



Guidelines for Applicants - Expression of Interest (EOI)

Irish Cancer Society Translational Research Scholarship Programme 2020

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General Introduction to the Irish Cancer Society Translational Research Scholarship Programme

The Irish Cancer Society is now accepting Expression of Interest applications for the Translational Research Scholarship Programme 2020.

The objective of the Irish Cancer Society Research Scholarship Programme is to offer excellent graduates the opportunity to undertake postgraduate training in translational biomedical cancer research.

During the four-year programme, Scholars will undertake general and cancer-specific training, as well as participating in structured PhD programmes, and will have the opportunity to gain experience at an international research institution.

All eligible EOI applications will be reviewed by an international panel and shortlisted applicants will be invited to submit a full application.

Applications to the Translational Research Scholarships are accessible through the Irish Cancer Society Gateway Grant Tracker online system. Please ensure that you are using the correct application.

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Guidelines for Applicants - Expression of Interest (EOI)

Irish Cancer Society Translational Research Scholarship Programme 2020

1. Introduction: Translational Research Scholarship

The objective of the Irish Cancer Society Translational Research Scholarship Programme is to offer excellent science, medical, nursing and other allied healthcare graduates the opportunity to undertake postgraduate training in **translational biomedical cancer research***.

Translational research can be defined as “bench to bedside” or patient-focused research, whereby the aim of the research is to **translate existing knowledge about cancer biology into techniques and tools that will accelerate progress towards patient benefit**.

For the translational research scholarship programme, we will only accept translational research projects (**T_{0.5} and/or T₁ phase**) **. Applications where the research is predominantly at T₀ phase with some proposed aspects of the project being T_{0.5} phase will not be accepted.

In the EOI application form applicants will be asked to describe how the research is translational (T_{0.5} and/or T₁ phase) as opposed to discovery research (T₀ phase). As part of this, applicants will also be asked to describe the ultimate long term end goal of the research in terms of having an impact on patients.

**Please note, applications in the areas of prevention, survivorship, drug design, SAR (structure–activity relationship) analysis, or drug screening will not be considered at this time.*

*** Please see Section 2.3 and the FAQ documents for more information. It is the responsibility of the applicant to ensure that the project fulfils the project eligibility criteria for this scheme. If you are uncertain about your project’s eligibility, please contact us (details provided below) in advance of preparing your application. The project eligibility **FAQ deadline is Monday 10 February at 3pm**. Project eligibility queries will not be addressed after this date.*

1.1 Funding

The total value of the Irish Cancer Society Research Scholarship covering stipend, fees, materials and dissemination will be up to €36,000 per year for a maximum of four years.

A mandatory provision of €1,000 is available to support Public and Patient Involvement (PPI) in the proposed research project*.

Additionally, mobility funding of up to a maximum of €7,000 for travel to a national or (preferably) international research institution in furtherance of advancement of the research project aims, over the

course of the programme (must be used in the first 3 years of the scholarship), must be included in the application. If the mobility funding has not been utilised by the end of year 2, a revised mobility plan will be automatically requested as part of the 2nd Year Annual Report. The purpose of this mobility element is to allow the applicant an opportunity to spend time working in varied research environments to maximise project impact and to aid the individual in their career development prospects.

A further fund will also be available in Year 3 & 4 of the scholarship to contribute towards dissemination of research in a high impact journal. This funding is separate to the travel and dissemination budget which must be detailed in the budget section of the application. The successful scholar will need to apply for this dissemination funding support at least three months in advance of the planned publication. Each application (scholar mobility element and dissemination awards respectively) will be reviewed before a funding decision is made. Further details of the dissemination fund will be provided at the full application stage.

Please note that full details of budget guidelines will be provided at the full application stage of this funding award.

** Please note that the €1,000 available for PPI may be supplemented with funds from the annual €36,000 budget. However, the annual €36,000 budget may **not** be supplemented with the PPI fund.*

1.2. Timeframe

Friday 24 January	Opening of call for Expression of Interest
3pm Monday 10 February	Project eligibility FAQ deadline
3pm Thursday 20 February 2020	Deadline for online submission of Expression of Interest
March 2020	Detailed review of applications and shortlisting.
Mid-March 2020	Outcome announced. Shortlisted applicants invited to submit full application.
End of April 2020	Full application deadline
May 2020	Detailed review of applications and shortlisting for interview
Early June 2020	Interviews in Dublin

Further details of important dates for the full application stage will be given to shortlisted applicants.

2. Eligibility Criteria

2.1. Applicant Eligibility Criteria

Applications from individuals that do not meet the eligibility criteria will not be assessed. We therefore strongly recommend you read the following to be made aware of requirements for the applicant, the Host Institute, and the Research Team:

Eligible Applicants must fulfil the following criteria:

- You must have obtained (or be about to obtain) a minimum of a first class honours or higher second class honours bachelor degree or equivalent*. If examination results are not known at the time of application, the Irish Cancer Society may make a provisional offer on condition that

the applicant's final grade for their bachelor's (or equivalent) degree is a first class or upper second-class honours.

** If you did not receive a first class honours or higher second class honours bachelor degree but received (or are about to obtain) distinction- or merit-level master's degree you are eligible to apply.*

- You must not be registered for a PhD prior to application. This funding is for a four year PhD only, therefore individuals undertaking an MSc on their chosen project will not be eligible to use this funding to transfer onto the PhD register.
- This must be your first PhD.
- You must complete the PhD at an Institution in the Republic of Ireland.

