



PIGWEB Newsletter

ISSUE 2 May 2023



'FAIR' Data Webinars

Pig researchers community had an opportunity to have an overview of FAIR (Findable, Accessible, Interoperable and Reusable) principles and how they can be applied to their experimental data during a series of three short webinars, organized last November 2022 by Rob Lockers and Hendrik Boogaard (WUR).

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Credit: Dusanpetkovic

PIGWEB Summer School

The Summer School contributed to spread new concepts in pig research and results of the joint research activities in the PIGWEB project to a new generation of pig researchers.

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Building a long-lasting European Pig Research Community

Dear stakeholder,

We are happy to present **the second newsletter of the Horizon 2020 PIGWEB project**. The project has been ongoing for a little over two years now, with another three years to go.

Networking is an important aspect of PIGWEB, both within the PIGWEB community and beyond. The **staff exchange program** is an example of "internal networking". Scientists are used to seeing each other at conferences, but this is not the case for staff such as animal caretakers. However, sharing experience and practices is important for all people involved in animal research (see page 3). An example of "**external networking**" is the stakeholder event that we organized just after the (internal) annual PIGWEB meeting in Spain. This event allowed us to exchange with stakeholders from different origins about what PIGWEB has done and plans to do, and how we can respond to stakeholders' needs.

PIGWEB offers access to its experimental installations through a so-called **transnational access (TNA)** program. This program allows stakeholders to carry out **their** research project in one of the TNA installations, and financed by the PIGWEB project. In this newsletter, you will find more information about **the first two calls for proposals; the third and final call will be launched in September**.

One of the issues we talk about within the project but also at conferences is about **the future of experimental animal research**. When animal production is in the news, it is mostly about the negative aspects of animal production, and this is even worse for news on experimental animal research. In 2021, the European Parliament asked the European Commission to propose a plan to actively phase out animal experimentation.

This resolution was adopted with 667 Parliament members in favour, 4 against, and 16 abstentions. The European Commission responded to the Parliament that there is a legal obligation to replace the use of animals when alternative non-animal methods become available.

However, they also indicated that it is impossible to predict when scientifically valid methods will become available. This illustrates that we have to continue to work on alternative methods. At the next annual meeting of the **EAAP**, we will organise a session entitled "**Is there a future for experimental animal research in Europe and, if so, what is it?**", with a round-table discussion with early-career scientists.

In this newsletter, you will find some examples on alternative experimental methods to sample blood and on methods to assess complex traits, such as emotions. The votes in the European Parliament also show that we, as a scientific community and the animal production sector, have to engage more in an open and constructive dialogue with society about animal production and animal production research.

Although we could see this movement as a "threat", I prefer to see it as an "**opportunity**".



Credit: dpicreativo

Staff Exchange

By Manfred Mielenz (FBN)

The aim of the **PIGWEB staff exchange programme** is to improve and establish new levels of communication between our research installations.

This kind of communication should help to **improve research in pigs** not only from desk to stable but also vice versa **from stable to the desk**. Practitioner experience is given a new meaning with this programme, which leads to further improvement of our research work.

The participants learn about the aspects of the daily work in other research institutions that will help to improve the workflow and the quality standards in their home institution. Four staff exchanges have been realized so far.

Until now, exchange programmes between **ILVO and SLU** as well as **INRAE and FBN** have been realised and the programme is still running.

The attendees took part in the routine work within the facility and insights were also provided into the respective research locations, such as a performance testing station.

