ERA-NET NEURON

NETWORKING GROUPS ON CHRONIC PAIN

Networking Groups Call 2022

Impact Report

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Abbreviations

ANR - French National Research Agency

BMBF - Federal Ministry of Education and Research

ECR - Early Career Researcher

ETAg – Estonian Research Council

ERA-NETs - European Research Area NETworks

HRB – Health Research Body

MOH - Ministry of Health

MRC – Medical Research Council

WHO - World Health Organisation

WoS - Web of Science

I. Introduction

1. ERA-NET NEURON

Public health is a central priority for individuals and governments globally. Brain and nervous system conditions affecting their growth, structure and/or function are responsible for a wide variety of congenital, neurodevelopmental and neurological dysfunctions. The World Health Organisation (WHO) estimates that one in three people will develop a neurological disorder at some point in their life, making neurological disorders the leading cause of disability and the second leading cause of death worldwide. Mental disorders are a major cause for morbidity, mortality and impaired quality of life in Europe. Biomedical and health research provides important knowledge to better understand mental disorders and helps improve diagnosis, therapy, and rehabilitation procedures. To address this topic, the 'Network of European Funding for Neuroscience' (NEURON) aims to coordinate research efforts and funding programmes of its partner countries in the field of disease-related neuroscience, specifically in the field of mental health and mental disorders. Under the umbrella of NEURON, a novel transnational call Networking Groups Call 2022 (NWGC 2022) was launched in the field of chronic pain.

The European community includes a vast pool of scientific and medical expertise. In order to coordinate research objectives and promote European research collaborations, the European Commission developed European Research Area NETworks (ERA-NETs). These ERA-NETs aim to support and encourage cross-border collaboration in various fields of research by supporting joint activities. The Network of European Funding for Neuroscience Research (NEURON; www.neuron-eranet.eu) was initiated in 2003 as a pilot Specific Support Action. It was developed into an ERA-NET in 2007 and has been funded by the European Commission in four phases: NEURON I (2007 – 2011), NEURON II (2012 – 2015), NEURON Cofund (2016-2020) and NEURON Cofund2 (2021-2026). The overarching aim of NEURON is to support the translation of results from fundamental brain research into improved prevention, diagnosis, therapy and rehabilitation for patients, their families, and carers.

The **transnational Networking Group Calls** of the **ERA-NET NEURON** programme are a novel funding scheme designed to strengthen international collaboration in neuroscience research. Instead of supporting experimental work, these calls fund networks of experts—researchers, clinicians, and stakeholders—from multiple countries to coordinate, harmonize, and advance shared goals in fields such as mental, neurological, and sensory disorders. The main objectives are to identify research gaps, align methodologies, foster data sharing, and develop strategic outputs like white papers or best-practice guidelines. By supporting activities such as **workshops**, **virtual meetings**, and **collaborative planning**, the scheme aims to build cohesive, transnational communities that lay the groundwork for future joint research and innovation across Europe and beyond.

II. Networking Group Call 2022 "Chronic Pain"

1. Participants of the call

The first ERA-NET NEURON Networking Groups Joint Transnational Call was launched in September 2022 as a pilot action involving 6 funding organisations from 6 countries (Table 1). The topic of this first Call was 'Chronic Pain'. The Call involved a total of ~ 554.000 € in funding for 11 successful projects, resulting in an average amount of ~50.400 € per networking group (excluding overheads). The awarded networking groups address cross-cutting challenges in the research field of chronic pain, to build knowledge on specific aspects, identify gaps, and find solutions for urgent issues such as interoperability of data and method harmonization. **The networking call does not fund experimental research activities or scientific staff salaries.**

Partner Country	Funding Agency
Estonia	Estonian Research Council (ETAg)
France	French National Research Agency (ANR)
Germany	Federal Ministry of Education and Research (BMBF)
Italy	Ministry of Health (IT-MoH)
Ireland	Health Research Body (HRB)
UK	Medical Research Council (MRC)

Table 1: Funding organisations participating in NWGC 2022

2. Evaluation of the projects

The first pilot action of the ERA-NET NEURON Networking Groups Joint Transnational Call was conducted as a one step-procedure. The Call Steering Committee (CSC) nominated remote evaluators for the proposals considering their scientific expertise on the topic. The Joint Call Secretariat (AEI, Spain) worked on the assignment of proposals to reviewers, ensuring at least three experts per proposal. After approval by the CSC, the evaluation was performed remotely. These experts assessed if the projects were within the scope of the call to carry out the evaluation according to the following evaluation criteria:

1) Excellence
Quality, importance and originality of the concept/idea/question
Clear definition of the expected outcome
Competence of the partners in regard to the question and appropriate mix of expertise
2) Impact
Potential outcome for the community
Added-value of the multidisciplinary and transnational collaboration
3) Quality of the implementation
Appropriateness of the proposed procedures
Outcome dissemination

The main distinct features compared to the regular biomedical calls are:

- Networking groups should address cross-cutting challenges in the field of **chronic pain**
- It should be clarified how the proposed outcome is potentially useful to the **relevant community**
- The networking call **does not fund experimental research activities**

A Networking Group must consist of a minimum of 10, and should not exceed 25 participant institutions. At least half of the institutions participating to a Networking Group must be established in a member country of the ERA-NET NEURON COFUND 2. As a result of the call, 11 proposals were submitted, all of which were eligible and successful. These comprised over 200 participant institutions from 30 different countries (Italy, France, United Kingdom, Switzerland, Canada, Greece, Belgium, Spain, The Netherlands, Curaçao, Qatar, Ireland, Germany, United States of America, Australia, Austria, Denmark, Chile, Estonia, South Africa, Finland, Japan, Sweden, Poland, Portugal, Norway, Israel, Croatia, Serbia and New Zealand, see Figure 1 for a detailed breakdown).

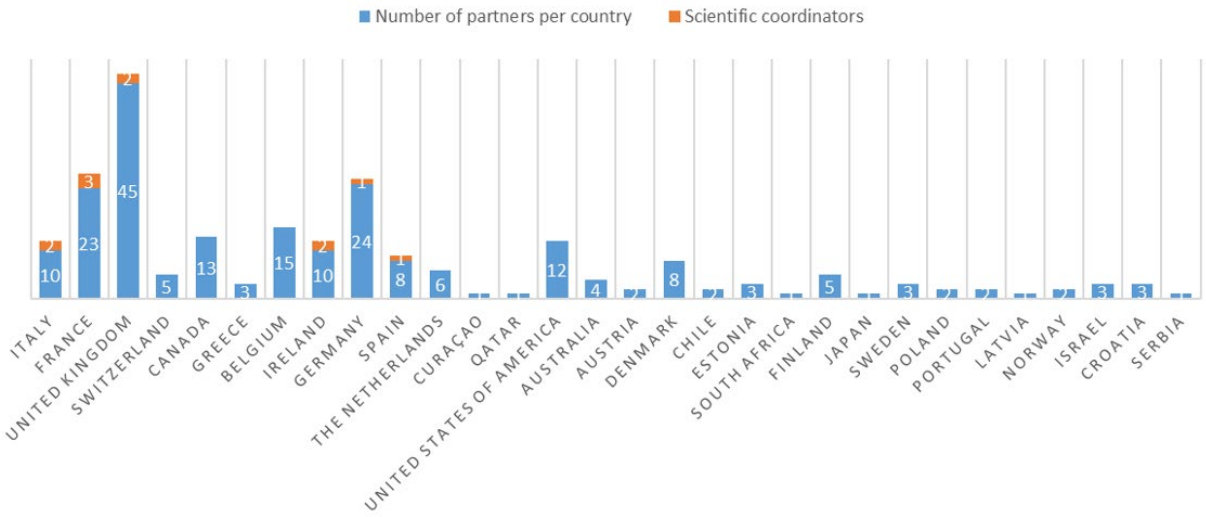

Figure 1: Number of research partner per country in NWGC 2022 on Chronic Pain

The groups were comprised by 52 % male participants and 48 % female participants (255 Total participants). There were three projects (3/11) led by female coordinators (27 %) (Figure 2).

