7 Steps to Building a Research Budget

Research and Innovation Support

Version 2

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Introduction

7 Steps to Building a Research Budget is a short guide designed to take you through the basic stages of creating a research budget. This document was produced by a cross-team working group from the Research Development, Research Support, Research Project Administration, and Research Infrastructure Teams. Each step will cover common budget items and provide an explanation as to how to cost effectively.

Once you have prepared your draft budget, you should submit it (along with a copy of your project proposal) to TORA, DCUs research management system, for institutional review and approval. The budget and proposal will be reviewed by RIS and Research Finance. You should submit your budget on TORA at least **5 working days** before submission to the funder. Any queries you may have regarding the budget can be addressed during the review process. For further information consult the TORA User Guide (PDF).

Direct and Indirect Costs

When you start to create your budget, terms you may come across include 'direct costs' and 'indirect costs'. Direct costs are those that can be attributed directly to the project e.g. personnel, travel, equipment, consumables. Overheads or indirect costs are also a feature of most funded research projects. **What are overheads or indirect costs?** These are costs incurred by the University that cannot be attributed specifically or exclusively to the project (e.g. office space, lighting, heating, maintenance, library services, computer services, and administrative support). Most funders will have a set rate for overheads– e.g. IRC 30%, EU 25% - but if there is no rate specified, and overheads are eligible, ***a rate of 30% should be applied***. If the funder is an industry partner a minimum rate of 40% should be applied. If unsure you should consult your funder on the rate of overheads they will contribute.

Overheads are calculated by applying the percentage to direct project costs e.g. if the call document allows for overheads of 25%, and your project has direct costs of €100,000 with no equipment, your overheads are €25,000 and your total project costs are then €125,000.

Budget Justification

Most funders will require applicants to complete a budget justification section or budget narrative to explain and justify the expenses you are requesting in your budget. The budget justification should address each of the major cost categories as well as any additional categories required by the funder.

The justification section is critical as it enables you as a Principal Investigator (PI) to state your case for your budget request and to emphasise the importance of essential project costs. It is crucial to read the call document which lists: the maximum budget you can apply for; restrictions to certain category costs; and any ineligible costs. A budget that is adequately and appropriately justified is the best way to ensure a positive review by a funder. See Appendix 3 below for an example budget justification.

Step 1: Matching Resources to your Project Plan

Before building your budget it is important to be clear on the tasks you need to carry out for the project. Creating both the work plan and the budget is usually an iterative process. The key to a strong budget is that it is consistent with the activities in the work plan and falls within the rules of the funder.

Before you start however:

- Check the amount of funding available on the call document. This should not be used as a target but the amount will allow you to see the parameters of the budget and consequently manage expectations of what can be done within that budget.

- Be aware of eligible and ineligible costs for this call to make sure you know what is allowed and what is not. **Always carefully check the call documentation and general budget policies provided by the funder for guidance or restrictions on the specific budget items.**

- Write down the tasks that need to be done to complete the project and begin to cost appropriately. It may be necessary to revise the tasks or the budget based on what is feasible.

Coherence between a budget and work plan is essential. The key issue is: will your budget provide enough funds to allow you to do what you have committed to do as part of the project?

Step 2: Costing Personnel in your Budget

Staff costs are often the largest portion of a budget. Types of staff costs can include PI time (which may facilitate or directly include teaching buy out depending on the funder), research students, and staff recruited directly to the project (e.g. research assistants). Before budgeting for staff you should first **consult the call document** to see what restrictions, if any, are in place in relation to staff costs. For example, some funders may only fund recruitment of project staff at the lowest point on the pay scale.

Generally, when costing staff in a budget, it is important to include not just the **basic salary** in your budget but also **employer PRSI** (11.15% in 2024) possible salary **increments** and **employer pension contribution** (20%) – there may be exceptions to costing core staff (see section titled Core staff).

Initial questions to help you cost personnel:

- How many people will be employed on the project?
- What category of personnel do you need? (See details for different categories below)
- How long will each person be employed on the project?
- On what date in the project will they start?