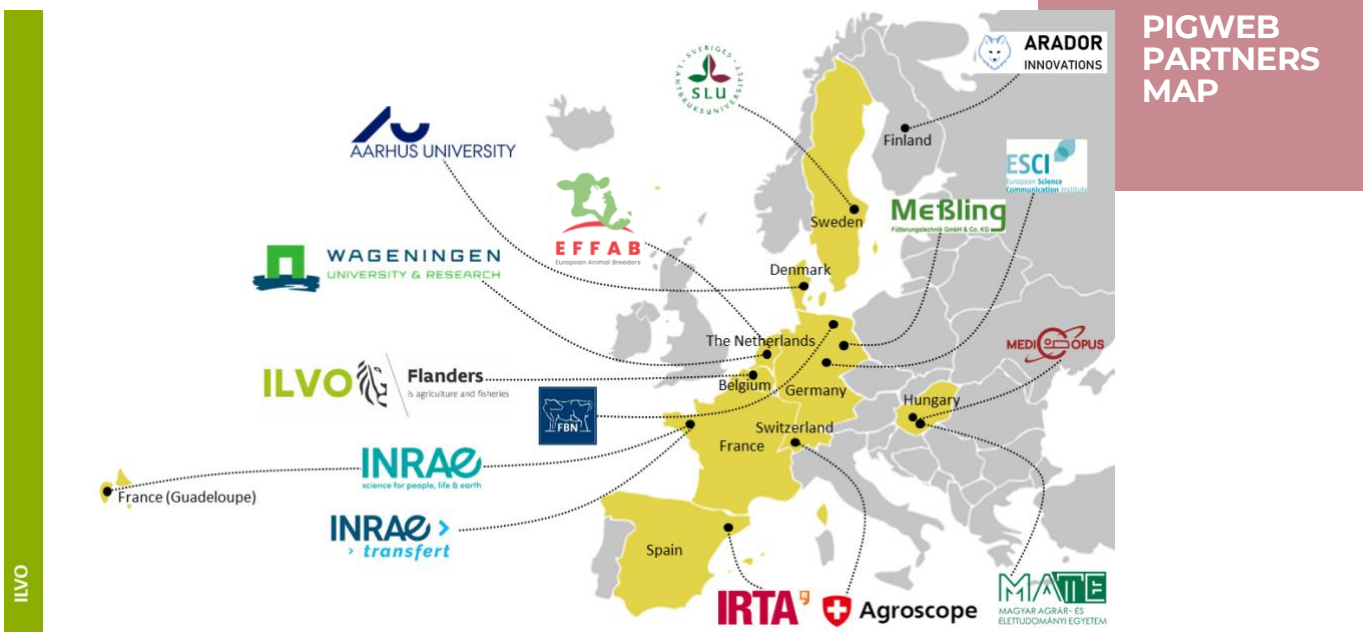
Ideas regarding the future design of a new barn were discussed, and the participants recognized, that differences in sow housing exist which has advantages for the sows but could led also to disadvantages for the handling of the sows.

In addition, other highlights were offered that were not only related to the actual activity, but also to **improve the contact between people**.

These were related on the one hand to contacts with academia, students and people like “a science night” at the local university, but also to the region and nature in which the institutions were located.

Personal contacts were strengthened through **joint activities** such as a walk around the city centre including some sightseeing and shared dinners with beer or apple juice.

We believe that this kind of exchange is a way to improve our work. We also believe that such programmes should be expanded in the future.



FAIR: Findable, Accessible, Interoperable and Reusable

Pig researchers community had an opportunity to have an overview of **FAIR (Findable, Accessible, Interoperable and Reusable)** principles and how they can be applied to their experimental data during a series of three short webinars, organized last November 2022 by Rob Lokers and Hendrik Boogaard (WUR).



Credit: Wirestock

First Session

The first session was an 'Introduction to Open Science and FAIR data'. During the session, **Tomas Klingström (SLU)** presented the current data landscape of data management practices in Pig Research. These results were issued from a survey carried out among the PIGWEB participating institutions and PIGWEB researchers' community. We have **an overview on the diversity of the institutions policy towards open science** and on the available institutional resources to help researchers for open data.

PIGWEB researchers have a mixed opinion of sharing data, though they are aware of the positive impact of open access publication and see the benefits of data reuse. With appropriate incentives, there is a need to support researchers for sharing their experimental data. **Rob Lokers presented the general principles of open science, why and how, and FAIR principles.**

A survey showed that part of the attendees think they share their data in compliance with FAIR to a certain extent but the others are much less convinced they do it properly. The last part of the first session, about data management and the data life cycle, was presented by **Hendrik Boogaard**.

The research data management is the correct handling, storing, preservation, sharing and legal care of research data using the FAIR principles. It includes a wide variety of activities, ensuring that data is available for a long period, that data is understandable and self-descriptive (so that others could reuse it), that data follows an organized structure, and that data can be shared when possible. To implement an adequate data management, **it is important to take into account the data life cycle**, from the conceptualization and data collection to the reuse that will help to elaborate new hypotheses and to identify the roles of all people involved in data life.

During the presentation, **H. Boogaard** put some emphasis on **the role of the data steward and the data reviewer**, who can be of particular importance to help researchers in data management and can be intermediate between researchers and other parties for opening data regarding ethics, legal, library and information technology items. After these introductory presentations, the aim of the following two sessions was to address more specific and practical items related to experimental data.

Second Session

The second session was dedicated to **'Making data (re)usable for pig research'**. **Juan Pablo Sánchez (IRTA)** presented the action initiated in 2012 to create a common data structure for pig performances to avoid loss of raw data and homogenize data recollection.