It is the responsibility of the applicant to ensure that they fulfil the eligibility criteria for this scheme. If you are uncertain about your eligibility to this scheme, please contact us (details provided below) in advance of preparing your application.

2.2. Supervisor and Research Team Eligibility Criteria

- Supervisors

The proposed PhD project must have at least 2 Supervisors, both of which are active in the supervision of the work.

- One Supervisor must be based at the proposed host institute and have a minimum of 5 years post-doctoral experience and hold a contract that covers the period proposed for the PhD.
- The other supervisor must have a minimum of 1 year post-doctoral experience*.
- Ideally both supervisors should hold a contract that covers the duration of the PhD. However, given one of the supervisors is only required to have 1 year post-doctoral experience, we will consider any co-supervisor who can demonstrate their commitment to the supervision of the student throughout the whole period.

**Please Note: We are allowing one supervisor to have a minimum of 1-year post-doctoral experience to strongly encourage more junior researchers to act as a PhD supervisor. The proposed supervisor's stage of career will be taken into account when reviewing each supervisor's CV.*

We recommend applicants ensure that their supervisors also meet the host institution's requirements for a research supervisor. Please refer to the guidelines for supervisors specific to their research organisation.

- Research Team

Research teams eligible to supervise a Research Scholar will include those in Irish higher education institutions as well as other institutions in Ireland who can demonstrate to the international peer review panel a sufficiently high international research reputation.

It is the responsibility of the applicant to ensure that their Supervisors also meet the host institution's requirements for a research supervisor.

2.3. Application Eligibility Criteria

- Translational Research Project Eligibility

Translational research can be defined as “bench to bedside” or patient-focused research, the aim of translational research is to translate existing knowledge about cancer biology into techniques and tools that will accelerate progress towards patient benefit.

Figure 1 outlines the Irish Cancer Society Phases of Translational Biomedical Research. T₀ research is defined as discovery research, it involves gaining knowledge and the understanding of biological or disease-specific mechanisms. T_{0.5} research builds upon the discoveries from phase T₀ and improves the translational potential of basic biomedical discoveries through testing pre-clinical studies. T₁ research yields knowledge that demonstrates potential new strategies for treatment and diagnosis, through proof-of-concept phase 1 clinical trials.

For the translational research scholarship programme, we will only accept translational research projects (**T_{0.5} and/or T₁ phase**) *. Applications where the research is predominantly at T₀ phase with some proposed aspects of the project being T_{0.5} phase will not be accepted.

**** It is the responsibility of the applicant to ensure that the project fulfils the project eligibility criteria for this scheme. If you are uncertain about your project’s eligibility, please contact us (details provided below) in advance of preparing your application. The project eligibility FAQ deadline is Monday 10 February at 3pm. Project eligibility queries will not be addressed after this date.**

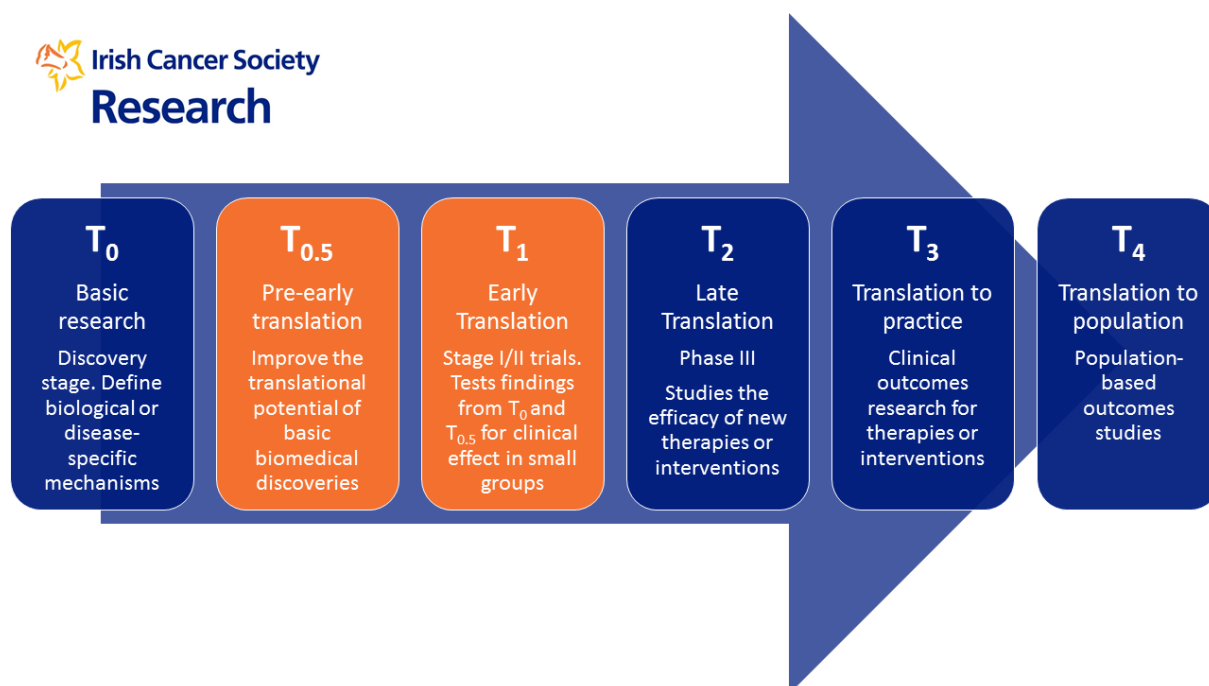


Figure 1: The Irish Cancer Society Phases of Translational Biomedical Research.

