

Annual Report

Grant Period 2

COST Action CA21135 IMMUNO-model

**“Modelling immunotherapy response and toxicity in
cancer”**

(2022-2026)

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Action Chair	Eva Martinez-Balibrea
Author(s)	Eva Martinez-Balibrea, Leticia Oliveira-Ferrer, Philippe Bertrand, Devrim Pesen Okvur, Cristiana Tanase, Emmet Mc Cormack, Johannes Haybaeck, Marleen Ansems, Maurizio Callari, Laura Belver, Rui Bergantim, Barbara Breznik, Rosalinda Sorrentino, Gianmarco Contino, Denis Collins, Hanne Haslene-Hox
Contact for queries	Action Chair Eva Martinez-Balibrea (embalibrea@iconcologia.net), Grant Holder Manager Melanie Giorgi (ghm_immunomodel@igtp.cat), WG5 leaders Barbara Breznik (barbara.breznik@nib.si) and Rosalinda Sorrentino (rsorrentino@unisa.it)

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1. Overview of activities in GP2

The primary goal of IMMUNO-model is to establish an international network of researchers dedicated to the development and implementation of preclinical models that evaluate both the efficacy and toxicity of cancer immunotherapies.

To pursue this goal, during the second Grant Period (GP2), many activities were carried out, which details can be found in the following sections of this report.

During the GP2, IMMUNO-model has organized 2 workshops and an Annual Conference, 1 training school and 5 webinars, which are accessible on IMMUNO-model YouTube Platform. These activities have not only raised awareness of the Action and its goals, but have also fostered collaboration among members, leading to the creation of new scientific project proposals and publications. This aspect was further fostered by awarding Young Researchers and Innovators (YRIs) of 20 Short-Term Scientific Missions (STSMs).

Looking ahead, IMMUNO-model recognized opportunities for improvement, particularly in increasing the engagement of patient associations and SMEs.

Additionally, IMMUNO-model launched a Task Force to collect protocols on preclinical models in immuno-oncology.

It is important to mention that during this period several meetings of the Working Groups (WGs) were held, which were useful for the participants to get to know one another and start proposing activities to achieve the objectives of the Action.

With these and the other activities detailed below, the foundation stones of the project were strengthened, and its products/results will be seen during the third Grant Period.

Meetings

- Workshop 1 *Predictive Biomarkers of Toxicity and Immunotherapy Response in Advanced Melanoma*, on 14-15/03/2024, virtual, led by Working Group 3. 120 Unique Participants
- Workshop 2 *Immunotherapies: charting a course from the lab to the clinic*, on 31st August 2024 in Dublin, Ireland, led by TGRC Group. 55 Unique Participants
- IMMUNO-model Annual Conference, on 13-15th May 2024, in Bratislava, Slovakia. 125 Unique Participants
- 11 Core Group Meetings, one in person.
- 2 Management Committee Meetings, both virtual.

Training School

- Summer school on Immunogenomic computational tools, 11-13 June 2024 at the University Hospital Lozano Blesa, Zaragoza, Spain. 5 trainers and 20 trainees.

Webinars

- 1st Webinar: Emerging Innovations for Immuno-models on 14/12/2023. 65 Unique Participants.
- 2nd Webinar: imSAVAR project: Nonclinical mimicking of the immune system effects of immunomodulatory therapies on 06/05/2024. 43 Unique Participants.
- 3rd Webinar: Mathematical Oncology on 25/06/2024. 20 Unique Participants.
- 4th Webinar: Dendritic cells and Immunotherapy on 02/10/2024. 47 Unique Participants.
- 5th Webinar: Preclinical modelling in Immuno-oncology: An industry perspective from Toxicology to IND on 15/10/2024. 32 Unique Participants.

Mobility Grants from IMMUNO-model:

- 12 Short-Term Scientific Mission (STSM) Grants
- 1 Inclusiveness Target Countries (ITC) Conference Grants
- 3 Dissemination Conference (DC) Grants
- 2 Virtual Mobility (VM) Grants

Grant applications from IMMUNO-model members:

- TRANSCAN-3, HEALTH, DEMOGRAPHIC CHANGE AND WELLBEING
 - Action participants listed among the proposers: Leticia Oliveira-Ferrer, Germany; Devrim Pesen Okvur, Turkey; Rebeca Pamplona, Spain; under evaluation
- EP PerMed, HEALTH, DEMOGRAPHIC CHANGE AND WELLBEING
 - Action participants listed among the proposers: Ciprian Tomuleasa, Romania; Emanuele Azzoni, Italy; Laura Belver, Spain; not funded
- MSCA Doctoral Network grant, HEALTH, DEMOGRAPHIC CHANGE AND WELLBEING
 - Action participants listed among the proposers: Emanuele Azzoni, Italy; Laura Belver, Spain; Theodora Katsila, Greece; Katarina Nikolic, Serbia; Peter Rashkov, Bulgaria; Nuno Rodrigues dos Santos, Portugal; Ciprian Tomuleasa, Romania; under evaluation
- EHA Bilateral, HEALTH, DEMOGRAPHIC CHANGE AND WELLBEING
 - Action participants listed among the proposers: Emanuele Azzoni, Italy; Laura Belver, Spain; under evaluation

Dissemination Materials:

- Update and maintenance of the IMMUNO-model Website
- Roll-up banner for meetings and events
- Post-production of webinars
- Industry power point template

- Various Flyers and word template for the dissemination of IMMUNO-model COST Action and for grants calls
- Newsletters
- STSM Grants reports

Other Expenses Related to Scientific Activities (OERSA)

- Zoom License
- Bank Charges

Budget

	Forecasted Budget			Actual Expenditure		
		LOS	TOTAL		LOS	TOTAL
Workshop 1, N. Macedonia 14-15 March 2024	7.680,40	3.000,00	10.680,40	7.680,45	3.000,00	10.680,45
Workshop 2, Ireland 31/08/2024	24.660,00	2.000,00	26.660,00	36.410,59	3.000,00	39.410,59
Annual Conference Hybrid, Slovakia May 2024 +CG meeting	57.800,00	6.000,00	63.800,00	53.451,89	9.349,88	62.801,77
IMMUNO-model Training School 1 WG3, Spain 11-13 June 2024	23.360,00	3.500,00	26.860,00	25.743,48	2.996,79	28.740,27
STSM			34.340,00	25.581,00		25.581,00
ITCG			3.998,81	1.190,00		1.190,00
DCG			3.000,00	1.550,00		1.550,00
VM			0,00	3.000,00		3.000,00
Scientific publication in Open Access			5.200,00	0,00		0,00
Website Maintenance			1.500,00	1.508,13		1.508,13
Design Word template (A4, one page) TGRCs			0,00			60,00
Design Flyer (A4, single side) TGRCs			0,00			120,00
Design of Roll-Up Banner			0,00			120,00
Production of 5 webinars			500,00	500,00		500,00
Consumables for training			500,00	0,00		0,00
Rental of equipment_software for Training School			500,00	0,00		0,00
Zoom license			500,00	425,19		425,19
Bank charges			1.200,00	750,00		750,00
Sub Total			179.239,21			176.437,40
FSAC 15%			26.885,88			26.465,61
TOTAL			206.125,09			202.903,01
Unspent Budget			3.222,08			

2. Overview of WG activities

2.1. WG1/WG3

Joint WG1 and WG3 meetings were held starting from January 2024, because many participants were engaged in both working groups. Therefore, according to the decision made during a Core Group (CG) meeting, the two WGs started an interactive approach among the participants of both WGs. Since the first meeting during GP2, both WGs organized subsequent meetings, allowing members to schedule themselves on the agenda, fostering discussions on specific scientific questions, challenges, sample sharing and STSMs prospects. During this gathering, the workgroup's objectives were outlined, and diverse opportunities were explored such as Short-Term Scientific Missions (STSMs), workshop organization, and training school participation. Notably, Dr. Bozena Smolková and collaborators organized the 2024 Annual Conference in Slovakia, and Dr. Rebeca Sanz-Pamplona and Dr. Maurizio Callari established a Computational Immune-Oncology taskforce and organized a Summer School on computational

immune-genomics. These Paths and tools were defined to achieve objectives of IMMUNO-model COST Action, particular to WG1 and WG3. Both WGs organized a Computational Immune-Oncology taskforce, 5 webinars. Reflecting on an exciting second year, the WG Leaders are dedicated to further shape the working group and advancing the objectives collectively in the coming years. (Please see more details in Section 4).

2.2. WG2

One webinar and two meetings were held. Paths and tools to achieve objectives of IMMUNO-model COST Action, particular to WG2, were discussed. The focus for the second year was to strengthen collaborations and realize publications.

2.3. WG4

During GP2, WG4 members applied together for several major funding initiatives:

- 1) European Partnership for Personalized Medicine (EP PerMed), led by Ciprian Tomuleasa (Romania) with four participants,
- 2) MSCA Doctoral Network grant, coordinated by Laura Belver (Spain), involving 15 researchers.
- 3) EHA Bilateral grant, led by Emanuele Azzoni (Italy) with two participants.

Beyond efforts to secure funding, WG4 is spearheading a special issue in *Frontiers in Immunology* on cellular immunotherapies, featuring four contributions from WG4 members on CAR-T cells, NK CARs, macrophage CARs, and TILs.

2.3 WG5 and Science Communication activities

The activities underlying this WG were performed by gathering other WGs' activities to be disseminated by means of the website, social media, scientific meetings and manuscripts, etc. In this regard the following are the activities that were performed during GP2:

- Dissemination & Communication Plan was prepared and approved by MC
- Webpage and social media platform establishment (Instagram) and its management (Linkedin, X, youtube channel, Instagram)
- Organization of events, activities of the COST Action to be archived to the open-access repository (e.g. Zenodo)
- Promotional materials (logo, flyers, videos, ppt templates) were set up and produced
- Dissemination of IMMUNO-model COST Action activities and results (scientific papers, EACR advertisement etc.)
- Collaboration with the MC to define the best options and tools to pursue the objectives of WG5 (emails, members area on webpage, flyers, etc.)
- Organizing and coordinating Webinars
- Annual Report GP2

Dissemination activities:

ITEM / ACTIVITY	TARGET AUDIENCE	RESULT	HYPERLINK
Letter + flyer for Immuno-model	SMEs, Enterprise Europa Network,	Ongoing letter distribution to all nations with direct representatives in EEN.	https://een.ec.europa.eu/

information targeted to industry prepared	consisting of Innovation offices in all EU nations.		
Prepared overview of SMEs within immunology+oncology with profiles on LinkedIn, to identify potential members to approach for recruitment	SMEs, Industry	New members of IMMUNO-model	
Meeting with yEFIS (closed)	Young researchers in immunology	Plans for dissemination of information about IMMUNO-model in the European network for young researchers in immunology. Immediate profiling of Immuno-model in yEFIS newsletter and social media. Future result: increased recruitment in the COST-action and workshops	https://www.yefis.org/
Oral presentation of WG1 and WG3 leaders at the International Pathology Conference of Victor Babes Institute, November 2023	Participants of the conference	The WG1 and WG3 leaders both gave a presentation about our COST Action and more specific about the objectives and goals of WG1 and WG3 to further build our network of Immune-Oncology researchers and facilitate connections.	https://www.linkedin.com/post/marleen-ansems-716b805_international-conference-of-pathology-of-activity-7126195343674765312-Thpu/?utm_source=share&utm_medium=member_ios
Website	Researchers interested to immunotherapy	Information to all interested scientists in the field of immunotherapy as well as members	https://www.immuno-model.eu/
Advertisement of webinars through EACR website	Researchers interested to immunotherapy	Information to all interested scientists in the field of immunotherapy as well as members	Visit the website
Communication at the 19th European Molecular Imaging Meeting	Researchers interested to immunotherapy	Disseminate CA21135 that increased recruitment of members to the CA; Emmet Mc Cormack (WG2 Leader) from University of Bergen presented IMMUNO-model COST action at the 19th European Molecular Imaging Meeting held in Porto, Portugal (12th-15th March 2024)	https://e-smi.eu/meetings/emim/2024-porto/). https://www.immuno-model.eu/category/presentations/
Videos	Researchers interested to immunotherapy	Disseminate CA21135 that increased recruitment of members in the IMMUNO-model	https://www.immuno-model.eu/newss/promotional-videos-of-immuno-model-cost-action-are-out/
Flyers	Researchers, industry, students	Promote CA21135 COST Action and its objectives	https://www.immuno-model.eu/newss/immuno-model-flyers-are-out/
Newsletters	Researchers, industry, students	Highlights CA21135 activities and the achievement of its objectives	https://www.immuno-model.eu/#popup-menu-news
Communication through EACR	Cancer researchers, students,	Advertising Action invitation for membership and active engagement	Online Collaborations The European Association for Cancer Research, https://www.eacr.org/

	industry, clinicians		
COST action under spotlight, communication with COST headquarters and other media	wider audience, policy makers, COST members, clinicians and industry	Dissemination of Action results and progress	Modelling immunotherapy– the path to success for cancer patients?. https://www.news-medical.net/news/20240120/COST-Action-bridges-the-gap-in-cancer-immunotherapy-research.aspx. https://industrialnews.co.uk/cost-action-bridges-the-gap-in-cancer-immunotherapy-research/. https://www.alphagalileo.org/en-gb/Item-Display/ItemId/241738?returnurl=https://www.alphagalileo.org/en-gb/Item-Display/ItemId/241738
Poster presentation at CNIO-CaixaResearch Frontiers Meeting: Metastasis, in Madrid (Spain).	Scientists, students	Rebeca Sanz-Pamplona and her team from CIBERESP and IISA Zagoza (Spain) presented their research on NK cell therapy for colorectal cancer and mutational patterns in metastatic homing at CNIO-CaixaResearch Frontiers Meeting: Metastasis, in Madrid (Spain).	https://www.linkedin.com/feed/update/urn:li:activity:7133744497573736448
Communication through grant holder institution IGTP	Researchers, students, industry	Dissemination of Action results and progress	News IGTP
Presentation on cancer immuno-models at Stockholm University, Sweden	Researchers, students	Dissemination of COST Action, update on immunomodels and radioresistance mechanisms	NIB visits SU to present radio-resistance in brain tumours - Cut Cancer
Establishment of biomarker and tumor specific taskforces (online)	The target audience was researchers interested in the topic as well as a wider audience as it was posted on YT channel.	At this year's lecture of the World Network of the University of Ljubljana (SMUL) is Dr. Barbara Breznik , presented research and technologies used to model tumors in the laboratory and search for new therapeutic approaches to combat resistance cancer for treatment. Dissemination of COST Action, update on immunomodels and identification of new therapeutic targets.	https://www.cutcancer.si/science-for-all-presentations-of-the-achievements-of-the-members-barbara-breznik/
Presentation on meeting with oncologists and surgeons, July 8, 2024, NIB, Slovenia	Clinicians, students, researchers	Dissemination of COST Action among clinicians, setting up pipeline for obtaining tumor models from patients fresh tumor biopsies	https://www.nib.si/eng/
Presentation IMMUNO-Model	Cancer Patient Organisation, UKE, Hamburg, Germany	Three patients agreed to join the "Patient Engagement Task Force"	Not available

2.4 Patient Engagement Task Force

The Patient Engagement Task Force of the COST Action IMMUNO-model, led by the Vice Chair Leticia Oliveira-Ferrer, brings together scientists, healthcare providers, patients and representatives of cancer patient organisations to improve patient involvement in immunotherapy research and implementation. IMMUNO-model's mission is to foster meaningful dialogue between patients and researchers, bridging the gap between cutting-edge science and patient-centred care. IMMUNO-model is committed to creating clear, accessible educational materials that explain immunotherapies and the goals of our COST Action. These resources are designed to empower patients with knowledge and will be disseminated through channels that effectively reach diverse audiences. In addition to educational activities, the Task Force prioritises direct patient engagement by ensuring a strong patient presence at conferences and workshops organised by our COST Action. IMMUNO-model also promotes patient involvement in research planning to ensure that their perspectives guide the development of future immunotherapy trials. Through these initiatives, IMMUNO-model aims to build a strong partnership between science and patient advocacy to drive advances that improve the accessibility and impact of cancer immunotherapies.

