Biotechnology and Reproductive Health: A Missed Opportunity?

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In the sphere of third world development, reports by the United Nations (UN) on topics such as poverty, health and women are eagerly anticipated dossiers, expected to serve as a lamp to the feet of international development agencies. The latest such report published by the United Nation Population Fund (UNFPA) is the *State of the World Population 2002: People, Poverty and Possibilities*. It is not dissimilar to past documents of the kind with a keen eye on the effects of economics, population growth, health, HIV/AIDS, and education in eradicating poverty in a world where 3 billion live on less than $2 a day. By going beyond the staggering numbers the report rightly views development as an upshot of such goals as universal primary education, access to family planning, improvement of health indicators (including child and maternal mortality) and environmental protection, rather than as merely a product of trade and market forces. The UN has set a goal of cutting in half by 2015 the number of people in absolute poverty.

Given my training in public health and the life sciences, the most germane concern on my reading this report was the role of biotechnology in this issue. As a sector, were we reaching our potential in contributing to the

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development and poverty reduction goals of the international community? Now much of what is accepted as our role in development revolves around food production/agriculture and our commission to develop and provide accessible drugs and medicine to diseases ravaging the developing world, namely HIV/AIDS, malaria and tuberculosis (TB). Our success in these efforts has been mixed at best. Agricultural biotechnology is still in its infancy but has shown some promising results. The attempts at providing affordable medicines to the developing world seem conflicted. While some pharmaceutical and biotechnology companies have made genuine attempts to bridge the treatment gap of diseases of the developing world – by shepherding research and development, establishing preferential pricing on existing drugs, etc. – a vast majority of the sector, according to the WHO, still only devotes less than 10 per cent of their R&D budget to diseases of the developing world.

Experts have written much on these two areas of biotechnology participation and I would be insolent to write my perspective. But on reading the latest UN report on the state of the world's population, what struck me was the lack of authentic biotechnology participation in the reproductive health matters of the third world. The report utilizes part of an entire chapter on the connection between reproductive health and poverty, and makes a valuable case. While we may perhaps identify with the association between health and poverty, rarely do we realize the impact of reproductive health on poverty and development. According to this report, more than 20 per cent of the disease burden among women in the developing world is related to reproductive issues; the figures reach up to 40 per cent in areas such as sub-Saharan Africa. The effect of reproductive health on development goes beyond the issue of contraception and family planning – matters preeminent in their own right – to intangibles like sexually transmitted infections (STI) (HIV/AIDS), reproductive tract infections, and complications during pregnancy and childbirth. These have adversely affected maternal and child mortality rates with some developing countries expressing maternal mortality rates higher than 1000 per 100,000 live births. (In stark contrast, Finland has a rate of 6 per 100,000). In societies where women have few negotiation skills in sex and childbearing, such complications

morph reproduction into a disquieting experience. Both the World Health Organization (WHO) and the UNFPA have concluded that the reproductive health malaise has affected the economic production and demographic structure of populations, and widened the gap between the rich and poor. It seems absurd that in something so integral to humanity the biotechnology sector has been largely insouciant.

Given the destructive economic and human impact of reproductive health problems in the developing world, how can we allay this situation? For starters, as has been recognized in malaria and TB, more basic and clinical research to understand male and female reproduction, including disorders, need to be undertaken. While not a traditional onus of the biotechnology sector, recognition of the need for more basic research can pave the way for better therapies. Second, the sector needs to invest in R&D for reproductive tract diseases and more effective STI prevention. This includes adopting concerted vaccine initiatives in cervical cancers, STI prevention, which can complicate reproductive tract infections and in immunocontraception; the recently announced human papilloma virus vaccine is a tribute to the biopharmaceutical effort. Part of this effort should also focus on obstetric and gynecological indications that affect the birthing process - like post-partum hemorrhaging, cervical ripening and thrombosis/ embolism after caesarean sections. Third, a more comprehensive portfolio of contraceptives needs to be developed. These should embrace viable male contraceptive choices, like synthetic androgens in the form of implants and transdermal gels; effective long-acting contraceptives, like time-release vaginal rings; and contraceptives that are also effective in STI prevention, like microbicides. The UNFPA reports that over 100m unwanted pregnancies still take place every year resulting in half a million deaths, making this third objective a true obligation.

At first glance, the role of the biotechnology and biopharmaceutical sector in the reproductive health of the developing world may seem somewhat cryptic. But as I have laid out in this article our expertise and resources can auspiciously serve some of the reproductive (therapeutic and preventative) needs of the developing world. Reports from the World Bank

have suggested that investing in reproductive health research is among the most cost-effective health interventions with bona fide economic benefits for not only the developing world but the pharmaceutical and biotechnology sector as well. This provides a real incentive in addition to our moral and human obligations. In the *State of the World Population 2002* the UNFPA has convincingly argued that improving reproductive health "offers clear and direct benefits for empowering women, reducing poverty…improving child survival and maternal health". We as an industry should heed these words in our contribution to improving health and aiding development in the third world. Just as to many of the international development agencies, perhaps these UN reports should serve as a lamp to our feet as well.

References

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