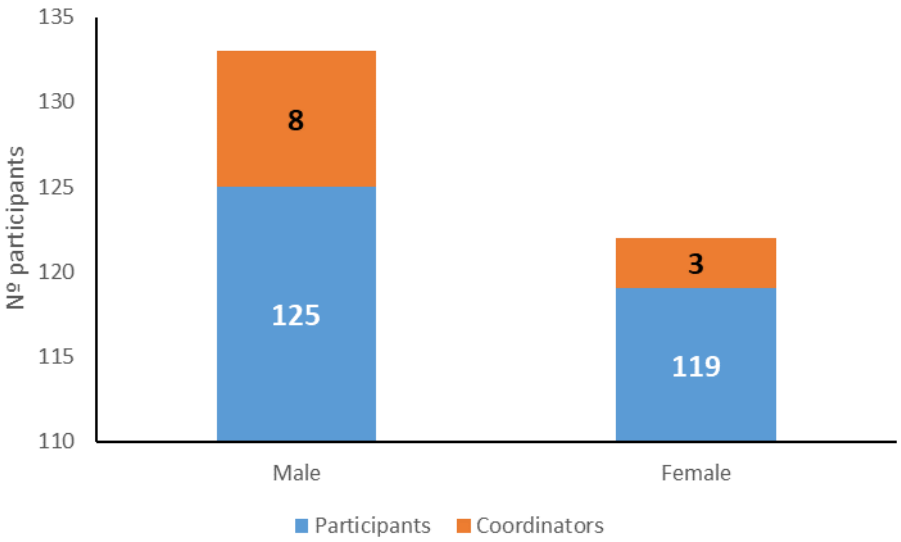

Figure 2: Male-Female Composition of Funded NWGs

3. Funded projects

The **11 successful projects** included over 200 research groups. The projects dealt with a wide variety of topics relevant for chronic pain, such as pain after covid (1); sex differences in chronic pain (1); osteoarthritis-related pain (1); developing novel pain research strategy (1); enhancing trust in pain research (1); chronic pain in childhood (1); improving translational research for chronic pain (2); neuropathic pain (2); complex regional pain syndrome (1).

Note: *that acute pain was excluded from this call as well as proposals focusing on psychological and social consequences of pain conditions. Experimental research activities were also excluded.*

Selected projects addressed current gaps in chronic pain research and potential solutions to ensure the fruitful, homogeneous and inclusive translation of basic science into clinical practice. The projects used a large variety of human data and experimental models spanning from molecular/cellular biology, imaging, advanced electrophysiological measurements, *omics* approaches, immunology, to clinical assessments and more. Basic structure of funded projects is shown in Table 2.

Acronym	Title	Consortium PIs	Country and Funding Agency
AGORA	Advancing guidelines with original research achievements in pain	**Giuseppe Lauria Pinter (PI)**	**Italy (MOH)**
		Didier Bouhassira	France
		Giandomenico Iannetti	United Kingdom
		Paolo Ripellino	Switzerland
		Ian Gilron	Canada
		Andreas Argyriou	Greece
		Deirdre Ryan	Belgium
		Frederic Destrebecq	Belgium
		Andres Ancor Serrano Afonso	Spain
		Xavier Gasull	Spain
		Catharina G. Faber	The Netherlands
		Ingemar Merkies	Curaçao
		Rayaz Malik	Qatar
OptiMeth-CRPS	Optimising clinical trial methods for complex regional pain syndrome (CRPS): A methodological framework initiative	**Keith Smart (PI)**	**Ireland (HRB)**
		Neil O'Connell	United Kingdom
		Frank Birklein	Germany
		Ralf-Dieter Hilgers	Germany
		Simon Day	United Kingdom
		Candy McCabe	United Kingdom
		Stephen Bruehl	USA
		Sharon Grieve	United Kingdom
		Stavros Nikolakopoulos	Greece
		Michael Ferraro	Australia
		Frank Huygen	The Netherlands
		Keene David	United Kingdom
		Franz Koenig	Austria
		Victoria Abbott-Fleming	United Kingdom
EndPain	European neuropathic pain tissue and data collection network	**Franziska Denk (PI)**	**United Kingdom (MRC)**
		David Bennett	United Kingdom
		Andrew Rice	United Kingdom
		Ralf Baron	Germany
		Claudia Sommer	Germany
		Rolf-Detlef Treede	Germany
		Angelika Lampert	Germany
		Emmanuel Bourinet	France
		Nadine Attal	France
		Andrea Truini	Italy
		Nanna Brix Finnerup	Denmark

		Eske Kvanner Aasvang	Denmark
		Theodore Price	USA
		Margarita Calvo	Chile
		Pille Taba	Estonia
NeuP-GRADE	Neuropathic pain special interest group (NeuPSIG) revised systematic review, meta-analysis and therapeutic guidelines	**Xavier Moisset (PI)**	**France (ANR)**
		Nadine Attal	France
		Nanna Finnerup	Denmark
		Nadia Soliman	United Kingdom
		Andrew Rice	United Kingdom
		Simon Haroutounian	USA
		Ralf Baron	Germany
		Ian Gilron	Canada
		Margarita Calvo	Chile
		Ewan McNicol	USA
		Peter Kamerman	South Africa
		David Bennett	United Kingdom
		Blair Smith	United Kingdom
		Srinivasa Raja	USA
		Daniel Ciampi de Andrade	Denmark
		Aki Hietaharju	Finland
		Patrick Dougherty	USA
		Koichi Hosomi	Japan
		Harriet Kemp	United Kingdom
		Elena Enax-Krumova	Germany
		Andrea Truini	Italy
		Ian Vollert	United Kingdom
		Michael Ferraro	Australia
		Fiona Talkington	United Kingdom
ITPain	Improving translational research for chronic pain: Data alignment in preclinical and clinical studies	**Esther Pogatzki-Zahn (PI)**	**Germany (BMBF)**
		Geert Crombez	Belgium
		Kristian Kjaer-Staal Petersen	Denmark
		Patricia Lavand'homme	Belgium
		Deirdre Ryan	Belgium
		Ralf Baron	Germany
		Cheryl Stucky	USA
		Theodore Price	USA
		Didier Bouhassira	France
		Jan Vollert	United Kingdom
		Kirsty Bannister	United Kingdom
		Eva Kosek	Sweden
		Katy Vincent	United Kingdom
		Luda Diatchenko	Canada
		Manuela Schmidt	Austria
		Katarzyna Starowicz-Bubak	Poland
		Lars Arendt-Nielsen	Denmark
		Andrew Sven Cracroft Rice	United Kingdom