2.5 Knowledge Hub Task Force

The Knowledge Hub Task Force was established to support the objectives of IMMUNO-model in creating an open-access database for experimental protocols related to immuno-oncology models. The task force comprises seven young researchers (within ten years post-PhD) from Slovenia, the UK, Switzerland, Ireland, Romania, France, and Sweden. It maintains gender balance with four female and three male members. Regular communication was held with CA Vice Chair Leticia Oliveira Ferrer, who actively supported the task force during meetings and contributed to decision-making processes.

Key Activities and Milestones:

Protocol Survey:

The task force analysed a survey prepared by the CG members on the availability of protocols among CA members' laboratories. This data was presented at the 2nd Annual Conference in Bratislava through a poster and a short talk. The survey provided insights into existing models and facilitated planning for the Knowledge Hub structure and protocol collection. It also established a network of researchers open to submitting protocols.

Platform Selection for the Knowledge Hub:

Significant effort was dedicated to identifying an appropriate platform to host the Knowledge Hub. The initial idea of using a journal or special issue for publishing protocols evolved into creating a publicly accessible database. After evaluating platforms like Protocols.io and considering budget constraints, the team chose the Open Science Framework (OSF) for its features, including version control, persistent URLs, and collaborative tools. The Knowledge Hub project on OSF was prepared with detailed subsections and descriptions for easy navigation and its public launch. It is accessible at: <https://osf.io/nc89k/>

Protocol Template and Submission Guidelines:

The task force developed a standardized protocol template to ensure clarity and reproducibility of protocols. Approved in a CG meeting, this template was uploaded to the Knowledge Hub.

Submission guidelines were also established, including a review process focused on clarity and alignment with CA objectives. Protocols will undergo expert and technical screening before being published in the public folder of the Knowledge Hub.

Promotion and Engagement:

To raise awareness of its activities, the task force participated in key events. Presentations were made at the 2nd Annual Conference in Bratislava and the 2nd IMMUNO-model Workshop in Dublin. In addition, members were invited to submit protocols via the IMMUNO-model webpage and social media.

Progress and Next Steps:

Looking ahead to Grant Period 3, the task force will focus on collecting and reviewing submitted protocols, promoting the Knowledge Hub, and fostering collaborations among CA members. These efforts aim to fulfil the CA objective of creating a comprehensive, open-access database that facilitates innovation and standardization in immuno-oncology research.

3. Events

3.1. Training School and Workshops

3.1.1 *1st Workshop “Predictive Biomarkers of Toxicity and Immunotherapy Response in Advanced Melanoma”*, 14-15 March, 2024 (hybrid event), Skopje, North Macedonia.

Objective: Explore the latest advancements in personalized cancer treatment.

The “Predictive Biomarkers of Toxicity and Immunotherapy Response in Advanced Melanoma” workshop focused on the latest advancements in personalized cancer treatments. This two-day event brought together leading experts, clinicians, and researchers in oncology to explore the latest advancements in personalized cancer treatment, focusing on melanoma. Internationally renowned speakers presented their work on a rich selection of topics such as diagnosis and treatments of melanoma, radiotherapy in melanoma, predictive and genetic biomarkers and immunotherapy, integrative approaches for biomarker analysis, toxicity of immunotherapy, real world data. The workshop provided a platform for engaging discussions, cutting-edge research presentations, and networking opportunities.

The event attracted a diverse group of participants, including clinical and preclinical researchers, immunologists, pharmacologists, pathologists, and PhD students. IMMUNO-model members, as well as professionals working on biomarker modelling and immunotherapy, contributed to knowledge sharing and fostering collaboration and interactions. The workshop was very successful and a good starting point for future collaborations within the group.

Number of participants: 120

Target audience: clinical and preclinical researchers in Oncology, Pharmacologists, Immunologists, Pathologists, advanced scientists, postdocs and PhD students and professionals working in immunotherapy and modeling of biomarkers.

Scientific & Organizing Committee:

Igor Stojkovski igor.stojkovski@medf.ukim.edu.mk
Marleen Ansems Marleen.Ansems@radboudumc.nl
Rosalinda Sorrentino rsorrentino@unisa.it
Daniel Lindegger lindeggerdaniel@gmail.com
Peter Rashkov p.rashkov@math.bas.bg
Vladimir Jurisic jurisicvladimir@gmail.com
Rubens Jovanovic rubens.jovanovic@medf.ukim.edu

Program with topics:

14th March 2024

- 09:00-10:00 Registration of participants
10:00 -10:15 Welcome and Opening: Introduction of the workshop and COST IMMUNO-model presentation – what it is about
Prof. Igor Stojkovski and Rubens Jovanovic, MDs, Professors of Pathology at *Ss. Cyril and Methodius University in Skopje, North Macedonia*
Session 1: Melanoma diagnosis and treatment
10:15-10:35 Melanoma Epidemiology and Risk Factors
Zorica Zafirovic *Ss. Cyril and Methodius University in Skopje, North Macedonia*
10:35-10:55 Dermatological approaches of melanoma diagnosis
Silvija Duma *Ss. Cyril and Methodius University in Skopje, North Macedonia*
10:55-11:15 Surgery of melanoma
Bisera Nikolovska/Sofija Pejкова *Ss. Cyril and Methodius University in Skopje, North Macedonia*
11:15-11:35 Pathology and interpretation of prognostic markers in advanced melanoma
Panče Zdravkovski/Boro Ilievski *Ss. Cyril and Methodius University in Skopje, North Macedonia*
11:35-12:00 Coffee break
12:00-12:20 Functional Imaging in Advanced Melanoma
Ana Ugrinska *Director of the University Institute of Positron Emission Tomography, North Macedonia*
12:20-12:40 Neoadjuvant and/or adjuvant Immunotherapy in malignant melanoma
malignant melanoma
Amina Jalovčić-Suljević *University of Sarajevo, Bosnia*
12:40-13:45 Lunch
Session 2: Role of Radiotherapy in melanoma
13:45-14:05 Radiotherapy and immunotherapy combinations
Roberto Diaz, *Department of Radiation Oncology, Moffitt Cancer*
14:05-14:25 Role of SRS/SBRT in treatment of metastatic melanoma
Igor Djan *Radiation oncologist Oncology Institute of Vojvodina, Serbia*
Session 3: Introduction to Predictive Biomarkers and Immunotherapy
14:30-14:50 Overview of predictive biomarkers and their importance in personalized medicine
Aleksandar Dimovski, *Mother Teresa University, Skopje*
14:50-15:10 Biomarkers for predicting responders to immunotherapies: lessons from ocular surface diseases
Virginia Calder *Professor of Ocular Immunology at UCL Institute of Ophthalmology; UK*
15:10-15:30 Role of NK cells in cancer immunology
Vladimir Jurisic *Faculty of Medical Sciences, University of Kragujevac, Serbia*

- 15:30-16:00 Cofee break
Session 4: Toxicity and Immunotherapy
16:00-16:20 Predicting the toxicity of immunotherapy
Violeta Klisarovska Ss. *Cyril and Methodius University in Skopje, North Macedonia*
16:20-16:40 Immune-related adverse events (irAEs) and their management
Lidija Kandolf *Military Medical Academy (CSEEMEG), 11000 Belgrade, Serbia*
17:00-17:15 Wrap of the day

15th March 2024

- Session 5: Real World Data in Melanoma**
8:40-09:00 Real World data in Melanoma. Experience from MELAREG.
Lidija Kandolf, *Military Medical Academy (CSEEMEG), 11000 Belgrade, Serbia*
09:00-09:20 Interpretation of tumor microenvironment and immune profiling data.
Tanja Mesti, *Medical Oncologist at Institute of Oncology Ljubljana, Ljubljana, Slovenia*
Session 6: Genetic Biomarkers in Melanoma
09:20-09:40 Genetic factors influencing immunotherapy response
Milan Risteski, *Clinical oncologist at Zan Mitrev Clinic, Skopje, Macedonia*
09:40-10:00 Genetic testing and technologies.
Aleksandar Eftimov/Rubens Jovanovic, Ss. *Cyril and Methodius University in Skopje, North Macedonia*
10:00-10:20 Possibilities of cytokine determination in cancer patients and their prognostic significance
Vladimir Jurisic, *Faculty of Medical Sciences, University of Kragujevac, Serbia*
10:20-10:45 Ethical considerations in biomarker research and patient care.
Zlatko Jakovski, Ss. *Cyril and Methodius University in Skopje, North Macedonia*
10:45-11:15 Coffee break
Session 7: Integrative Approaches for Biomarker Analysis
11:15-11:40 Immunomics in predicting immunotherapy response.
Rebeca Sanz-Pamplona, *Universitat Oberta de Catalunya, Barcelona, Catalunya, Spain*
11:40-12:10 Overview of mathematical models for melanoma
Peter Rashkov, *Bulgarian Academy of Sciences, Sofia, Bulgaria*
12:10-12:30 Modulation of HLA A/B/C expression in an oestrogenstimulated cutaneous melanoma in vitro model
Marta Valenti, *Politecnico Milano, Milan, Italy*
12:30-12:50 Modeling immunotherapy response in several cancers using multiomics data
Osman Uğur Sezerma, *Department of Biostatistics and Medical Informatics Faculty of Medicine, Acibadem University, Turkey*
Closing remarks
12:50-13:30 Interactive discussions on challenges and solutions in implementing biomarker-guided therapies.
All participants



3.1.2 *2nd Workshop IMMUNO-model TGRC workshop “Immunotherapies: charting a course from the lab to the clinic”*, took place in Dublin City University, Ireland on Saturday, 31st August 2024. The workshop attendees heard from experts in the pre-clinical, clinical, translational and industry/SME sectors who provided presentations outlining their fields of expertise and the current challenges they face in relation to immunotherapies. The workshop opened with a welcome from Denis Collins, Ireland, and an overview of the COST Action by IMMUNO-model lead Eva Martinez-Balibrea, Spain, and WG3 Co-Lead Maurizio Callari, Italy. Two sessions followed. The first session concentrated on best practice and current challenges with engaging presentations from David Pinato, UK, Emmet Mc Cormack, Norway and Samuel S. Chuang, Charles River Laboratories, USA on the clinical experience, in vivo models and the CRO setting, respectively. The second session explored beyond state-of-the-art approaches with contributions from Pedro Cruz, Portugal, Rita Fior, Portugal and Kristin Anderson, USA covering novel translational strategies, zebra fish models and engineered cellular therapies. The final session was led by the TGRC Committee members Catarina Rodrigues, Portugal, Hanne Haslene-Hox, Norway, Gianmarco Contino, UK, Uzma Hasa, France and Yari Ciribilli (Italy) and focussed on summarising the learnings from the first two sessions to identify new areas of research and the key challenges in modelling immunotherapy. Some of the key challenges identified included funding and better connections with clinicians and industry.

Number of participants: 55

Target audience: clinical and preclinical researchers in Oncology, Pharmacologists, Immunologists, Pathologists, advanced scientists, postdocs and PhD students and professionals working in immunotherapy and immuno-oncology field.

Scientific & Organizing Committee:

Denis Collins – CA21135 TGRC2 leader (denis.collins@dcu.ie)

Hanne Haslene-Hox – CA21135 TGRC3 leader (hanne.haslene-hox@sintef.no)
Gianmarco Contino – CA21135 TGRC1 leader (g.contino@bham.ac.uk)
Catarina A. Rodrigues – CA21135 TGRC2 coleader (crodrigues@ipatimup.pt)
Yari Ciribilli – CA21135 TGRC1 member (yari.ciribilli@unitn.it)
Hasan Uzma – CA21135 TGRC1 member (uzma.hasan@lyon.unicancer.fr)
Marta M. Bobińska – CA21135 TGRC3 member (marta.maleszewska@uw.edu.pl)

Program with topics:

- 10:00-10:45 Registration of participants/Arrival of attendees/Tea, coffee, pastries
10:45 -11:00 Welcome Session
Denis Collins, *Dublin City University, Ireland*
- 11:00-11:15 IMMUNO-model – who we are, data collected to date
Eva Martinez-Balibrea, *Catalan Institute of Oncology, Badalona, Spain*
- 11:15-11:35 IMMUNO-model – working group experiences to date
Maurizio Callari, *Fondazione Michelangelo, Italy*
- Session 1 – Best practice and current challenges**
- 11:35-11:55 Immunotherapies in the Clinic
David Pinato, *Imperial College London, UK*
- 11:55-12:15 In vivo and in vitro models of Immunotherapies used in Academia
Emmet Mc Cormack, *University of Bergen, Norway*
- 12:15-12:35 In vivo and in vitro models of Immunotherapies used in Industry
Samuel S. Chuang, *Charles River Laboratories, USA*
- 12:35-13:05 Chaired open panel discussion with Session 1 speakers
13:05-14:00 Lunch
- Session 2 – Beyond state of the art**
- 14:00-14:20 Novel clinical & translational approaches
Pedro Cruz, *IPO-Porto, Portugal*
- 14:20-14:40 Novel in vivo approaches to modelling Immunotherapies
Rita Fior, *Champalimaud Foundation, Portugal*
- 14:40-15:00 Novel in vitro approaches to modelling Immunotherapies
Kristin Anderson, *University of Virginia, USA*
- 15:00-15:30 Chaired open panel discussion with Session 2 speakers
15:30-16:00 Coffee break and poster session
16:00-16:15 Summary of learnings from Sessions 1 and 2
Gianmarco Contino, *University of Birmingham, UK*
Hanne Haslene Hox, *SINTEF, Norway*
- 16:15-17:00 Chaired open panel discussion with attendees to outline key findings from the workshop & Closing Session
Catarina A. Rodrigues, *IPO-Porto & i3S, Portugal*
Yari Ciribilli, *University of Trento, Italy*





3.1.3 2nd Training School “Computational Immuno-genomics Summer School”, 11-13 June 2024, University Hospital Lozano Blesa. C. de San Juan Bosco, 15, 50009 Zaragoza, Spain.

