

# Opinion: Lay summaries needed to enhance science communication

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At first blush, the notion of lay summaries seems a simple idea with admirable aims: Scientists write summaries of journal articles emphasizing the broad significance of research in accessible language. However, viewed from an ivory tower that has been besieged by an increasing amount of paperwork, scientists could easily regard lay summaries as just one more hurdle in peer-reviewed publishing, another administrative task to fit into an already busy agenda.

But rather than an unrewarding burden, scientists (and journal publishers) should consider widespread adoption of lay summaries—accompanying online publications and made publicly available with traditional abstracts—as a way to increase the visibility, impact, and transparency of scientific research. This is a particularly important undertaking given the changing science media landscape.

There are clear professional benefits to increasing visibility of one's own research through broad communication. Disparate studies show consistent connections between public communication, increased visibility of research, and greater numbers of citations (e.g., refs. 1 and 2). Concerns voiced by scientists that public communication is time-

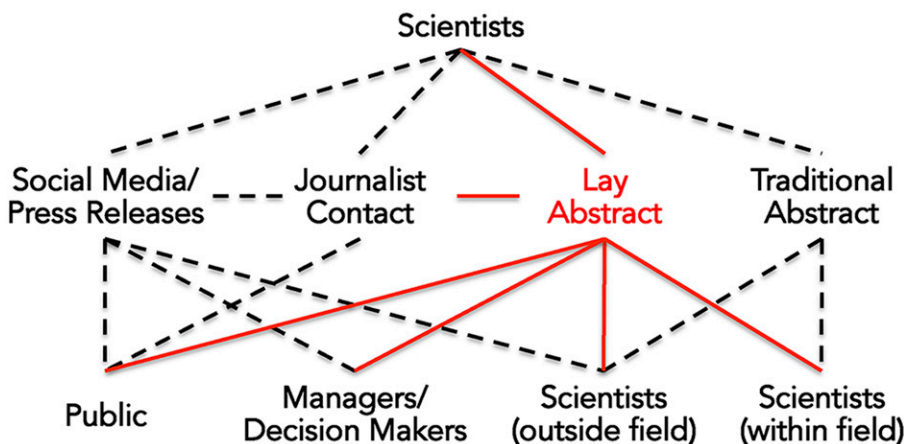
consuming, too difficult, and even professionally risky (3) contrast strongly with research documenting that scientists who engage in public communication enjoy an enhanced reputation among peers, and rate contacts with media as generally positive and beneficial to their careers (2, 4). Furthermore, scientists who engage in public communication tend to be more academically productive; few experience negative career impacts from these activities (5). Journalists also value and cultivate connections with scientists who can communicate clearly and accessibly (6). At best, scientists could view lay summaries as opportunities to contextualize their research and communicate with interested nonspecialists. But regardless, they could serve as building blocks for broad and transparent communication of research.

The value of lay summaries increases when considered within the radically changing science media landscape. There is little debate that dissemination of research and scientific news is undergoing a sweeping change (7). Greater reliance on the Internet for scientific information is transforming communication pathways from a traditional top-down transfer of knowledge to one where readers play

a much more active role in acquiring information and agenda setting (8). Within the general public, 87% of online users rely on the Internet for research activities like fact-checking or looking up scientific terms (9), and evidence suggests that the public are using increasingly diverse sources of information (e.g., blogs and social media) (7, 10).

Meanwhile, science journalism is fundamentally changing. Along with traditional duties of investigative reporting and agenda setting, a plethora of information and more collaborative relationships with readers is emphasizing new roles, such as curator and convener (8). The number of content producers equates to availability of diverse perspectives on research findings, leading respected scholars in science communication to propose that a “media ecosystem” more accurately depicts the way scientific knowledge is transferred today (8). We have conceptualized the science media ecosystem (Fig. 1) to illustrate both the limitations of current communication pathways and the potential for lay summaries to increase access to and communication of research findings.

The traditional pathway through legacy media (television, radio, and print) effectively reaches wide audiences, but is limited in scope with at most 3 of every 1,000 published articles gaining attention from mass media (11). This pathway is increasingly constrained by reductions in science media staffing, leading to more exclusive reliance on press releases from major scientific journals for story ideas and content (6). Not only is this an unlikely avenue to encourage comprehensive access to research findings, but it is actually trending toward loss of information diversity and homogenization of science news (6, 12). Blogging and social media have transformed the media ecosystem, and many scientists have adopted this route to make material directly available to interested audiences. The primary limitations of this pathway are its uncertain reach, the perceived and actual



**Fig. 1.** A conceptual map depicts the pathways available for communicating research results between scientists and end users via different mechanisms (depicted by black dotted lines). Lay summaries of published articles would serve to enhance potential communication pathways (depicted by red solid lines) between scientists and the lay public, increase decision makers' access to information, and improve interdisciplinary communication.

Author contributions: L.M.K. and J.D.O. wrote the paper.

Any opinions, findings, conclusions, or recommendations expressed in this work are those of the authors and do not necessarily reflect the views of the National Academy of Sciences.

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