		Jordi Miro	Spain
		Brona Fullen	Ireland
		Bruno Pradier	Germany
		Daniel Segelcke	Germany
INCHILD PAIN	International network on chronic pain in childhood	**Jordi Miro (PI)**	Spain
		Esther Pogatzki-Zahn (Budget Recipient)	**Germany (BMBF)**
		Mary O'Keeffe	Belgium
		Rikard Wicksell	Sweden
		Sussie Lord	Australia
		Francisco Reinoso-Barbero	Spain
		Jesus Cebrecos	Spain
		Julia Wager	Germany
		Chantal Wood	France
		Lorezon Moscaritolo	Italy
		Christina Liossi	United Kingdom
		Suellen M Walker	United Kingdom
		Stahl Minna	Finland
		Ananda Fernandes	Portugal
		Pablo Ingelmo	Canada
		Allen Finley	Canada
		Vina Mohabir	Canada
		Inese Gobina	Latvia
		Liesbet Goubert	Belgium
		Helen Koechlin	Switzerland
		Randi D. Andersen	Norway
		Mark P. Jensen	USA
ENTRUST-PE	ENTRUST-PE: Enhancing trust in pain evidence	**O´Connell Neil (PI)**	**United Kingdom (MRC)**
		Neil O'Connell	United Kingdom
		Christopher Eccleston	United Kingdom
		Emma Fisher	United Kingdom
		Andrew Rice	United Kingdom
		Nadia Soliman	United Kingdom
		Vollert Jan	United Kingdom
		Esther Pogatzki-Zahn	Germany
		Gisele Pickering	France
		Roger Knaggs	United Kingdom
		Geert Crombez	Belgium
		Georgia Richards	United Kingdom
		Jack Wilkinson	United Kingdom
		Dennis Turk	USA
		Amanda Williams	United Kingdom
		Thomas R. Toelle	Germany
		Francis Keefe	USA
		Tonya Palermo	USA
		Elaine Wainwright	United Kingdom

		Stewart Gavin	United Kingdom
GO-PAIN	Going inside osteoarthritis-realted pain phenotyping	**Jeremie Sellam (PI)**	**France (ANR)**
		Francis Berenbaum	France
		Serge Perrot	France
		Kalle Kisand	Estonia
		Philip Conaghan	United Kingdom
		Sylvain Mathieu	France
		Hans-Georg Schaible	Germany
		Alice Courties	France
		Roland Peyron	France
		Nadine Attal	France
		Camille Fauchon	France
		Marie Binvignat	France
		Liisa Kuhi	Estonia
		Alain Saraux	France
		Niels Eijkelkamp	The Netherlands
		Eva Kosek	Sweden
		Patrick Omoumi	Switzerland
		Simo Saarakkala	Finland
		Yves Henrotin	Belgium
		Margreet Kloppenburg	The Netherlands
		Ida Haugen	Norway
		Ali Mobasheri	Finland
		Celine Mathy	Belgium
		Rinie Geenen	The Netherlands
		Christelle Chau	France
PRiSE	Developing a pain research strategy for Europe: An international network of world-leading experts and patient representatives	**Luis Garcia Larrea (PI)**	**France (ANR)**
		Gisele Pickering	France
		Brona Fullen	Ireland
		Mary O Keeffe	Belgium
		Patrice Forget	United Kingdom
		Thomas Graven-Nielsen	Denmark
		David Finn	Ireland
		Kirsty Bannister	United Kingdom
		Andre Mouraux	Belgium
		Elon Eisenberg	Israel
		Susanne Becker	Switzerland
		Mira Meeus	Belgium
		Deirdre Ryan	Belgium
		Felicia Cox	United Kingdom
		Thomas Tolle	Germany
		Hugo Leite-Almeida	Portugal
		Ioannis Sotiropoulos	Greece
		Jose Antonio Lopez-Garcia	Spain
		Michiel Reneman	The Netherlands
		Livia Puljak	Croatia

		Andrea Truini	Italy
		Eija Kalso	Finland
		Magdalena Kocot-Kepska	Poland
		Snezana Tomasevic Todorovic	Serbia
		Kevin Vowles	United Kingdom
PAINDIFF	Methodological approaches for best practice study of sex and gender differences in chronic pain: Consensus recommendations and a roadmap for research	**Michelle Roche (PI)**	**Ireland (HRB)**
		Brona Fullen	Ireland
		Siobhain O'Mahony	Ireland
		Kieran O'Sullivan	Ireland
		Ipek Yalcin	France
		Herta Flor	Germany
		Rohini Kuner	Germany
		Miriam Kunz	Germany
		Stefan Lautenbacher	Germany
		Edmund Keogh	United Kingdom
		Kevin Vowles	United Kingdom
		Suellen Walker	United Kingdom
		Katelynn Boerner	Canada
		Salter Michael	Canada
		Karen Davis	Canada
		Jeffrey Mogil	Canada
		Yves De Koninck	Canada
		Ruth Defrin	Israel
		Kathleen Sluka	USA
		Emeran Mayer	USA
		Hemakumar Devan	New Zealand
		Louise Riordan	Ireland
PAC-MAN	Pain after Covid: Multidisciplinary action network	**Ennio Tasciotti (PI)**	**Italy (MOH)**
		Cesar Fernandez-de-las-Penas	Spain
		Andrea Fanelli	Italy
		Sam Eldabe	United Kingdom
		Lars Arendt-Nielsen	Denmark
		Jean-Pierre Van Buyten	Belgium
		Massimo Allegri	Switzerland
		Carolina Muscoli	Italy
		Pablo Ingelmo	Canada
		Assaf Zinger	Israel
		Dragan Primorac	Croatia
		Filippo Sertorio	Italy
		Nicoletta Marchesi	Italy
		Gisele Pickering	France
		Marina Lusic	Germany
		Thomas Volk	Germany
		Luda Diatchenko	Canada

Table 2: NWGC 2022 Funded projects. Bold indicates the coordinators of the consortia

4. Key Performance Indicators

As part of the final report for each project, researchers were asked to fill out a questionnaire (Annexe II) to measure the key performance indicators set by ERA-NET NEURON (Table 3). A summary of the different aspects evaluated by the final questionnaire (Annexe II) is described below organised according to ERA-NET NEURON's overarching objectives.

