may be accelerated by virtue of in silico trials using advanced biological networks or organs-on-a-chip technique. This approach may analyse with supercomputers thousands of drug candidates on billions of virtual human physiological models in seconds. Although cancer remains a fearful disease, progress in its treatment gives hope for the future.

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## Lectures 8-9: A New Hope: Biomarker-driven, personalised cancer therapy - CELONKO

**Aleksandra Stańczyk, PhD**

**Celon Pharma S.A., Poland**

Drug research and development is a long-term and complicated process. From an initial idea to an entry into the market the project can last around 10-15 years and costs about \$1.7 billion. The new strategy is to develop tailored drug to the patient to develop more efficient drugs and limit the costs. An example of this approach is CELONKO project.

The aim of CELONKO project is a preclinical and clinical development of innovative therapy for FGFR-driven cancers like squamous lung, stomach and bladder cancers. A potent, low-molecular-weight FGFR inhibitor characterized by the appropriate selectivity and desirable pharmacokinetic properties was developed in the laboratories of Celon Pharma.

In parallel, a diagnostic test to identify biomarker supporting identification of patients who will benefit the most from our new personalized therapy was developed.

Currently novel anti-FGFR inhibitor CPL304110 is undergoing clinical development and may give a New Hope for cancer patients

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## Lecture 10: Clinical Trials: Set-up and management

**Eva McGrowder, PhD**

**Institute of Cancer Research, UK**

**Purpose:** To outline the requirements for setting up and management of a Clinical Trial of an Investigational Medicinal Product (CTIMP) under the UK Medicines for Human Use (Clinical Trials) Regulations (MHRA)/EU Clinical Trials Directive (2001/20/EC).

**Methods:** The talk will outline the process flow of a clinical trial, from the early stages of trial design, the required regulatory approvals, opening of the trial and management throughout the course of the trial.

**Conclusion:** By the end of the talk, students will have an understanding of key requirements involved in turning a research question into a clinical trial. Key points will include legal and good practice requirements as well as indication of standard processes that are expected for a trial. Students will be able to identify processes that are applicable for CTIMPs and non-CTIMP trials. The speaker will highlight the role of a trial manager throughout the course of a trial.

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## Workshop 1: Should we be afraid of a rubber duck? Plastic as a threat for humans and other living organisms health.

**Aleksandra Zofia Rutkowska, PhD, Aleksandra Konieczna, PhD**

**DetoxED, LTD, Poland**

In everyday life all of us use food packaging, plastic bottles, electronics, sport equipment, cosmetics, cleaning agents, textiles and many other objects containing endocrine disruptors (ED). These are chemicals that due to their similarity to natural hormones disrupt their action and lead to increased risk of lifestyle diseases such as cancer, obesity or infertility.

It has been already proved that ED affect human and wildlife health. As it is estimated that ED exposures only in the European Union may contribute substantially to disease and dysfunction across the life course with costs in the hundreds of billions of Euros per year, we believe that such prevention may be of human benefit. WHO, EFSA, FDA and many world medical and health societies point the necessity of reducing ED exposure and sharing the knowledge. These actions were signed in Sustainable Development Goals as their aim is to achieve a better and more sustainable future for all. They address the global challenges we face, mainly including environmental degradation, human exposure to hazardous substances and increasing prevalence of lifestyle diseases. During this workshop we will share our knowledge about estimating the risk of ED exposure and suggest easy for introducing lifestyle changes and safer, (almost) ED-free alternatives and solutions.

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## Workshop 3: The signatures of mutational processes in cancer

***Tomasz Stokowy, PhD***

***University of Bergen, Norway***

Cancer is a disease of DNA, in which one or several mechanisms of DNA repair do not work. These repair mechanisms can be affected by aging, environmental factors (i.e. smoking, UV radiation) or heritable genetic changes (i.e. BRCA or TP53 germline mutations). Each of these factors is a cause unique mutation pattern, called a mutational signature.

Thanks to understanding of mutational signatures in cancer we can identify which DNA repair mechanism does not work and select personalized treatment options.

During the workshop students will get an access to whole genome data and learn how to derive a mutational signature in R. We will look at the signatures from different cancer types and discuss, if there are available treatment options for each case.

The whole genome data presented during the workshop will be available thanks to Siepomaga Foundation and MNM Diagnostics.

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## Workshop 4: Three golden rules of science communication

***Mikołaj Fedorowicz, MSc***

***March for Science Poland***

Science communication is a part of our job, and that's a fact. We must share results of our work with our bosses, colleagues, society... even our families or random people in a pub. Some people are made for it – they were born with some kind of a gift, right? WRONG! Science communication relies on your skills. Skills that can be improved. For someone it might be easier, for the other one much harder. How to do it? Lectures, books and the Internet are full of advices, and some of them are conflicted.

Personally, I think there are 3 golden rules of science communication that everyone should remember of. The rest is helpful but not essential.

There will be no miracle answers, just sharing some experience. Bring your ideas to the table.

There will be no dogmas but a discussion. Come and argue with me.

Maybe we will create some new rules?

### NOTES

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