- Public and Patient Involvement

The Irish Cancer Society is dedicated to putting patients, families, survivors, supporters, and the public at the very heart of what we do. Public and Patient Involvement (PPI) in the research process ensures that research is meaningful and of benefit to those affected by cancer. PPI can be involved at any stage of a research project, from development and design to interpretation and dissemination.

In line with this commitment, it is expected that all applicants include a patient involvement plan (and the associated €1,000 budget allocation) within their application. Summarised details of planned patient involvement is expected at the Expression of Interest stage, all applicants that are shortlisted to progress to full application will be required to incorporate all comments from the PPI reviewers and provide a revised patient involvement plan in their full application. It is expected that all applicants will predominately incorporate patient “involvement” activities as part of their Patient involvement plan and will be required to submit a budget and dissemination plan. Details of PPI is included in Appendix 1. Please note the successful scholarship recipient will be expected to attend a PPI development workshop toward the end of 2020.

- Host institution

The host institution is the organisation that receives and administers grant funding and is responsible for compliance with all general and specific terms and conditions of awards. In order to be eligible to apply for funding, a proposed host institution must be a higher education institution in the Republic of Ireland and must be one of the HRB’s approved host institutions: <https://www.hrb.ie/funding/funding-schemes/before-you-apply/all-grant-policies/hrb-policy-on-approval-of-host-institutions>.

3. Application Procedure

Prior to applying, you **must** read this document through to completion. You must identify at least two suitable research supervisors, and discuss the proposed research project with these supervisors before completing the application form.

The scholarship application should be initiated by the applicant, with strong input from the supervisors throughout. **The application must NOT be written by the supervisors alone.** Applicants who will be invited to attend the interview stages of assessment must display an in-depth knowledge of the proposed research project and demonstrate the ability to think independently. Therefore, it is essential that the applicant themselves lead the scholarship application.

3.1. How to Apply

Applications must be completed and submitted through the Irish Cancer Society Grant Tracker online system. In order to submit an online application you are required to register at the following address: <https://grants.cancer.ie>.

When registering please fill out all the fields on the registration form.

3.2. Overview of the Application Process

When you enter your login details you will be directed to the Portal Home page. From here you can:

1. Update your basic information (please make sure all fields are completed)
2. Make a new grant application
3. Access previous grant applications

3.3. Making an application

When you have ensured that all your basic details are inputted then you can proceed to apply for a new grant application. This can be done by returning to the Portal Home page and clicking to apply for funding from one of our grant streams. Or alternatively through the 'My Applications' tab on the left hand side of the page, and clicking the 'New Application' button.

You will then be asked what Grant Type you would like to apply for. Click 'Apply' for the grant type detailed as 'Translational Research Scholarship - EOI 2020'.

3.4. Eligibility Criteria

Once you click 'Apply' you will be required to tick that you meet all of the eligibility criteria before you can proceed to make an application. If you do not meet all criteria, then you will be unable to make an application.

4. The Application Form

Once you have indicated that you meet all eligibility criteria you will then be directed to the application form.

There are 12 sections outlined on the left hand side of the page:

1. Introduction
2. Project Outline
3. Applicant CV
4. Supervisors
5. Supervisors' CVs
6. Project Summary
7. Personal Statement
8. Patient involvement plan
9. Sharing of Research Findings
10. Declaration of Support - Supervisors
11. Declaration of Support - Head of Department
12. Validation Summary

These sections are to be viewed and completed. It is recommended that you save the information as you complete each section. This can be done by clicking 'Save' as you go along. Alternatively, the information will be saved when you click 'Save and Close'. By clicking 'Previous' you will be brought to the previous section and by clicking 'Next' you will be brought to the next section.

As you proceed through the sections you will see a small blue question mark icon next to some of the sections. By clicking on this icon you will get more information on the section to be completed.

Sections that are required to be filled out have a red circle icon next to them. You will not be able to proceed with the application if these sections are not completed.

1. Introduction

This section gives overview information on the scholarship programme.

2. Project Outline

Details of your application are entered into this section. Input and save the information as required under the following headings:

- a) Proposed PhD Title
- b) Proposed Start Date - Must not be before 01/09/20
- c) Duration - Must be 48 months
- d) Proposed Research Institute
- e) Cancer Type
- f) Keywords
- g) Research Type
- h) Discipline
- i) Translational research stage and overview

3. Applicant Curriculum Vitae

Please upload your CV - completed using the template provided (the template is downloadable in this section on the online system or on the website). More information on each section is given in the template.

- Name
- Contact details
- Academic qualifications

Please complete a table for each year of your qualification. For example, one table for Year 1, another table for Year 2, etc. Example of completed academic qualifications table:

Degree/Qualification	BSc Genetics
Year	1
From	01/09/14
To	01/06/15
Subjects	Molecular Genetics, Emerging Therapies, Drug Discovery and Development, etc....
Institute	University College Dublin (UCD)
Department/School/Division	Pharmacology
Country	Ireland

Grade	70% or GPA 3.0 (First Class)
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- Research experience
- Employment
- Publications
- Research grants

4. Supervisors

You must add your **two** proposed supervisors to the application. Your supervisors will have to confirm participation in the application and also approve the application after you submit it and before it is finally submitted to the Society.

