From the Editor

Moving Toward Point-of-care?

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The high costs of medical care and drug development are challenging scientists and clinicians alike to develop better ways to detect and treat disease earlier and more cheaply. Overcoming the well known difficulties is easier said than done: for instance, it has been projected that bringing a single drug to market can cost up to \$2 billion. And while disease treatment can be made less costly by designing point-of-care diagnostics, such clinical tests still require significant front-end financial investment and planning to create tools that, in the field, are inexpensive, robust, and intuitive to use by a wide variety of personnel.

In order to really tackle the crux of the cost issue, the focus should be on developing point-of-care diagnostics that can be deployed globally. If the H1N1 outbreak of 2009 taught us anything, it was that better surveillance and rapid detection platforms could be the most efficient and effective first-line defense against future pandemics. In the current issue of *BioTechniques*, Chen et al. describe a new PCR platform that has the potential to work in a variety of environments as a cost-effective, point-of-care diagnostic device. Based on convection PCR, the approach requires nothing more than a capillary tube and simple heating device (even the heating unit from a portable mosquito repellent can be used here) to cycle the PCR reaction. Although special consideration has to be paid to initially designing the primers and reaction components, the authors' results demonstrate that the system has the potential for robust implementation in a variety of applications.

But how far will this approach go? While a growing number of scientists have been working on variations of PCR instrumentation for point-of-care diagnostics for quite some time, further development and commercialization of such systems has lagged far behind. Most groups working on low-cost PCR applications and diagnostic technologies are either in academic labs or associated with smaller start-up companies. Although certainly a starting point, without more investment these efforts will not get to the places where they are desperately needed. To see such developments curtailed

due to a lack of commercial interest would be a tragedy, since the potential impact on human health is great, and research on basic concepts and design principles is being published with greater frequency.

Commercial drug discovery, on the other hand, suffers no lack of investment interest, but a focus on high-return diseases impairs the development pipeline in its own right. But as I detail in this month's Tech News, the establishment of new academic chemical screening centers has led to increased efforts to identify therapeutics to treat a wider range of disorders and infections, including many devastating diseases like TB and malaria that are most often associated with third-world countries. With these academic centers leading the charge, the hope is that a greater number of compounds can be identified for a wider array of diseases, which can then be quickly advanced through clinical trials. By partnering with pharmaceutical companies later on and mitigating some of the early-stage risks (failing leads, high screening costs), the hope is that these compounds can eventually be brought to market.

The overall goal should be to make disease detection and treatment available to all, at any location around the globe. Drug discovery seems to be on a path to achieve just that in the coming years. Similarly for point-of-care diagnostic technologies, advances such as those detailed in Chen et al. represent significant steps. Now it is time for developers to move beyond the rhetoric and find a viable path to get these devices into the hands of those that truly could benefit from the technology. Please share your thoughts with us by posting at our Molecular Biology Forums under "To the Editor" (<http://molecularbiology.forums.biotechniques.com>) or sending an email directly to the editors (bioeditor@biotechniques.com).

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