There is a partition between **active experiments**, to provide efficient interactions, and **finished experiments**, to ensure permanent storage with limited manual intervention. As a conclusion, J.P. Sanchez mentioned the importance of an important technical training and the necessity of institutions to help with the infrastructure.

Having a structure for the data **may help to adopt FAIR principles** and some improvement might be envisioned with the use of ontologies. **Hendrik Boogaard's** presentation focused on data curation.

The major items were **how to organize and structure data, and how to provide metadata** for the project and for the data. It is possible to improve data management by organizing files and folders, by using naming conventions, adding explanations with readme files and codebooks and by privileging open data formats. Another point is to keep track of file versions via filenames or version control tables/software. **The principal objective of metadata is to stimulate reuse**, and the more metadata are relevant the better to reach that purpose.

Answers to questions such as for what purpose the data were created, how the data were collected, or how the data were processed can provide useful information and project metadata. Regarding data, **metadata should provide information on the formats of the data file**, on the variables (names, units, full description, and provenance), the missing values, explanations and definitions of codes. Depending on the nature of data, different kind of metadata might be more appropriate.

Sarah Fischer and **Nina Melzer (FBN)** showed a case study of **data curation in practice**, with the example of a piglet weights and all steps that can be taken to have proper data before analyzing and sharing. Some take home messages are 'no blind trust in databases' and 'it is difficult to predict possible issues'.

Rob Lokers focused on data sharing and publication, reminding the principle of 'as open as possible, as closed as necessary'. One of the possibilities to share data is to use a **data repository** which ensure preservation, discovery, citation and licensing. Data repositories are numerous and can be institutional, generalist or disciplinary, or provided by journals.

As the importance of ontology is often underlined for FAIR principles, **Martin Toutant (INRAE)** explained how to annotate data with ontologies. **Ontologies allow sharing common understanding of the structure of information and enable reuse of knowledge**. The example of the Animal Trait Ontology for Livestock, initiated by INRAE, was explained and the way to use it in the PIGWEB project was further detailed with a short demonstration.

Last Session

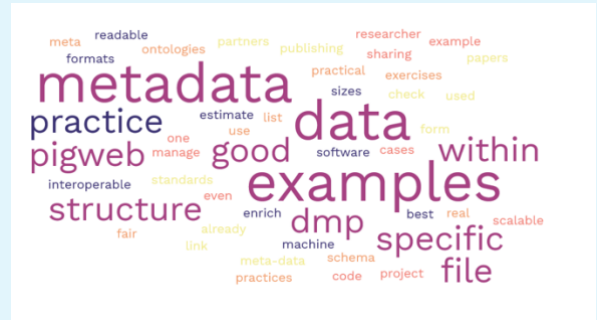
The third and last session focused on the specific **'Writing a data management plan in PIGWEB'**.

Danny de Koning (WUR) gave a tour on the necessity to elaborate a data management plan (DMP), for finding and understanding the data, to limit data loss, to increase transparency and reproducibility and generally to meet funders requirements.

Online tools are now available to create DMP with university and funder templates. The main advantage of these tools is to **provide supports and guides for researchers to create DMP**.

The (fictitious) example of a DMP for **an experiment on pigs was showed to go through all the important items**. The PIGWEB data management plan was presented by Catherine Larzul (INRAE) as another example of DMP, at a higher level of organization.

Considering the expectations of the attendees, emphasis will be put on metadata in the following events.



Cloud of tags during the last session of FAIR.

SPANISH STAKEHOLDERS MEETING

On April 23rd, we organized the first PIGWEB stakeholder event at the IRTA headquarters in Torre Marimón, near Barcelona and gathered more than 40 stakeholders.

After a short introduction, the work package leaders of PIGWEB highlighted a few aspects of the project, to open up a discussion with the stakeholders.

Topics addressed included **research infrastructures** for the future, the need for standard operating procedures (SOPs) and guidelines, **FAIR data**, and **stakeholder engagement**.

First results of the joint research activities on non- and less-invasive experimental techniques and the measurement (of indicators) of complex traits were also presented and discussed.

The last topic of the meeting was an open discussion on **"How to interact with society about animal production and animal research?"**.