To add your supervisors, you can search for your supervisors by entering their surname. If the supervisor has already created an account, then they will appear on the list. To add them as your supervisor, click 'Select'. Please note that on saving, the contact will be added to the Application as a Supervisor and they will receive a notification of this via email.

If your supervisor does not already have an account, you can click 'Add a New Contact' and enter their name and email address. Please note that on saving, the contact will be added to the Application as a Supervisor. They will receive a notification of this via email.

Please note you must upload a CV from each of your proposed supervisors (uploaded in Section 5 - *Supervisors' CVs*).

If you wish to include more than 2 primary supervisors, e.g. include a clinical-based supervisor, please include their details in the collaborators section of the form. Please state their name, position, institution, and the nature of their supervision.

5. Supervisors' CVs

Please upload the CVs of your two proposed primary supervisors. These CVs must be completed using the template provided (this template* is downloadable in this section on the online system or on the website).

**Please note this template is different to the Applicant CV Template.*

Please ensure that you first have the permission from your supervisors to upload their CVs.

6. Project Summary

Please give a summary of your proposed research project. This should include summary details of the following:

A. Project Summary (**1000 words max**)

- Background information/existing literature/preliminary results
- The hypothesis and the objectives
- Methodology
- Summary and conclusions

B. Translational Summary

- Detail how this research is translational and how it will benefit people affected by cancer (**150 words max**).

7. Personal Statement

The personal statement section should include only relevant information which will add merit to your application (**300 words max**).

The following must be covered:

- Reasons for pursuing a PhD in cancer research
- Reasons for choosing the proposed research centre and supervisors

8. Patient involvement plan

The Irish Cancer Society is dedicated to putting patients, families, survivors, supporters, and the public at the very heart of what we do. In this section, please provide a lay summary of your research and an overview of your plan for integrating Patient Involvement into your research project. Please note that patient involvement is a fundamental aspect of the application, a full-detailed patient involvement plan will be required at the full application stage, feedback from the EOI PPI review must be incorporated into the full application. Please see appendix 1 for more information on PPI.

External patient representatives (PPI reviewers) will review this section. Do not use scientific or technical language. Please see information from the Irish Cancer Society on Public and Patient Involvement (PPI) in Research Guidelines (Appendix 1).

Please detail the following:

A. *Lay Summary:*

The lay summary section will be used to set the context for the PPI reviewers.

When completing this section, please carefully consider the following questions: (**150 words max**)

- Please provide the background information to your research?
- What is the overall aim of your research project?
- How is the proposed research relevant and important to patients and the public?

B. *Patient involvement plan:*

When completing this section, please carefully consider the following questions: (**200 words max**)

- What area/areas will patient involvement be included in your research project? E.g. planning, design, implementation, management, evaluation and/or dissemination.
- What is the overall goal of your patient involvement plan?
- What do you want from the people involved and how will it influence your research?

Please note, while patient participation and engagement activities are permitted and encouraged as part of an application and can be detailed as part of the patient involvement plan, the Society will only fund applicants who predominately include “involvement” activities as part of their Plan. Please see appendix 1 for further details and examples.

9. Sharing of Research Findings

As the largest voluntary funder of cancer research in Ireland, the Irish Cancer Society relies on the generous donations from the public in order to fund cancer research. A key priority is, therefore, to ensure that the public (including people affected by cancer) are kept up to date on research that is funded by the Society. In line with this, it is a requirement that all applicants produce a dissemination plan to include communication of their research to all relevant audiences (including the public and people affected by cancer).

Please describe your plan for sharing your findings. Dissemination may include printed or electronic articles, presentations, public engagement events, etc. **(200 words max)**.

10. Declaration of Support - Supervisors

Please upload a declaration of support from each of your two proposed primary supervisors. The Declaration of Support Template is downloadable from this section on the online system or on the website. This must be completed on headed paper.

11. Declaration of Support - Head of Department

Please upload a declaration of support from the head of department. The Declaration of Support Template is downloadable from this section on the online system or on the website. This must be completed on headed paper.

The declaration of support required from the head of department is simply a standard letter stating that you are aware of and support the application.

12. Validation Summary

In this section any required fields in the application form that have not been completed will be detailed. You will not be able to submit the application until all required fields are completed.

5. Submission of the Application.

The application can be submitted once:

- It has been verified that all required questions are answered in the correct manner on the application form.
- Both supervisors have confirmed their participation.
 - An email will be sent to each supervisor requesting their participation when they are added to the application.

For final submission to the Irish Cancer Society once:

- The application submitted by the applicant is approved by each signatory (two supervisors).
 - The supervisors will be notified by email once the applicant has submitted the application.
- The signatories will be able to see the full application in PDF format on their online portal.

- The signatories may approve or reject at this stage.
 - The applicant will be notified of both approval and rejection of the application. Rejected applications will be returned to the applicant.

Applications that have been submitted by the lead applicant but not approved by the signatories before the deadline will not be considered. It is the responsibility of the applicant to ensure that each signatory approves the application before the deadline. Please ensure that the application is submitted with sufficient time allowed for each signatory to approve.

6. Assessment Procedure

Incomplete and ineligible applications and those submitted after the deadline will not be assessed.

