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AWARDEE REPORT FORM

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| NAME | | Cian O’Connor | | |
| TWITTER HANDLE\* *optional* | | @OptimisticBio | | |
| UNIVERSITY | | Royal College of surgeons in Ireland | | |
| NAME OF AWARD | | Symington-Bequest fund | | |
| PURPOSE OF AWARD *conference/event attended/organised (full name) with city and dates.* | | | | |
| The purpose of this award was to support attendance at the world leading Materials Research Society Fall 2023 meeting to present research from my Anatomical Society funded PhD work. | | | | |
| REPORT: What were your anticipated benefits?  *Minimum number of words between 200-400. Please write in coherent paragraphs.* | | | | |
| Before attending the Materials Research Society fall meeting the main anticipated benefits were to promote my research and engage with international experts in the fields of material research. In particular, through delivering an oral presentation of my research entitled ‘*Development of a human induced pluripotent stem cell loaded biomimetic scaffold for spinal cord repair applications’* I aimed to receive feedback on my work to date from a more materials scientist related background as opposed to the traditional biological science related audiences I typically present to. Additionally, as this was my first time in the USA, I had planned to expand my international network in the field of materials research by engaging with researchers from a wide array of backgrounds.  The conference hosted extensive poster sessions with over 1000 poster presentations on display across 3 days of the conference. Through these poster sessions I hoped to engage with researchers at varying stages of their career, establish collaborations with other labs and where possible offer feedback on research in the area of neural biomaterial development. Specific symposia of interest to me included sessions on ‘Soft Bioelectronics’, ‘Bioelectronic Interfaces’, ‘Polymeric Biomaterials for Regenerative Engineering’ and ‘Scaffolds for Regenerative Engineering’. Across these sessions experts from all over the world presented cutting-edge research with implications for my work in developing advanced biomimetic implants for spinal cord repair. | | | | |
| COMMENTS: Describe your experience at the conference / lab visit / course / seminar/ event.  *Minimum number of words between 200-400. Please write in coherent paragraphs.* | | | | |
| The Materials Research Society meeting was hosted in the Hynes Convention centre in the heart of Boston, MA. From Nov 26th – Dec 1st fascinating and engaging research was presented across the fields of solar cells, battery development and of particular interest to me, the use of soft biomaterials for biological applications. Several sessions were run throughout the week on using advanced materials for neural applications focusing on the areas of spinal cord repair, developing brain interfaces, and advancing technology for cochlear implants. The regenerative medicine track talks also offered insight into the current state-of-the-art of using biomimetic biomaterials as therapeutic platforms to tackle a range of diseases and disorders while also developing physiologically and anatomically inspired 3D *in vitro* tissue models. Particular talks of interest that stood out to me included:   * ‘*Interaction of graphene and WS2 with neural cells, neutrophils and mesenchymal stem cells implications for peripheral nerve regeneration’* which discussed the mechanisms behind how 2D materials such as graphene can enhance axonal outgrowth through nerve growth factor accumulation in axons grown on these materials. * ‘*Integration of soft materials in microfabrication for auditory neuro-prostheses’* which discussed advancements in the development of state-of-the-art cochlear implants and how material science is pushing the clinical frontiers in this area. * ‘*Conductive and bio-functional hydrogels for regenerative living interfaces in the nervous system’* which discussed how electrostimulation and electroconductive materials can be used to enhance repair of the injured spinal cord while supporting the delivery of stem cells to the lesion site.   On a broader level attending such a high level conference and interacting with many researchers at the top of their field was a rewarding experience and highlighted key areas of interest in research from across the globe. | | | | |
| REPORT: In relation to skills, what were the most important things you gained? *(does not apply to equipment grant.* For public engagement/outreach awards what did your audience gain and how did you evaluate success?  *Minimum number of words between 200-400. Please write in coherent paragraphs.* | | | | |
| Some of the most important things I gained from attending this conference involved establishing collaborative networks, receiving feedback on my work, raising my own research profile internationally and engaging with early career researchers. More specifically, following my talk I engaged with some of the editor in chiefs of internationally renowned journals in my field and they gave excellent feedback on my work and insights on how and where to publish some of the findings. Additionally, both during and outside of my sessions I expanded my network by engaging with researchers from Harvard University, Rice University, Texas A&M and several other universities based in countries around the world. My hope is that this will help expand my network and future career prospects.  Throughout the talks I also learned a great deal about cutting edge advancements in neuro engineering. In particular, the use of 2D nanomaterials such as PEDOT, MXenes, EDOT, Galium and more being incorporated into natural polymer materials that are used in my research. This has not only enhanced my knowledge of the emerging electroconductive tissue engineering research field but has inspired many ideas I hope to pursue throughout my current and future postdoctoral research work. Finally, on a more general note, the presentation style and how research is discussed at conferences in the USA seemed quite different to styles I have typically seen at European conferences. Researchers from the USA used much more conversational, visual and clear styles with reduced scientific jargon in their presentations (despite discussing complex topics). Going forward I hope to implement many of these presentation styles and features in my own efforts to communicate my research. | | | | |
| REPORT: How do you think you will put this learning experience into practice in the future? For public engagement/outreach awards how with the materials/knowledge generated by this activity be used in the future?  *Minimum number of words between 200-400. Please write in coherent paragraphs.* | | | | |
| I hope to build on the experience of attending the Materials Research Society fall meeting in many ways. Firstly, I plan to disseminate the key talks and findings to my lab group and wider department at one of our weekly lab meetings in the new year to highlight new techniques and areas of research that may be of interest to pursue. While many talks of interest focused on neural applications, there were many talks on skin wound healing and bone repair, of which the findings will be of interest to our wider Tissue Engineering Research Group.  Additionally, I hope to strengthen my network further. Throughout the conference I met many researchers working in both similar and completely different areas of research to myself. Going forward I hope to not only keep in touch with these researchers but to actively engage and hopefully collaborate with them in the future.  Finally, the growing field of nanomaterials for biological applications stood out as a key emerging area in materials research in the USA. Going forward I hope to use these newly established networks and insights to determine if I can incorporate the use of electroconductive nanomaterials into my work to create advanced therapeutic platforms for spinal cord repair. Overall, I feel there are many insights I hope to put into practice in both growing my research and my profile in the future. | | | | |
| Data Protection/GDPR: I consent to the data included in this submission being collected, processed and stored by the Anatomical Society. Answer YES or NO in the Box below | | | | |
| Yes | | | | |
| Graphical Images: If you include graphical images you must obtain consent from people appearing in any photos and confirm that you have consent. A consent statement from you must accompany each report if relevant. A short narrative should accompany the image. Answer N/A not applicable, YES or NO in the box below | | | | |
| n/a | | | | |
| Copyright: If you submit images you must either own the copyright to the image or have gained the explicit permission of the copyright holder for the image to be submitted as part of the report for upload to the Society’s website, Newsletter, social media and so forth. A copyright statement must accompany each report if relevant. Answer N/A not applicable, YES or NO in the box below | | | | |
| n/a | | | | |
| SIGNATURE | *Cian O’Connor* | | DATE | 21/12/23 |

*If submitted electronically, a type-written name is acceptable in place of a hand-written signature*

*File: AS-Award-Report-Form-171023*