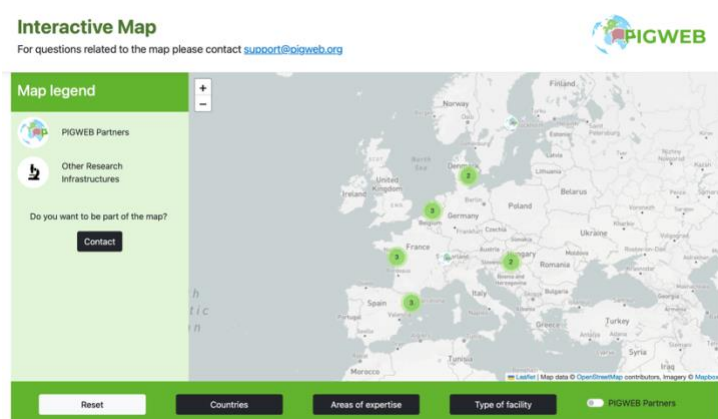
All in all, the half-day meeting was very successful and we plan to organize another stakeholder event right after our annual meeting in mid-April 2024 in Germany.



Credit: IRTA

WP1 PIGWEB INTERACTIVE MAP

The WP1 team has made significant progress in the last period towards its goal of establishing a **community of Research Infrastructures (RI)** for the pig industry in Europe. One key accomplishment has been the creation of an [interactive map](#) that shows the location of the European RI participating in the initiative. The map is based on a database that stores relevant information about the characteristics of the RI, the equipment, techniques, and skills available to potential users and research collaborators.



Screenshot of our Interactive Map. Click on the image to access it.

The interactive map provides an **easy-to-use navigation tool** that allows users to geolocate the different research centres and their various facilities. Individual forms for each facility provide detailed and concise information about the facilities and their capabilities. The design and development of the map and the forms have been a continuously evolving process, with the goal of creating a user-friendly interface that is both functional and easy to navigate.

For the moment, **all PIGWEB partners are visible on the map**. In the coming year, we will expand it to all research infrastructures on pigs that would like to be included in the map. The team made a questionnaire to make it easy to fill in the requested information.

If you are interested in having your institution featured on the map, please contact pigwebmap@irta.cat to know more.

WP2 THE PROTOCOLS

The pig research infrastructures in Europe have different focus areas, but also many common challenges. All perform basic management of pigs and often the same standard traits are recorded, providing possibilities for improvement of **standard operating procedures (SOPs)**, within and across facilities.

One of the aims within WP2 is to **work with harmonisation and documentation of basic management and development of protocols for recording of standard traits**. Eight protocols in different areas have now been developed.

The process to reach this aim included three main steps:

- A)** Identification of key areas of standard management and recording.
- B)** Development of improved protocols based on compilation of current practises.
- C)** SWOT analyses on implementation of improved protocols.

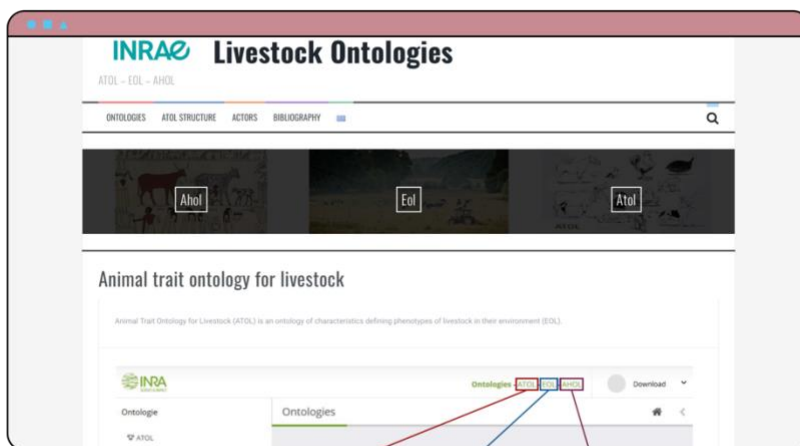
We conclude that procedures varied between facilities but key areas with potential for improvements and harmonisation could be identified. Many facilities had no written standard operating procedures (SOPs) for basic management, even though adequate routines were in place.

The protocols developed in the process described above are not to be used strictly, but as templates to **facilitate and promote the development of SOPs that suit the specific facility**. The work now continues with translation of the final protocols from English to several languages.

WP3 ONTOLOGIES

An ontology is a way of representing **a set of concepts and the relationships between these concepts in a specific field**. The role of ontologies is becoming increasingly important due to the increasing amount of data collected by the scientific community. They are powerful tools to be used in programs of phenotyping or modelling.