6.1. Conflicts of Interest

We will endeavour to ensure that the international peer review panel chosen do not have any conflicts of interest regarding the applications they are assessing.

6.2. Assessment Procedure

The following will be assessed by the international panel of reviewers:

- Applicant CV
- Supervisors' CVs
- Project Summary
- Personal Statement
- Declaration of Support – Supervisors

The following will be assessed by the PPI panel of reviewers:

- Patient involvement plan (Section B: Patient involvement plan)
- Sharing of research findings

Please note: the entire submitted application form will be accessible to the international panel of reviewers and the PPI panel of reviewers. Please be mindful of the language used throughout the application.

6.3. Assessment outcome

Applicants will be informed of the outcome of review by email. Shortlisted applicants will be invited to submit a Full Application.

7. Full Application

Applicants whose EOIs are shortlisted will be invited to submit a full application. For the full application, you will be required to take the academic and PPI reviewer comments on the EOI into consideration and provide greater detail on all aspects of the proposal. You will be required to submit a detailed: a)

Lay summary; *b*) research programme (including basis for research, translational research details, aims, methods, ethical approval, first year objectives, SWOT analysis; *c*) Full Patient involvement plan; *d*) description of the research environment; *e*) mobility element plan; *f*) Dissemination plan *g*) dissemination budget plan *h*) budget. The full application will be reviewed by international scientific reviewers (research programme, mobility, budget) and PPI reviewers (full Patient involvement plan, involvement plan budget).

The top applicants will be invited to interview stage.

8. Application Checklist

- Completed Application form.
 - Including the upload of:
 - Applicant's CV
 - Both proposed Supervisors' CVs
 - Declaration of Support from both Supervisors
 - Declaration of Support- Head of Department

The following must be completed **ONLINE by 3pm Thursday 20 February 2020.**

9. Contact

If you require assistance with the online application system or have any queries about the application which are not currently addressed in the FAQ document, please contact us:

Email: grants@irishcancer.ie

Appendix 1: Public and Patient Involvement (PPI) in Research Guidelines

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Appendix 1: Public and Patient Involvement (PPI) in Research Guidelines

Please note: This document is intended for researchers planning to submit applications to an Irish Cancer Society research grant. For general information regarding the Irish Cancer Society's Public and Patient Involvement, please contact ppi@irishcancer.ie

1. What is Public and Patient Involvement in research?

The Irish Cancer Society is committed to putting patients, families, survivors, supporters and the public at the very heart of what we do. In keeping with this commitment, we are working to embed Patient and Public Involvement (PPI) in our research processes. PPI can be contextualised in the many different ways people with cancer can interact with research, specifically by means of *participation*, *engagement*, and *involvement*¹.

Participation

A person with cancer may be recruited into, and take part in, a research study and provide data of some form.

Engagement

Engagement is when the researcher communicates and disseminates research information, for example, at science festivals, public talks, television programmes, or radio.

Involvement

Involvement is distinct from participation or engagement. Where participation and engagement are conducted 'to', 'about', and 'for' people with cancer, involvement is conducted 'with' or 'by' people

with cancer. People with cancer can be involved at any stage of the research process, from conceptualisation to dissemination.

2. Why is PPI important?

PPI is becoming increasingly common in research. The Irish Cancer Society is committed to expanding the involvement of those affected by cancer in the research that the Society funds, and in the funding decision-making process. This commitment is reinforced by the Irish Governments' National Cancer Strategy (2017-2026)², which highlighted:

“Patient involvement in cancer research improves the relevance of research questions, the quality, acceptability and feasibility of research conduct and the likelihood of uptake of research outputs.”

PPI creates a partnership between people affected by cancer and researchers. It is more than a tokenistic gesture to comply with policy, but can provide a real and substantial benefit to all key stakeholders. While not without its challenges, PPI can:

- Promote a sense of empowerment and value among patients³
- Enhance patient trust in researchers³
- Improve researchers' insight into their own research area³
- Help researchers identify barriers and come up with solutions to research³
- Increase trust and acceptability in the patient community of research findings³
- Inform the provision, access, and location of healthcare services⁴
- Improve the dialogue between healthcare professionals and patients⁴

Specific to the cancer setting, PPI may be used by patients as a resource, to make sense of living with chronic condition⁵. People with cancer report feeling enhanced knowledge and skills from taking part in PPI, as well as feeling they contributed to research by providing a lay perspective (i.e., practical knowledge about being a patient with cancer)⁶.

As such, PPI can be a valuable tool in the research process for both patients and researchers, and the Irish Cancer Society aims to expand its PPI work over the coming years.

3. PPI and the funding process

The Irish Cancer Society aims to embed PPI in its grant review process and funding decisions. As such, the selection of award recipients is co-decided by scientific and patient reviewers. In doing so, the research we fund is of the highest scientific quality, while being relevant and important to people affected by cancer.

As the ultimate stakeholders in any future improvements of cancer care, advances in cancer research is of the most impact to patients. The Irish Cancer Society, therefore, encourages all applicants to use the PPI sections as an opportunity to connect with the patient reviewers. To do this, it is vital that application form sections allocated to patient reviewers are written in plain, non-technical language.