Categories of Personnel:

Research students (Master's or PhD) recruited to the project

- Current fees for Master's and PhD students are included in the DCU Fees Booklet.
- Check the call document for any restrictions to student stipends (e.g. SFI €22,000; HRB €24,000, IRC €22,000). Unless capped by funder this is typically ~€22,000.
- Total cost for Master's or PhD students = Fees + Stipend

Contract research staff recruited to the project (e.g. postdoctoral researchers, technicians, research assistants)

- Unless otherwise specified in the call document the IUA salary scales should be used to calculate staff salaries.
- The DCU Salary Calculator is a useful online tool which can be used to calculate staff costs for the project: https://salarycalculator.adaptcentre.ie/ It is based on IUA salary scales and includes known PRSI increases up to 31/12/21 and Government approved increases to October 2020 – increases after that date will be updated when known.

Using the DCU Salary Calculator:

- Choose the category of staff (research assistant, postdoc etc.)
- Choose the point on the scale at which they will start based on the qualifications and experience of the staff member to be employed on the project
- Enter the proposed date on which they will start (this is important to make sure you are taking account of multi-annual scale changes)
- Enter the number of months they will work on the project
- Check the boxes at the bottom of the screen for 'With increment' (if allowed by the funder) and '20%' pension
- Click 'Calculate'
- The cost per project year and calendar year is given – use the one appropriate to the call budget guidelines (generally project year).
- Use the far right column 'Total' as this includes employer's PRSI and pension contribution, costs which will be charged to your project

Project management/administration staff from DCU's central Unit ***Research Project Administration*** *can be costed into a project to assist with post-award management and/running of the project.*
Please consult Research Project Administration and contact rpa.enquiries@dcu.ie for costings.

If large-scale equipment is included in the budget and you wish to include technician time, please consult with the Research Infrastructure Network at research.facilities@dcu.ie – for costings.

Core staff (including PIs) whose time will be costed into the project budget

Core staff are staff who are currently employed by DCU and who are core funded (rather than, for example, funded through an existing research project). In general, costs of permanent academic staff are not eligible for most funding calls. The main exception to this is EU funding where costs may be sought for the proportion of the academic's time devoted to the project. It should be noted that this funding will be held as a surplus until the end of the project. It is then used to cover any deficits in other categories. Any remaining surplus is then split equally between the School and the PI. The PI portion goes into a General Research account.

When calculating time for core funded staff, you need to consider their gross salary (see DCU current pay scales) plus Employer's PRSI (11.15% in 2024) but depending on the funder, may not have to include pension costs (20%) e.g. for EU funded projects, pensions costs would not be included for core staff.

If you are unsure if pension costs need to be included, please check with Research Finance. The amount calculated for PI time should also be verified by Research Finance.

A small number of funding calls also allow funds for a 'teaching buyout' for academic staff. This is calculated differently to core staff costs as it is the actual cost of paying another individual to cover the teaching responsibilities of the academic. Consult the call document to check if this is an eligible cost and also what pay scale and time restrictions may apply.

How to calculate an hourly/daily rate of a core member of staff?

Annual cost of employment = Gross salary plus related costs [employer PRSI and pension (if relevant)].

Important figures for calculations:
One year = 215 working days or 1720 productive working hours (average EU rate adopted by DCU for standardised budgeting purposes)

Calculations:
Hourly rate = Annual cost of employment / 1720
Daily rate = Annual cost of employment / 215

Example: Sample Calculation for Research Staff

This example is for a 4-year project with an expected start date in Sept. 2020 which will employ:

- 1 PhD student for the full duration of the project
- 1 postdoc starting at point 3 on scale for years 2 & 3 with a pay increment (expected start date 1 Sept 2021)
- 1 research assistant at point 6 on scale with a pay increment @ 0.25 FTE for the full duration of the project

PhD student:

