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## Introduction

Scientific and technologic advancements influence decision making by drug discovery and development scientists, clinicians, and regulators. The American College of Clinical Pharmacology (ACCP) uses these scientific milestones to communicate its understanding of

## The Link Between Direct-to-Consumer/ Patient Advertising of Genetic Testing and the Practice of Clinical Pharmacology

Technology is accelerating the pace of knowledge generation

## Present and Future Consequences of Consumer Experiences with Genetic Testing

The value of information derived from genetic testing of polygenetic disease is likely to improve rapidly over the next decade. Currently, however, there is limited ability to predict the risk of diseases based on genetic profiles and genomic expression patterns. It is important that consumers realize that issues regarding scientific quality and reproducibility of genetic and genomic tests must be resolved; consequently, the quality is not uniformly there yet [6]. Consumers who are not prepared for the uncertainty and risk associated with genetic testing may suffer as a result [7]. Furthermore, at a population level, these collective experiences may give future genetic testing a poor reputation, and it consequently may not be trusted by consumers.

This negative branding can be an unintended marketing consequence of premature promotion and uptake of DTC/P genetic testing. This outcome could deter the future utilization of pharmacogenetic testing to inform choices about medication use, which is a long-awaited scientific advance in our discipline. To prepare consumers/patients who are considering taking action in response to DTC/P promotion and advertisement of genetic testing [8], clinical pharmacologists could convey the following cautionary advice: Verify, in consultation with a knowledgeable and trusted professional, the information presented in DTC/P advertisements of genetic testing. What is the population at risk for the disease that is the focus of the advertisement, and what percentage of individuals with that disease actually has a strong genetic component to the disease's expression? Seek professional advice. If genetic testing is being recommended by a health care professional not trained in genetics, seek genetic counseling from a trusted source prior to making a decision about having a genetic test. Recognize the scientific limitations of each test. With a few exceptions, genetic testing currently being advertised directly to consumers provides information that is not readily translatable to the type of knowledge needed to inform therapeutic decisions. Realize that many companies that sell DTC genetic testing services do not provide interpretation of

test results. Pre- and posttest counseling and result interpretation must be sought by the consumer. Clinical pharmacologists can assist with genetic testing that is pharmacotherapy related and thereby add value to the consumer experience for this type of genetic test. Other genetic test results can be triaged to appropriate clinicians for interpretation and communication of risk assessment.

## Conclusion

Pharmacogenetics and pharmacogenomics are expanding the frontiers of health professions. Clinical pharmacology will have a voice in how the evolving science translates not only into clinical trials and patient care but also into regulations involving the promotion and advertising of all genetic tests. Clinical pharmacologists can help ensure that realistic expectations of genetic and pharmacogenetic/genomic tests are communicated, thereby mitigating psychological, social, and medical risks.

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