Objective of the Funding Programme	Key performance indicators	Measures (i.e. items in the questionnaire)
1. **Enhance cooperation between scientists working in the field of chronic pain**	Communication of results	List of publications and communications - level of co-publication, bibliometric indicators with members of the consortium. (**Question 1**)
	NWGC as starter of new collaborations	Have the partners participating in the NEURON project collaborated before applying for this NEURON Call? (**Question 3.1**)
	New research groups from other countries joining the consortium	Has the development of the project funded by NEURON motivated the establishment of new collaboration(s) with other team(s)? (**Question 3.2**)
	Sustainability of the collaboration (obtaining further funding for the same consortium)	Has the consortium collaboration led to new applications/grants in other funding programmes? (**Question 3.3**)
	Intensity of collaboration (meetings, workshops)	List of meetings/workshops involving at least four consortium partners (**Question 4**)
2. **Support the development of innovative or shared resources and new technologies**	Outputs with impact to health	Data sharing strategies (**Question 2**)
	Evaluation of the development and the use of new resources	Has the consortium created a new or further developed an existing transnational patient registry, database or biobank? (**Question 4.1**)
3.**Support development of new strategies for prevention, diagnosis, therapy, and rehabilitation procedures**	Major achievements	List the major achievements of the consortium (**Question 5**)
4**. Promote multidisciplinary consortia and encourage translational research proposals (from bench to bedside)**	Patient engagement	Were patients/patient representatives involved in planning and/or during the networking group activities (**Question 6**)

Table 3: Key performance indicators in relation to the objectives of the funding programme (The respective question in the questionnaire is given in brackets)

A summary of the major achievements expressed as percentage from the total number of consortia (11) funded can be found in Table 4. These results are further detailed in the sections below.

Objective of the Funding Programme	Key performance indicators	Results (percent of funded consortia, if not specified).
1. Enhance cooperation between scientists working in the field of chronic pain	Communication of results	→ **100** % reported results including original research articles and reviews
	NWGC as starter of new collaborations	→ 11/11 projects were partially pre-existing consortia (some PIs collaborated before)
	New research groups from other countries joining the consortium	→ 7 consortia incorporated new research groups from other countries (Taiwan, Serbia, Canada, USA, Australia, South Africa, etc.)
	Sustainability of the collaboration	→ 7 consortia applied to other grants (European Programs, National Calls) → 3 consortia applied to the ERA-NET NEURON 2025 “Interdisciplinary Approaches to the Neuroscience of Pain”
	Intensity of collaboration (meetings, workshops)	→ On average consortia held 4 meetings during the duration of the project.
2. Support the development of innovative or shared resources and new technologies	Outputs with impact to health	→ **90 %** reported documents directly targeting the health care system (recommendations, protocols, diagnosis tools, etc.) (10/11)
	Evaluation of the development and the use of new resources	→ 5 consortia reported the development of new websites and the generation of open repositories for data sharing with the scientific community
3. Support development of new strategies for prevention, diagnosis, therapy, and rehabilitation procedures	Major achievements	→ 8 consortia reported contributions to conceptualization of new ideas → 6 consortia reported provision of white papers → 4 consortia reported prospective analysis in expert centres → 6 consortia reported harmonization and standardization of methods → 3 consortia reported guidelines for patient stratification

		→ 6 consortia reported best practices concerning patient data → 7 consortia reported roadmaps for implementation of new techniques and protocols → 5 consortia reported guidelines for best practices → 3 consortia reporter other type of achievements such as patient engagement and training, and international collaborations, for example the **INCHILD PAIN** consortia generated a Latin American Alliance on Paediatric Chronic Pain under the Lima Declaration framework.
4. Promote multidisciplinary consortia and encourage translational research proposals (from bench to bedside)	Patient engagement	→ **90 %** of consortia reported active patient engagement (10/11)

Table 4: Summary of major achievements in the frame of key performance indicators.

5. Composition of Funded Consortia

ERA-NET NEURON aims to promote interdisciplinary collaboration to solve unmet medical needs in the field of nervous system disorders through the development of translational research projects. As such, it is expected that the consortia include expertise from fundamental science but also any other expertise needed to pave the way towards therapeutic solutions for mental disorders. Out of the 11 funded consortia, 5 coordinators were medical doctors (often holding dual MD-PhD degrees).

The majority of the researchers involved in the projects worked in basic research laboratories and collaborated with researchers working in clinical research laboratories and researchers working at hospitals.

This synergy between basic and clinical researchers generated new experimental and protocol paradigms, ensuring a realistic approach to chronic pain research, facilitating the validation of results in both preclinical and clinical contexts. Moreover, this interaction enabled the development of materials with proven clinical value (Table 5).

In addition to the principal investigators, the projects highlighted the involvement of 24 ERC members in project conceptualization as well as prominent roles in key activities. Most ERCs were senior postdoctoral researchers (15), advanced PhD students (7) and 2 junior group leaders. This distribution can be found in Figure 3.

Important contributions were also made by external collaborators and non-permanent personnel, mainly postdoctoral researchers (39%), PhD students (32%), technicians (14%), MD collaborators (11%), and patient representatives (4%).

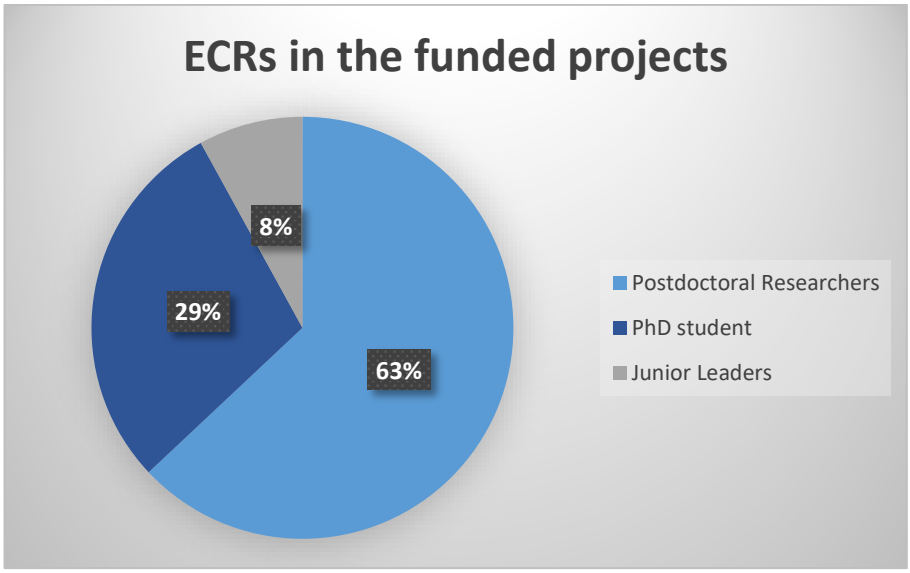

Figure 3: Distribution of ECRs in the NWGC 2022 funded projects

III. Objectives of the Funding Programme

1. Enhance cooperation between scientists working in chronic pain

1.1 Publications and Communications (Question 1)

Consortium partners were asked to report the dissemination channels of project results. This included white papers, recommendations, peer-reviewed publications (journal articles, reviews, and books or book chapters), PhD dissertations, presentations (written and oral) to scientific congresses, and articles dedicated to the general public. Peer-reviewed articles and reviews were included only if NEURON support was acknowledged. Table 5 presents a summary of the different communications produced by the funded consortia.

Type of publication (submitted or in preparation)	Total
Peer reviewed articles	**8**
Peer reviewed reviews	**11**
General public papers (Dissemination)	**19**
Books or book chapters	**0**
Communications in scientific congresses	**67**
PhD Dissertations	**0**
White papers, prospective views, recommendations, guidelines, best practices	**5**
Others (letters to the editor, comments, etc.)	**2**

Table 5: Total publications resulting from projects funded through NWGC 2022

Most of the consortia reported some form of publication or dissemination activity. The short duration of the projects (one year) limited the number of peer-reviewed articles or reviews produced; nevertheless, several publications were reported, either as accepted research papers (e.g., in *Pain*, *European Journal of Pain*) or as manuscripts under review (7). Approximately 75% of the publications were authored by multiple members (> 3) of the consortium.