	Year 1	Year 2	Year 3	Year 4	Total
Fees	5,505	5,505	5,505	5,505	22,020
Stipend	18,500	18,500	18,500	18,500	74,000
Total	24,005	24,005	24,005	24,005	**96,020**

Postdoc: From DCU Salary Calculator

	Year 1	Year 2	Year 3	Year 4	Total
Gross Salary		41,025	42,200		83,225
Employer PRSI		4,533	4,663		9,196
Pension		8,205	8,440		16,645
Total	0	53,763	55,303	0	**109,066**

Research Assistant: From DCU Salary Calculator

	Year 1	Year 2	Year 3	Year 4	Total
Gross Salary	27,329	27,767	28,569	29,392	113,057
Employer PRSI	3,020	3,068	3,157	3,248	12,493
Pension	5,466	5,553	5,714	5,878	22,611
Subtotal	*35,815*	*36,388*	*37,440*	*38,518*	*148,161*
Total (0.25 FTE)	8,954	9,097	9,360	9,630	**37,040**

Total Personnel Costs for this project:

PhD Student	€96,020
Postdoc	€109,066
Research Assistant	€37,040
Total	**€242,126**

Step 3: Materials and Consumables

Materials and consumables are items that will be used exclusively during the course of the project, and in support of the project objectives. In general, you should make provision for an annual budget per year for each member of staff (as appropriate to their role).

- Types of costs that are typically included in this category are: catering/hospitality costs, bench fees, equipment access costs, animal costs, lab. supplies, lab. notebooks, survey tools, brochure printing, computer supplies and postage. For some funders, dissemination costs would be charged under this category so publication costs and open access charges could also feature here.
- Some software and non-ICT equipment may be included in this category where the item(s) are of low value (i.e. less than €10k including VAT). Equipment access charges (for large scale equipment) may also feature here.
- Estimated costs can be derived from catalogue prices, supplier quotes etc. Make sure that estimated costs include VAT and any additional charges, e.g. delivery costs.
- It is generally acceptable to funders to provide a breakdown of Materials and Consumables under broad category headings, however some funders do require a more detailed listing and justification.

Example 1: How to cost research lab materials for my project?

From your project plan, estimate costs per year per person working in the lab, e.g. €5,000 per person per year, depending on materials needed. Systematically review the work that you plan to do, and list key materials and consumables that are required to complete the work, and estimate consumable costs per person, per year working in the lab. When starting out, this is a valuable exercise to understand all of the costs required to carry out your research, and may highlight if your requirements exceed the budget available. Contact colleagues or lab members who have submitted grants in similar research areas to obtain practical estimates of consumable costs per researcher, consumable price lists or example budgets that will inform your budget costs.

Example 2: How to cost hosting a project meeting?

30 attendees will be attending a 3-day meeting. Room booking is €100 per day. The catering costs for tea and coffee breaks (morning and afternoon), lunch and one evening meal have been quoted as

- Tea/Coffee breaks - €3.95 per person - €3.95 x 2 x 3 x 30 = €711.00
- Lunch with options – €13.95 x 3 x 30 = €1,255.50
- Project dinner - €32.50 x 30 = €975.00
- Poster printing - €24 per poster x 8 posters = €168
  Total to include in the budget = €3,109

Step 4: Equipment

Depending on your discipline area and type of project, equipment costs can vary e.g. for some projects laptops may be the only equipment costs, whereas for others, large scale equipment may be necessary. Any requested equipment needs to be integral to achieving the project objectives and strongly justified in the budget. **Read carefully the call documentation and funder's guidelines** - as many funders have different thresholds for classification of items as equipment and different quotation requirements.

General rules for costing Equipment are below:

- Low value equipment, i.e. with a value under €10k including VAT, can often be included under the 'Materials and Consumables' budget category
- High value equipment, over €10k including VAT, is considered capital equipment.
  Please note that all equipment purchases must conform to normal procurement procedures. This may require three quotes or even a tender process if greater than €25,000. Note that for EU funders, only deprecation can be costed.

