The European Research Council, ERC

Workshop for Applicants

Handout

- Exercise: Elements, keywords and structure of successful abstracts -

Physical Sciences & Engineering

Project Acronym: NEWLOG
Project Title: New Directions Linking Ocean Geochemistry, Biomineralization and Palaeoclimate (NEWLOG)
Budget: €2.58 million
AdG

This proposal bridges three fields, geochemical oceanography, biomineralization and palaeoclimatology. The link that will be advanced is the oceanic carbon system now and in the past and its relationship to climate change. The major focus will go into marine calcification, the building block of the skeletons and shells for a large number of marine organisms. This is a key research area because: (i) storage of carbon in oceanic deposits of calcium carbonate plays an important but poorly understood role in controlling atmospheric CO_2; (ii) trace element and isotopic compositions of marine calcifying organisms have been used for reconstructing environmental parameters to understand past changes in climate; (iii) increasing ocean acidification will lead to reduced calcification of modern ecosystems as well as enhanced dissolution of carbonate sediments that will play an increasingly important role in the future chemistry of the ocean and its ability to take up atmospheric CO_2.

Work on biomineralization and biomineralogy of marine calcifiers is expanding rapidly but is almost completely divorced from work on their use in palaeoceanography. Bringing these two aspects together has enormous potential and is a key goal of this proposal. There are a large number of opportunities given recent breakthroughs in understanding, within this proposal and in the future.

The most important are to (i) understand incorporation of proxies into foraminifera; (ii) produce accurate estimates of pH and CO_2 over earth history on tectonic, orbital and rapid time scales; (iii) explain how changes in deep-sea storage of calcium carbonate affects atmospheric CO_2; and (iv) develop research on evolution of ocean chemistry concurrent with biotic innovations.

Life Sciences

Project Acronym: ECOLIGHT
Project Title: Ecological effects of light pollution
Project Funding:€1.6 million
StG

The last 100 years have seen the dramatic spread of an evolutionarily unprecedented environmental change. Across huge areas, the spatial patterns and temporal cycles of light and dark that have previously remained approximately constant have been disrupted by the introduction of artificial night-time lights. This raises major

concerns, given that light and dark provide critical resources and environmental conditions for organisms and play key roles in their physiology, growth, behaviour and reproduction, including the entrainment of internal biological clocks to local time. Indeed, it has long been recognised that light pollution of the night is likely to have profound consequences for the structure and functioning of populations and communities. Nonetheless, empirical studies of these effects remain wanting.

This project will bring about a step change in understanding of the ecological consequences of night-time light pollution, addressing the principal question: How does the experimental manipulation of artificial night-time light influence population abundance, species composition and community structure? This will be answered using linked experimental studies. The results will have wide ramifications for understanding of the influences of rapid environmental change on population and community structure and of measures by which these can best be ameliorated.

Social Science & Humanities

Project Acronym: Preferences
Project Title: Understanding Preferences: Measurement, Prevalence, Determinants and Consequences
Project funding: €1,340 million
StG

This project analyzes the distribution, origin, determinants and consequences of human preferences. Preferences are key building blocks of any economic model and fundamentally determine human behavior both at an individual and a country wide level. Four particularly important types of preferences, which will be studied in this research project, are risk preferences, time preferences, social preferences and preferences for work and leisure. Despite their fundamental importance, empirical knowledge regarding the nature of preferences is still very limited. Crucial open questions concern: the pervasiveness of different degrees of risk aversion, impatience, social preferences and preferences for work and leisure in the population; the extent to which different preferences vary systematically with personal characteristics, such as gender, age, and educational background; the correlation between preferences within person, e.g., whether individuals who are risk averse also tend to be impatient; the relation between economic preferences and other non-cognitive skills, such as personality (e.g., Big Five) and cognitive skills measured in terms of IQ; the origin of preferences, e.g., the extent to which preferences are passed on from one generation to the next; the possibility that preferences and attitudes vary systematically with the social and institutional environment; and the degree to which individual preference endowments differ across populations and countries. Answering theses questions is of great importance, both from a general research perspective as well as from a policy oriented point of view. This project is highly innovative as it combines experimental and survey techniques and because it bridges insights from many disciplines.