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Embed dynamic content in your poster

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Abstract

A new technology has emerged that will facilitate the presentation of dynamic or otherwise inaccessible data on posters at scientific meetings. Video, audio, or other digital files hosted on mobile-friendly sites can be linked to through a quick response (QR) code, a two-dimensional barcode that can be scanned by smartphones, which then display the content. This approach is more affordable than acquiring tablet computers for playing dynamic content and can reach many users at large conferences. This resource details how to host videos, generate QR codes, and view the associated files on mobile devices.

Description

Poster presentations are a key communication platform in the scientific community. They serve as an educational opportunity for undergraduates, graduate students and fellows to hone their communication skills and receive detailed feedback about their work and ideas for future experiments. For visitors, these are where late-breaking results are presented. However, especially in fields that rely on live cell imaging, presenters frequently choose oral presentations over posters in order to display dynamic data. While presenters at a poster might be stuck gesticulating awkwardly trying to explain the dynamics of cellular motility, oral presenters can simply queue a movie.

Enterprising presenters have worked around this limitation by setting tablet computers up at their poster presentation, an approach that has been met with some measure of success. However, when the presenter needs to step away, tablets (and the movies) generally leave as well, removing key piece of information. With more conference attendees carrying smartphones, however, an alternative approach has emerged in the form of QR codes. These 2D barcodes can link to online content by scanning apps on smartphones (Figure 1). By linking to dynamic video or audio content hosted on sites like Youtube, visitors with smartphones can access your work just by scanning the QR code.

QR codes hold several advantages over a tablet attached to the poster board. First, printing QR codes to embed dynamic content has no marginal cost, unlike purchasing tablet for augmenting poster presentations. Second, the QR codes remain behind when the presenter leaves, allowing visitors to access the content themselves. Third, presenters can get feedback on the types of dynamic data that in the past they could only share in an oral presentation. This is particularly valuable since oral presentation slots are typically limited in number compared with posters. Of course, visitors must have smartphones with internet access and QR scanning apps installed (or borrow the presenter's device), but increasing smartphone penetration will facilitate the move toward augmenting posters with digital content.

One caveat to take into consideration when sharing dynamic content online is the prior publication policy of the journals you might like to publish in. Some might consider online distribution of data will compromise its novelty. To determine how much of a problem this might be, I contacted the editors of three leading biomedical journals. A common response

theme was that this method should not be used for promoting one's unpublished work (especially to the media), but rather for sharing cutting-edge results with meeting participants. One editor emphasized the importance of not crossing the line from presentation to promotion, and encouraged keeping the presented materials similar to those in an oral presentation. According to another editor, posting the video either to an institutional website or a video sharing site for the presentation shouldn't compromise novelty as long as the QR code was given only at the presentation and provided authors disclose how the video had been used. Likewise, this should not break prior publication policies according to the editors of a third journal, as long as the work was presented at a scientific conference and wasn't promoted to members of the press. Each journal might have a different policy, so authors should proceed thoughtfully.

Presenters interested in augmenting their posters with digital content first need to host their content, and second generate their link as a QR code. The movie in Figure 1 is a three-dimensional reconstruction of a gonadotropin-releasing hormone (GnRH) neuron stained for 3-tubulin [1,2] to show microtubules in green; the nucleus is shown in blue. This was saved as a movie file with ImageJ. This was converted to an .mp4 file with Quicktime Pro (to maximize compatibility with mobile devices) and uploaded to Youtube at http://youtu.be/-WQy9zO_zP4. To best comply with prior publication policies, the sharing settings were set to "Unlisted", which only allows those with the link (which can be shared only on the poster) to access the video.

Since QR codes are standardized, generating the code with the link can be done by any number of free QR generating tools online. Some examples are listed below. The images from the code generator can be saved as an image file. After generating the QR code, it can simply be added to a poster like any other figure panel.

QR code generators
http://qrstuff.com
http://qrcode.kaywa.com
http://goqr.me
http://www.qr-code-generator.com/

Viewers will need a QR scanning app on their smartphone. The code in Figure 1 was tested with Google Goggles for Android, the Goggles function in Google Search for the iPhone, and the scan function in the Bing search app for Windows Phone. With these tools in hand, poster presentations can rival oral presentations for digital content and further facilitate the sharing of scientific information.

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Figure 1.

3D reconstruction of cytoplasmic tubulin in a GnRH neuron. Video encoded using Quicktime 7 Pro and hosted at http://youtu.be/-WQy9zO_zP4. Fluorescence immunostaining for β -tubulin is shown in green and the nucleus is shown in blue; samples were prepared as described in [1] and labeled as in [2]. Google Goggles for Android or the Goggles function in Google Search or the Scan app for the iPhone were tested; Windows Phone can read QR codes from the Bing search program.