Some funders permit access charges for equipment (either within DCU or in another location) and these should always be costed in. DCU equipment access charges and a list of available equipment is available via the DCU Research Infrastructure webpage. Depending on the funder budget guidelines, these access charges may appear under the Materials and Consumables budget category.

When budgeting for large-scale equipment, service contracts and installation costs also need to be considered and factored into your budget. If technical support is required, this should be factored into your personnel budget. Central support from the Research Infrastructure Unit can be discussed with Robbie Sinnott (Research Infrastructure Manager).

> Many EU schemes only fund depreciation. If you are applying to the EU for funding to purchase large-scale equipment please be sure to use the full purchase cost of the equipment and to make the purchase immediately at the start of the project. Please contact the Research Infrastructure Manager to discuss further research.facilities@dcu.ie

It is expected that any equipment items are purchased/procured at **an early stage in the project** for use throughout. Bear in mind that it can take time to procure large equipment items and this may delay the project.

For further details on procurement rules and depreciation see Appendix 1 below.

Example: Costing a Large Scale Piece of Equipment

What is the estimated cost of this item?

- Supplier Y have quoted a list price, excluding possible discounts, of €500k ex VAT

What is the estimated annual Service Contract costs for this item?

- Supplier Y charge €12,500 per annum (ex VAT) for their gold standard service contract. The first 12 months after purchase of the instrument is under warranty where all parts, labour and travel are covered anyway.

How many annual service contracts do you wish to purchase with this item and at what cost?

- The plan is to cover the first 3 years of ownership with the initial purchase.
- Cost: €25k +VAT

Will there be installation costs and if so, what is the estimate cost?

- Following consultation with technical specialists and the supplier, it is estimated that €10k + VAT should be budgeted for the installation

Who will become the Equipment specialist and is budget required?

- The instrument will be installed in the NCSR and will require 50% FTE technical officer support. A budget of €27k per year for 3 years must be included in the staffing section.
- In year 4, the plan is that the instrument will be centrally managed as Research Infrastructure and the CMRI team will have responsibility for all costs and support.

Description	**Cost (Incl. VAT)**
Instrument X including all required hardware add-ons	€615,000 (€500,000 + VAT)
Service contracts for year 2 and year 3 (Year 1 under warranty)	€30,700 (€25,000 + VAT)
Installation costs (new services, lab alterations, H&S)	€12,300 (€10,000 + VAT)
Total 'Equipment' request in application	**€658,000**

Step 5: Travel

Will you (or members of the project team) need to travel for your project? If so, consider how travel will feed into the overall goals of your project. For example:

- Will you need to travel in order to carry out your research, e.g. to collect data?
- Will you attend relevant conferences, workshops or training programs during the course of the project? *(If so, you should also factor in registration costs)*
- If you are in a consortium – how many management meetings will you need to attend?
- For all of the above how many people will travel? If you are hiring staff will they travel also?

Funders often require a breakdown of travel costs by trip, reflecting the purpose, destination, number of persons travelling, number of days, air fare, accommodation and meal costs (per diem), and so forth. The budget should include relevant information (including names of countries to be visited) and justification for the trip.

Research funded travel and accommodation should be the **best available reasonable value** – if the cheapest option is not chosen, reason must be provided. Economy fares should be chosen, unless exceptional reason can be provided.

Flights costs can be estimated by looking at airline websites for actual costs. Similarly, the budget for accommodation and meals can be estimated by ascertaining approximate actual costs (i.e. looking up hotel rates and average meal costs) or by applying daily subsistence rates (which cover accommodation and meals). Institutional travel and subsistence rates are available via the Finance website. Note that airport transfers or taxis etc. may also need to be accounted for and included in the budget.

Example: Budgeting for attendance at a project meeting

In this example, per a project plan, there will be a meeting in the first year of the project, scheduled to take place in the partner's institute in Madrid. The meeting will be of three days' duration.

