### Research statements – excerpts to inspire you and help you write yours

Here we list excerpts from successful past research statements. Each section has several examples from different research statements to give you a sense of the many ways to write sections. We have examples from life sciences, physical sciences and tech, social sciences and arts and humanities**. A well written research statement should offer concepts that are understandable across disciplines even if the ideas are complex.**

Research Vision examples

I will investigate cellular signaling dysfunction in Parkinson’s Disease. In doing so, I will be able to explore fundamental questions about cellular signaling regulation, mitochondrial function and other key biological processes in neurons.

I would like to make implants suitable to measure signals in the human body to communicate to a phone and to measure health.

To understand the molecular dialogue between kingdoms of life: the two-way communication between plants and their animal parasites.

## Setting the context examples

Air pollution is the world’s single largest environmental health risk, responsible for over 7 million annual deaths. My research will enable us to reduce our exposure to the most damaging types of pollution. I will attack this problem on two fronts: by improving indoor ventilation systems, and by reducing sources of pollution.

Unusually for an animal, parasitic cyst nematode sex is not determined genetically, or at least not entirely, but rather by food availability. Individuals that establish a successful feeding site develop into females, while unsuccessful individuals develop into males. Given that plant-nematode interactions cause up to 80% crop loses, it thus stands to reason that genes which dictate the outcome of parasitism (e.g. effectors) contribute to plant developmental re-programming, animal sex determination, and ultimately human food security.

The Sustainable Development goal (number 4) recognises the importance of providing an education to all children within an inclusive education system.  My research investigates the causes of inequalities in learning for children from disadvantaged backgrounds to identify strategies to raise learning outcomes in support of achieving this goal.

My research uses experimental and analytical techniques to give physical understanding and to inform low-order models of unsteady flow. This is of particular importance to engineers designing new technologies where the unsteady component of the flow is substantial, e.g. tidal turbines and urban air taxis.

The demand for bandwidth is increasing rapidly and shows no signs of slowing down, and the internet already consumes up to 10% of the world’s electricity. I propose to send considerably more information down optical fibres, by creating highly flexible optical interferometers that can be completely reconfigured in a few milliseconds.

Such a study would redress the widespread critical neglect of religious modes of thinking and would help to explain their survival in our predominantly secular world.

## State of the art examples

By XXX it was emerging that like viruses, pathogenic bacteria engage in unexpectedly complex cross-talk with their hosts by deploying a sophisticated arsenal of virulence ‘effector’ proteins, often delivered into cells via specialised nanomachines termed XX.

Previous research has focused on achieving thermal comfort for the inhabitants. My programme will extend this to include non-uniform ventilation of contaminants, with the aim of making buildings healthier places.

After genetic studies implicated Fbxo7 in the development of autosomal recessive forms of in Parkinson’s Disease.

On the modelling side, the state-of-the-art is limited because it assumes two-dimensional flow, while both the geometry and gusts are three-dimensional in reality. The assumption of two-dimensional flow also leads to inaccurate steady performance predictions. For the past two years, I have been developing my research in the effects of three-dimensional flow on overall efficiency through undergraduate projects on blade design and MaRINET2 shared facilities funding for flume tank testing of a turbine with winglets. In this proposal, I outline my plans to build on this work to develop a robust, 3D design tool for turbines.

## Track Record examples

I was the first to measure mixing efficiency values over 75% in laboratory experiments of bouyancy-driven flows during my PhD, whereas previously only values of up to 50% were thought possible. This result fundamentally changed the way we think about stratified mixing, and is important for the ocean models used to predict the effect of climate change. I recently gave an invited talk on stratified mixing at the 70th annual meeting of the APS Division of Fluid Dynamics.

I recently made a simple discovery that provides a tangible insight into…..

In a recent effort, I identified a ‘spatial reader’ – a nematode transcription factor that binds the Dorsal Gland Box (DOG box) in a sequence specific manner. The implications of this (DOG box), and the discovery of a cognate reader, establish a platform and a methodology to explore the regulation of inter-kingdom communication.