The Computational immuno-genomics Summer School took place in Zaragoza, Spain. In line with the IMMUNO-model COST Action goals, this training school focused on key techniques of computational biology to understand tumour and its microenvironment focusing on the immune system.

This summer school combined theoretical and practical sessions to fully understand gold standard and emerging techniques in the field of immunomics. Among the topics covered, students learnt to analyse data from cutting-edge technologies, such as single cell mass cytometry and spatial transcriptomics. Bulk RNA-Seq data were also used to apply deconvolution techniques to identify immune populations in tumour samples. Regarding genomics, different tools were used to identify neo-antigens from cancer mutations. Lecturers also explained how to study interactions between cancer and immune cells, using mathematical models or tools to decipher the crosstalk between cells. Of note, some of the sessions were specifically dedicated to pre-clinical models, which is the focus of this COST Action.

Number of participants: 22, targeted audience PhD students given priority.

Trainers:

Sandra García Mulero: s.garciam@idibell.cat

Roberto Fornelino: robertofg463@gmail.com

Peter Rashkov: p.rashkov@math.bas.bg

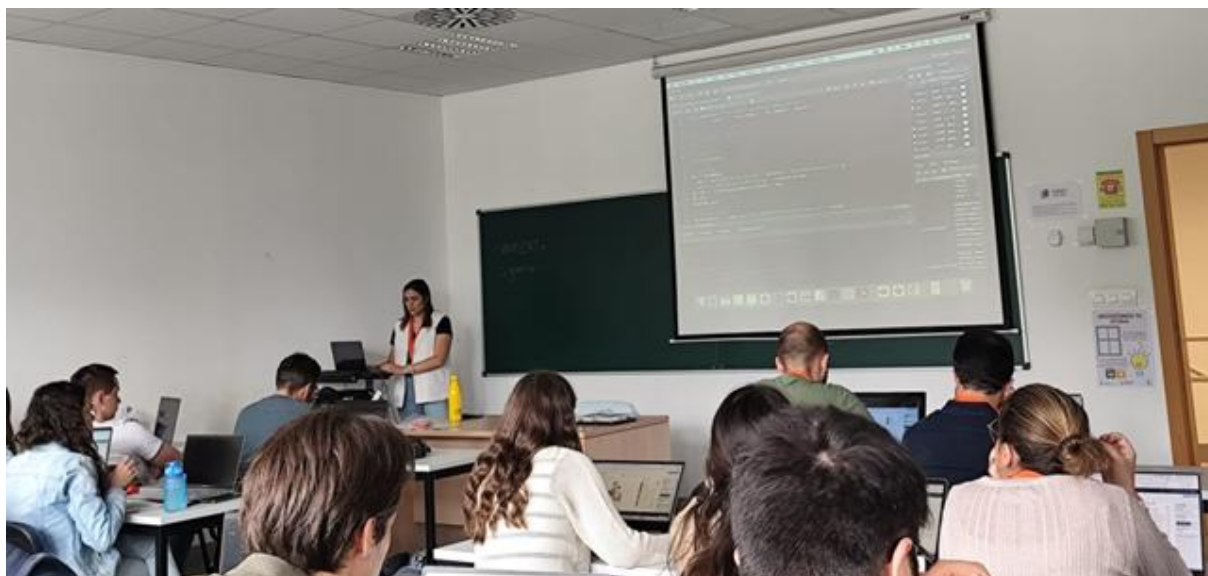
Maurizio Callari: maurizio.callari@fondazionemichelangelo.org

Rebeca Sanz Pamplona: rsanz@iisaragon.es

The training school was very successful. Sample feedback from participants:

“Thank you so much for making this memorable, informative, and friendly summer school!!”

“Thank you all for all the effort for this great summer school.”



3.2. Annual conference, Bratislava, Slovakia: “IMMUNO-model Second Annual Conference: From Pre-clinical Models to the Search for Biomarkers in Immuno-Oncology”

The international conference “IMMUNO-model Second Annual Conference: From Pre-clinical Models to the Search for Biomarkers in Immuno-Oncology” was held in Bratislava from 13th to 15th May 2024. The conference was preceded by a meeting of Core Group members on 13th May 2024.

The conference, which was organized by the Biomedical Centre of the Slovak Academy of Sciences was officially opened by the Director General Professor Silvia Pastoreková and project coordinator Eva Martínez Balibrea. The event had a hybrid format, with a total number of 125 participants, with 85 scientists from almost all European countries attending in person. There were 40 online conference participants.

A total of 27 interesting scientific lectures were presented at the conference. Among the most prominent speakers were Leticia Oliveira-Ferrer from Germany and Emmanuel Donnadieu from France. At the conference, relatively large blocks were also dedicated to discussions about the activities of individual working groups led by their leaders. 25 posters were presented in the poster sections.

The conference was held within the framework of the project – COST Action IMMUNO-model CA21135, which is dedicated to fostering research and innovation in preclinical immunology models and creating a collaborative network by bringing together European researchers from the academic, clinical, and industrial sectors. The theme of the conference was to showcase innovative experimental models that offer a link between laboratory research and clinical application, as well as offer insights into the complex interactions between the immune system, the tumor microenvironment, and immunotherapeutic interventions.

For more information, please visit the conference website <https://immuno.sav.sk/>.

Organizers and Scientific Committee:

Bozena Smolkova, Cancer Research Institute, Biomedical Research Center, SAS, Slovakia
Viera Horvathova Kajabova, Cancer Research Institute, Biomedical Research Center, SAS, Slovakia

Denis Collins, TGRC2 Leader, MC Member, Dublin City University, Ireland (for networking with clinicians)

Hanne Haslene-Hox, TGRC3 Leader, MC Member, SINTEF, Norway (for networking with the industry)

Katrin Kleinmanns, University of Bergen, Norway (representing WG2)

Cristiana Tanase WG1 coLeader, MC Member, Victor Babes National Institute of Pathology, Romania (representing WG1)

Christina Sakellariou, Lund University, Sweden (representing WG3)

Rosalinda Sorrentino, WG5 coLeader, UNISA, Italy (representing WG5)

René Winkler, IJC Josep Carreras Leukemia Research Institute, Spain (representing WG4)

A dedicated email address was done: immuno.model@savba.sk

In summary, the 2nd IMMUNO-model conference served as a dynamic platform for advancing the frontiers of cancer immunotherapy, bringing together diverse perspectives and expertise to drive meaningful progress in the fight against cancer.



3.3. Webinars

1st IMMUNO-model webinar entitled Emerging Innovations for IMMUNO-model was streamed live on the ZOOM platform on 14th December, 2023 at 2.00 CET.

The webinar consisted of two presentations and a question and answer session:

- Krzysztof Wrzesinski, *CelVivo ApS, Denmark, North-West University Potchefstroom*
ClinoStar a purpose-built system for culturing cells as *in vivo* mimetic 3D structures
- Devrim Pesen Okvur, *CTO and co-founder of Initio Cell BV*
Microphysiological Systems as Disease Models

The webinar was moderated by dr. Barbara Breznik, IMMUNO-model Science Communication Coordinator.

IMMUNO-model
Modelling immunotherapy response and toxicity in cancer

www.immuno-model.eu

IMMUNO-model webinar series presents:

1st Webinar ***Emerging Innovations for Immuno-models***

December 14th 2023, at 2 - 3.30 pm CET
Live on ZOOM platform

Speakers

 **ClinoStar a purpose-built system for culturing cells as *in vivo* mimetic 3D structures**
Krzysztof Wrzesinski, CelVivo ApS, Denmark, North-West University Potchefstroom

 **Microphysiological Systems as Disease Models**
Devrim Pesen Okvur, CTO of Initio Cell BV

Register here:
<https://forms.gle/H5jXJcxMb3YC6R6Y6>
Contact: barbara.breznik@nib.si

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2nd IMMUNO-model webinar entitled “*imSAVAR project: Nonclinical mimicking of the immune system effects of immunomodulatory therapies*” was streamed live on the ZOOM platform on 6th May, 2024 at 2.00 pm CET.

The webinar consisted of two presentations and a question and answer session:

- Marek Ostaszewski, Luxembourg Centre for Systems Biomedicine, University of Luxembourg

Construction, visual exploration and analytics of irAOP systems biology diagrams

- Katherina Sewald, Fraunhofer ITEM, Germany

Immune-related adverse outcome pathways for regulatory decision making

The webinar was moderated by Dr. Christina Sakellariou, Lund University, Sweden, and prof. Rosalinda Sorrentino, IMMUNO-model WG5 co-Leader, University of Salerno, Italy.

The poster features the IMMUNO-model logo (a stylized cell) and the text 'IMMUNO-model Modelling immunotherapy response and toxicity in cancer'. A URL 'www.immuno-model.eu' is in the top right. The main title is 'IMMUNO-model webinar series presents: 2nd Webinar *imSAVAR project: Nonclinical mimicking of the immune system effects of immunomodulatory therapies*'. The date and time are 'May 6th 2024, at 2 - 3.30 pm CET' and 'Live on ZOOM platform'. Under 'Speakers', it lists Marek Ostaszewski (Luxembourg Centre for Systems Biomedicine, University of Luxembourg) with the topic 'Construction, visual exploration and analytics of irAOP systems biology diagrams', and Katherina Sewald (Fraunhofer ITEM, Germany) with 'Immune-related adverse outcome pathways for regulatory decision making'. Under 'Moderator', it lists Christina Sakellariou (Lund University, Sweden). A registration link is provided: 'Register here: https://forms.gle/pE2EiwaiGkLs4j7j7' with contact 'barbara.breznik@nib.si'. Logos for COST (European Cooperation in Science & Technology) and the European Union are at the bottom right.

3rd IMMUNO-model webinar entitled “*Mathematical Oncology*” was streamed live on the ZOOM platform on 25th June, 2024 at 5.00 pm CET.

The webinar consisted of two presentations and a question and answer session:

- Prof. Christina Kuttler, Technical University Munich, Germany

Equation of life: Predicting tumor dynamics and metastasis through Math

- Peter Hinow, University of Wisconsin-Milwaukee, USA

A mathematical model of the disruption of glucose homeostasis in cancer patients

The webinar was moderated by Dr. Peter Rashkov, Institute of mathematics and informatics, Sofia, Bulgaria, Prof. Rosalinda Sorrentino, IMMUNO-model WG5 co-Leader, University of Salerno, Italy and Dr. Barbara Breznik, IMMUNO-model WG5 Leader, National Institute of Biology, Slovenia.

IMMUNO-model
Modelling immunotherapy response and toxicity in cancer

www.immuno-model.eu

IMMUNO-model webinar series presents:
3rd Webinar
Mathematical Oncology
June 25th 2024, at 5 - 6 pm CET
Live on ZOOM platform

Speakers

Prof. Christina Kuttler, Technical University Munich, Germany
Equations of Life: Predicting Tumor Dynamics and Metastasis Through Math

Prof. Peter Hinow, University of Wisconsin-Milwaukee, USA
A Mathematical Model of the Disruption of Glucose Homeostasis in Cancer Patients

Moderator

Peter Rashkov, Institute of mathematics and informatics, Sofia, Bulgaria.

Register here:
<https://forms.gle/aXsBPYzgsay5Mp7k8>
Contact: barbara.breznik@nlb.si

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4th IMMUNO-model webinar entitled “*Dendritic cells and Immunotherapy*” was streamed live on the ZOOM platform on 2nd October, 2024 at 9.30 am CET.

The webinar consisted of three presentations and a question and answer session as below:

9:30-9:40– Brief introduction by WG5 leaders (Dr. Barbara Breznick and Prof. Rosalinda Sorrentino) and Dr. Jessica Dal Col (University of Salerno, Italy)

9:40-10:00–Cancer vaccines selectively targeting tumour antigens to cross-presenting dendritic cells

Prof. Riccardo Dolcetti (Peter MacCallum Cancer Centre and Victorian Comprehensive Cancer Centre, University of Melbourne, Australia)


10:00-10:20 –DC vaccines in Oncology: a good partner in combination strategies

Prof. Massimo Guidoboni (University of Ferrara, Italy)

10:20-10:40 – DCOne platform for developing cancer vaccines

Dr. Satwinder Singh (Mendus AB, Stockholm, Sweden)

10:40-10:55– Q&A-Discussion




IMMUNO-model
Modelling immunotherapy response
and toxicity in cancer
<https://imm0.gla.ac.uk/NTAPFGROYESA>

IMMUNO-model webinar series presents:
4th Webinar
Dendritic cells and immunotherapy
October 2nd 2024, at 9.30 am CET
Live on ZOOM platform


Speakers

Prof. Riccardo Dolcetti, Peter MacCallum Cancer Centre and Victorian Comprehensive Cancer Centre, university of Melbourne, Australia




Cancer vaccines selectively targeting tumour antigens to cross-presenting dendritic cells.

Prof. Massimo Guidoni, University of Ferrara, Italy



DC vaccines in Oncology: a good partner in combination strategies.

Dr. Satwinder Singh, Mendus AB, Stockholm, Sweden



DCOne platform for developing cancer vaccines.

Moderator
Jessica Dal Col, University of Salerno, Italy.

Register here:
<https://forms.gle/UZL8sNTAPFGROYESA>
Contact: barbara.breznik@nib.si

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5th IMMUNO-model webinar entitled “Preclinical modelling in Immuno-oncology: An industry perspective from Toxicology to IND” was streamed live on the ZOOM platform on 15th October, 2024 at 2.00 pm CET.

The webinar consisted of three presentations and a question and answer session as below:

14:00-14:10– Brief introduction by WG5 leaders (Dr. Barbara Breznik and Prof. Rosalinda Sorrentino) and Prof. Emmet Mc Cormack (University of Bergen, Norway)

14:10-14:30– Preclinical development of immunoncology therapeutics in humanized mice

Dr. Michael Boice, Senior Director, Scientific Engagement, Certis Oncology Solutions, San Diego, USA

14:30-14:50 –Preclinical development of small molecule immunoncology therapeutics – A pharma perspective

Dr. Katarzyna Wnuk-Lipinska, Novartis Biomedical Research, Basel, Switzerland

14:50-15:10 –Development of immunoncology therapeutics in preparation for IND.

Dr. Hillary Millar Quinn, Director of In Vivo Pharmacology at Century Therapeutics Inc., Philadelphia, USA

15:10-16:00– Q&A-Discussion



IMMUNO-model
Modelling immunotherapy response and toxicity in cancer

IMMUNO-model webinar series presents:
5th Webinar

Preclinical modelling in Immuno-oncology: An industry perspective from Toxicology to IND
October 15th 2024, at 14.00-16.00 CET
Live on ZOOM platform

Speakers

Dr. Hillary Millar Quinn, Director of In Vivo Pharmacology at Century Therapeutics Inc.
Development of immunoncology therapeutics in preparation for IND.

