

Abstract of Presentation

Note: This paper should be typed in “Times New Roman” of 12pt.

Presentation Title (Should be no more than 20 words):

Developing Genomic Medicine in Mexico. Gerardo Jimenez-Sanchez, MD, PhD.
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Abstract:

Mexico faces important demographic and epidemiological transitions with significant implications to patterns of disease, disability, and death. On the one hand, there are problems of underdevelopment and, on the other, the emerging challenges of the chronic and degenerative diseases of the industrialized world. For these diseases, prevention becomes a key strategy for alleviating a major burden to the economy and health of the population. Genomic medicine has become a priority to the Mexican government as a means of finding new strategies to tackle common diseases (Jimenez-Sanchez G. *Science* 2003. 300(5617): 295). In 2000, strategic planning for genomic medicine began, from a feasibility study and a multi-institutional consortium effort, to the creation of a National Institute of Genomic Medicine (INMEGEN) by the Mexican Congress in 2004 (Séguin B, *Nat Rev Genet.* 2008 Oct;9 Suppl 1:S5).

INMEGEN is designed to develop world-class translational research focused on national health problems. Most Mexicans are Mestizos resulting from admixture of Amerindian, Spaniard and African populations. The admixture process has led to particular genomic ancestry structure. To optimize the use of human genome information to improve healthcare in Mexicans, we are systematically evaluating genomic variability of the Mexican population (Silva-Zolezzi I. *PNAS* 2009). We are including additional Mexican Amerindians and increasing SNP density to better understand the admixture process in Mexicans, and develop more suitable tools to analyze the genetic bases of complex diseases in this population (<http://diversity.inmegen.gob.mx>). In addition to the construction of a haplotype map of the Mexican population, INMEGEN is developing several genome-wide association studies for common diseases, such as diabetes, obesity, cardiovascular disease, and cancer, as well as other translational medicine projects that include biomarkers discovery for several kinds of cancer, pharmacogenomics, and nutrigenomics (Jimenez-Sanchez, G. *Genome Res.* 2008; 18 (8): 1191-1198). The design of INMEGEN includes an intellectual property unit and a business incubator to develop goods and services to improve healthcare for the Mexican population. These projects

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have included a strong component of community participation, resulting into local pride and support of the idea of individualized medicine (www.inmegen.gob.mx).

Special attention has been devoted to ethical, legal and social implications (ELSI) related to developing genomic medicine in Mexico, including the development of an ELSI Research Center that has developed a comprehensive strategy for community engagement into research projects, including personal consent for sample collection. In addition, INMEGEN has a permanent interaction with the Mexican Congress to advise on emerging needs and opportunities for legislation on issues related to fair access and privacy, among many other issues.

This efforts have created knowledge and culture about genomic medicine in Mexico leading develop a more modern regulatory framework to ensure that genomic medicine successfully contributes to improve healthcare in the Mexican population (Hardy BJ, *Nat Rev Genet.* 2008 Oct;9 Suppl 1:S23).