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## Introduction to the special issue on genetic research of alcohol use disorder in diverse racial/ethnic populations

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### Abstract

This special issue of *The American Journal on Addictions* is an extension of a workshop held at the Research Society on Alcoholism (2015) highlighting several important issues related to studies of the genetic bases of alcohol use disorder among racially/ethnically diverse populations. While not exhaustive in their coverage, the papers in this special issue focus on three important topics: (1) the importance of considering the social and environmental context in genetic analyses; (2) social and cultural considerations for engaging diverse communities in genetic research; and (3) methodologies related to phenotype development for use with racially/ethnically diverse populations. A brief overview of each paper included in these three sections is presented. The issue concludes with additional considerations for genetic research with racially/ethnically diverse population groups along with a commentary.

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This special issue originated from a roundtable discussion at the 2015 annual meeting of the Research Society on Alcoholism, titled “Perspectives on genetic analysis in diverse populations: Opportunities and challenges”<sup>1</sup>. The goal of the roundtable was to facilitate an examination of ideas and opinions regarding methodological, social, and ethical issues relevant to genetic research on alcohol and other addictive disorders among racial and ethnic minority populations. The roundtable initiated a lively discussion on these topics that warranted further consideration. Following the session Dr. Thomas Kosten, editor of *The American Journal on Addictions*, encouraged us to expand the breadth of topics presented to provide a more wide-ranging treatment of the issues related to genetic studies involving racial/ethnic minority population groups. This served as the impetus for this issue.

Currently many different racial/ethnic groups are under-represented in genetic studies of alcohol use disorder (AUD). The latest estimate for genome-wide association studies (GWAS), not specific to addiction, is that only 19% are conducted using non-European samples<sup>2</sup>. This is an increase from 4% in 2009 and is largely explained by an increase in the inclusion of different Asian ancestry samples. Indigenous populations and Latin American

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#### Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

and African ancestry groups remain particularly understudied, respectively, in 2016, 0.05%, 0.54%, and 3% of GWAS samples <sup>2</sup>.

The ten papers in this special issue cover the under-represented population groups of American Indians and Alaskan Natives, Asians, Latinos, and African Americans. These papers are organized around three themes: the importance of incorporating the environment and social context into genetic analyses; social and cultural considerations for engaging diverse communities in genetic research; and methods for data reduction in phenotype development and specialized genetic studies. We introduce each paper under these sections briefly here.

### **Section I: Addictive behaviors and environmental influences**

The first paper in this issue, by *Luczak et al.* <sup>3</sup>, reviews the prevalence rates of addictive behaviors and their co-occurrences in U.S. racial/ethnic groups and their implications for genetics research. The next two papers consider the role of environmental factors in association with genetic factors and race/ethnicity. *Agrawal et al.* <sup>4</sup> examine the influence of religious involvement on the alcohol use behaviors of African American and White younger adult women. Then *Chartier et al.* <sup>5</sup> survey a larger set of environmental influences for African Americans, Asians, Latinos, and American Indians for investigation in gene-environment (G-E) studies.

### **Section II: A focus on four racial/ethnic population groups**

The next four papers focus on under-represented racial/ethnic groups in genetic research on AUD. Each paper reviews issues relevant to a single population. *Enoch and Albaugh* <sup>6</sup> describe the alcohol consumption patterns of American Indian and Alaskan Native individuals in relation to potential environmental risk factors for heavy drinking. *Matsushita and Higuchi* <sup>7</sup> then describe the use of selected Asian samples to investigate genetic variations of alcohol metabolizing enzymes in relation to AUD to better understand G-E interactions. *Martinez et al.* <sup>8</sup> note that the Latino population is diverse along important sociodemographic and genetic factors, and genetic studies may have potential importance for addressing significant alcohol problems in many communities. *Dick et al.* <sup>9</sup> discuss the importance of including African Americans in genetic studies because such samples may contain genetic variants that differentially impact the etiology of AUD versus other racial/ethnic groups.

### **Section III: Special methodologies**

The last three papers look at specific methods that can be used to improve genetic research with diverse racial/ethnic population groups. *Peterson et al.* <sup>10</sup> describe the use of an empirical clustering method of genome-wide markers to define ancestral membership, an improvement over self-report methods. *Zhang and Gelernter* <sup>11</sup> provide a literature review regarding potential epigenetic changes in DNA methylation resulting from chronic alcohol consumption. The last paper by *Cservenka et al.* <sup>12</sup> summarizes existing pharmacogenetics

studies of treatments for AUD in patients of European, African, East Asian, and American Indian and Alaskan Native ancestry.

## Next steps

We conclude the special issue by providing a description of the key findings of each of these papers and offer several suggestions and potential next steps<sup>13</sup>. Scott<sup>14</sup> also provides an important commentary on the current state of the science, pointing to several cultural and political issues relevant to the planning and conduct of genetic studies. It has been an exciting opportunity to put together this issue. We are thankful for and appreciate the effort and work on the part of both the authors and the journal editors that has resulted in this special issue.

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