Dr. Katarzyna Wnuk-Lipinska, PhD, Lab Head, Oncology Pharmacology
Novartis Biomedical Research
Preclinical development of small molecule immunoncology therapeutics - A pharma perspective.

Dr. Michael Boice, PhD, Senior Director, Scientific Engagement
Certis Oncology Solutions Inc.
Preclinical development of immunoncology therapeutics in humanized mice.

Moderator
Prof. Emmet Mc Cormack, University of Bergen, Norway.

Register here:
<https://forms.gle/qnP7pKeQRpvou7CB6>
Contact: barbara.breznik@nib.si and rsorrentino@unisa.it

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4. Meetings

4.1. Core Group meetings

Core Group Meeting 1

- 17/11/2023
- Virtual
- 12 participants

Summary of decisions / relevant issues

- Approval WPB for GP2
- Change in Leadership in WG2, Co Leader now Leader
- Setting up taskforces
- CG meeting during Annual Conference to decide activities for GP3
- Setting up periodical meeting with WG Leaders and Chair
- Setting up online database of all existing protocols through a dedicated taskforce
- Virtual Mobility Grant for somebody who will collect/structure this
- Training School: learning computational skills
- Grants calls can now be opened
- Annual Conference: Program and Setting up scientific committee - discussion
- Webinars: WG Leaders to ask members for volunteers to speak
- Workshop 1 and 2: to set up a meeting with organisers
- Updates from TGRCs: new applicants to join

Core Group Meeting 2

- 15/12/2023
- Virtual
- 14 participants

Summary of decisions / relevant issues

- Update Annual Conference: discussion of program and venue
- Workshop 1: Presentation by the main organizer and discussion of program
- Workshop 2: Update by Denis
- Feedback regarding webinar 1, good attendance
- Next Webinar February 2024: looking for proposals
- Online database now to be called Knowledge Hub for protocols and another for molecular data
- Discussion of set up of Knowledge Hub (KH)
- WG leaders meeting in January, and then every 3 months approximately
- So far WG meetings are going well, WG 1 and 3 will have joint meetings
- WG 5 Leaders working on Annual Report and Newsletter
- Webpage being updated with comments from CG
- Grants: 2 DC and 1 ITC. CG to prioritise new applications: a grant will not be approved for applications from the same person for a similar conference and presentation of work during two consecutive years.
- Update from TGRCs: committee needs 2 more members for TGRC 2 and 3: a call will be published

Core Group Meeting 3

- 12/01/2024
- Virtual
- 13 participants

Summary of decisions / relevant issues

- Presentation by Javier De Las Rivas, Vice Chair of COST Actions STRATAGEM and PANDORA followed by a Q&As session
- Workshop 1: Presentation by Igor and discussion of program. Soon to post announcement. Some speakers confirmed.
- Webinars: Proposal of 3 speakers for the next 3 webinars (Jessica Dal Col, Christina Sakellariou and Peter Rashkov)
- Knowledge Hub: a call to be issued for interest in setting this up. A template was discussed and drafted with WG Leaders. To ask Boutik if it can be setup on the website.
- WG 5 Leaders are collecting contributions for the Annual Report.
- Next Newsletter will be in February
- Dissemination Plan will be revised and shortened and then sent to CG for feedback
- Ideas were discussed for the International Day of Women and girls in science 2024. WG 5 Leaders to ask women in IMMUNO-model to send a photo of themselves in their labs.
- TGRCs to issue a call to increase their members

Core Group Meeting 4

- 09/02/2024
- Virtual
- 16 participants

Summary of decisions / relevant issues

- Annual Conference update: website is up and running. Scientific Committee is set up. CG agreed on dates for registrations etc. WG Leaders to aid in finding speakers.
- Workshop 1: Announcement has been posted and invitations sent out. Program being finalised.
- Training School: informative document will be posted soon with call for registrations. CG agreed to give priority to IMMUNO-model members and those in the process of becoming WG members
- Next Webinars: April: Christina Sakellariou (IMmune SAFety aVAtaR (imSAVAR) project). June: Peter Rashkov (Mathematical oncology). September: Jessica Dal Col (Dendritic cells and Immunotherapy)
- Vice Chair Role: The Chair and Vice-Chair discussed the role of Vice Chair and they agreed on 2 responsibilities:
 - Help build and supervise the setting up of the protocols Knowledge Hub (database) and its task force
 - Contacting and getting patient organisations onboard
- Taskforce Knowledge Hub: 12 candidates replied and 4 seemed suitable. Vice Chair to set a meeting with them.
 - Excel with info regarding collected protocols will be sent to Vice Chair
- Annual Report: all info has been collected, next step is formatting
- Second Newsletter will be published at the end of February
- February 11 International Day of Women and girls in science 2024: flyer is being prepared and announcement was sent. So far 23 photos of IMMUNO-model women in science were gathered
- Update on Grant applications: the application forms were updated with the CG decisions that if applicant was awarded in GP1 they can apply again GP3
 - Current number of applications: STSMs: 4 approved, 1 rejected for project not linked to immunotherapy, 1 cancelled by applicant and 1 under review. DCG: 2 approved. ITCG; 1 rejected as applicant was granted in GP1 (CG decision)
- Update from TGRCs: Main activities were highlighted. An overview for the PR1 was given. To increase ITC, YRI and Male involvement in mandatory leadership roles, should replacements be required for these positions, IMMUNO-model will prioritise targeting COST Action members with this profile in calls for replacements. Still looking for additional members to join TGRCs.
- Core Group meeting at the Annual Conference & planning of GP3 activities: In this meeting the activities for next grant period and budget will be presented by the WG Leaders and discussed
 - WG Leaders to ask their members for proposals and collect them in preparation for this meeting, especially for Training School and workshops

Core Group Meeting 5

- 08/03/2024
- Virtual
- 16 participants

Summary of decisions / relevant issues

- Annual Conference: Speakers are being identified and contacted. To invite the Knowledge Hub Leader to give a presentation (Emanuela Senjor).

- Core Group voted in favour of reimbursing Science Committee members attending the Annual Conference even if not presenting as a token of appreciation for the time and effort
- Core Group voted in favour of increasing travel budget for participants at the Annual Conference in May 2024
- Workshop 1: Program nearly finalised, 8 speakers from 7 countries. 12 local speakers. 126 registered participants (In Person 75, Virtual 51, from 18 countries)
 - Core Group voted in favour of reimbursing 40% of the daily allowance to the 12 local speakers
- Training School: Program is finalised, 5 trainers. 15 spots for trainees. Call will open soon.
- “Springer book on protocols coordinated by Sweta Rani of WG1 is well underway. 3 chapters will be on bioinformatics (coordinated by Maurizio Callari and Rebeca Sanz-Pamplona).
- Workshop 2: Venue is booked and now searching for speakers.
- Gianmarco Contino will present IMMUNO-model at EUSICA meeting in London in May and will apply for a DC grant.
- The leader of the Knowledge Hub taskforce was chosen (Emanuela Senjor). She organised meetings with the other applicants to choose the team. Will give a presentation to next CG meeting.
- The Annual Report is now published on IMMUNO-model website
- After the workshop in Skopje, the 3rd newsletter will be published
- Dissemination and communication plan is being updated and amended
- Update on Grant applications: 1 additional STSM application.
 - The CG voted in favour of allocating an additional 10,000 euro to the grants budget as the current budget had nearly been spent.
- The TGRCs have 2 new members but still need at least one for TGRC 2.
- WG2: only 19 members were present at the last meeting
 - Due to low participation of WG2 members in the meeting, it was suggested that Emmet McCormack could be at the next WG1 and WG3 meetings to present himself and the work of WG2 and also ask for members to join

Core Group Meeting 6

- 05/04/2024
- Virtual
- 16 participants

Summary of decisions/relevant issues

- Feedback on Workshop 1: it went very well with 120 unique participants (in person and online). Positive feedback from participants (lecturers and participant)
 - Promotion of IMMUNO-model COST Action
 - Ideas for potential research and collaboration
 - Possible Output: collect summaries and write a conference paper highlighting the most important ideas raised during this meeting.
 - A news article published in Local Medical Society Journal.
- The Knowledge Hub Taskforce Leader gave a presentation to the members on the plan as to how to proceed. She also went over the results from the survey. A general discussion followed to guide the taskforce.

- Update on the Annual Conference: 82 abstracts were submitted for in person, 30 online and 112 in person participants will be attending the conference, 25 posters so far were chosen. As there will be more than 100 attendees the CG voted favourably in increasing the LOS Grant in accordance with real attendance.
 - It was also acknowledged that there will be a 27,000 euro top up budget so more participants can attend in person and be reimbursed
- Update on Training School: the final program was shown to CG, 39 applications were received.
 - The Core group voted favourably on increasing the number of trainees to be reimbursed from 15 to 20.
- Update on Workshop 2: the agenda and program were explained to the CG. The Workshop will be announced during the Annual conference. Organisational matters were also discussed.
- Agenda for the Core Group meeting at the Annual Conference was discussed
 - WGLs / TGRCs / Taskforces: proposals for 1 x workshop/meeting/activity + 1 x training school (face-to-face, online, co-organised with another organisation / COST Action, co-located with another meeting). All proposals should include a description of the activity including country/town, number of participants, tentative dates, Grant Period Goal(s), Output(s). A Template was attached for guidance purposes.
 - GAC: breakdown of grants and budget for STSMs, VM, ITCs. For DC grants, GAC to gather suggestions of conferences to attend from WGLs.
 - SCC: proposal for communication activities, with a description of aims, number of participants, etc. (like webinars, podcasts, dissemination materials etc)
- The Core group voted favourably on allocating €10,000 to the Annual Conference to reimburse all poster and abstract presenters, and local participants.
- The Core group voted favourably on allocating €5,000 to the Training School to have 5 more trainees (from 15 to 20).
- The Core group voted unfavourably on non-members of IMMUNO-model to be reimbursed at the Annual Conference as passive participants
- The GAC gave an update on Grant applications to date.
 - 5 STSM
 - 2 DC grants
 - 1 ITCG
- TGRCs update on applicants to join:
 - TGRC1: 2
 - TGRC2: no applicants (more targeted approach will be pursued)
 - TGRC3: 2

Core Group Meeting 7

- 13/05/2024
- In person at the Annual Conference
- 17 participants

Summary of decisions / relevant issues

- Annual Conference 2025: Two options for the next Annual Conference were discussed and the Core Group voted in favour of the University of Warsaw option from Marta Maleszewska-Bobińska.
- TGRCs new members:
 - TGRC 1: Yari Ciribilli, Italy and Hasan Uzma, France
 - TGRC 2: Catarina Rodrigues, Portugal (certified as TGRC2 co-lead, approved by MC).
 - TGRC 2: Marta Maleszewska-Bobińska, Poland.
- TGRCs work in GP3:
 - Continued review of membership under gender, ITC, early career
 - Report on Workshop 2
 - Event to coincide with Women in Science/Leadership? Mentoring Workshop?
 - Understanding the challenges or partaking in EU COST Actions for ITC members?
 - TGRCs to contact GHM so she can give info re participants of events (ITC, gender etc)
- Workshop 2 in Dublin: the program was presented and discussed.
- Grants:
 - Overview of current grants situation
 - Keep the same budget for next GP.
 - To analyse why there were few applications for all grants.
 - WG Leaders to promote more in their meetings.
 - MC members to promote more grants.
 - Discussion on VM grants
- Update on Knowledge Hub Taskforce: Taskforce activities from February to May 2024 were outlined
 - Protocol survey results were analysed
 - Ideas for template for protocols (depending on platform to be used)
 - Abstract for AC
 - Draft of database structure
 - Search for the appropriate platform for database publication
 - 2 members of Taskforce are involved
 - 70 responses to the survey
 - Platform should be free of charge with open access database.
 - Some protocols could be published with COST funds
 - Each member uploads their protocols on a database and then the best to be chosen for publishing
 - To collect them through IMMUNO-model website: to ask Boutik how to set it up
 - Set-up a scientific committee for quality check. Taskforce to ask for help with assessment to WGs.
 - YRs could do the first oversight, and the more senior staff can do the second
- Book of protocols led Sweta Rani and Łukasz Skalniak: 17 chapters, 3 are computational and the rest are protocols.
- WG5 Co-Leader gave an overview of possible events for GP3:
 - Continue with webinars: to make titles more attractive
 - Podcasts: Exchange knowledge, short podcasts with slides that individuals can record themselves. Check VuMedi
 - Virtual Blogs from young and senior investigators: record themselves and then post them on webpage. Give own experiences during STSMs. Before and after.

- Make it mandatory for Grant applicants to present their experience in Working Groups
- Dissemination Material: Action Posters, materials to give away, etc
- WG leaders to send suggestions re website and activities to WG5 Leaders.
- WG1 Leader gave an overview of possible events for GP3:
 - 1 more Summer school on MPS as there was great interest and many applied
 - 1 workshop Image analysis at the Izmir Institute
- WG2 Leader commented on poor attendance at meetings. So far 2 meetings were held and 20, 11 and 8 participants attended respectively. Ideas for possible events:
 - 1 Symposium Imaging on immunotherapy in person
 - 1 workshop similar to the one held virtually in GP1
 - Meeting on toxicology
- WG3 Co-Leader gave an overview of possible activities in GP3:
 - Computational tasks force and Molecular data collection: involve the people of the summer school
 - Data portal: Rebeca Sanz to implement something similar, maybe through a VM grant
 - Workshop on molecular/spatial
 - Publications
 - Summer school, do another one on new topics, spatial analysis for example.
- WG4 Leader gave an overview of possible activities in GP3:
 - Attend European CART T Cell February, 6-8 Strasbourg
 - Co-located event
 - 10 participants, presenting their work
 - Training school in Coimbra, Portugal
 - 25-27 June 2025
 - Liquid biopsies
 - Rui Bergantim, AnaBela Sarmiento, Helena Vasconcelos
 - Immuno model networking event regarding samples
 - To connect who has samples with who needs them (possible issues with ethical consent to work on them)

Core Group Meeting 8

- 07/06/2024
- Virtual
- 13 participants

Summary of decisions / relevant issues

The following are ideas collected at the Annual conference:

- To put together a book of abstracts of the second annual conference (and maybe also the first annual conference).
- Gather all deliverables and upload on a platform
- Draft an editorial to explain what IMMUNO-model is with aims etc and publish it in a relevant journal in the field of immunology or cancer.
- Creating a forum for people to find partners, ask questions, reagents, clinical data etc. Possibility it can be set up through a VM.

- Getting in touch with different Patients' Associations.