3.1. Lay Summary

A lay summary should provide a brief overview of the research proposal, written in a format appropriate and understandable to your audience. Remember, your audience, who will be patients, **may not** have a scientific background. Therefore, ensure the lay summary is written in plain English (please see Section 5). However, an important consideration when writing a lay abstract is to determine the right balance between pitching it to the correct lay audience and oversimplifying it too much. As such, the abstract should be written in clear plain English, but also adequately conveys the research question and what makes that particular research project important. The abstract may still have some “jargon” or scientific names when necessary, once they are clearly defined in understandable terms.

Please see below for sample answers for the Lay Summary Section:

Example 1: Technical language used. Poor abstract with very little context. Please note, the project described in this example has been created for the purpose of providing guidelines.

Background of the research proposal:

Our group was the first group to establish and publish research on Trastuzumab-resistant cell line variants. At present, to our knowledge, we are the only group researching the role of Hypoxia-inducible factor 1-alpha (HIF-1 α) in Trastuzumab drug resistance in HER2+ breast cancer. This is a very interesting area that we have been researching. This research may also be beneficial in other HER2 targeted therapies.

Overall problem:

The focus of this project is on a drug called Trastuzumab. The problem that we are addressing is Trastuzumab drug resistance. The question we are asking is why do some patients respond to Trastuzumab treatment and why do some patients not respond to Trastuzumab treatment?

Trastuzumab is a monoclonal antibody that prevents HER2-mediated signalling. Trastuzumab is approved for the treatment of HER2-positive breast cancer. Trastuzumab is showing promise in the clinic but, like most therapies, the issue of innate and *de novo* resistance prevails. Our research focuses on investigating the mechanisms of drug resistance, finding ways to overcome this resistance and finding predictive and/or prognostic biomarkers for this breast cancer treatment.

How are we addressing the problem of Trastuzumab resistance?

In the laboratory, we have Trastuzumab-sensitive breast cancer cell line variants and we have developed Trastuzumab-resistant breast cancer cell line variants. We are comparing the proteins in drug-resistant cells to the drug-sensitive cells to try to find statistically significant differences between the two. We have identified HIF-1 α as a potential protein involved in the mechanism of Trastuzumab resistance.

What is HIF-1 α and what are our next steps?

HIF-1 α is one of the major transcription factors that regulates tissue response to low oxygen tension. HIF heterodimers bind to hypoxic response elements (HREs) in the genome, this results in activation of pathways involved in angiogenesis, pH regulation, metabolism and apoptosis.

We have shown in the laboratory that increased expression of HIF-1 α directly correlates with increased resistance to Trastuzumab treatment. We are interested in further investigating if HIF-1 α plays a role in initiating and/or promoting Trastuzumab drug resistance. If awarded this grant, we will have the opportunity to expand this research and to test these findings in other breast cancer models.

Example 2: Understandable lay abstract with good level of research context given. Plain language used. Please note, the project described in this example has been created for the purpose of providing guidelines.

Overall problem:

Trastuzumab is a drug used to treat a certain type of breast cancer called HER2+ breast cancer. This drug has been very successful in treating breast cancer. However, unfortunately, while Trastuzumab destroys a lot of breast cancer cells, there are some cancer cells that can still stay alive. When treatment does **not kill all cancer cells**, this is called **drug resistance**.

Background of the research proposal:

With the issue of Trastuzumab drug resistance in mind, we previously developed two types of breast cancer cells in the laboratory that represent the different ways that patients respond to Trastuzumab. One type being cells that die after Trastuzumab treatment and the other type are cells that do not die after Trastuzumab treatment. We previously compared hundreds of different ingredients in these two different types of cells. We found one particular ingredient that we believe to be involved in stopping Trastuzumab working.

What is the specific ingredient?

We found that the breast cancer cells that are resistant to Trastuzumab treatment are the only ones that **produce large amounts of the “Hypoxia-inducible factor-1-alpha (HIF-1 α)”** ingredient. We need to see if HIF-1 α is the “brains-of-the-operation” when it comes to Trastuzumab resistance.

What is HIF-1 α ?

Tumours can grow very fast, but, sometimes the walls surrounding the tumour cannot grow at the same speed and are faulty. Because of this, the tumours can become patchy and “leaky”. When this happens, oxygen can leak out of the tumour causing the conditions in the tumour and nearby area to become very harsh and unfavourable. But, cancer cells cleverly find ways to avoid the harsh conditions and they can become stronger and survive better. Cancer cells use HIF-1 α to make these unfavourable conditions within a tumour less harsh.

How are we addressing this problem?

Our **next steps** are to find out why the resistant cells are producing large amounts of HIF-1 α . We believe that Trastuzumab will work again if we stop the cells producing large amounts of this specific ingredient. We will test different drugs to shutdown HIF-1 α in the resistant cells. When we find the best drug to shut down HIF-1 α we will then test Trastuzumab’s ability to kill the cells. If Trastuzumab works again we will test the two drugs together to see if they work better together as a “**double therapy**”. The next step will be to try the two drugs in mouse models of HER2 breast cancer. Mice with resistant cancer tumours will be given either Trastuzumab alone or the two drugs together to see if the “double therapy” works best.

Our research will focus on trying to stop drug resistance occurring in patients in the first place and to try and make Trastuzumab better at treating breast cancer.

3.2. Impact

Broadly speaking impact is the demonstrable contribution that research makes to society. Impact is defined as research being used to bring about a positive change to the lives of people affected by cancer. The impact research has is specific to each project and therefore, impact is varied and can occur over different timescales, from the short to long term.