As a result of my work in tidal power, I was invited to an EPSRC competition in Hong Kong where I was successful in winning £125k funding for an RA to work on a 6-month project on tidal farm modelling with Dalian Technical University. We published the results of this study in the Journal of Fluid Mechanics.

My doctoral thesis examined the complex identification of poetry and paradise in the works of W My doctoral thesis examined the complex identification of poetry and paradise in the works of W. B. Yeats (1865-1939) and Ezra Pound (1885-1972). Previous scholars have focused thematically on the sorts of paradise which each poet imagines (earthly or celestial, Christian or pagan), and on their mythological, historical, and religious sources. Instead, I show how their works boldly suggest that, rather than merely describing paradise, poetry might bring us to or even make paradise. It is only by attending to this subtler, more ambitious identification that we can understand either the poems or the paradises of Yeats and Pound.

Using live cell imaging techniques, I revealed how input signals (i.e. cytokines, cellular stresses) could be transduced into an ‘oscillatory’ pattern of recurring waves of IκB degradation and NF-κB nuclear entry and exit [ref].

In 20XX I was the programme chair and local organiser for the international Eurohaptics conference held at the University of Warwick. This role involved co-ordinating the submission and review process, securing industry sponsorship, and soliciting input from recognised experts as keynote speakers. The conference was very successful and has gone on to form part of the IEEE accredited “World Haptics” series of conferences, as well as allowing me to make multiple international contacts in the research field.

## Fit with dept/institution examples

The approach that I have used for tidal turbine blades – undertaking experimental work and developing physically reasonable low-order models – can be adapted for many applications and there will be synergies between my work and that of Dr David Cleaver’s group on unsteady flow and separations.

I aim to continue expanding my own research initiatives and expertise niche with the existing cutting-edge research from CEB. I also want to bring to the department my current network of academia-industry collaborations, be able to support and mentor younger members of CEB to plan their future research, and to contribute as much as possible with my experience in fellowships such as the URF, the ERC, etc.

My research perfectly complements the existing strengths of Earth Sciences at Oxford, with my quantitative analyses of the …In the Department of Earth Sciences with Dr. Erin Saupe, I am keen to develop biogeographic models over the Ediacaran – Cambrian transition, investigating …Building on my work demonstrating the stochastic nature of early animal life, I would like to develop theoretical models … Prof. Roger Benson, to investigate the extent to which animal diversification is stochastic versus deterministic. I am collaborating with Dr Frankie Dunn in the OUMNH…. am currently building collaborations within the Department of Zoology with Prof. Mike Bosall ….The University of Oxford has a unique combination of research areas which combine to form an integrated environment for my research and open avenues for inter-departmental collaboration with the Department of Zoology and Oxford Museum of Natural History.

## Seeking funding

‘I plan to continue building the tidal group into a world centre for hydrodynamics research, and hope to supplement funding from Alstom and future SUPERGEN calls with money from an EPSRC First Grant.’

## Examples of Impactful language

The words you use matter. Use phrases that show impact as highlighted below. Beware that these phrases can sounds cliched and empty if they are not used with solid concepts and evidence.

* The proposed project seeks to ***open a new research front*** within the field…
* This work offers a ***complete understanding of the properties of these*** new objects and a***road map charting the next steps for research in the field****.*
* An***innovative and emerging***materials science led approach is now required to understand the factors at play limiting xxx, thus opening the door to realising their functional potential. … This ***proposal strikes at the heart of all these issues***  …
* This study will ***provide decisive evidence on this debate*** by proposing a ***new methodology***for studying the impact of economic policies on public health, and in so doing ***advancing an emerging new research***tradition…
* Paleomagnetism has played a pivotal role in developing our modern understanding of the Earth, and remains one of the primary tools used to study the structure and dynamics of the Earth and other planets…… Adopting ***cutting-edge techniques from physics and materials science*** *…*
* Some of the most interesting and controversial periods of Earth’s history occur far beyond the current limits of our confidence in the paleomagnetic signals used to study them. xxx***will solve this problem by…***