Aims and goals of getting in touch with Patients' Associations:

- Reach out to explain about IMMUNO-model project and ask for feedback in a lay person's language.
- Ask for feedback from patients that underwent immunotherapy: how it affected them, what they would like to improve, about toxicity
- Patients provide perspective, user involvement. Find examples of projects where users/patients were heavily involved
- Explain the importance of doing research in cancers that do not respond well to immunotherapy
- Be in touch with local Patient Associations and the International ones

Way Forward

- Each CG member to find and contact their local Patient Associations or individuals they know whom may have contacts. Restrict to Immuno-therapy only.
- CG members can go to the Patients' Associations meetings and explain IMMUNO-model COST Action and gather ideas from patients themselves
- The Vice Chair to be kept updated on all communications
- Put these ideas together and set up an event accordingly for patients only
- Invite representatives of International Cancer Patient Associations to CG meeting and then translate this to Annual Conference or another meeting
- Possibly have some reps present for CG meeting in July and September
- Important to have clear questions / framework for patients before contacting them directly
- Start with CG and then move to MC and ask them for contacts

Ideas for events

- Roundtable to discuss patient experiences in immuno therapy
- Bring a few patients that are good communicators to annual meeting
- Invite patient representatives to CG meeting
- Do a Webinar
- For next Annual Conference a PhD and Post-docs student could organise 'The point of science' discussions in an informal setting. <https://pintofscience.com/>

The idea of creating an Immunology / immunotherapy educational program was discussed. The CG will ask Yanis Saidani (the proposer) to give a presentation to the CG.

The idea of setting up a PhD task force was discussed by the proposers Catarina A. Rodrigues (Portugal) and Lucia Juhasikova (Slovakia). In July meeting, proposers will give a presentation to the CG regarding all the issues that were discussed in the meeting.

A special Issue in Frontiers in Immunology: WG4 Leader explained that she had a meeting with the editor regarding the special issue with at least 4 articles to be published. The price per article would be approximately 3300 USD x 4 articles but this price will be negotiated. The WG4 Leader will present a draft for possible Special Issue in the July CG.

The articles will be published in GP3, so this expense should be included in the budget, as well as the book of chapters coordinated by Sweta Rani.

The GHM explained the special conditions in the Annotated Rules (page 103) to publish the articles.

Update on Workshop 2 in Dublin: registrations will be opened asap. 3 speakers are still needed. WG4 Leader offered to be one of them.

Regarding registrations and reimbursing the 30 participants budgeted, the CG agreed that they will be assigned on a first come first served basis for IMMUNO-model members first and then open it up if the places have not been filled.

Core Group Meeting 9

- 12/07/2024
- Virtual
- 13 participants

Summary of decisions / relevant issues

Proposed activities for Grant Period 3 were discussed. At the next meeting the final list will be put to vote to the Core Group.

Proposal No	Name	Leading	WG	Type of Activity	City	Country	Dates	Duration (days)	Participants to be reimbursed	Other participants
1	Liquid Biopsies in Hematological Malignancies - identification of immunotherapy biomarkers	Rui	WG4	TS	Coimbra	Portugal	30/06-02/07/2025	3	28	
2	Image Analysis for Cell Biology	Devrim	WG1	TS	Izmir	Turkey	24-26/09/2025	3	20	
3	EHA-EBMT 7th European CAR T-cell Meeting	Laura / Rui	WG4	Meeting/Workshop COST session within an event not	Strasbourg	France	06-08/02/2025	2	10	
4	Early Career Researchers on Immunotherapies: the future is now	Catarina	TGRCS	Conference/Virtual event	Porto	Portugal	11-12/09/2025	2	25	30 in-person+ 20 virtual
5	Predicinal models to evaluate NK cell therapies	Mar Valés-Gómez	WG1	symposium	Madrid	Spain	Oct/Nov 2025	2 or 3	8 + Participants	30-50
6 (no written proposal)	In vivo models	Emmet	WG2	meeting	Barcelona o Brussels	Spain or Belgium	nov/dec 2024	1,5	20	30 online / not reimbursed
7 (no written proposal)	Computational training school/workshop	Maurizio	WG3	Workshop / TS						

Regarding Workshop 2 in Dublin, the Chair asked MC to vote on increasing the budget to reimburse additional participants (around 20 more).

The CG addressed the need to verify the IMMUNO-model membership status of the registered participants to date and agreed to wait until the registration deadline before sending out invitations.

It was agreed that prioritization of abstract presenters for reimbursements will be in favour of active participants over passive attendees, even if they are not IMMUNO-model members.

Feedback from Summer School was that it went very well and was very well organised. Participants seemed happy with content and also formed a nice cohesive group. A few possible collaborations developed from the TS.

Regarding Grants applications for GP2, the Grant Award Coordinator confirmed that all the budget for Grants had been exhausted. With regards to a Virtual Mobility Grant for this GP2, the Core Group agreed to issue a call for a VM Grant for the Knowledge Hub creation, for a maximum of 1500 euro and reduce the number of participants to be reimbursed for Workshop 2 in Dublin (about 2).

Update regarding the Knowledge Hub Taskforce: the OSF Open Science forum Platform suggested by WG4 Leader was reviewed and it seemed to have everything that needed for the KH:

- It is Open
- It can have DOI for submitted protocols
- It has a standard license
- It enables sub folders
- Each subpage has its own description. Can track versions.
- Saves meta data
- Each folder has a discussion subpage
- Similar to Zenodo but enables structure and hierarchy
- Another CA used it to publish everything! MOBilisE
- Each subfolder can be either public or private
- Can stay on the net forever

The Core Group agreed to go ahead with this platform and use it for the Knowledge Hub and possibly the YR hub too. It was also agreed that the next step would be to finalise the protocol template

The Taskforce would collect them and a committee to be set-up from different working groups to carry out the vetting

It was discussed that a VM could be made available for a member to collect all the information and deliverables of IMMUNO-model and upload them in an organised manner on the same platform as the KH.

There has been low attendance to the webinars so after discussing the Core Group agreed that for next grant period CG will evaluate if to continue with the webinars or chose different content.

Another idea for contact creation was put forward to create video clips explaining basic content in immunology (Yanis Saidani). This will be presented at next CG meeting.

An update was given on the Young Researchers/EC taskforce. Currently 2 members are very active and have:

- Presented the taskforce at WG1 and WG3 meeting. In the future also to present to the other WGs.
- An Instagram account was created with email: youngscientists.immunomodel@gmail.com
- Working on increasing the number of members

Core Group Meeting 10

- 13/09/2024
- Virtual
- 16 participants

Summary of decisions / relevant issues

The Core Group voted in favour of the budget and activities presented by the Chair:

- Training School in Portugal as this was already proposed last GP2
- Working Group 2 meeting because it is needed to push forward involvement
- TGRC / Young Researchers meeting to achieve the MoU aims
- 2 publications already underway
- Annual Conference in Warsaw
- VM Grants to achieve MoU objectives

Chair presented the points that will be discussed at next MC meeting on 27/09/2024 from 10 – 12 CET. The Core Group agreed on the agenda.

The COST Action Monitoring and Final Assessment Report was discussed and the necessary information was highlighted. The Working Group Leaders are to gather the information together with the Chair and Co-Chair.

A report was given on Workshop 2 in Dublin. Overall, all agreed that it went very well, there were 83 registered but 55 participants attended. Denis Collins, the organiser will be collecting and analysing the poll results.

A Virtual Mobility Grant for short educational videos was discussed by the Core Group after Yanis Saidani gave his presentation. It was agreed that Yanis Saidani would send a proposal to the Core Group with deliverables, timeline, list of topics, calendar of execution topics.

Emanuela Senjor gave an update on the Knowledge Hub Taskforce.

- The template to submit the protocols has been finalised
- Finalising the template for the precool.
- By mid-October the taskforce will ask for the protocols
- The call is to be sent to the CG to ensure that participants understand that the aim is to contribute and learn
- It was suggested to organise a short event where the taskforce is presented and explained explaining

Next webinars scheduled:

- Webinar 4: Dendritic cells and immunotherapy, 02/10 at 09.30 CET
- Webinar 5: In vivo pharmacology of immunotherapeutics, 15/10 at 14:00 CET

Core Group Meeting 11

- 11/10/2024
- Virtual
- 19 Participants

Summary of decisions / relevant issues

1 - At this CG meeting these Patient Associations Representatives were invited to discuss a way forward:

- Alexandra Carpentier, Patient Experience Program, Josep Carreras Foundation, Spain
- Laura Cunha, Executive Director, Patient Advocate at Associação Portuguesa Contra a Leucemia, Portugal
- Avin Hell, a specialist in patient involvement at the University Cancer Centre Hamburg (UCCH), Germany
- Josephine Mosset, Policy Officer at Cancer Patients Europe (CPE)

Main ideas from discussions:

Website and Info materials

- Have a tab on the website specifically dedicated to patients, where they can find information as well as a contact person (Leticia offered to be the contact person)
- Create text for the patient website page
- Create information for patients and patient associations about IMMUNO-model, immunotherapies, clinical trials. This information can be in the form of comics and easy to read documents
- Information can be in English as well as in local languages
- Information materials could also be translated from already available info/documents
- The MC members could translate the info in their own languages
- CG to agree on topics and then work on the info materials /slides using Biorender.
- Leticia as the contact person to pass on the info to large PAs like Josephine and then they will pass it on to local organisations.
- Use COST funding for translation services
- CPE offered to disseminate activities and materials that IMMUNO-model prepares
- Add the 2 videos already made to this tab. To look into translating / installing subtitles in the 2 videos already produced. Maybe automated subtitles.
- Create explicative videos

Working group / Taskforce

- Set-up a working group with patient experts that speak English and have some scientific background to kick off the process. Have an IMMUNO-model coordinator to manage the group.
- First item on the agenda, develop the info materials that are understandable to the patient. Then translate it into national languages
- Ask what they would like in the info materials, what interests them
- Set up contact points per country from IMMUNO-model members (Leticia and Devrim already volunteered)
- Send an email out to all IMMUNO-model members asking for participants in the Task Force / Working Group
- Reach out to CPE to spread the work and engage patient experts
- At local level: Each CG member to seek national PAs and contact them.

National Level

- Set up local activities to work on the national / local level with PAs and patients
- Important to give patients feedback on their participation for example let them know how their input was used etc

2 - Special issue in a scientific journal to be led by each of the WGL

The Core group agreed that IMMUNO-model will need to produce scientific work like papers, guidelines, reviews, original papers etc. therefore each working group will lead a special issue regarding their topic like WG4 is already doing.

3 - Q&A re Progress Report 2 (COST Action Monitoring and Final Assessment)

The Working Group Leaders to start working on the information to be uploaded for the PR2.

4.2. MC meetings

Management Committee Meeting 1

- 06/06/2024
- Virtual
- 28 participants

Agenda

1. Welcome to participants, verification of the quorum and adoption of agenda: **Eva Martinez-Balibrea, Chair** (10 minutes)
2. Information to the MC: **Eva Martinez-Balibrea, Chair** (20 minutes)
 - a) Recap of the minutes of the last meeting, e-votes and matters arising since the last meeting
 - b) Core Group: report from the Core Group, including delegated decisions
 - c) Action Membership: New Specific Organisations and COST Members represented in the MC
 - d) Action Participation: WG membership and applications, New MC Members/Observers and provisional substitution.
 - e) Budget status: summary from the Grant Holder: **Melanie Giorgi, Grant Holder Manager** (10 minutes)
 - f) Update from the COST Association: **Radenka Krsmanovic Whiffen, Action Science Officer** (5 minutes)
3. Follow up and discussion on the
 - a) Implementation of the COST Excellence and Inclusiveness Policy: **Dennis Collins, TGRC2 Leader** (5 minutes)
 - b) Grant Awarding by the Action: **Philippe Bertrand, Grant Awarding Coordinator** (5 minutes)
 - c) Progress of each working group including MoU Objectives, WG tasks, deliverables, and Goals for the current GP: (15 minutes each WGL, 60 minutes in total)

Devrim Pesen Okvur, WG 1 Leader

Emmet Mc Cormack, WG 2 Leader

Marleen Ansems, WG 3 Leader

Rui Bergantim, WG 4 CoLeader

- d) Progress of WG 5 and Science Communication Plan: **Rosalinda Sorrentino, WG5 co-Leader** (15 minutes)
4. Planning
 - a) Upcoming activities: **Eva Martinez-Balibrea, Chair** (5 minutes)
5. AOB: **Q&A** (10 minutes)
6. Summary of MC decisions in the actual meeting: **Eva Martinez-Balibrea, Chair** (5 minutes)
7. Closing

Management Committee Meeting 2

- 27/09/2024
- Virtual
- 19 participants

Agenda

1. Welcome, verification of the quorum and adoption of agenda: **Eva Martinez-Balibrea, Chair**
2. Approval of MC Meeting Minutes of 06/06/2024
3. Update from the COST Association: **Radenka Krsmanovic Whiffen, Action Science Officer**
4. Summary of GP 2 final expenditure and activities: **Eva Martinez-Balibrea, Chair**
5. Summary of Training School in Zaragoza, Spain: **Rebeca Sanz Pamplona, Organiser of Training School**
6. Summary of last event in Dublin, Ireland: **Denis Collins, TGRC2 Leader**
7. Presentation of GP 3 activities and budget: **Eva Martinez-Balibrea, Chair**
8. Q&A
9. Closing

4.3. WG meetings

4.3.1 WG1 meetings

1st Meeting, online on 30th November, 2024, 24 Participants

- 1) Welcome and announcements: STSM re-opened and applications especially from young scientists are strongly encouraged. WG1 and WG3 meetings will be carried out jointly due to a high number of overlapping members.
- 2) Intro by Giovanni Capranico
- 3) Intro by Pavla Bojarova
- 4) Intro by Lukasz Skalniak
- 5) Intro by Devrim Pesen Okvur
- 6) Closing

Joint Meetings WG1 and WG3

WG1/3 meeting 1: Thursday 25th January 2024: 13.00 – 14.00, 56 participants

- 1) Welcome

- 2) Intro by Daniel Lindegger
- 3) Intro by Jessico Dal Col
- 4) Intro by Christina Sakellariou
- 5) Closing

WG1/3 meeting 2: Thursday 29th February 2024: 10.00 – 11.00, 78 participants

- 1) Welcome
- 2) Intro by Peter Rashkov
- 3) Update computational taskforce (Maurizio Callari)
- 4) Update TGRCs (tentative, Denis Collins/Gianmarco Contino)
- 5) Closing

WG1/3 meeting 3: Friday 19th April 2024: 10.00 – 11.00, 70 participants

- 1) Welcome
- 2) Intro by Caroline Nunes-Xavier
- 3) Intro by Vinton Cheng
- 4) Intro by Julia Lamberti
- 5) Closing

WG1/3 meeting 4: 25th June, 2024, 10.30 – 11.30, 71 participants

- 1) Welcome
- 2) Intro by Iola DuarteLucia Juhasikova
- 3) Intro by Catarina Rodrigues
- 4) PhD taskforce (Lucia and Catarina)
- 5) Closing

WG1/3 meeting 5: 12th September, 2024, 11.00 – 12.00, 61 participants

- 1) Intro - Hayarpi Javrushvan
- 2) Update on computational taskforce - Maurizio Callari
- 3) Formation of taskforces for various Tumors/Biomarkers Types - Marleen Ansems

WG1/3 meeting 6: 15th October, 2024, 10.00 – 11.00, 76 participants

- 1) Chiara Riganti
- 2) Pierre Schembri Wismayer
- 3) Update on the tumor specific taskforces - Marleen Ansems

WG1 Task Force:

The main goals of WG1 are to foster the development and optimization of in vitro and ex vivo models for immuno-oncology research, and to promote know-how sharing, protocol standardization, and the creation of user guidelines on these models. Towards these goals, the specific research objectives of WG1 Task Force will focus on:

- 1) Establish basic protocols for immunotherapy response evaluation
- 2) Identify readout strategies and biomarkers
- 3) Determine culture durability
- 4) Expand the number of tumor types in which in vitro and ex vivo immunotherapy models can be applied
- 5) In vivo and ex vivo immunotherapy model (Neoantigens and cell-based therapy)

4.3.2 WG2 meetings

Two meetings of WG2 were held:

1st Meeting, online on 7th March, 2024

2nd Meeting 18th April, 2024

Decisions: because of the expertise and the requests by members to increase the knowledge on *in vivo* models, WG2 decided to organize a webinar entitled “Preclinical modelling in Immunoncology: An industry perspective from Toxicology to IND”. Speakers were from the academic and industrial side explaining preclinical development of immunoncology therapeutics in humanized mice, preclinical development of small molecule immunoncology therapeutics and development of immunoncology therapeutics in preparation for IND. The perspectives were from academic and pharma side in order to give an overview to attendees as requested during the WG2 meetings.