Return flight to Madrid, 1 person travelling	€300 per person
Subsistence Rates (for Madrid, x3 days)	€287 x 3 = €861 per person
Airport transfers	€50
Total budget	**€1,211**

Step 6: How to Budget for Dissemination Costs

Dissemination is an important part of all research projects. It is expected that you will tell people about the results of your research so it is important to cost appropriately. In the case of EU funded projects dissemination is a project deliverable. You should consider what approach will maximise the articulation of the outputs of your projects and best align with the priorities of your funder.

What items could be costed as part of dissemination?

This part of the budget will depend on your project and what your requirements are but the following are ideas of what items may be considered:

- Publication costs e.g. open access charges, publication page fees
- Graphic design costs of final report
- Printing of final report
- Professional formatting and printing of policy brief
- Costs associated with the launch of a report
- Organisation of workshops with invited national/international participants
- Attendance at international conference (e.g. registration fee, flights and accommodation)
- Website (e.g. purchase of domain name, creation and maintenance of website)
- Stakeholder workshops/training/demonstration
- Exhibitions/open days/guided visits
- Creation of videos

Dissemination often happens near the end of the project so if only current annual prices are available, allow for an estimated increase (5%).

Example: Dissemination and Knowledge Exchange Budgets

1. **Budget for Report Launch with 120 delegates. Venue – The Helix, DCU**

Item	**Cost**	**Notes**
Venue Hire	€790 [Gallery]	See: https://thehelix.ie/venue-hire/conferences-events/ If the event requires a technician on site, it is charged at €25 inclusive of VAT @ 23% per hour and minimum call is 4 hours.
Catering	€1,950	See DCU Catering - https://www.dcu.ie/catering/index.shtml Useful email addresses: All Hallows Campus: allhallowscatering@dcu.ie St Patrick's Campus: stpatscatering@dcu.ie Glasnevin Campus: restaurant@dcu.ie
Graphic Design & Printing	€2,680	56-page report, plus the 4 pages for the cover. Design was €1,390 + 23% VAT; printing 100 copies was €970. DCU preferred print/graphic design supplier is https://neogen.ie/
TOTAL	**€5,420**	

2. **Website development**

Item	**Cost**	**Notes**
Website	**€6,500**	Estimate for design, construction and hosting with external website provider with a yearly hosting fee (Price incl. VAT). Administration of the website may require additional resources.

Step 7: Subcontracting

In general, the use of subcontractors to deliver part of a research programme should be avoided and programme tasks should be completed by project partners if at all possible. This benefits the strength of the application and confirms that the project team have the skills to deliver the project without relying on third party subcontractors.

If a part of the project must be delivered by a subcontractor it should be a distinct well defined task that is not core to the scientific delivery of the programme. Typical examples would be:

- Website development (if not included under dissemination)
- Prototype machining
- Use of a company to survey participants

If a subcontractor is essential to the programme you must conform to normal procurement procedures when selecting them to deliver on the programme. This may require three quotes or even a tender process if greater than €25,000.

In addition, it is worth noting that the subcontracting relationship will require a written agreement to be put in place and you should contact research@dcu.ie to initiate this process. When costing the subcontracting role, you should get initial quotes as guides and be sure to include 23% VAT in the budgeted cost.

Appendix 1: Equipment: Procurement, Depreciation and Procedures

All Equipment and Infrastructure must be purchased in compliance with all National and EU procurement guidelines. Funders may have additional requirements in addition to these guidelines such as itemisation, lower limits, depreciation, etc., but that will be detailed in the call documentation.

