



## Review

# The Manchester Fly Facility: Implementing an objective-driven long-term science communication initiative



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## ABSTRACT

Science communication is increasingly important for scientists, although research, teaching and administration activities tend to eat up our time already, and budgets for science communication are usually low. It appears impossible to combine all these tasks and, in addition, to develop engagement activities to a quality and impact that would make the efforts worth their while. Here we argue that these challenges are easier addressed when centering science communication initiatives on a long-term vision with a view to eventually forming outreach networks where the load can be shared whilst being driven to higher momentum. As one example, we explain the science communication initiative of the Manchester Fly Facility. It aims to promote public awareness of research using the model organism *Drosophila*, which is a timely, economic and most efficient experimental strategy to drive discovery processes in the biomedical sciences and must have a firm place in the portfolios of funding organisations. Although this initiative by the Manchester Fly Facility is sustained on a low budget, its long-term vision has allowed gradual development into a multifaceted initiative: (1) targeting university students via resources and strategies for the advanced training in fly genetics; (2) targeting the general public via science fairs, educational YouTube videos, school visits, teacher seminars and the droso4schools project; (3) disseminating and marketing strategies and resources to the public as well as fellow scientists via dedicated websites, blogs, journal articles, conference presentations and workshops – with a view to gradually forming networks of drosophilists that will have a greater potential to drive the science communication objective to momentum and impact. Here we explain the rationales and implementation strategies for our various science communication activities – which are similarly applicable to other model animals and other areas of academic science – and share our experiences and resources to provide ideas and readily available means to those who are actively engaging or intend to do so.

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## 1. Introduction

Scientists are increasingly expected to communicate their research to the general public. Impact or social responsibility statements make up ever larger and important sections on grant applications [1], and we are asked to accompany our published work with lay summaries, short films or blog articles. Even for those enjoying engagement activities, they can substantially add to our tight schedules and enormously diverse portfolios of duties. In addition, there are many other barriers that stand in the way of science communication by scientists [2]. For example, there are issues (a) with self-perception (“I am not good at this” or “I have a fear of public speaking”), (b) with attitude (“this ranks lowest in my priority list”), (c) with potential lack of external reward by line managers (“focus on your research and teaching”), (d) with frustration (“does my engagement make any difference?”), (e) with limited budgets to support outreach work, and (f) with limited opportunities to publish the fruits of science communication in biomedical journals that would strengthen our CVs. Clearly, we need to achieve the seemingly impossible and square the circle by developing clever strategies that can help to bring down these barriers.

As detailed elsewhere [3,4] and also discussed here, one important strategy which can help to overcome these barriers is to shape science communication activities into objective-driven, long-term initiatives. To illustrate how this can be done and what benefit can be gained from such a strategy, we describe here strategies and experiences of the science communication initiative of the Manchester Fly Facility - and these can be similarly implemented by researchers working on other aspects of biology or even fields of science.

The Manchester Fly Facility is a central research facility of the Faculty of Biology, Medicine and Health at The University of Manchester which supports research that utilises the fruit fly *Drosophila melanogaster* [5]. This tiny genetic model organism has pioneered modern biology and has remained at the forefront of many areas of biomedical research for more than a century, leading to 5 Nobel Prizes in physiology or medicine; it provides important experimental advantages and many of the findings made in flies are applicable to higher animals and humans, due to a high degree of evolutionary conservation [6–9]. The community of ‘drosophilists’ worldwide is estimated to comprise over ten thousand scientists (FlyBase, personal communication), reflecting the unremitting importance of *Drosophila* research as a highly efficient and cost-effective strategy to drive scientific discovery. Notably, this importance is not diminished by the rapidly evolving modern research technologies in vertebrate models [9]. Therefore, funding of many areas of fly research should be continued as a responsible and necessary investment policy if we are to sustain efficient discovery processes in the biomedical sciences. However, misconceptions associated with the advent of new technologies and the current political trends towards applied translational research, negatively impact on the general awareness and acceptance of *Drosophila* research [10]. To stop or even reverse this trend, drosophilists must engage proactively in communicating and advocating the fly research we do.

The two authors recognised this need, especially since the community of drosophilists, which has a long tradition of developing and sharing resources [7,11,12], has not taken concerted action to develop a common forum or strategy for promoting the communication, training and advocacy of *Drosophila*. Capitalising on the capacity of the Manchester Fly Facility with over 10 fly groups and ~40 drosophilists at different stages of their careers, as well as experiences from training university students in fly genetics, we initially started organising science fair stands, then adapted our experiences to school visits and gradually improved and developed these activities into a multi-faceted, long-term initiative. This initiative now involves strategy and resource development for

researcher training, extracurricular and curricular school lessons, science fairs, online platforms and marketing – all combined under one umbrella objective which aims at promoting awareness about the importance of *Drosophila* research. As will be explained, our initiative is gradually gaining momentum and impact, and it has been recognised by our faculty as a valuable contribution to social responsibility, thus making it easier for us to sustain our activities.

The development and rationale of activities, strategies and resources will be discussed in this article, and we will describe how and where they have been made publicly available through various repositories and websites. By sharing our experiences and resources, and discussing their added value (as well as pitfalls), we hope to inspire other drosophilists to contribute to the common effort through initiating similar activities or further improving their strategies and resources. We also hope to reach out to scientists with different interests or working with different model organisms to adapt similar strategies and perhaps even consider developing their engagement into long-term initiatives that aim beyond local impact.

## 2. The science communication initiative of the Manchester Fly Facility

### 2.1. Objective setting

A widely accepted guideline for objective setting is provided by the SMART acronym, suggesting that objectives should be specific, measurable, achievable, realistic and timely/time-bound [13]. Whilst each single science communication activity will need its own rationale and objective, we suggest to align activities under an overarching long-term objective into a focussed science communication initiative with a greater chance of generating momentum and impact [3,4]. For this, we suggest to choose an objective that is easy to identify with. For example, following the environmental disaster caused by the Santoz chemical spill in 1987, the Rhine countries initiated the Rhine Action Program (also referred to as “Salmon 2000”) [14–16]. One key target for this program was to bring back the long-lost (since 1930s), pollution-sensitive salmon into the Rhine by the year 2000. In 1997, the salmon returned and pollution was reduced by 50–100% depending on substance. In our view, choosing this easy-to-grasp, almost emotional objective of re-establishing a well-known and valued fish species likely provided the right incentives, necessary flexibility and creative space to implement appropriate and effective measures than more specific, technocratic targets might have done.

When we started our initiative, objective setting was not a conscious process, but rather a feature in the background, and we followed common sense and sentiment instead. An important incentive was the discrepancy between our own understanding of the importance of invertebrate model organism research and the noticeable lack of this awareness amongst university students. A few decades ago when invertebrate model organisms were the key source for biological discoveries, most university students would have known about *Drosophila* from their school education. For reasons mentioned in the introduction, this student “species” has become rare, and we can no longer count on the general awareness or even acceptance of the importance of fly research. We felt a strong desire to change this situation, at least locally. In hindsight this was a good direction to take. A vague objective (e.g. “raising general awareness of the importance of *Drosophila* research”) might not have worked as well as the concrete goal of “raising the number of university life science students who acknowledge the importance of *Drosophila* in biomedical discovery processes”. Not only does the latter objective directly impact on our daily work

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