4.3.3 WG3 meetings

General WG3 Meeting 1: 28-11-2024 (47 participants)

Agenda

- 1) Welcome
- 2) Intro by Metka Novak
- 3) Intro by Natalia Bednarz-Knoll
- 4) Intro + info on the workshop “Predictive Biomarkers of Toxicity and Immunotherapy Response” Igor Stojkovski
- 5) Closing

The other meetings are reported above at WG1 as joint meetings.

WG3 Task force activities

Computational taskforce (led by Maurizio Callari and Rebeca Sanz-Pamplona)

- Contribution to the “IMMUNO-model: Methods in Molecular Biology” Springer Book to be published soon. Initiative led by Sweta Rani (WG1/WG3). Three chapters were developed by the Computational taskforce:
 - o *Deciphering the tumour microenvironment composition using bulk transcriptomics: a guide to recent advances and open challenges*
 - o *Computational methods for cancer neoantigen prediction*
 - o *Methods for methylation data analysis in immuno-oncology*
- Organization of a Computational Immuno-genomics Summer School (11-13 June 2024, Zaragoza, Spain) with the aim to provide an introduction to key computational strategies to study the reciprocal interactions between the tumour and its microenvironment, with a specific focus on the immune compartment. Five trainers and 20 trainees participating.
- Immuno-genomics data collection initiative, with the following aims:
 - o Aim1: literature/repositories review and publication of the results
 - o Aim2: implementation of a web-based interface to interrogate the datasets
 - o Aim3: Data analysis to support pre-clinical model validity and biomarker validation

A pilot phase has been implemented with the support of a Virtual Mobility grant awarded to Marco Barreca. The Project Will be continued during GP3.

4.3.4 WG4 meetings

WG4 meeting 1 (virtual): 29th February 2024 (19 participants)

Agenda

- Available grants: overview and rules for application (Laura Belver and Philippe Bertrand)
- Call for contributions to the protocol task force in the context of WG4 (Laura Belver)
- Update on the IMMUNO-model Annual Meeting and call for abstracts (René Winkler)
- Proposal for Summer Training School on Liquid Biopsies (Rui Bergantim)

WG4 meeting 2 (virtual): October 2nd 2024 (17 participants)

Agenda

- Coordination of the ACHILLES MSCA Doctoral Network Application on hemato-oncology therapeutics

Special Issue in Frontiers of Immunology: “Cellular Immunotherapy: Transforming Cancer Treatment”

Research Topic: This activity is organized and supported by WG4 and its intent is to review the latest advances in the development and application of cell-based immunotherapies for cancer treatment. This includes a comprehensive overview of clinical implications and current applications, as well as ongoing studies aimed at opening new therapeutic avenues, particularly for relapse/refractory cases and cancers with poor prognoses. Additionally, current challenges in the design, development and application of new cellular immunotherapies, with a special emphasis on the approaches and experimental models used for their preclinical evaluation, will be examined.

Link: <https://www.frontiersin.org/research-topics/66551/cellular-immunotherapy-transforming-cancer-treatment>

This initiative is supported by the IMMUNO-model COST Action (CA21135), a scientific network that is dedicating to advancing research and innovation in preclinical immunology models, with the ultimate goal of enhancing cancer treatment outcomes and improving patients’ quality of life.

4.3.5 WG5 meetings

Name	Date	Virtual/in person	Number of participants	Summary of decisions / relevant issues
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WG5 meeting 1	11 th November, 2023 1-1.30 pm CET	Virtual	9	<ul style="list-style-type: none"> • Revision of Dissemination and Communication Plan • Promotional activities and Webpage and social media (revision of platforms and activities, improvements) • Other, discussion
WG5 meeting 2	21 st November, 2023 1-2 pm CET	Virtual	16	<ul style="list-style-type: none"> • Overview of WG5 activities • Promotional material and social network platforms • Webinars and workshops • Webpage and social media platforms • Membership • Other, discussion
WG5 meeting 3	30 th January, 2024 1-2 pm CET	Virtual	16	<ul style="list-style-type: none"> • Welcome to new group members • Update on CA and WG5 activities • Promotional activities, webpage and social media (revision of platforms and activities, improvements) • Women in Science Day: CA activities • Survey on IMMUNO-model protocols for building database • Other, discussion
WG5 meeting 4	12 ^h March, 2024 1-2 pm CET	Virtual	17	<ul style="list-style-type: none"> • Update of IMMUNO-model activities • Dissemination and Communication activities in WG5 • Short presentations of members Švubová Veronika and Lucie Janstova, Institute of Hematology and Blood Transfusion, Prague: leukemic bone marrow niche and 3D models for testing of immunotherapeutical products, contact: Veronika.Svubova@uhkt.cz Theo Zacharis, Greek Scientists Society: Virtual Networking Support, project exploitation and dissemination, contact theo@greek-scientists-society.org • Questions, discussion
WG5 meeting 5	27 th June, 2024 1-2 pm CET	Virtual	12	<ul style="list-style-type: none"> • Update of IMMUNO-model and WG5 activities • Taskforces – active involvement • Questions, discussion
WG5 meeting 6	10 th September, 2024 1-2 pm CET	Virtual	9	<ul style="list-style-type: none"> • Update of IMMUNO-model and WG5 activities • Presentation Uzma Hasan EVIR team at the Centre International de Recherche en Infectiologie (CIRI, Inserm U1111, ENS, UCBL, CNRS) & Coordinator of the The Lyon Immunotherapy for Cancer Laboratory (LICL) • Taskforces – active involvement • Early investigator taskforce – Catarina Rodrigues • Questions, discussion

Task Forces:

1. IMMUNO-model member profile update and new searching tool
2. Update of webpage

3. Instagram account
4. Blogs and podcasts

Dissemination and Communication Plan for the GP3 will include all the activities performed during GP2, including podcasts, webpage tools for member and non-members to find collaborators in an easy-to-use manner. These activities in collaboration with the other WGs will allow to pursue the IMMUNO-model goal to become a network of reference in the field of immunotherapy research.

5. Mobility Grants



An initial budget of 28000€ was proposed for GP2, to support up to 10 Short-term Scientific Mission (STSM) applications and some ITC and DC grants. VM grants support were added during the GP2 period.


A total of 12 STSM applications, 1 ITC, 3 DC and 2 VM were approved for this grant period. Some ITC and STSM applications were rejected.







The global budget spent is shown in the following table.





	GP2
STSM (12)	25581
ITC (1)	1190
DC (3)	1550
VM (2)	3000
TOTAL	31321

Below are the applicants, their project with the location where they went, the length of their stay and a summary of the results.

	<p>Maria Urbanova <i>Implementation of the humanized mouse models as a tool for testing immunotherapy in pancreatic ductal adenocarcinoma</i> Slovakia -> Norway, 2 weeks Results: I gain hands-on experience in establishing humanized mouse models crucial for advancing PDAC cancer research at my home institute. I was also involved in working with other interesting methods, such as in vivo tumor imaging, patient-derived xenograft development, and cell transduction and sorting. The knowledge and skills I acquired at this laboratory will be highly beneficial for my future research and projects at my home institute.</p>
	<p>Sumesh Sasidharan, <i>Immunotherapy-Induced Toxicity in Cardiovascular Disease: Translational Research Models and Techniques</i> France -> United Kingdoms, 2 weeks Results: A major focus was to explore how preclinical cardiovascular immunology findings can be incorporated into my computational models. One of the significant outcomes of the STSM was the proposal for a collaboration between Prof. Maffia's lab and my research at Aix-Marseille University with data sharing, which</p>

	<p>would enable me to incorporate their preclinical findings into my computational models. I prepared notes on the experimental techniques with a focus on standardizing these methods.</p>
	<p>Mariangela Garofalo <i>T-cell phenotyping and evaluation of the immunomodulatory properties of oncolytic vaccines complexed with extracellular vesicles</i> Italy -> Poland, 3 weeks Results :Cancer-derived extracellular vesicles (EVs) loaded with oncolytic viruses (OVs) were produced and characterized. We evaluated the in vivo biodistribution of the EV carrying an oncolytic vaccine in melanoma models (IVIS Imaging System Lumina II). To confirm the efficacy spheroids and murine tissues were analyzed at the host institution via T-cell phenotyping. The results demonstrated that the novel formulations increased the infiltration of CD8+ cytotoxic T lymphocytes but more work is required.</p>
	<p>Paula Martin Rubio <i>Establishment of patient-derived orthoxenograft mice models of lung metastases: a tool to test immunotherapies</i> Spain -> France, 2 weeks Result: During my stay I had the opportunity to receive training on orthotopic lung surgeries in mice, thanks to Dr. Maraver's team. I developed a detailed surgical protocol that outlines the entire orthotopic implantation procedure. This protocol, which includes audiovisual material gathered during surgeries, was reviewed by the team of Dr. Maraver and ensures accurate implementation of the technique. Our aim is to use these advanced models to test NK cell-based immunotherapies against lung metastases from gastrointestinal tumors</p>
	<p>Lucia Juhasikova <i>Implementation of slice culture technique as a tool for pancreatic ductal adenocarcinoma therapy testing</i> Slovakia -> Austria, 1 month Results : I have learned many methods like organotypic slice culture (OTSC). OTSC is a great model for modelling tumour microenvironment (TME) of pancreatic ductal adenocarcinoma (PDAC) as it can very precisely simulate its TME in patient and mouse samples.</p>
	<p>Laura Drndkova <i>3D co-culture system for pancreatic cancer immunotherapy modelling</i> Slovakia -> Poland, 1 week Results: I gained valuable skills in establishing 3D co-culture models with cancer cells and PBMCs (create and maintain 3D spheroids), integrate immune cells, and test new immunotherapy treatments. The knowledge and techniques acquired will directly support our ongoing projects in cancer immunotherapy.</p>
	<p>Lukasz Kuryk <i>Assesment of oncolytic virotherapy in 3D cancer spheroid model</i> Poland -> Italy, 1 month Results: I have been trained on protocols for 3D culture and bioimaging with IVIS Lumina system. The 3D protocol will be transferred and implemented at the National Institute of Public Health in Poland, focusing on development of more efficacious therapy for mesothelioma, with oncolytic adenoviruses in combinations with PD-1 and CTLA4. Furthermore, joint grant application initiatives and publication are planned. The STMS activities brought new knowledge and protocols related to 3D spheroid mesothelioma model and bioimaging protocols for assessment of biodistribution of oncolytic viruses.</p>
	<p>Marilina Garcia Aranda <i>MULTICELLULAR 3D IMMUNOSPHEROID MODELS TO ADVANCE PERSONALIZED TREATMENT STRATEGIES IN COLORECTAL CANCER</i> Portugal -> Spain, 3 months Results: I gained hands-on experience with advanced 3D cell culture models with the development of mono-, double-, and triple-cultured cancer spheroids, as well as 3D multilayer tissue-engineered hydrogel models. I developed expertise in the fixation and preparation of spheroids for paraffin embedding, prior to immunohistochemistry and immunofluorescence studies. The efficacy of varying</p>

	<p>chemotherapy was evaluated. Planned follow-up activities include continued collaboration with the host lab at i3S (research funding, joint participation in research projects, co-authored publications).</p>
	<p>Tina Kolenc Milavek <i>Visualisation of the tumour microenvironment in organoids using Imaging Mass Cytometry</i> Slovenia -> Netherlands, 2 months 1 week Results: I learnt the Imaging mass cytometry (IMC) to determine spatial characteristics of a tissue and observe interactions between cells. IMC allows to determine changes in the interactions within the glioblastoma microenvironment in organoids. Understanding how cell interactions change after therapy will hopefully help us to unveil the mechanisms underlying therapy resistance.</p>
	<p>Thanh Hoa Vo <i>Investigating Immune-Drug Interactions in Acquired Drug-Resistant and Sensitive Breast Cancer Models</i> Ireland -> Poland, 1 month Results: Techniques for working with PBMC cells were effectively exchanged. The STSM facilitated efforts towards the standardization of protocols across institutions. A refinement of these protocols will help adoption by other researchers in the field of drug resistance to contribute to a standardized approach. A co-authored chapter on our protocols for the IMMUNO-model book is ongoing.</p>
	<p>Agnieszka Maslanka <i>Investigating the infiltration of immune cells in mouse tumors using fluorescence microscopy</i> Poland -> Romania, 2 weeks I gain valuable knowledge and skills concerning tumor tissue preparation and processing, as well as immunostaining and image acquisition. As a young PhD student, I got the chance to learn from experts in the field, as well as expand my professional network and connect with other researchers interested in similar topics.</p>
	<p>Milan Beljkas <i>New models for the development of dual HDAC/ROCK inhibitors as potential drugs to improve the efficacy and overcome the resistance of cancer immunotherapies</i> Serbia -> Estonia, 1 month Novel QSAR (Quantitative Structure-Activity Relationship) models were created for performing molecular docking studies to predict the activity of novel dual HDAC/ROCK inhibitors. I acquired knowledge in in Schroedinger Suite 2023 for molecular docking and artificial intelligence based QSAR machine learning with Python. 15 optimal candidates have been identified for predicted activity and key interactions with HDAC6, ROCK1 and ROCK2.</p>
	<p>Marleen Ansems <i>COST CA21135 - IMMUNO-model - WG3: Solid tumors - models to study immunotherapy efficacy and toxicity in solid tumors, and validate biomarkers to monitor these effects</i> Netherlands -> Romania, 3 days Results: I took part in the International Pathology Conference at the Victor Babeş Institute in Bucharest, Romania. I engaged in discussions with conference organizers and fellow participants, explored the institute, and attended presentations. Moreover, I disseminated information about our COST action, IMMUNO -model, to further build our network of Immune-Oncology researchers and facilitate connections.</p>
	<p>Gianmarco Contino <i>COST Session in collaboration with COST IMMUNO-model</i> -> 2 days Results: Presenting COST Action CA21135 at the EUSICA/INSICA Brain Conference was a successful endeavour, marked by significant interest and engagement from the attendees. The round table discussion further facilitated meaningful connections with potential collaborators, paving the way for future</p>