Guide on the procurement path based on National and EU values:

Values (excl. VAT)	**Minimum requirements Supplies and / Services**
Less than €500	At least 1 quotation documented
≥ €500 and < €5,000	At least 2 quotations documented
≥ €5,000 and < €25,000	At least 3 written quotations in response to brief specification
≥ €25,000 and < EU threshold[1]	National procurement process

[1] *Current EU threshold (2019) is €221,000, above which advertising of contracts in the Official Journal of the EU is obligatory. Most tenders from DCU for Equipment over €25,000 are EU advertised.*

Depreciation and EU funded equipment

If applying for an equipment budget from an EU grant, note that ***funding will be received to offset depreciation per year rather than fund the purchase cost.*** Funding to fully offset depreciation will only apply if the equipment will be used exclusively for the project throughout the duration of the project in question and where depreciation costs for the equipment have not been claimed from other sources. For example:

- Instrument A is funded at a value of €100,000
- Project duration is 4 years
- DCU finance depreciates equipment over 5 years (always)
- This means, from the date of purchase, we can claim €20,000 per annum (20% depreciation each year)
- In this example, a maximum 80% of the original instrument value can be claimed from the funder if purchased on day 1 of the project.

Do note that this equipment does not have to be purchased from this EU grant, but if it is USED exclusively for the project, then a depreciation claim can be made.

It is critically important to purchase equipment early in the project due to the depreciation rules and the time it takes to get through the procurement process. Not including lead times for delivery, this will take in excess of 3 months.

Procedures for Costing Equipment

When setting the budget line for Equipment, the following questions need to be answered:

What is the estimated cost of this item?

- Speak with a possible vendor and get list prices, not discounted prices. Discounts can change over time so budget should be set at list price.
- *Note: An item can refer to a single instrument or piece of infrastructure or it can refer to a cluster of instruments or infrastructure*

What is the estimated annual Service Contract costs for this item?

If this is unavailable from a vendor, use a % of the capital purchase value.

- E.g. Use ~5% /annum for non-mechanical Equipment and scale up to ~10% /annum for more mechanical Equipment

How many annual service contracts do you wish to purchase with this item and at what cost?

- Make sure you have service contracts in place for the duration of the project. The Service Contracts would commence after the 12-month warranty period has finished. E.g. If two annual service contracts are purchased with the Equipment initially, the first three years are covered.

Will there be installation costs and if so, what is the estimate cost?

- This can be difficult to estimate but include what won't be part of the purchase of the Equipment such as transfers from trucks to the lab, lab service installations (e.g. power, gas lines, extraction, anti-vibration, heat control, and so on), health & safety requirements and consultancy.

Who will become the Equipment specialist and is budget required?

- Is there a technical officer or post doc current employed that could do the job? Would they have capacity? The skillset? Does it need a new hire? Will training be included in the purchase? If a person or part FTE is required, how much per annum?

Appendix 2: Example Budget of €100,000 1-year project

This is a hypothetical budget for a 1 year project. It is intended as a rough guide to the types of expenses that may go into a budget.

ITEM	YEAR 1	TOTAL
Personnel		
Postdoctoral Researcher (Level 1, Point 2 on IUA Scale)	€58,312	
		€58,312
Materials/Consumables		
Transcription service	€3,000	
Software license	€1,200	
Software Training	€1,200	
		€5,400
Travel/Dissemination/Public Engagement		
Conference Travel	€2400	
Travel for conducting interviews	€2300	
Hosting 1 day Conference (100 people)	€1900	
Final Report	€2680	
Open access	€3000	
		€12,280
Overhead Costs		
30%		**€22,797.60**
Equipment		
Laptop	€1500	
		€1,500
Sum total including overhead		
		€ 99,289.60

Based on the DCU Salary Calculator and includes Employer PRSI and Employer Pension Contribution

€1 per minute is a standard subscription cost. 50 interviews of 60 minutes duration.

License for qualitative data management software for 2 users. 1 day training for use of this software. This software is essential for analysis of the interview

Cost is for 2 international conference trips per year. Estimate of €300 flights, €400 for hotel and €500 conference fees.

Travel costs for up to 50 interviews. Estimated at an average of 100km for 50 return day trips. Using DCU mileage rate, 46 cent per km .