The **PAINDIFF** consortium was particularly active in scientific communications, delivering 27 conference presentations. The preparation of white papers was one of the main objectives of the call, resulting in **five** outputs, either already published or under review. The NWGs were also highly engaged in dissemination activities aimed at the general public, with 18 contributions. In this regard, the consortia **ENTRUST-PE** (7 articles), **PAINDIFF** (6 articles), and **PRISE** (5 articles) were especially notable. Only the **NeuP-Grade** consortium reported no dissemination activities during the project duration (1 year) but indicated plans for future activities

Overall, these results demonstrate the strong productivity of the projects funded under this NWGC, particularly given the exceptional time constraint of one year. Additional publications are expected in the coming years, as at least **10 new manuscripts** were in preparation at the time of the final report.

The materials produced were quite varied, mainly addressing topics related to:

- Neuropathic pain
- Enhancing trustworthiness in pain research
- Peripheral tissue
- Osteoarthritis-related pain syndrome
- Methodological approaches
- Pain research strategies

The journals were also of high quality. An analysis was performed using “quartiles” (Q). Quartiles indicate where a journal’s ranking lies within a particular subject category, using the citation level and impact factors. They are ranked from least referenced (Q4) to most referenced (Q1) in the domain. The quartile of each journal where the articles of this call’s projects were published was gathered on the “Web of Science” website and analysed. They are represented in Figure 4. The vast majority of this call’s peer-reviewed articles were published in Q1 or Q2 journals, highlighting the high quality of the scientific production of NEURON-funded consortia.

Considering the short duration of the project’s implementation, the groups have achieved a good level of productivity, which is expected to continue increasing in the coming months. In fact, several consortia reported having articles (original research articles or reviews) in preparation or already submitted to high-impact, peer-reviewed journals in the fields of Pain and Neuroscience.

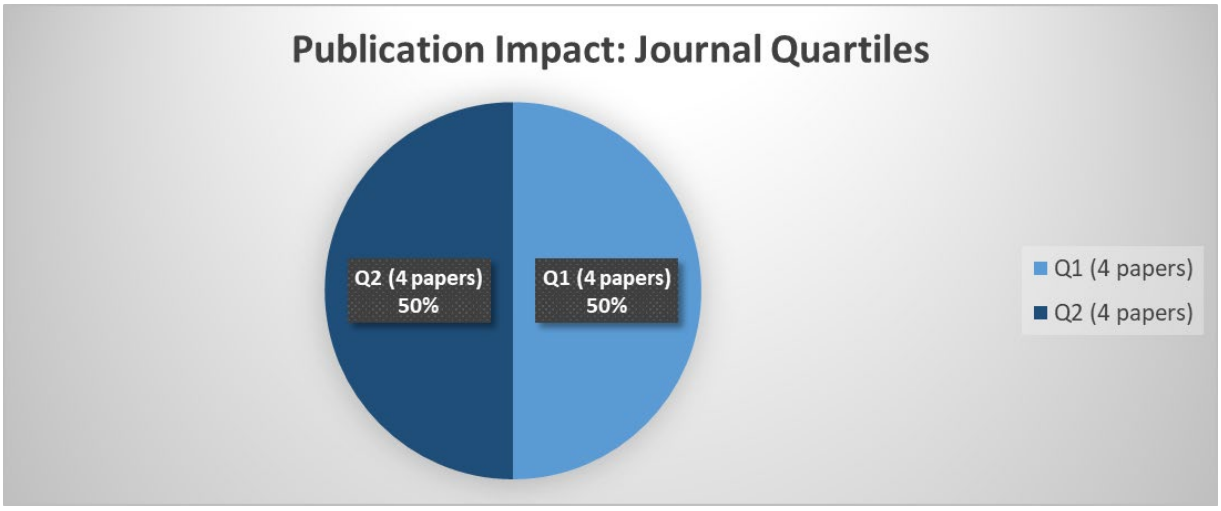

Figure 4: Peer-reviewed publications: Distribution of peer-reviewed publications (research and review articles) by quartile rank indexed in relevant disciplines associated with the neurosciences in the WoS (Q).

1.2 NEURON NWGC as a starter of new collaborations (Questions 3.1 and 3.2)

The final report contained a series of questions on the structure of the consortia, including whether the partners had previously collaborated on a research project and whether new collaborations arose during or will continue after the funding period. None of the funded consortia had worked together as a full group before the present call.

Most consortia (10/11) included members with a history of collaboration previous to this ERA-NET NEURON project. In general, the coordinator had collaborated with at least one partner. The consortia then grew with the addition of new partners. In particular, new partners from third countries were added to 7 consortia including partners from Taiwan, Serbia, Canada, USA, Australia, New Zeeland and South Africa among others. The **INCHILD PAIN** consortia indicated the formation a new Latin American Alliance on Paediatric Chronic Pain under the Lima declaration framework.

1.3 Sustainability of the collaboration (Question 3.3)

Researchers were asked to report follow-on collaborations, including further funding applications by consortia members. This measure indicates the impact of consortium development within the NEURON programme on continuing scientific advancement beyond the ERA-NET funding period, and on seeding sustainable academic collaborations. Members of 7 funded consortia applied for a total of 8 grants. Applications were made to subsequent ERA-NET NEURON 2025 Call “Interdisciplinary Approaches to the Neuroscience of Pain” and other HORIZON EUROPE funding schemes, and grants from associations (i.e., Association for the Study of Pain).

1.4 Intensity of Collaboration (Question 4)

Consortia were encouraged to organise regular in-person or virtual meetings as well as staff exchanges to fully capitalise on the range of expertise of project partners and to develop the skillsets of individual lab members. All the consortia organised between 1 and 12 meetings (average of 4 per consortia; over 40 meetings in total). These meetings were considered fruitful, as they fostered the exchange of scientific ideas and plans for funded and future work. This call particularly highlighted the collaboration effort made by the members of the consortia, facilitated by the ERA-NET NEURON NWGC.

A Final Symposium was organised by NEURON in March 2025 (online format). A consortium member, usually the coordinator, gave a presentation on the work progress. Members of the Call Secretariat (AEI) evaluated the progress, and the coordinators received feedback. Two main aspects were evaluated: scientific progress (outcomes produced/advancement of the work plan) and collaboration between the partners. In general, the evaluations were highly satisfactory since the projects were considered properly advanced and some projects started publishing their results.

Summary

The present analysis shows that ERA-NET NEURON NWGC funding resulted in a high number of interactions between research groups in several countries. Most of these interactions (100 %) were partially established consortia and were extended towards new research groups throughout the lifetime of the project.

Most of the collaborations will outlast the period of funding by ERA-NET NEURON, as evidenced by the report of several publications still in preparation at the end of the project. Ongoing follow-up work was reported, which is at the origin of national and international applications for funding such as directly related calls (i.e., ERA-NET NEURON 2025 Call “Interdisciplinary Approaches to the Neuroscience of Pain”). ERA-NET NEURON was instrumental in getting the research started and building long-lasting collaboration between international scientists. This ERA-NET NEURON Call was used as a building block to structure new research ecosystems in the field.