	<p>partnerships that will enhance the impact of our action. Moving forward, we remain committed to expanding our network and driving advancements in brain research through collaborative efforts.</p>
	<p>Devrim Pesen Okvur <i>COST CA21135 - IMMUNO-model - WG1: In vitro and ex vivo cancer immunotherapy models – establishing basic protocols for immunotherapy response evaluation</i> Turkey -> Romania, 3 days Results: Attending the conference made it possible to disseminate information about IMMUNO-model COST action to targeted groups like young researchers. Attendance was also disseminated through social media – LinkedIn and X (Twitter). I talked about the scope of COST actions in general and our COST action IMMUNO-model specifically. I delivered information about objectives, achievements, plans for the future and how to get involved. The LinkedIn post got 2158 impressions, 76 reactions, 1 comment and 2 reposts. Responders were from Turkiye, Netherlands and Romania.</p>
	<p>Emanuela Senjor <i>Establishment of IMMUNOmodel Knowledge Hub</i> 2 months Results: Almost all the proposed outcomes were produced. We are close to fulfil the CA objective of establishing and open-access database of experimental protocols of immuno-oncology models. Two tasks are still under work, as the IMMUNO-model Knowledge Hub not public yet. The protocol collection was planned to begin by the end of grant period 2. The task force will perform an internal test submission to check for any technical problems before we open the submission to the members of the CA. We plan to finish this by October, so we can start collecting protocols by the end of October/ beginning of November.</p>
	<p>Marco Barreca <i>Omics Data Gathering</i> Italy, 1 month Results: During the Virtual Mobility period, a dedicated taskforce and I defined the main principles of dataset searching and curation. We laid the foundations for a larger project aimed at visualizing and analyzing publicly available omics datasets in the immuno-oncology field. These tools will enable researchers to easily access and organize relevant data, contributing to biomarker discovery and translational research.</p>
	<p>Georgios Aindelis <i>Treatment of colon cancer cells with Lacticaseibacillus casei: induction of apoptosis and release of DAMPs associated with immunogenic cell death. 21st Annual CIMT Meeting</i> Greece -> Germany, 3 days Results: I had the chance to converse with experts on the field of immunotherapy, presenting my work and witnessing the innovative ideas of others. I also made acquaintances with researchers interested in our work, informed them about the goals of the IMMUNO-model COST Action and I am looking forward for an opportunity to further our cooperation with them in future joined studies.</p>

Below are the outcomes of the above grants:

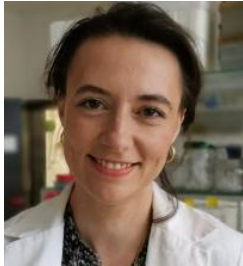
Outcome 1. Ana Borges (GP1 STSM)



EUGLOHRIA Seeding Grant’: funded by the European Commission, under the “Science with and for Society” programme within Horizon 2020, July 2023 --> Approved

ImmunoRad 7.0 International Conference - September 27-29, 2023, Paris, France
-Poster Presentation, Cooperação Bilateral Portugal-França 2023: Programa PESSOA 2023.09861.CBM --> Approved

Outcome 2. Jelena Grahovac and Milica Nanur (GP1 STSM)



Milica Nanur applied for the CRP - ICGEB Research Grants Programme 2024 and won a 3-year grant.

Milica Nanur is a PI, and her institution is the grant holder, Jelena is participant.

Outcome 3. Emanuele Azzoni and Cristina Barone (GP1 STSM)



Manuscript under revision that benefited from the collaboration that the STSM supported and includes both us and the host lab's coordinator.

preprint on Biorxiv:

<https://www.biorxiv.org/content/10.1101/2024.07.11.603050v1>

Outcome 4. Lukasz Kuryk (GP2 STSM)

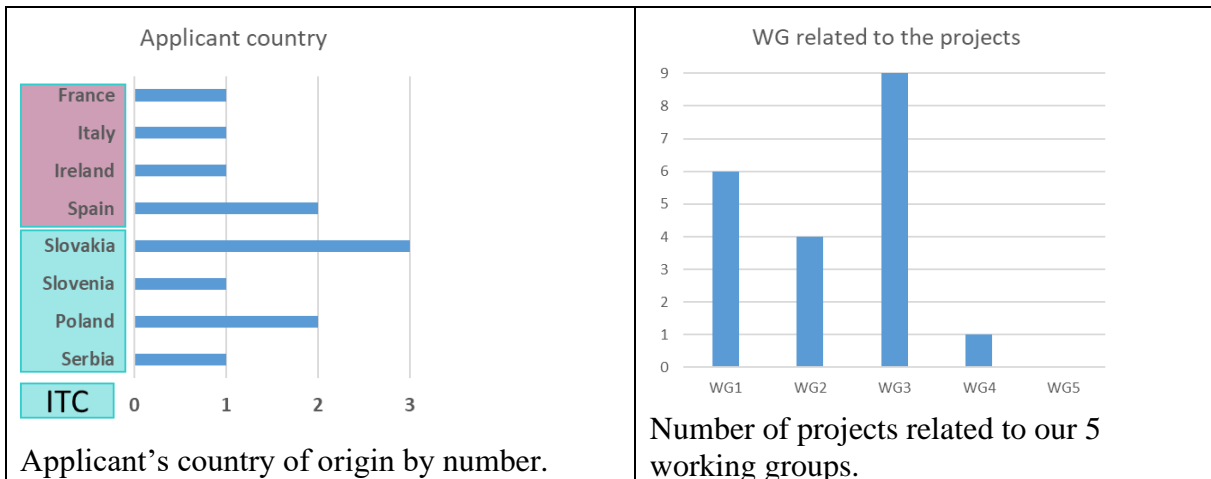


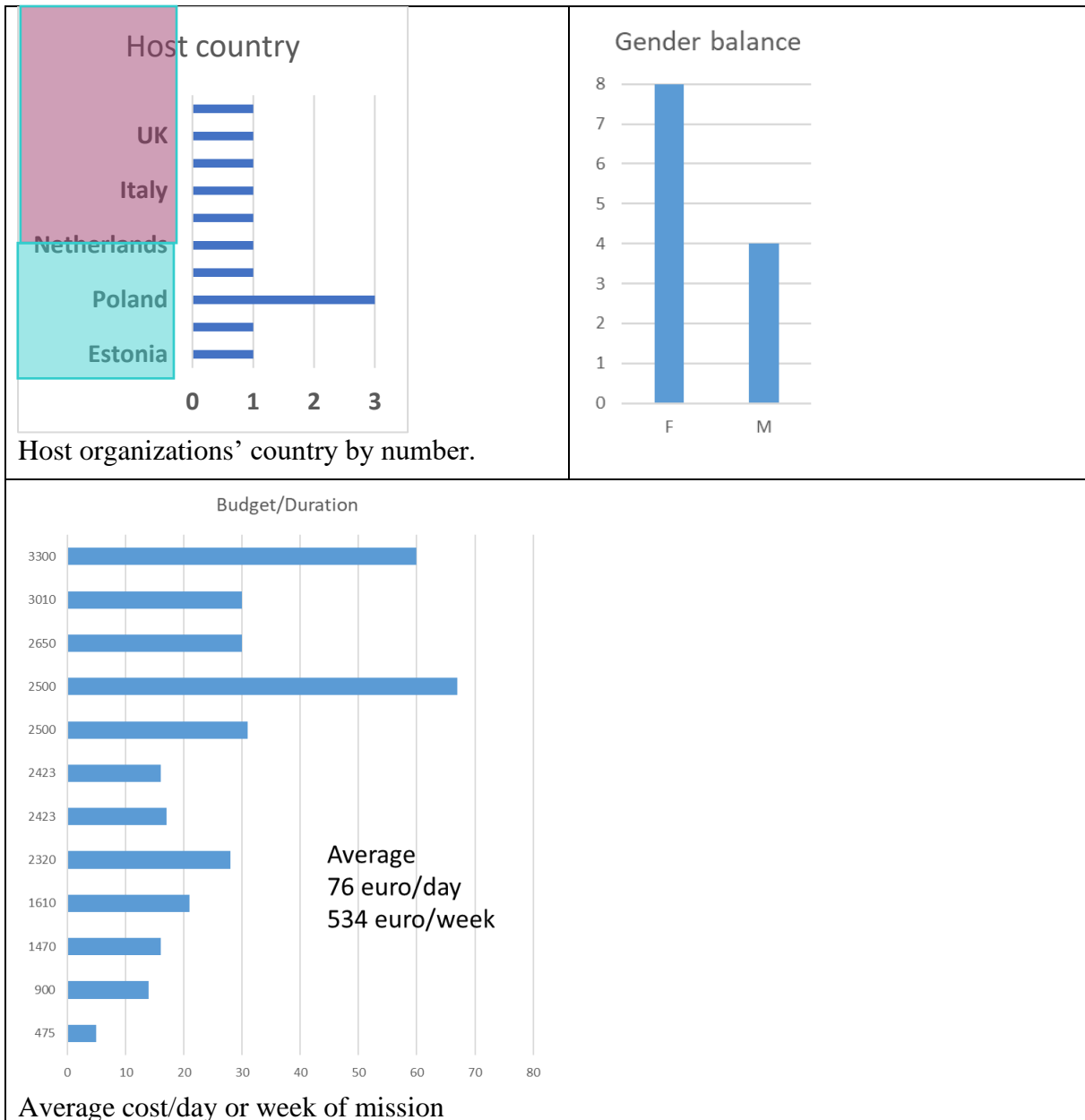
The project is progressing well, and we anticipate publishing our findings later this year or early next year. In the meantime,

Review article published, co-authored with Dr. Garofalo (also a fellow STSM grant holder) *Clinical and Experimental Medicine* (2025) 25:24
<https://doi.org/10.1007/s10238-024-01541-7>

Statistics for Mobility Grants:

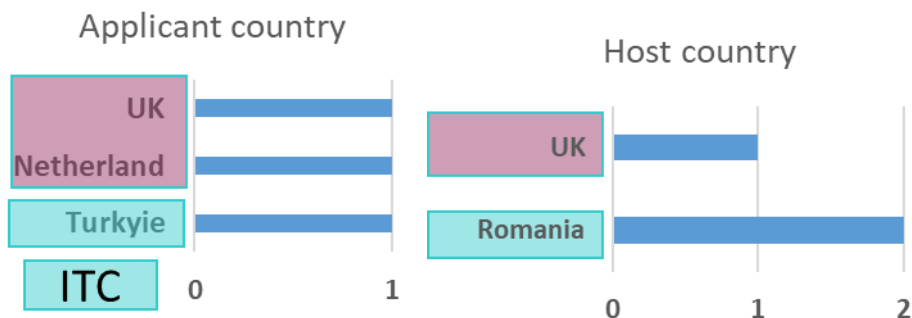
Purple: COST member countries; Blue: ITC countries

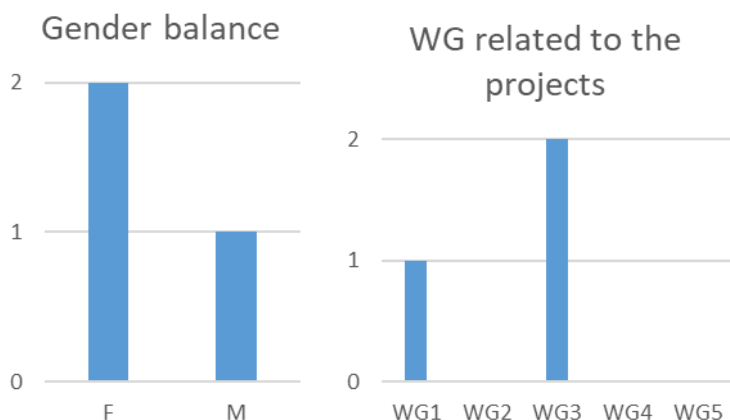




Statistics for DC Mobility Grants:

Purple: COST member countries; Blue: ITC countries





VM statistics GP 2, 2 applications

Gender F/M = 1/1

ITC statistics GP2

1 Sender Greece

1 Host Germany

Gender balance M 1

WG relation: WG1/5

6. Dissemination and Communication Activities

6.1. Webpage and logo

The IMMUNO-model webpage and logo was established- <https://www.immuno-model.eu/>. The website will be active for the duration of the Action and a further two additional years. The website is updated regularly by WG5, the Action Leader and Boutik Studio. The webpage contains all relevant information and news for CA members and other visitors of webpage. It will be further improved to have an easy-to-use search tool to facilitate collaborations according to the researchers' needs. A google form link is being created to be sent to the members.

6.2. Social media platforms

Social media platforms have been established and are updated by WG5:

- X: [@immunomodel](https://twitter.com/immunomodel) / X (twitter.com)
- LinkedIn: www.linkedin.com/company/cost-action-ca21135-immuno-model/
- Youtube channel: <https://www.youtube.com/@IMMUNOModelCOSTAction>
- Instagram: <https://www.instagram.com/immunomodel/>

6.3. Scientific publications

- Special Issue in Frontiers of Immunology
- C Colarusso, A Falanga, S Di Caprio, Michela Terlizzi, Emmanuel D'Andria, A Molino, P Maiolino, R Sorrentino. *Biomed Pharmacother* 2024 Jul;176:116896. doi: 10.1016/j.biopha.2024.116896. PMID: 38876049, DOI: [10.1016/j.biopha.2024.116896](https://doi.org/10.1016/j.biopha.2024.116896)
- Montico B, Nigro A, Lamberti MJ, Martorelli D, Mastorci K, Ravo M, Giurato G, Steffan A, Dolcetti R, Casolaro V, Dal Col J. Phospholipid scramblase 1 is involved in immunogenic cell death and contributes to dendritic cell-based vaccine efficiency to elicit antitumor immune response in vitro. *Cytotherapy* 2024, 26(2): 145-156. PMID: 38099895, doi: 10.1016/j.jcyt.2023.11.014
- Milovic E, Matic IZ, Petrovic N, Pasic I, Stanojkovic T, Petrovic MR, Bogdanovic GA, Ari F, Jankovic N. Chlorine containing tetrahydropyrimidines: Synthesis, characterization, anticancer activity and mechanism of action. *Biorganic Chemistry* 2024, (153) 107907. PMID: 39490136 doi: [10.1016/j.bioorg.2024.107907](https://doi.org/10.1016/j.bioorg.2024.107907)

1.4 Promotional materials

- Industry flyer and letterhead template

IMMUNO-model www.immuno-model.eu

The purpose of IMMUNO-model

IMMUNO-model is a vibrant and diverse network, continually seeking new research partners to collectively elevate the quality and impact of immunotherapeutic research across Europe.