Some of the key areas of research impact include:

- academic impact
- health and health systems/services impact
- health-related and societal impact
- influence on policy making
- economic impact

It is vital that applicants describe their research project honestly, and do not overstate the impact of a research project. Rather, goals should be realistic, as should the *potential* impact that the project can have.

It is recognised that for some research there will be no direct impact on the lives of people affected by cancer in the short or medium term. However, the research will contribute to a wider conversation on cancer with the view to eventually directly impacting the lives of people affected by cancer.

The inclusion of academic impact is also an important consideration when measuring research impact, as it demonstrates the contribution that a particular research project has made towards the advancement of science, and to the cancer research knowledgebase. These academic advances can be measured in terms of primary research related outputs and includes research publications, knowledge dissemination, capacity building, and collaborations.

Please note, when communicating the impact of your research, it is also useful to identify and articulate the different routes to impact - which are the means by which you aim for your research to be impactful.

3.3. Sharing of research findings

The Irish Cancer Society is the largest voluntary funder of cancer research in Ireland. Research is conducted primarily for the benefit of patients, therefore, a key priority of the Irish Cancer Society is to ensure that the public (including people affected by cancer) are kept up to date on research that is funded by the Society. In line with this, it is a requirement that all applicants produce a dissemination plan to include communication of their research to all relevant audiences (including the public).

It is important to note that while peer-reviewed journals are an important means of communicating research findings to academic researchers, members of the public are less likely to access academic journals.

Research dissemination and knowledge exchange includes:

- Public engagement talks or events e.g., Irish Cancer Society ‘Decoding Cancer’, Pint of Science, Science Week events, public university talks, etc.;
- Non-peer reviewed professional periodicals e.g., The Irish Psychologist, World of Irish Nursing;
- Newspapers/media e.g., The Irish Times, thejournal.ie, Newstalk;
- Blog posts e.g., professional blog, Irish Cancer Society website;
- Peer-reviewed journals (open-access).

4. Patient involvement plan

Involvement can be incorporated into almost any stage of the research process, which should be planned from the very beginning of study design. Examples of how patient involvement can be incorporated into research includes (but is not limited to):

- as members of a patient advisory group for the project;*
- commenting on and developing patient information leaflets, consent forms, questionnaires or other research materials;
- user and/or carer researchers carrying out the research;
- commenting on and developing dissemination materials (e.g., conference abstracts, posters, presentations);
- Involvement in organising and running public and patient engagement activities.

In general, when, where, and how involvement will be included in studies should be decided early in the research process. The patient involvement plan must detail activities that will be organised during the project.

Please note, a number of universities within the Republic of Ireland already have dedicated individuals, infrastructure, training, or programmes (e.g., the HRB 'PPI Ignite Award') in place dedicated to PPI. We recommend that you engage with these local resources when planning how patient involvement will be integrated into your project.

**Any post-award significant alterations to study design or protocol suggested by the patient advisory group would need to be approved in advance by the Irish Cancer Society throughout the duration of the research project.*

4.1. Budgeting for PPI

The cost of PPI is dependent on how you plan to embed it into your study i.e., your 'Patient involvement plan'. As such, it is difficult to prescribe guidelines on how to budget for PPI. However, **at a minimum, it is expected that the cost to patient members associated with involvement are covered by the research grant** e.g., bus/train fares, mileage, parking charges, and subsistence (if appropriate).

The steps to budgeting are described below:

Step	Activity
Step 1: Framework selection	Select a framework for mapping involvement costs. This might be the research project cycle (i.e., the step-by-step research process/procedure) or a project timeline (e.g., Gantt chart).
Step 2: Planning your involvement	Make a plan of the involvement activities you intend to incorporate into your research.
Step 3: What are the costs?	For each activity, identify the specific costs for which you will need to budget.
Step 4: How much will it cost?	Estimate the cost or range of costs against each involvement activity. To work out the budget for your study, go to the online cost calculator: https://www.invo.org.uk/resource-centre/payment-and-recognition-for-public-involvement/involvement-cost-calculator/ . Please note the online calculator is in Pound Sterling.
Step 5: Mapping	Map the involvement activities onto your selected project framework so that you know exactly when in the project timeline costs are allocated.

Adapted from the UK National Institute for Health Research, Budgeting for Involvement (2013)

An online calculator is available on the *NIHR Involve* website: <https://www.invo.org.uk/resource-centre/payment-and-recognition-for-public-involvement/involvement-cost-calculator>. Please note the online calculator is in pound sterling (£), euro conversion rates will apply. The online calculator is a guiding tool, all costs must be appropriate to costings in the Republic of Ireland and all researchers must verify the costs associated with their patient involvement plan. Please check that the host institute has appropriate systems in place for the payment of PPI costs and expenses. Costings from all categories of the online calculator will be eligible (see below). However, please note that final approval of all costs is at the discretion of the Irish Cancer Society.

Please see the worked costing example below for guidance on creating and budgeting for the patient involvement plan.