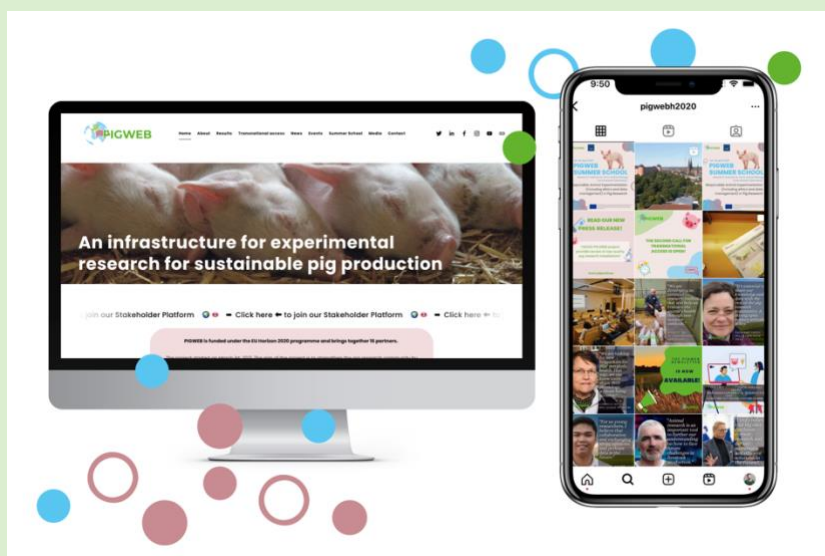
Ontologies applied to research data help meet the FAIR principles. [The ATOL ontology](#), which stands for “**Animal Trait Ontology for Livestock**”, has been specifically dedicated to traits related to livestock and livestock research. The global aim of this ontology is to enhance the ability to standardise phenotype nomenclature. A specific effort has been put into increasing the number of traits described in the ontology and for improving the description of pig-related traits. An expected outcome is also to facilitate the use of ATOL by the pig research community.



In that respect, PIGWEB researchers were encouraged to provide **lists of phenotypes** they recorded in their experiments. Consequently, some ATOL branches related to carcass traits were restructured to meet pig researchers' needs. As a result, more than 300 traits and definitions have been added to the database. A modernisation of ATOL has been investigated to make it more interoperable with other ontologies and with data. This led to a guideline to migrate to a graph-oriented database with the use of ontology standards known as OWL/RDF. PIGWEB WP3 work also contributed to **enriching with new traits related to blood metabolites** the “[Vertebrate Trait Ontology](#)”, coordinated by Iowa State University. PIGWEB researchers were also offered the opportunity to have their datasets enhanced with ATOL references.

The web interface to access ATOL was redesigned to facilitate the visualisation of the ontology as a graph and to provide a powerful semantic search engine.

WP4 A WIDER AUDIENCE



Our website and social media accounts.

The PIGWEB project is navigating an important scientific area which gathers stakeholders from all angles. To make sure we are reaching out to all stakeholders in the correct manner, **we have reviewed and evaluated the audience** and reach of all current communication outlets such as social media but also scientific presentations and press releases.

Based on this information, **we have updated our communication plans** for the years to come. And especially these years will be very exciting from a communication and dissemination point of view. Shortly, the **Citizen Survey** will be launched and our partners will participate in **Open Science events** to engage in a dialogue with a wider audience.

WP5 ALTERNATIVE BLOOD SAMPLING



Blood-sucking ticks (*Dipetalogaster Maximus*). Credit: Agroscope

The efforts in identifying and developing **alternative research methods**, which are less invasive than the currently used methods, address two challenges.

The **first** is to **avoid surgery** on pigs when evaluating the small intestinal nutrient digestibility of different feeds. The **second** is to **induce less stress and pain** in pigs when obtaining blood samples. Research depends on the current methods to provide knowledge on the utilisation of e.g. future sustainable feedstuffs and to reduce the environmental and climate impact by understanding the exact nutritional requirement of the animal.

Blood sampling of pigs is commonly done by inserting a needle into a vein of the neck of the pig, which is fixated by a string surrounding the snout. Experienced staff can obtain such a blood sample within seconds, but it is obvious that the act of especially fixation causes stress to the animal. In PIGWEB, some **alternative blood sampling** methods have been tested, and the work identified the pro and cons of some very distinct methods.

The techniques were evaluated regarding their feasibility from the staff's perspective and the stress level imposed on the animal. Preliminary results point towards the **finger prick method** and **blood-sucking ticks** as candidates, although, in general, they are not better than the current methods. Upcoming work will look into the challenges of e.g. small blood volumes and the potential impact of tick-metabolism of the new methods.

WP6 MEASURING EMOTIONS IN PIGS

Four experiments on measuring **affective states** using positive (straw reward) and negative (omission of straw delivery) stimuli in pigs performed at AU, INRAE, WUR and IRTA have been completed.

Behavioural (social play; tail posture) and **physiological** (salivary oxytocin, infrared eye temperature) parameters have been measured across partner institutions together with FBN and our industry partner, Arador Innovations. Data will be jointly analysed by integrating hormones with behaviour and thermal imaging results. The final goal is to **develop a non-invasive tool to measure emotions in pigs**.