The role of SMEs in IMMUNO-model

Immuno-model aims to facilitate the transfer of knowledge between basic, translational, and clinical investigators, and with SMEs.

SMEs bring a key perspective, both by defining the modelling needs of industry, and by delivering innovative technologies and solutions for modelling of immunotherapy.

We seek SMEs that would like to be an active part of the scientific network of Immuno-model and work together to develop and implement preclinical models for immunotherapy.

What is IMMUNO-model COST-action

COST Action IMMUNO-model CA21135 aims to:

- Foster research and innovation in the field of preclinical immuno-oncology models.
- Advance the treatment of cancer patients.
- Improve patients' outcomes and quality of life.

Our work is organized through five working groups (WG) covering:

- WG1** In vitro and ex vivo cancer immunotherapy models
- WG2** In vivo cancer immunotherapy models
- WG3** Solid tumors
- WG4** Hematologic tumors
- WG5** Communication, events & partnering with industry

What do you get from becoming a member

Access to a diverse network of > 200 researchers, clinicians and industry professionals.

Participation and visibility in Working group and annual meetings and access to scientific exchanges through mobility grants.

Access to the Immuno-model protocol collection, and opportunity for open dissemination of own developed technologies and protocols.

An arena to establish and participate in grant collaborative initiatives within the network.

How to become a member

To join us, and for more information, scan the QR Code!

This flyer is based upon work from COST Action IMMUNO-model CA21135, supported by COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

COST EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

Funded by the European Union

- Various Flyers for the dissemination of IMMUNO-model and for grants calls <https://www.immuno-model.eu/newss/immuno-model-flyers-are-out/>
- Power Point Template



IMMUNO-model
Modelling immunotherapy response
and toxicity in cancer

Insert Title Here

Insert Subtitle Here

IMMUNO-model COST Action CA21135



IMMUNO-model
Modelling immunotherapy response
and toxicity in cancer

Insert Title Here

Insert Subtitle Here

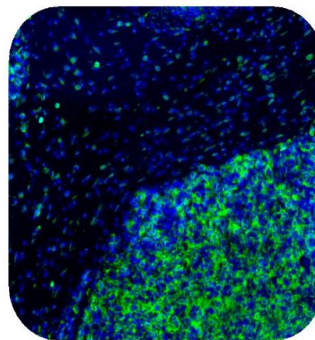
IMMUNO-model COST Action CA21135



Description of the Action



The COST Action **IMMUNO-model** CA21135 aims to foster research and innovation in the field of preclinical immuno-oncology models with the ultimate goal of advancing in the treatment of cancer patients by improving their outcomes and quality of life.



- Roll-up for meetings/workshops/conferences



The poster features the IMMUNO-model logo at the top left, which consists of a stylized cell with a nucleus. To the right of the logo, the text 'IMMUNO-model' is displayed in a bold, sans-serif font. Below this, a white pill-shaped box contains the text 'IMMUNO-model COST Action 21135'. The main body of the poster is a vibrant blue and purple image showing a close-up of a laboratory dish with a pipette tip. Below the image, the text 'IMMUNO-model aims to foster research and innovation in the field of preclinical immuno-oncology models.' is centered. Further down, the heading 'Meet our Working Groups' is followed by five items, each in a red pill-shaped box: 'WG1 In vitro and ex vivo cancer immunotherapy models', 'WG2 In vivo cancer immunotherapy models', 'WG3 Solid tumors', 'WG4 Hematologic tumors', and 'WG5 Communication, events & partnering with industry'. At the bottom, the heading 'Follow Us on all social media platforms' is followed by four QR codes labeled 'X (TWITTER)', 'LINKEDIN', 'WEBSITE', and 'YOUTUBE'. The footer includes the COST logo (European Cooperation in Science & Technology) and the European Union flag with the text 'Funded by the European Union'.

- Power point for patients: https://www.immuno-model.eu/members-area/#elf_11_c2xpZGVzIGFuZCBwcmVzZW50YXRpb25z
- Promotional videos of webinars on YouTube channel
 - 1st webinar: <https://www.youtube.com/watch?v=IwJ3y5kFMqk>; 22 visualizations
 - 2nd webinar: <https://www.youtube.com/watch?v=-VwajsY2OdY>; 17 visualizations
 - 3rd webinar: <https://www.youtube.com/watch?v=ZccX3VL8KOU>; 10 visualizations

4th webinar: https://www.youtube.com/watch?v=1fsxAX3BX_w&t=8s; 43 visualizations
5th webinar: <https://www.youtube.com/watch?v=-qzdDSMK-ZM>; 47 visualizations

- Newsletters: <https://www.immuno-model.eu/category/newsletter/>

7. Target Group Recruitment Committees (TGRCs) activities

The goal of the TGRCs is to monitor and promote participation of young researchers, women, and investigators from Inclusive Target Countries (ITCs) in IMMUNO-model. The TGRCs ensure equal representation and opportunity for all Target Groups in Action activities, disseminate IMMUNO-model COST Action activities, strategy, dissemination of activities, outreach and equality/diversity/inclusion initiatives.

The leaders of the three TGRC groups are and Gianmarco Contino (TGRC1), Denis Collins (TGRC2) and Hanne Haslene-Hox (TGRC3).

A call for additional TGRC members was circulated by WG leaders to all IMMUNO-model COSTAction members in Q4 2023 and Q1 2024. In GP2, the TGRCs have recruited four new members to assist with activities:

TGRC1 – Uzma Hasan (France), Yari Ciribilli (Italy)

TGRC2 - Catarina Rodrigues (Portugal)

TGRC3 – Marta Maleszewska-Bobińska (Poland)

Annual conference:

Members of the TGRC were represented in the scientific committee for the annual conference in Bratislava, May 2024, and contributed to the balanced representation and inclusion of clinicians and industry in the conference program.

There were in total 17 female (63 %) and 10 male speakers in the program. Of these, 13 speakers were from ITC countries (48%), and 10 were young researchers (37 %).

There were four speakers representing SMEs:

Marcin Krzykawski: Novel 3D Cell Culture Models for Immuno-Oncology studies

Mangala Srinivas: In vivo imaging for quantitative tracking of immune cells

Calum Leitch: Utilising preclinical animal models and single-cell analysis for cancer immunotherapy studies

Victor M. Díaz Cortés: Pre-clinical validation of humanized CAR-Ts cells in the industry: experiences from the bench to the bedside

Targeted communication with specific members and membership groups

The TGRCs have identified that targeted communication focusing on aspects important for especially industry is important to tailor towards these actors' particular needs. A flyer and a

standardized information letter have been produced to highlight details especially relevant for industry and SMEs, to promote industry participation. These are available in the shared online IMMUNO-model website.

Industry recruitment through EEN

The European enterprise network (EEN) was identified as a potential source of industry members in the COST application and MoU. This network consists of central innovation network actors from national and regional innovation offices in most European countries, with contact information to some of these actors. As the industry-tailored information have been made, the process of distributing information about the COST Action to these contact persons have been initialized and will continue during 2025. The innovation offices are contacted and requested to forward information about IMMUNO-model COST Action to SME and industry with relevant value propositions.

Meeting and established collaboration with yEFIS

The Young European Federation of Immunological Societies Network (yEFIS) was identified as a key platform for engaging potential members and collaborators. This network brings together early-career Immunologists (with different backgrounds) from across Europe, creating a diverse scientific community. With tailored information about the IMMUNO-model COST Action prepared, the dissemination process began in October 2024 and will continue throughout 2025. yEFIS is actively involved in disseminating different activities from the IMMUNO-model COST Action (such as webinars and meetings) with its network, through their monthly newsletter by email and on social media platforms, fostering connections with early-career scientists and encouraging collaboration in the Immuno-Oncology research field. This collaboration aligns directly with Objective 2 (CB-O2) of the MoU. Furthermore, as yEFIS is a network closely connected to EFIS, it also contributes to achieving Objective 3 (CB-O3).

TGRC Meetings:

- The TGRCs have held had 5 meetings in 2024 (February, May, June and August (2)) to progress TGRC strategy and organise the TGRC August workshop (see below). Minutes are available on the shared IMMUNO-model intranet.
- The TGRC have presented updates in the Core Group and Management committee meetings. Presentations are included in the IMMUNO-model CG and MC meeting minutes.
- The IMMUNO-model TGRC workshop “Immunotherapies: charting a course from the lab to the clinic”, took place in Dublin City University, Ireland on Saturday, the 31st August 2024. 55 attendees heard from experts in the pre-clinical, clinical, translational and industry/SME sectors who provided presentations outlining their fields of expertise and the current challenges they face in relation to immunotherapies. The workshop opened with a welcome from Denis Collins, Ireland, and an overview of the COST Action by IMMUNO-model lead Eva Martinez-Balibrea, Spain, and WG5 Co-Lead Maurizio Callari, Italy. Two sessions followed. The first session concentrated on best practice and current challenges with engaging presentations from David Pinato, UK, Emmet Mc Cormack, Norway and Samuel S. Chuang, Charles River Laboratories, USA on the clinical experience, in vivo models and the CRO setting, respectively. The second session explored beyond state-of-the-art approaches with contributions from Pedro

Cruz, Portugal, Rita Fior, Portugal and Kristin Anderson, USA covering novel translational strategies, zebra fish models and engineered cellular therapies. The final session was led by the TGRC Committee members Catarina Rodrigues, Portugal, Hanne Haslene-Hox, Norway, Gianmarco Contino, UK, Uzma Hasa, France and Yari Ciribilli (Italy) and focussed on summarising the learnings from the first two sessions to identify new areas of research and the key challenges in modelling immunotherapy. Some of the key challenges identified included funding and better connections with clinicians and industry. The workshop presentations abstract book and final programme have been uploaded on the shared IMMUNO-model site/drive, with the abstract book to follow. The workshop was promoted and reported on through LinkedIn, X (Twitter) by the TGRC, and through IMMUNO-model channels (including the December IMMUNO-model newsletter. A report on the Dublin workshop is being put together for Q1 2025 to summarise the findings of the workshop.

TGRC training/workshop event proposal

In the scope of the TGRC activities for GP3, a hybrid conference for YRIs is planned and will be funded by IMMUNO-model in 2025: “Young Researchers and Innovators on Immunotherapies: the future is now”

Proposed date: 11-12 September 2025

Venue: IPO-Porto, Portugal (<https://ipoporto.pt/en/eu-profissional/investigacao/centro-de-investigacao/>)

TGRC members, IMMUNO-model members (including YRIs) from IPO-Porto will be involved in the organization and local support of the conference.

8. Summary and directions for GP3

For the third Grant Period several activities are planned along the lines of those that took place in Grant Period 2. It should be noted that the 3rd Annual Conference, which will be organized in Poland, will be more focused on the actual work carried out by the participants of the different Working Groups, who are currently collaborating with each other. This is undoubtedly an achievement of the scientific objectives of the IMMUNO-model Action and for GP3 the CA intends to further strengthen scientific collaborations, exchanging protocols, knowledge, visiting researchers, etc. In support, the Knowledge Hub Task Force has developed a database on the research groups that are carrying out experiments with pre-clinical models of immunoncology. Another way to increase collaborations is to create an IMMUNO-model member profile to allow members or other scientists to find collaborators in an easy manner. In addition, for GP3 IMMUNO-model Action intends to gather knowledge on multi-omic data. The Training School organized in Zaragoza has focused on the analysis of bioinformatics data launching new ideas for training school. Indeed, due to the success and satisfaction from attendees, the next workshop will be focused on multiomic approaches. In addition, 4 or 5 webinars are planned on crucial topics that will be recorded and made available to anyone who is interested. Moreover, 10-minute podcasts are planned in order to foster either the dissemination of the COST Action or to tail network and share scientific data. Another

important activity will be the communication with Patients' Associations and gather their experience after immunotherapy treatment.

The frequency of Working Group meetings will be increased, which are expected to result not only in new proposals for activities, but also in new collaborations among participants as well as joint publications.

Details of all the planned activities for Grant Period 3 are listed below:

- Workshop 1: Harmonizing models of immunotherapy, Past, present and future directions of WG2, Bergen, Norway, 10-11/04/2025
- 3rd Annual Conference, Warsaw, Poland, 13-14/05/2025
- Young Researchers and Innovators on Immunotherapies: the future is now, Portugal, 11/09/2025
- Training School: Liquid Biopsies in Haematological Malignancies - identification of immunotherapy biomarkers, Coimbra, Portugal, 30/06-02/07/2025
- 5 webinars
- 11 Core Group Meetings, 1 in person at the Annual Conference
- 1 Management Committee Meeting, Virtual, 26/09/2025
- Grants (STSMs, ITCs, YRIs, VMs and DCs)
- 2 scientific publications in Open Access
- Communication with Patients' Organizations
- Update and maintenance of the IMMUNO-model Website
- Zoom license for meetings and webinars
- Bank charges

Budget

	Forecasted Budget		
	Budget	LOS	TOTAL
WG 2 Workshop Hybrid Norway	19.944,00	2.000,00	21.944,00
Annual Conference Poland	50.000,00	4.000,00	54.000,00
TGRC Workshop Hybrid Portugal	18.054,00	1.000,00	19.054,00
MC1 Virtual			
CG meetings virtual x 10			
Webinars x 4	0,00	0,00	0,00
Training School In person Portugal	30.100,00	3.500,00	33.600,00
STSM	15.700,00	0,00	15.700,00
VM	4.500,00	0,00	4.500,00
ITC Conference	1.500,00	0,00	1.500,00
Dissemination Conference	1.500,00	0,00	1.500,00
YRI	3.000,00	0,00	3.000,00
Scientific publication in Open Access	13.700,00	0,00	13.700,00
Scientific publication in Open Access	10.000,00	0,00	10.000,00
Website Maintenance	1.600,00	0,00	1.600,00
Virtual communication and collaboration tools (Zoom license)	500,00		500,00
Bank charges	1.200,00	0,00	1.200,00
Sub Total			181.798,00
FSAC 15%			27.269,70
Grand Total			209.067,70