2. Support the development of innovative or shared resources and new technologies

2.1 Main outcomes with public health impacts (Question 2)

The NWGC 2022 produced numerous outcomes with significant public health impact. Regarding Data Sharing strategies for these outcomes (Question 2.1), eight consortia provided specific information on this aspect:

- **AGORA** results have been published in PROSPERO enabling open access data sharing.
- **EndPain** set up a protocol sharing community on Zenodo, where we they deposited lab-specific protocols.
- **ENTRUST-PE** consortium registered the project on the Open Science Framework and all project outputs will be publicly available.
- **ITPain** results (Delphi surveys, SOPs and analytic code) are stored on ITPain.org under FAIR principles.
- **NeuP-GRADE** data extracted during the systematic review will be available on the Open Science Framework DOI 10.17605/OSF.IO/KJQ9U.
- **OptiMeth-CRSP** shares meeting notes and discussion publicly online at: https://doi.org/10.17605/OSF.IO/894MQ
- **PAINDIFF** will make results openly available on the paindiff.com website and in an online repository.
- **PRiSE** will make results publicly available.

Question 2.2 inquired about other outputs with impact to health. Two consortia provided answers for this aspect:

- The **AGORA** collaborative framework resulted in standardized, evidence-based guidelines for both clinical practice and research in chronic neuropathic pain.
- **PAINDIFF** will develop recommendations and guidelines to improve how research in chronic pain incorporates sex and gender influences.

2.2 Development and use of new resources (Question 4)

Sharing information and resources with the community was of utmost importance for the funded researchers. Four consortia developed online platforms for data sharing made available to a broad community.

- The **ENTRUST-PE** consortium indicated that all project outputs will be publicly available from Open Science Framework and their website https://entrust-pe.org/
- The **NeuP_GRADE** consortium established an Open Science Framework database to share project´s results: Open Science Framework DOI 10.17605/OSF.IO/KJQ9U
- The **PAINDIFF** consortium developed a website available to the public to communicate information about the project to be consulted at: https://www.paindiff.com/
- The **PRISE** consortium indicated a new website will be available to the public to communicate information about the project.
- The **INCHILD PAIN** consortium developed a new website for data dissemination: https://in-childpain.org/project/network-members.html

Summary

The consortia funded in the frame of NWGC 2022 engaged in collaboration with basic researchers as well as medical doctors to further understand chronic pain and develop therapeutic and preventive approaches. Several outcomes with direct clinical value were developed, such as, recommendations for best practices concerning patient data, methods for harmonization and standardization for chronic pain research, and roadmaps for implementation of techniques or protocols related to chronic pain. Communication was promoted through the creation of online platforms. Overall, the high degree of interaction of the consortia shed a light on the capacity of the ERA-NET NEURON to bring together great international scientists and enable them to develop innovative solutions.

3. Supporting the development of new strategies for prevention, diagnosis, therapy and rehabilitation procedures

3.1 Potential health impact and achievements (Question 5)

In addition to scientific publications, the projects also generated a series of research resources shared among the partners of a project or open to broader scientific, clinical, and other relevant communities. Common protocols and practices were developed and harmonised between members of the consortium to be shared with the rest of participants.

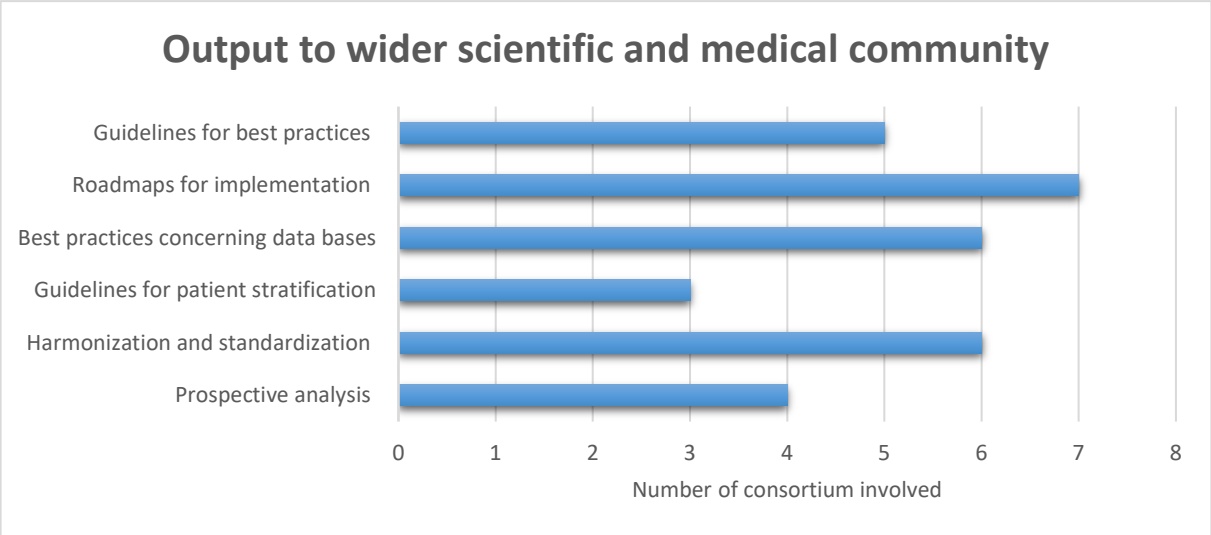

Figure 5: Output to wider scientific and medical community

Summary

ERA-NET NEURON aims to support the development of new tools and resources available to the research and clinical community at large. As such, the consortia generated protocols and recommendations based on experimental or clinical data which were exchanged between the participating laboratories. The resources generated within ERA-NET NEURON funding are expected to be further exploited to influence new practices in chronic pain research.

4. Promote multidisciplinary consortia and encourage translational research proposals

4.1 Development of new strategies for diagnosis, therapy, and rehabilitation procedures

New clinical strategies were derived from the work of the funded consortia. In particular, six consortia contributed tools and materials at an advanced stage or implementation level to improve chronic pain research:

- The **AGORA** consortium developed a person-centered approach to chronic neuropathic pain and consensus-driven recommendations (via Delphi process) for inclusion criteria.
- The **PAINDIFF** consortium conducted a survey to analyse current methodological practices regarding sex and gender variables in the study of chronic pain research. The survey was the foundation for the development of recommendations on this issue. The consortium established a collaboration with Chronic Pain Ireland to deliver patient outreach events.
- The **EndPain** consortium published a narrative review paper in the Journal Pain describing harmonization protocols for neuropathic pain research.
- The **ENTRUST-PE** consortium published a white paper in OSF discussing an integrated framework for trustworthy pain evidence.
- The **ITPain** consortium developed a top-down framework and 75 recommendations refined via Delphi consensus to guide translational pain research. These recommendations were summarized in a white paper authored by several members of the consortium.
- The **OptiMeth-CRSP** consortium establish best practices and roadmaps for implementation in future clinical trials in CRPS.

4.2 Patient engagement (Question 6)

All projects used patient cohort data from various origins, either pre-existing or accessible through collaborations established with ongoing clinical trials as well as data from direct patient recruitment. Some projects required patient-derived material as well.