PPI budgeting costs:

Costing category	Related costs
Payments and rewards	<ul style="list-style-type: none">• Fees to individuals• Vouchers/tokens for individuals• Prize draw awards• Fee/donation to a group• Funding for additional training and learning• Honorary appointment e.g., lay fellow or research partner
Expenses	<ul style="list-style-type: none">• Travel• Subsistence• Childcare• Carer costs• Personal assistants• Overnight accommodation• Home office costs
Involvement activity	<ul style="list-style-type: none">• Finding people/advertising• Training and learning costs• Venues and catering• Equipment and books• Access to university facilities• Conference fees
Involvement staffing	<ul style="list-style-type: none">• Administrative support• Involvement coordinator• Independent facilitator• Peer researchers/interviewers
Other costs	<ul style="list-style-type: none">• Disclosure and barring service• Language translation and interpretation costs• Support for people with impairments

Adapted from the UK National Institute for Health Research, Involvement Cost Calculator

Worked costing example: A researcher wishes to set up a patient advisory group to guide the dissemination of findings. The aim is to ensure the research findings are communicated as widely and efficiently as possible, are accessible to a lay audience, and are engaging to the general public. To achieve this aim, the researcher hopes to host a public engagement event.

The researcher is looking for five patient advocates to form the advisory group. The group will meet for a half day workshop to design the public engagement event, creating information booklets, and

educational project posters. All information booklets and educational videos will be accessible on the researcher's website.

The estimated costs associated with setting up the advisory group and the costs associated with the public event are as follows:

Category	Detail	Quantity	Cost	Total
Travel	Local travel in Dublin	3	€7	€21
	Travel from outside of Dublin	2	€30	€60
Focus group payment	Payment for attending focus group/workshop	5	€100	€500
Venue costs	University meeting room cost	1	€0	€0
Catering costs	Breakfast and lunch for attendees (€10 per person/per meal)	5	€20	€100
Advertising	Newspaper advertisement (for 2 weeks)	1	€70	€70
Dissemination	Printing of 12-page booklets	250	€0.96	€240
	And educational posters:	5	€32	€160
Public Event costs	Costs for university venue (1/2 day)	1	€150	€150
	Catering (tea and biscuits) (€3.50 per person)	100	€3.50	€350
TOTAL COST (€1000 from PPI budget and €651 from consumables budget)				€1,651

All costs were calculated using estimated costs for train tickets, hotels, and so on in the Republic of Ireland as of March 2019.

5. Writing in plain English

There are many online resources available to guide you in writing an effective plain English summary. Some of these resources are listed in Section 6 of this document.

Here are some general notes on how to write in plain English:

- Patients are not scientists (usually) and knowledge should not be assumed. Avoid using technical language or scientific terminology. Use everyday words to communicate your point and explain the science. While language should be understandable, it should not be dumbed

down - It may be necessary to use scientific words and jargon in order to convey why your research is special, but be sure to explain it thoroughly and be consistent in its use.

- Use short clear sentences.
- Use paragraphs
- Use an active voice, and place the person/group/thing doing the action at the beginning e.g., 'We ran an experiment,' rather than, 'The experiment was run.'
- Don't use 'don't'. You can write in plain English without becoming too casual/unprofessional.
- Use an appropriate tone. This is not a newspaper article, and its purpose is not to entertain.
- Make sure grammar, punctuation, and spelling are accurate.
- Bullet points (like these ones) can make it easy to digest a lot of information

6. Additional Resources

General resources

- INVOLVE – UK National Institute of Health Research (NIHR) initiative to support PPI.
<http://www.invo.org.uk>
- National Standards for Public Involvement.
<https://www.invo.org.uk/posttypepublication/national-standards-for-public-involvement/>
- NALA (National Adult Literacy Agency)
<https://www.nala.ie>
- Access to Understanding: Promoting public understanding of biomedical and health research
<http://www.access2understanding.org>

Writing a Lay Summary

- Duke, M. (2012). How to write a lay summary.
<http://www.dcc.ac.uk/sites/default/files/documents/publications/HowToLaySummariesDec2012.pdf>

Communicating to patients

- NHS England. Language Matters: Language and Diabetes.

<https://www.england.nhs.uk/wp-content/uploads/2018/06/language-matters.pdf>

Writing in plain English

- NALA (National Adult Literacy Agency). *Writing and Design Tips*.
https://www.nala.ie/sites/default/files/publications/Writing%20and%20Design%20Tips%202011_1.pdf

Budgeting for PPI

- INVOLVE PPI Involvement Cost Calculator
<https://www.invo.org.uk/resource-centre/payment-and-recognition-for-public-involvement/involvement-cost-calculator/>

7. References

- 1) INVOLVE. (2018). *What is public involvement in research?* Retrieved from <http://www.invo.org.uk/find-out-more/what-is-public-involvement-in-research-2/>. Accessed 2/08/2018.
- 2) Department of Health. (2017). National Cancer Strategy (2017-2016). Retrieved from <https://health.gov.ie/wp-content/uploads/2017/07/National-Cancer-Strategy-2017-2026.pdf>. Accessed 28/08/2018.
- 3) Brett, J., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014a). A systematic review of the impact of patient and public involvement on service users, researchers and communities. *The Patient-Patient-Centered Outcomes Research*, 7(4), 387-395.
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- 5) Thompson, J., Bissell, P., Cooper, C. L., Armitage, C. J., & Barber, R. (2014). Exploring the impact of patient and public involvement in a cancer research setting. *Qualitative Health Research*, 24(1), 46-54.
- 6) Froggatt, K., Preston, N., Turner, M., & Kerr, C. (2014). Patient and public involvement in research and the Cancer Experiences Collaborative: benefits and challenges. *BMJ Supportive & P Care*, 5, 518–521.