Venue hire for the Helix for 1 day @€800. Sandwiches, tea/coffee for lunch @€8 p.p. and tea/coffee, biscuits @€3pp . Plus design and printing of 100 copies of final report

Overheads or indirect costs **should be included in every budget** unless the funder specifically states that they are not permitted. If the funder does not specify a % rate then 30% should be

Check if your funder has a limit on the purchase of computers. For example IRC will only allow €1k max per computer/laptop.

Appendix 3: Example Budget of €600,000 4-year project

This is a hypothetical budget for a 4-year project along with a sample budget justification. It is intended as a rough guide to the types of expenses that may go into a budget and the level of detail required in justification. Salaries were calculated based on a project start date of 1st January 2021.

Details	Year 1	Year 2	Year 3	Year 4	Total
Personnel					
Postdoc	60,869	65,144	66,845	68,643	261,501
PhD student	24,005	24,005	24,005	24,005	111,200
					372,701
Equipment					
Laptops	2,000				2,000
Thermal cycler	6,000				6,000
					8,000
Materials/Consumables					
Animal model	1,300	3,900	2,600		7,800
Pre-clinical analysis	1,800	5,400	3,600		10,800
Patient sample analysis	4,000	6,000	6,000	4,000	20,000
Access to core equipment	2,000	3,000	3,000	2,000	10,000
General lab consumables	3,000	4,000	4,000	3,000	14,000
Pipette starter kit	790				790
					63,390
Travel & Dissemination					
Open access publication		2,000	4,000	4,000	10,000
Conferences		3,000	3,000	3,000	9,000
					19,000
Overheads					
30%					**136,527.3**
				TOTAL	**€599,618**

Budget justification:

Personnel:

Funding is sought for a full-time postdoctoral researcher at point 3 of the scale for the duration of the project. This will allow us to hire a postdoc with 2 years' experience in carrying out animal models of inflammation.

A PhD student with a background in biochemistry/immunology or similar will be recruited. Funding is requested to cover an annual stipend of €22,000 along with fees. Fees are based on the current DCU fees for a lab-based researcher of €5,800.

Equipment:

Laptops will be purchased for both the postdoctoral researcher and PhD student at the outset of the project.

Funding is sought for a thermal cycler to carry out reverse transcription reactions prior to real-time PCR. The amount requested is based on a quote from Applied biosystems. Prior to purchase at least three up to date quotes will be obtained from separate suppliers, as per DCU procurement policy.

Materials/Consumables:

Animal costs have been calculated for the EAE model to include the costs of housing animals within the DCU Bioresources Unit and also the cost of myelin oligodendrocyte glycoprotein (MOG) and pertussis toxin required to induce disease. Purchase costs of animals are not included as the lab maintains a breeding colony of C57BL/6 mice from which experimental animals will be obtained. Costs are based on 8 animals per group for all experiments.

Pre-clinical analysis costs include all costs related to the analysis of samples from the EAE animals including isolation of immune cells, ELISAs, antibodies for flow cytometry, and reagents for DNA isolation and RT-PCR.

Patient sample analysis costs include reagents for PBMC isolation and cell sorting; antibodies and vital dyes for flow cytometry; reagents for DNA isolation and RT-PCR; lactate assay kits; glucose uptake analysis; and western blotting. Costs are based on the analysis of 90 individuals - 30 patients with active disease, 30 patients in remission and 30 healthy control individuals.

Costs are included to cover access charges for the use of core equipment including flow cytometry and RT-PCR base on charges of €20 per hour for internal DCU users.

A pipette starter kit will be purchased for the PhD student in year 1.

Travel & Dissemination:

Funding is sought to cover open access publication of 5 research articles. This is based on an average cost of €2000 per publication as charges vary based on journal.

Travel costs are sought to assist with the cost of both researchers employed on the project attending international conferences in years 2, 3 and 4. Conferences will include Immunology, British Society for Immunology and relevant Gordon Research and Keystone conferences. The requested amount represents anticipated costs of abstract submission, registration, international travel, accommodation and subsistence. Additional funding to supplement this will be sought from travel grant schemes.

Overheads:

Overheads are calculated based on 30% of all non-equipment direct costs.