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Review

The Node and beyond–using social media in cell and developmental biology

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ABSTRACT

Traditionally, strong scientific communities have been at least partly built around physical proximity – either by members of the same department or institute, or through regular meetings and conferences. The online environment and the rise of social media platforms now make it easier to build virtual communities of geographically dispersed people with a common interest. In this article, we explore how such networks can be nurtured, focussing on the Node – a community blog for and by developmental biologists. We also discuss the value of social media outlets like Twitter in building and maintaining scientific communities online.

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1. Introduction

Science today is an increasingly online enterprise. While in the past, interactions between researchers relied on face-to-face meetings, newsletters, personal letters or phone calls, today's digital era facilitates rapid and global communication with relatively few boundaries. The researcher's day typically begins and ends with

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email. Meetings are still a crucial way of making connections and disseminating research, but are complemented by video chat, webinars, live streams and recorded conference sessions, and online Q&As. The web is our main source of information, but access to this information requires active participation from the community, for example through the deposition of data in key resources and databases. Organisations such as university departments, journals, advocacy groups and scientific societies have to maintain a dynamic online presence to promote their activities. Lab websites are often the first port of call for an interested student or potential collaborator, so an up-to-date site is of crucial importance. And of course scientific publishing is chiefly done online – submitting manuscripts, reviewing and proofing, producing the 'paper', and reading it in online editions of journals, often accessed via search engines such as PubMed [1].

While these now standard online channels have revolutionised communication between scientists, the internet also offers other ways for researchers to build scientific networks and share ideas. Social media – a term which defies clear definition but which we consider here as online platforms that allow users to set up individual profiles, generate content and connect with others in real time using the same platform – opens up new ways of building networks, and promotes connections with researchers you don't personally know. Blogging (which can be considered a form of social media but which, for simplicity, we exclude from the definition for the purposes of this article) allows ideas to be formulated and disseminated outside the restrictions of traditional publishing. Importantly, blogging and social media are essentially free, and so allow connections to be made without the need for (often international) travel – which can be particularly helpful for junior researchers or those from developing countries. Furthermore, unlike traditional publishing routes, social media promotes the spread of ideas without the necessity for prior editorial approval, and thus gives a degree of freedom to researchers thinking unconventionally.

However, these tools come with their own challenges. You can publish a blog post, but how do you ensure it will be read by more than the odd e-wanderer? Conversely, social media platforms like Twitter can have hundreds of millions of users: how do you find your audience in this mass? It can be a daunting task to find the group of people with whom you want to connect and interact online.

Here, we describe how The Company of Biologists and its journal Development has sought to build and support an online community for the developmental biology field, through launching and maintaining the community blog the Node (www.thenode.biologists.com) and its associated social media channels. We first discuss how the project was conceived, how it works today, the extent to which we feel we have met the aims of the site and where we still face challenges. We then explore how social media has been crucial to the Node's success. We consider how our experiences might help individuals and organisations who seek to use online platforms to build scientific networks. While many scientists also use social media as a way to engage with the public, the focus here is on building networks between scientists; articles elsewhere in this issue will provide complementary experiences for public engagement.

2. The Node

2.1. Launching the Node

Established in 1953 and initially known as the Journal of Embryology and Experimental Morphology, Development (www.dev.biologists.com) is a leading research journal in developmental biology. Run by the not-for-profit publisher The Company of Biologists, whose mission is to support and inspire the biological community, it has a specific remit to support the needs of developmental biologists. In 2009, a survey conducted by the journal highlighted the idea that Development – seen as a community journal – should be doing more for the community. Specifically, the survey identified a desire for an environment where members of this and related fields (most notably stem cell biology, but also other intersecting fields such as cell biology, evolution and genetics) could gather and interact online, bypassing the need for each internet-savvy researcher to build their own network from scratch. Development responded in 2010 by establishing an online hub called the Node (Fig. 1; [2]). The site's name reflects its aim: from a technical perspective, a node is simply a connection point, while developmental biologists know the node as an important group of cells that instruct and organise the activity of others in the early embryo. The Node was hence conceived as an online connection point for developmental biologists. It would provide a place where ideas could be discussed and exchanged by the whole community, without the restrictions of more formal publications, and would encourage an informal style and varied content, as well as dedicated pages for job opportunities and events useful for community members. Importantly, the Node would be open to anyone interested in contributing and would be easy to use. Thus, to some extent, the Node could be considered an online (and hence more flexible and accessible) version of a scientific newsletter – an informal form of communication aimed at a defined group of researchers with a remit to facilitate exchange of ideas and provide information on useful resources [3].

The Node is hosted on the Company's servers and uses the Wordpress [4] content management system, customised from a standard template by the Node team in collaboration with our information technology (IT) consultants and marketing manager. This system requires no advanced web skills, though users have some flexibility with formatting, particularly if they have basic HTML coding knowledge. The principle is that any member of the community should be able to post spontaneously, and the site's content would thus be community-driven. This community blog approach contrasts to other blogs, such as those run by other publishers or societies (for example, PLoS's Biologue [5], the ASCB's Compass [6], the GSA's Genes to Genomes [7], and Cell Press' Crosstalk [8], all of which mainly post 'in house' content) or those run by individuals (such as Paul Knoepfler's The Niche [9]) – in both these cases, the hosts have much greater control over content than is the case for the Node. In being specifically focussed on developmental biology, it differs from blog aggregators such as ScienceBlogs [10]. Though the Node aims to serve as a central hub for linking to and advertising resources such as The Embryo Project [11] or the Manchester Fly Facility [12], it aims to be much more than an educational resource for the developmental biology community. Crucially, the Node differs from platforms such as The Conversation [13], which is a curated community site aimed at a public audience; our focus on an audience of specialists has fundamentally dictated both the content we host and the strategies we use to promote it. At its launch, the Node was therefore something of an untested experiment, and still is – to our knowledge – a unique format in the science blogosphere.

2.2. How the Node works

2.2.1. Management

The Node is maintained by a dedicated Community Manager (CM; this post is currently held by Aidan Maartens and previously by Catarina Vicente) employed by The Company of Biologists (Fig. 2A). The CM provides strategic input into the future of the site, as well as running it day-to-day, commissioning content (see below), authorising users, helping with formatting, responding to questions and requests, and running the Node's social media opera-