The prototype of an automatic feeder newly developed by our industry partners FTB Messling/Agrisys for group-housed suckling piglets is currently being tested at the FBN pig facility. The feeder monitors the milk replacer intake, meal patterns, and body weight of individual piglets. First results indicate that **the feeding device is well accepted by piglets**, who learn to operate the feeder independently.

The aims are to supply individual piglets in large litters with extra energy and nutrients to improve their vitality and growth pre-weaning and ease their transit to post-weaning. In addition, the feeder is used as a research tool to analyse individual feeding patterns of suckling piglets and test different milk compositions for suckling piglets.



Experiments on the measurements of emotions in pigs. Credit: FNB

FIRST ANNUAL MEETING OF PIGWEB

IN SWEDEN

On June 14-15 of 2022, **PIGWEB held its first Annual Meeting in Uppsala** (day 1) and **Lövsta** (day 2) in **Sweden**. The meeting was attended by **54 participants** where project partners had the opportunity to show the progress and the upcoming activities in their work packages.

The meeting started presenting [SmartCow](#) project (An integrated infrastructure for increased research capability and innovation in the European cattle sector) which has many similar activities with the PIGWEB project. Then partners presented project activities as mapping of research infrastructures, MAP, 2nd TNA call in September 2022, training on FAIR data and new blood sampling techniques. We had also a very interesting interactive session with a roleplaying activity and partners were challenged to convince policymakers/citizens that animal research is necessary.

On the second day, the discussion was focused on **EU legislation on research in pigs**, best practices, protocols, ethics and community building. By the end of the meeting, PIGWEB's Stakeholder Advisory Board members evaluated the progress of the project and provided a comprehensive and constructive feedback and recommendations for each WP. In general, the activities and the progress of the project were found very good and effective!

We will continue to work effectively and enrich our activities to fulfil the objectives of PIGWEB.
Stay in touch!



Presentation of the PIGWEB Annual Meeting in Sweden.

SECOND ANNUAL MEETING OF PIGWEB

IN SPAIN

The **second PIGWEB annual meeting** was held on the 21st and 22nd of March. Partner IRTA hosted this year's edition at their facilities in **Monells, Spain**. Both meeting days were packed with updates from the research activities and tasks and room for discussion. With refreshed energy, the project enters the third year, where new findings will be published; discussions will be held and most importantly, where we will be in dialogue with you!



The PIGWEB team gathered at IRTA facilities in Monells, Spain.

TRANSNATIONAL ACCESS (TNA) PROGRAM

PIGWEB's transnational access (TNA) program ensures free access to top-quality European pig research installations. A budget of 1.5 million euros is available to provide external researchers (both academic and private) with easy and transparent access to the partners' infrastructures. In total, 28 research installations offer TNA to feed mills, barns, different pig breeds and lines, calorimeters, metabolic cages, abattoirs, scanners, recording systems, and laboratories.

FIRST CALL

The first call, launched in **September 2021**, was a great success. The 20 proposals submitted addressed diverse research topics, with a strong interest in performance trials. **Seven proposals**, accounting for 25% of the total TNA budget, finally passed the two-stage selection process. Together, 10 TNA installations will be used to answer the proposed research questions of the selected proposals. **Most projects will use only one experimental installation**, while two projects will combine the expertise of two or three installations.

In general, selected TNA projects focus on **pig emotion and welfare, milk production and piglet survival**, medium chain fatty acids, amino acid requirements for piglets, crude protein levels in sow diets, former food products and castration. Two TNA users are from Belgium and two from France. Others come from the UK, Slovenia and Serbia. Three TNA users work in a private company and three at a university. One is employed at a research institute. The gender of the TNA users is nicely balanced, with three men and four women. **TNA projects from the first call will run between July 2022 and December 2023.**