Researchers were asked to report the involvement of patients or patient groups as active members of the project. This includes involvement in the design, coordination (as part of a committee or advisory board), analysis or interpretation of research data, or in the dissemination of results. All projects involved patients. The project **PAINDIFF** was particularly adamant in involving patients and patient associations from the beginning.

Summary

The NWG call was very successful and gained a lot of visibility through the different networking events, and prizes received. It built a solid foundation for further funding and clinical developments. The different prizes won by the participants of the call are proof that the NEURON initiative steers its recipients toward innovation and pushes the research further in the field of brain diseases through capacity building.

As detailed in previous sections and in agreement with the general objectives of this call, the project outcomes were concentrated on the study of disease mechanisms and the development of diagnostic, prognostic and therapeutic approaches for chronic pain.

Multinational collaborations initiated in the context of this funding initiative continued after the end of the projects, emphasising the long-lasting seeding effect of NEURON on the neuroscience community.

An important number of papers are still in preparation at the time of the final report, and the joint applications for funding evidence the long-lasting collaboration established among the funded groups.

Overall, this call was particularly successful, and the major achievements of the NWGC 2022 are depicted in Figure 6.

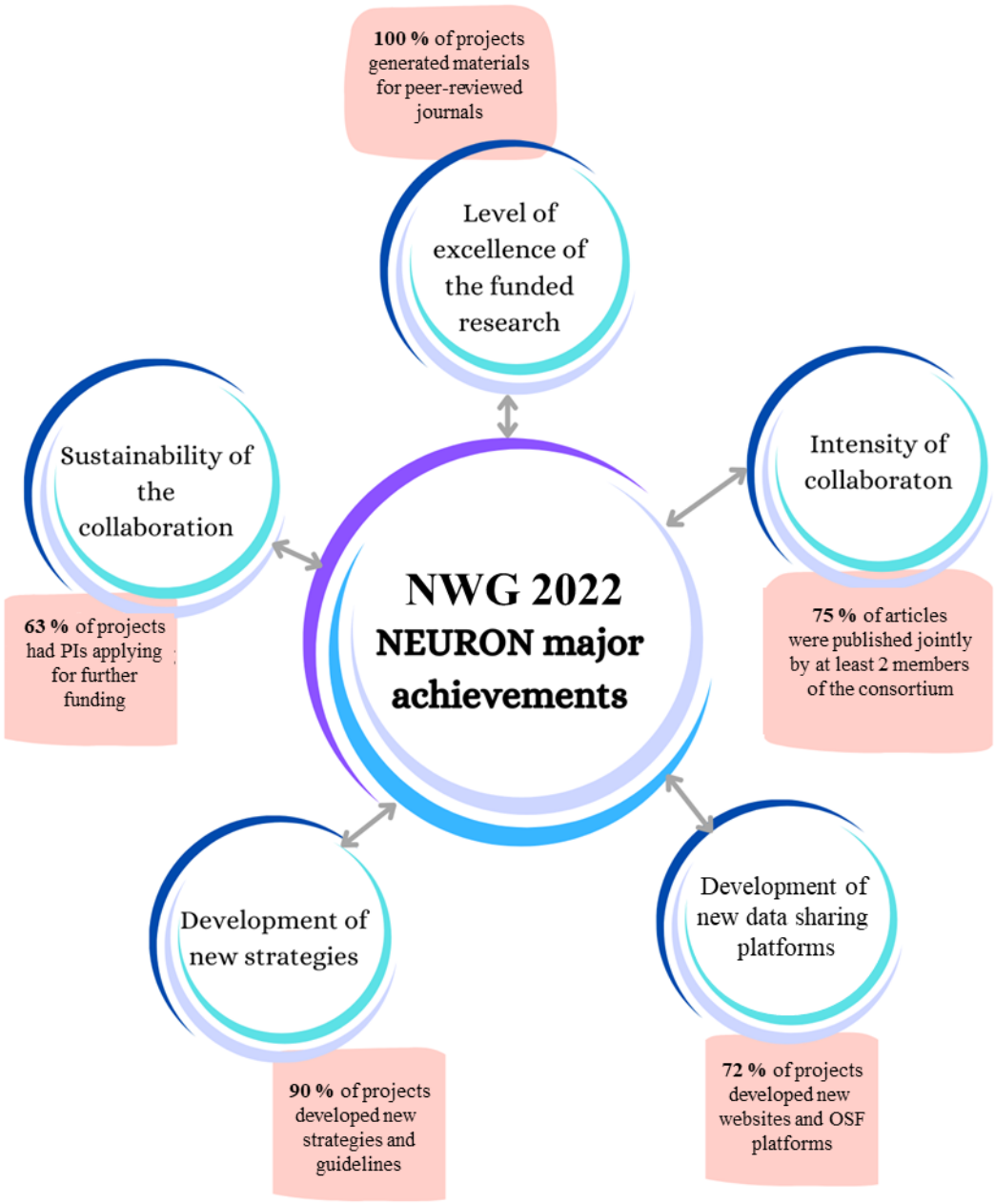

Figure 6: Major achievements of the NWG 2022 Call

IV. Highlighted projects

All projects funded under this call reported high-quality outcomes. This section highlights a selection of projects, showcasing varying degrees of success, and provides a brief analysis of the cases that were particularly successful: PAINDIFF and ENTRUST-PE. Success stories for these projects are being prepared or already online at ERA-NET NEURON website https://www.neuron-eranet.eu/news-publications/publications/success-stories/entrust-pe-a-new-framework-for-trustworthy-pain-research/.

1. PAINDIFF

The PAINDIFF Project achieved significant impact in advancing methodological approaches to studying sex and gender differences in chronic pain. Through a multidisciplinary network of 32 international researchers, clinicians, and patient advocates, the project produced a comprehensive framework and thirteen consensus recommendations that guide **best practices for incorporating sex and gender as variables in pain research**.

These recommendations, summarized in a perspective article published in *Nature Neuroscience 2025*, are expected to enhance research reproducibility and translatability across preclinical and clinical settings. The consortium conducted a global survey involving 483 pain researchers, developed open-access datasets, and engaged the public through conferences, media, and patient partnerships.

The project fostered numerous new transnational collaborations, influenced policy and funding priorities, and raised public and professional awareness of sex and gender disparities in pain research, laying a foundation for more personalized and equitable approaches to pain management worldwide. The resultsof the project can be consulted at their website: https://www.paindiff.com/.

2. ENTRUST-PE

The ENTRUST-PE project was an international, interdisciplinary network of 25 experts from the EU, USA, and Australia focused on improving the trustworthiness of pain research evidence. The group brought together researchers from diverse disciplines and career stages, including early-career researchers, a patient partner, clinicians, preclinical and mechanistic scientists, statisticians, journal editors, and experts in research integrity and quality improvement.

The network's primary goal was to identify and recommend actions for stakeholders across the research ecosystem to **strengthen the reliability of pain evidence**. Its work focused on key areas including research governance and integrity, equity and inclusivity, patient and public involvement, methodological rigor and transparency, data transparency and accessibility, balanced reporting and communication, and data authenticity. The group also identified existing resources to support best practices in these areas.