SECOND CALL

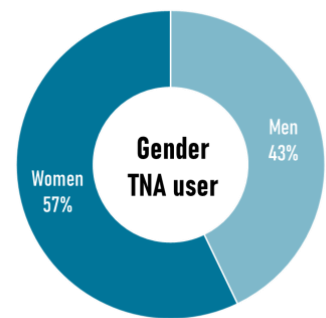
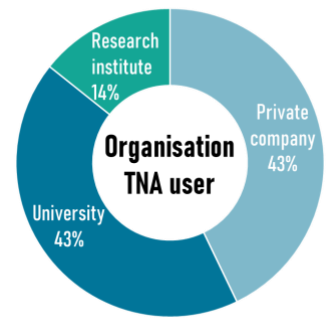
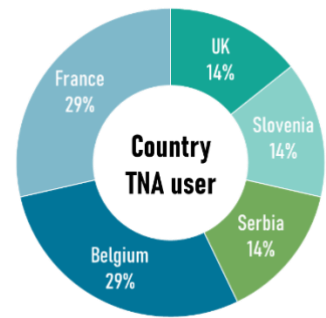
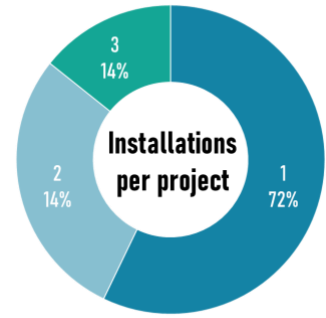
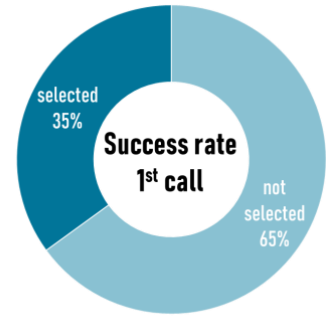
The second call, launched in **September 2022**, was a great success as well. This time, **28 proposals** were submitted, of which 12 were selected to proceed to the second stage and are invited to submit a second-stage proposal by the end of March 2022. **The final selection of proposals will be made at the end of May.**

THIRD CALL

Are you triggered by the PIGWEB TNA program? **Interested in, for example, a piglet trial, calorimetry or the production of experimental feed?** We are pleased to announce that the third and final call will be launched this September!

We welcome your proposals and look forward to hearing from you. If you have any questions or need advice on the most suitable research facility or the proposal submission process, the TNA Management Team is available to assist you. Please use the contact form on the project website at <https://www.pigweb.eu/contact> to get in touch with the team. For more information on the available installations, eligibility criteria, and procedures to follow, please click on the button below.

[Call for proposals](#)



PIGWEB SUMMER SCHOOL

The PIGWEB Summer School took place between the 24th and the 28th of April in Dummerstorf (Germany), and gathered PhD students and early-career scientists on responsible animal experimentation in pig research.



From 24th to 28th of April, the **PIGWEB Summer School** on responsible animal experimentation in pig research at the **Research Institute of Farm Animal Biology (FBN) in Dummerstorf, Germany**, close to the city of Rostock, took place.

The Summer School contributed to spreading new concepts in pig research and the results of the joint research activities in the PIGWEB project to a new generation of pig researchers.

The 15 attendees, consisting of young post-docs and PhD students, were selected from a larger group of applicants for **on-site participation** and came from 12 countries, such as e.g. Portugal, Czech Republic, Brazil.

Parts of the lectures and discussions were offered as a **hybrid event and more than 80 persons from 27 countries worldwide** had registered for online participation. The online participants selected the lectures according to their interests.

The presenters from seven partner institutions of PIGWEB provided a multifaceted programme including lectures, group discussions and practical demonstrations on animal ethics and welfare, nutrition and energy requirement, non-invasive sampling techniques and measurement techniques such as dual-energy X-ray absorptiometry and the use of stable isotopes tracers to analyse metabolic traits.

An important aspect was also **communicating the need to create standard operating procedures for all research activities** as well as the presentation of the principles of FAIR data (findable, accessible, interoperable, re-usable), which will be more and more important in the future. The lessons were rounded off with a visit to the pig facility of the FBN in which a visitor corridor exists.

In addition to taking up the pure factual knowledge **new contacts were made by the participants during this week**. At a get-together evening with lecturers and organisers in a brewery in Rostock experiences were exchanged away from daily work.

We hope that the experience and spirit of the meeting will help the new generation of pig researchers to **expand their professional and perhaps friendship network**.



Image credits: FBN

Profiles

“The human web behind the pigs”

PIGWEB Management Team



SAM MILLET – WP1 EV-ILVO

Sam Millet graduated as a veterinarian from Ghent University in 2000 and obtained his PhD in Veterinary Sciences from the university's Laboratory of Animal Nutrition in 2004. He is a Diplome of the European College of Porcine Health Management and also performed a 6-month postdoc at UC Davis in California. Since 2005, Sam has worked as a senior researcher in pig husbandry at the Flemish Institute for Agricultural and Fisheries Research (ILVO).

Sam's research interests focus primarily on amino acid nutrition in piglets and the effect of diet on nitrogen excretion in pigs. He has supervised several research projects related to pig husbandry and holds a visiting professorship in pig nutrition at the Faculty of Veterinary Medicine at Ghent University.

Currently, Sam is the president of the study commission on pigs for the European Federation of Animal Science (EAAP) and leads WP1 in PIGWEB, a work package that focuses on organizing transnational access to research infrastructures, mapping research infrastructures, and identifying the needs of infrastructure users.

CATHERINE LARZUL – WP3 INRAE

Catherine Larzul has been a research scientist at INRAE since 1993. She specialised in animal quantitative genetics. She carried out research on several animal species including waterfowl, rabbits, and sheep. Her research activities are now fully dedicated to understand genetic determinism of pig traits, combining selection experiments and studies on selected pig in collaboration with pig breeding companies.

The aim of her research is to elaborate genetic selection strategies to improve meat quality and animal welfare. She is also currently interested in taking into account the microbiota information to explore new opportunities to improve sustainable breeding. Throughout the years, she was part of several European projects and coordinated research projects at the national level. She is used to deal with large amount of data and support open science principles. In the PIGWEB project, Catherine is the coordinator of the Work Package dedicated to FAIR data in practice.



Credit: PIC

Videos



[Why Pig Research is Important?](#)

Meet **Giuseppe Bee** from **AGROSCOPE**, the WP7 leader at the PIGWEB project, who will explain to us more about the science applied to pig research and its benefit during PIGWEB's first Annual Meeting in Uppsala, Sweden, in 2022.



[Jaap's presentation at ISEP 2022](#)

During the **7th EAAP International Symposium on Energy and Protein Nutrition (ISEP)** that took place in Granada in September 2022, the PIGWEB project was presented by **Jaap van Milgen**, our Coordinator.



[PIGWEB Junior Board: Francis Eugenio](#)

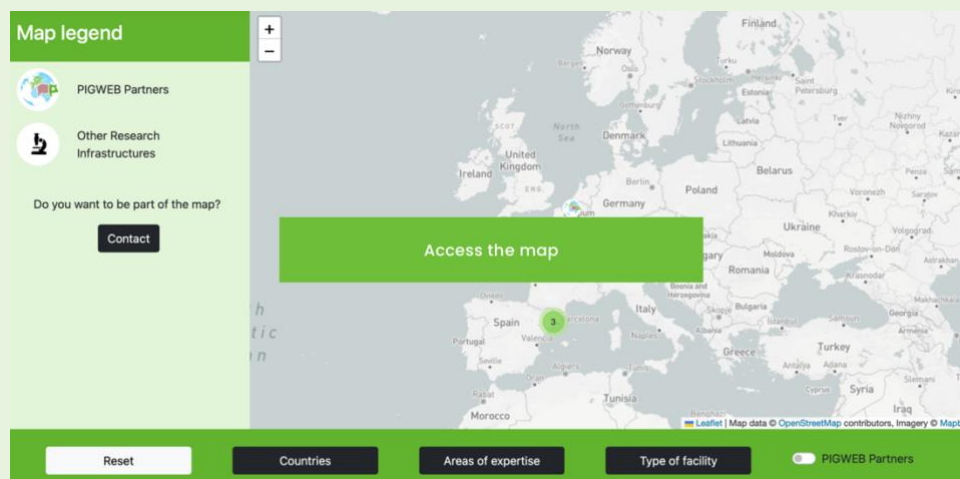
Francis Eugenio, a postdoc researcher at Agroscope (Switzerland), explains to us the "**Pig Vampire**" project, a series of methodologies within Work Package 5 of PIGWEB to extract samples of blood in a non-invasive way.

PIGWEB RESEARCH INFRASTRUCTURES MAP

PIGWEB aims to build a **long-lasting European Pig Research Community**. It will develop a comprehensive overview of all the existing pig **Research Infrastructures (RIs)** in Europe. In the end, this will lead to a **database** in which the relevant information of the RI is stored and retrieved. To start with, the infrastructure map will focus on the infrastructures of the PIGWEB partners (e.g., the installations proposed for TNA and used for JRA, as well as other partner installations).

The database will cover information concerning the characteristics of the RI, the equipment, techniques, and skills proposed to potential users and research collaborators. After developing the database and tools with information from PIGWEB partners, **other RI in Europe will be invited to contribute to this networking activity**. The other RI will include both basic and applied RI (e.g., experimental and demonstration farms) from public and private stakeholders.

Currently, the PIGWEB Research Infrastructure Map is at an initial phase, which includes information on PIGWEB Partner RIs. You can access the map below:





For more information about the PIGWEB project, visit our website:

www.pigweb.eu

You can also follow us on our social media accounts:



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PIGWEB

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