The project produced a comprehensive white paper (OSF link), stakeholder factsheets, and a patient/public explainer, all freely available online. The project was registered with the Open Science Framework (OSF) and shared its progress through the ENTRUST-PE website:
https://m.entrust-pe.org/

V. Conclusion

The projects funded within NWGC 2022 produced results at the scientific and clinical levels. Multiple approaches for chronic pain-related disorders were developed at the preclinical and clinical levels and will be instrumental in the development of new clinical practice in the near future.

At an administrative level, grant recipients could be different from the scientific coordinators to allow for flexibility and promote participation of additional countries. This proved to be helpful for some projects (EndPain, NeuP-GRADE, ITPain, INCHILDPAIN, and ENTRUST-PE) but problematic for project PAC-MAN which reported significant delays in receiving the allocated funds. This issue proved difficult to overcome within the limited timeframe of short-duration projects (such as this one, which lasted only one year). For future calls under other funding frameworks, **it is recommended to review this scheme** in order to facilitate project administration and financial management.

The collaboration between the consortia members was of high quality, as shown by the number of joint publications, the number of meetings held by all partners and joint funding applications. The ERA-NET NEURON provided them with opportunities to network and foster further collaborations, which particularly benefited ECRs in their career advancement. The still-ongoing collaboration and clinical research results analysis will further structure the community of chronic pain research.

Results of the NWG 2022 funded consortia embody what the ERA-NET NEURON initiative strives to provide to the scientific community in terms of clinical advancement, translational innovation and outstanding communication and dissemination.

Annexe I Excerpt call text

You can access the call text through the link below:

Call text 2022 "Networking Groups on Chronic Pain"

Annexe II Questionnaire / Impact of the Project

Below is the questionnaire that was filled by the consortia members as a foundation for this impact report.

IV. Questionnaire / Impact of the Project

This section will be used by ERA-NET NEURON partner organisations to analyse the joint call results. Information from this questionnaire **may be published** for reporting the call output.

Q.1 Publications and communications

Please indicate the number of publications and communications in which **NEURON support was acknowledged**. Publications in preparation or submitted must be indicated.

Do not include:

- **articles published before the project start date**
- **articles that do not acknowledge NEURON funding or are not directly related to this networking action**

Q.1.1 Publications and communications

Type of publication	Total N°
Peer Reviewed Research Articles (acknowledging NEURON support)	
Peer Reviewed Review Articles (acknowledging NEURON support)	
Books or Book Chapters	
Dissemination Articles (to lay audiences, news articles, press releases etc.)	
Communications in Scientific Meetings	
Dissertations	
White papers, prospective views, recommendations, guidelines, best practice framework	
Others (letters to the editor, comments, responses, etc.)	

Add lines as appropriate

Q.1.2 List of publications and communications

A. List the publications resulting from the funded project.

Highlight the name of the NEURON partners and indicate the partner number according to the numbering designation in section I (e.g. partner 1 or P1). Please only add publications that acknowledge NEURON support and **provide a snapshot of the relevant acknowledgment section** for each of the listed publications.

No.	Publication Type (Article, Book)	Publication (authors, title, journal, year, issue, pp.)	PMID	DOI	Partner(s)	Impact factor	Open access (Y/N)
1							
PASTE ACKNOWLEDGMENT SNAPSHOT HERE							
2							
PASTE ACKNOWLEDGMENT SNAPSHOT HERE							
3							
PASTE ACKNOWLEDGMENT SNAPSHOT HERE							
4							
SUBMITTED / IN PREPARATION							

Add lines as appropriate

B. List of scientific communications of NEURON funded project

List presentations to scientific congress (oral and poster), institutional lectures, seminars, workshops, summer schools, etc.

Presentation Number	Presentation Type (Oral, poster)	Venue (congress/meeting, date and location)	Partner(s)	Invited (Y/N)
1				
2				
3				
4				

Add lines as appropriate

Q.1.3 Dissemination of networking group activities and results

Q.1.3.1 Were **the networking group activities and findings disseminated to the broader public?**
YES ☐ NO ☐

►If YES, please specify:

- **Online/Social Media Platforms**

ResearchGate ☐ Linkedin ☐ Twitter ☐ Facebook ☐

- **Traditional Media**

Broadcast television ☐ Radio ☐ Print ☐ Other ☐

►If Other, please specify:

Public Science Meetings/Seminars/lay conferences

YES ☐ NO ☐

►If YES, please specify:

Q.1.3.2 **Did you create specific social media accounts for this project?**

YES ☐ NO ☐

►If YES, Please provide appropriate references: No specific social medial account however activities and outputs from this network were publicised via the individual social media accounts of the partners.

Q.2 Outputs with impact to health

Q.2.1 Data sharing

Please describe if data are to be shared or have been shared for the networking activities and the corresponding sharing strategy (Data management plan, other).

Q.2.2 Please list below other outputs with impact to health

Q.3 Consortium collaboration and sustainability

Please tick when applicable

Q..1 Have the partners participating in the NEURON project collaborated before applying to this NEURON call? YES ☐ PARTIALLY ☐ NO ☐

Q..2 Has the development of the project funded by NEURON motivated the establishment of new collaboration(s) with other team(s)? YES ☐ NO ☐

►**If YES**, please name the institutions and countries and specify the collaboration:

Q..3 Has the consortium collaboration led to new applications/grants in other funding programmes?

YES ☐ NO ☐

►**If YES,** please specify the partners involved and the corresponding programme (e.g. partners 1 , 3, and 4: HORIZON 2020 call xy) :

Q.4 Intensity of collaboration: Meetings, workshops, etc.

A. Collaboration meetings/workshops (Involving at least four consortium partners)

Description (type of meeting, location, date)	**Partners present**

Add lines as appropriate

B. Please list **all non-permanent personnel** involved in the project.

Partner	Position (PhD Student, Technician, Postdoc, PI…)	Gender	Last degree obtained	Employed using NEURON funds?

Add lines as appropriate

Q.4 Development of innovative or shared resources and technologies

Q.4.1 Has the consortium created a new or further developed an existing transnational…

Patient registry ☐ Patient database ☐ Biobank ☐ Platform ☐ Website ☐ other (please describe) ☐
N/A ? ☐

If other, please describe:

►**If YES, please complete** (repeat this section as many times as necessary):

- Name of the website:
- How was the website created?

Totally new ☐ set-up By compiling existing national sources ☐

o ☐

Please specify how the website will be maintained/financed after the end of this project:

Is the website in open access?

Q.5 Potential health impact / achievements

Please list the major acheivements of the consortium.

Achievements		Brief description of achievement	Expected impact (research, treatment, policy, etc.)
Conceptualisation of new ideas	☐		
Provision of white papers	☐		
Prospective analysis in expert centers to unveil problems or gaps in protocols	☐		

Harmonization and standardization of methods, protocols, and/or techniques	☐		
Guidelines for patient stratification based on analysis of available resources	☐		
Best practices concerning data access, handling and/or sharing	☐		
Roadmaps for implementation of techniques or protocols related with chronic pain	☐		
Guidelines for best practices in the treatment of chronic pain	☐		
Other Increasing public awareness on the study and impact of research on sex and gender in pain	☐		

Add lines as appropriate

Q.6 Patient engagement

Were patients/patient representatives involved in planning and/or conducting the networking group activities? YES ☐ NO ☐

►Please briefly describe the patient engagement:

►If NO, please explain why patients were not involved: