

THE “GENOMIC SELF”:

GENOMICS, HEALTH, AND JUSTICE IN LATIN AMERICA/MEXICO

Workshop, Mexico D.F.

19-20 JANUARY
2017



TORRE DE INGENIERÍAS
CIRCUITO ESCOLAR S/N, CD. UNIVERSITARIA



CUERPO ACADÉMICO FILOSOFÍA SOCIAL, UNIVERSIDAD DE GUANAJUATO

THURSDAY, 19TH JANUARY 2017

Lugar: Salón 3, sala sur, Torre de Ingenierías

9:30-10:00 Welcome (Abril Saldaña and Peter Wade)

10:00 – 14:00 Moderator: Carlos López Beltrán

10:00-10:30 *'The more white and Caucasian the person is, the less predisposition s/he has: obesity and the racial origins of health risks among Mexican mestizos.*

Peter Wade, University of Manchester, UK.

10:30-11:00 *European genomes on a collision course, mitochondrial mothers and the 'poor uterus': genomic research and epigenetics in the context of child obesity research.*

Abril Saldaña, Universidad de Guanajuato, Mexico.

11:00-11:30 *The search for the extreme: narratives of the normal and the pathological in genetics of obesity research.*

Shirlene Badger, University of Cambridge, UK.

11:30-12:00 *One or Many Environments?.*

Natali Valdez, Rice University, EE.UU.

12:00-12:30 **Coffee Break**

12:30-14:00 **Discussion and questions**

14:00- 16:00 **Lunch** Azul y Oro/Torre Ingenierías

16:00 – 18:30 Moderator: Peter Wade

16:00-16:30 *History of science; heredity; genomics and health in Mexico.*

Carlos López Beltrán, UNAM, Mexico.



16:30- 17:00 *Predisposition: Tracking the geneticization of diabetes risk in Mexico.*
Emily Vasquez, Columbia University, EE.UU.

17:00-17:30 *Stress, Status and Obesity: Translating Epigenetics From Animal Hierarchies to Human Societies.*
Paul Martin, University of Sheffield. UK

17:30-18:30 **Discussion and questions**

FRIDAY, 20TH JANUARY 2017

9:00-14:00 Moderator: Luis Fernando Macías

9:00- 9:30 *Fat country / country of the dead. Obesity, death and nation in biomedical and forensic genetics in Mexico.*
Vivette García Deister, UNAM, Mexico.

9:30 -10:00 *Life on Third: Blood for Oil, Ethics for Justice .*
Jenny Reardon, University of California, EE.UU.

10:00- 10:30 *Evolutionary biology; comparative genomics, history of biology taxonomy and phylogenetic systematics.*
Francisco Roberto Vergara Silva, UNAM, Mexico.

10:30-11:00 **Coffee Break**

11:00-11:30 *Obese-phobic ideology and epistemic strategies: the scientific professionalization of a cultural stigma.*
María Luján Christiansen, Universidad de Guanajuato, Mexico.



11:30-12:00

Blood diseases in the backyard: population genetics, and the rise of biomedicine in the mid-1960s.

Edna Suárez-Díaz, UNAM, Mexico.

12:00 -13:30

Discussion and questions

14:00- 16:00

Lunch at Azul y Oro/ Torre de Ingeniería

16:00 – 19:00

Moderator: **María Luján Christiansen**

16:00-16:30

Population and Genetic Studies in Mexico during the Cold War.

Ana Barahona Echeverría, UNAM, Mexico.

16:30-17:00

The limits of genetics in explanatory models of complex conditions.

José Antonio Alonso Pavon, UNAM, Mexico

17:00- 17:30

Ancestry and identity in Los Altos de Jalisco: from colonial classifications to genomic studies

Rafael Mojica, CIESAS, Mexico

17:30-18:30

Discussion and questions

18:30-19:00

Closing comments on workshop.

Peter Wade / Manchester University, UK.



ABSTRACTS

The more white and Caucasian the person is, the less predispositions he has: obesity and the racial origins of health risks among Mexican mestizos.

Peter Wade, University of Manchester

This paper explores the discourses of Mexican scientists and doctors on genetics and obesity and how these relate to ideas about race, class and national identity. Drawing on interviews with geneticists and medical staff treating obese children in Mexico, the paper argues that the “thrifty genotype hypothesis” converges with racialized imaginaries that are being lent authority by genomic science. We discuss the implications of such imaginaries for social exclusion, especially in the context of the increasing and unregulated commodification of life science. We then suggest that medical discourse downplays genetic causes in favour of environmental, cultural and epigenetic processes, while still racializing in ways that might have negative effects for patients at an individual and group level. Rather than focusing on minority groups, as is commonly the case in the literature on race and genomics, we suggest that in Mexico ideas about racialized genetic (and cultural) ancestry impinge on the majority, opening broader panoramas of racialized pathologization.

European genomes on a collision course, mitochondrial mothers and the ‘poor uterus’: genomic research and epigenetics in the context of child obesity research.

Abril Saldaña-Tejeda, Universidad de Guanajuato

The presentation explores scientific and medical discourses on genomic medicine and epigenomics in the context of child obesity. It also illuminates some of the experiences of mothers of children with obesity and morbid obesity in Mexico City. The presentation draws on qualitative interviewing with 10 geneticists doing population genomics and medical genomic research on obesity and diabetes predisposition among Mexican mestizos. It also involves 10 face to face interviews with medical staff treating children with obesity at one of the main children’s hospitals in Mexico and 17 mothers of children with obesity that are treated at the clinic.

The presentation shows how genomic and postgenomic research, through scientists’



own subjectivities, provide a site where a particular articulation of race, gender and class is appropriated and reinforced. By turning colonial history into genotypes, these scientific projects and the directions that these are currently taking inform medical discourses and practices that have, for centuries, rest on notions of a healthy nation where some bodies, indigenous, poor and maternal, are constructed as unhealthy and pathological.

The search for the extreme: narratives of the normal and the pathological in genetics of obesity research.

Shirlene Badger, University of Cambridge

Obesity is a public disease, both in discourse and physical expression. Despite complex understandings as to the causation of obesity, the fat body is commonly seen to be somewhat self-evident, holding an increasingly significant political, public health, scientific and personal power. In 1994 progress in the scientific research on obesity received the boost that has continued to fuel current focus on the genetic causes of obesity. The discovery of the role leptin plays in producing weight loss in obese mice was later realised in extremely rare cases of inherited human obesity by a team of scientists at the University of Cambridge. Following that discovery, recruitment of individuals with severe/early onset obesity to the Genetics of Obesity Study (GOOS) began. In this paper I draw on an extensive period of ethnography that pivots around GOOS and its various settings: the laboratory, the clinic and the homes of children and their families in order to explore narratives of how fat comes to be viewed as problematic by participants. The investment in the proposition of a genetic diagnosis for obesity requires specific work in order to situate it as a present condition within a historical and cultural moment. Within this background landscape we can begin to question whose body is being investigated and categorised and the ways in which contingent possibilities and structural features act upon the shape of different trajectories (cf Bowker & Star, 1999:187). Specifically, I will explore how the reality of, and recognition of fat as either normal or pathological occurs through a long series of events and engagements neither uniform or discrete. As such, I see these events as the multiple enactments that occur in the process of referral to and participation in GOOS. Sometimes these routes are determined by the pursuit of an explanation for obesity, at other times obesity sits alongside the trajectory of other health questions and investigations. Perhaps more poignant are the times that obesity pushes from behind along a trajectory that is presented as not being chosen, but as something that obesity indicates and dictates.



One or Many Environments?, Prenatal Interventions and Epigenetic Science

Natali Valdez, Rice University

Epigenetics, an emerging field that explores how environmental conditions affect genetic regulation and expression, is shaping new ways of understanding what counts as the environment. Drawing on research in clinical trials that test nutritional interventions on pregnant women, this essay engages with the different ways that scientists use epigenetics to target particular scales of the environment in their experimental practice. The essay uses an analytical framework of scale to examine how epigenetics simultaneously opens up and multiplies concepts of “the environment,” as well as intensifies attention and anticipation around individual women. I explore four distinct scales of the environment that are rendered meaningful through scientific applications of epigenetics, including food as environment, maternal environments, home environments, and lived experiences. Whereas the first three scales are rendered from the perspective of scientists, the last scale draws from my engagement with pregnant participants in clinical trials. Through an analysis of environmental scales I show how the “environment” comes to matter and how women’s bodies are consistently the main sites for interventions.

Genetics and Racial Pathologization. Amerindian origins and the epidemiological transition.

Carlos López Beltran, UNAM

My presentation will develop four points. 1) An introduction to the problems of genetic causation of disease in the genomic and post-genomic age. 2) A description of the epidemiological transition and studies of genetic causes of diabetes. 3) The research of Amerindian genetic variants and their possible causal links with diabetes and obesity. The role of the Thrifty gene hypothesis. 4) A brief conclusion about racial pathologization.

Predisposition: Tracking the geneticization of diabetes risk in Mexico

Emily Vasquez, Columbia University

This paper tracks public discourse in Mexico over nearly two decades about the genetic etiology of diabetes, drawing on a review of public health campaigns, health and science policy documents, health advertising, and media. I show that despite



ample scientific evidence pointing to behavioral and structural determinants as the primary drivers of the three-fold increase in diabetes rates in Mexico since 1990, genetic predisposition has remained a powerful frame through which the epidemic is explained. Moreover, I highlight the entanglement between the rise of the field of genomics in Mexico and public discourse about diabetes etiology. I argue that publicly circulating claims about the genetic origins of this complex disease have been both crucial to and, in turn, reinforced by parallel efforts to promote the field of genomic science in Mexico over this period. Beyond a linear understanding of geneticization, public discourse about diabetes in Mexico offers a lens through which to understand the circuitous relationship between genomic science and beliefs about the nature of diabetes in the context of Mexican bodies.

Stress, Status and Obesity: Translating Epigenetics From Animal Hierarchies to Human Societies.

Paul Martin, University of Sheffield

Why is it that poor people tend to be more obese? Inequalities in human societies, particularly in socioeconomic status, are associated with differential health outcomes, including rates of obesity. Yet relatively little is known about the causal mechanisms that mediate this link. Recent work in epigenetics has started to explore the role of the stress response as a result of adverse social and environmental conditions in the aetiology of common diseases. Central to this work is the use of animal models which attempt to mimic the stress caused by living in a social hierarchy. However, discussion of the applicability of animal hierarchies to human societies appears to be largely absent from the scientific literature. This paper presents early findings from a Leverhulme funded project “How Does Inequality get ‘Under the Skin’? Epigenetics, health disparities and the making of social policy”. In particular, it will describe work in this area that links laboratory animal studies of stress to research on the epidemiology of obesity with the aim of identifying evolutionary conserved pathways. The paper will then explore the underlying assumptions about animal models of human societies and different concepts of stress, and consider the validity of this type of translational research. It will conclude by reflecting on different constructions of ‘the social’ in biomedical research, the shift to a flattened molecular ontology of social experience, and the making of new transdisciplinary biosocial research communities.



Fat country / country of the dead. Obesity, death and nation in biomedical and forensic genetics in Mexico. **Vivette García Deister, UNAM**

Since at least 2010, the idea of Mexico as a “fat country” and, in parallel, as a “country of the dead” has entrenched itself in the national and international imaginary. This imaginary is analyzed in a comparative way, in light of the role played by genetics in two national domains: health and justice. It explores the ways in which audiences of biomedical and forensic genetics are assembled, either by recruitment (in the first case) or interpellation (in the latter). The comparison between biomedical and forensic genetics allows us to broaden current theories about “citizen participation” in science, and problematizes the social contract between science and society in the current context of health and violence crisis in Mexico.

Life on Third: Blood for Oil, Ethics for Justice
Jenny Reardon, University of California Santa Cruz

While venture capitalists and governments around the world invest in the possibility that biodata and its networks will lead to more rational, inclusive and thus more valued approaches to caring for and governing life, the experiences of people asked to participate in creating the new biodata economy reveal that questions of inequity and worth remain endemic. Effort to resuscitate liberal dreams of open societies via informatic networks, and efforts to make data meaningful through appeals to liberal democratic principles that promote public participation in data production and interpretation falter as more fundamental questions of justice demand attention: What are the things in this world that people should gather around to help to create because of their broad public import? What is the place of big data, genomics, and biomedicine in constituting these things? How can we know and decide? Who are ‘we’? In this talk I bring these questions about the conditions of justice and knowledge on a depleted but data-rich planet, where technoscience garners disproportionate resources, richly into focus through an examination of the transformation over the last decade of of 3rd Street in San Francisco.



The natural / cultural character of 'genetic facts' and the historiography of biological anthropology.

Francisco Vergara Silva, UNAM

By 2013, transnational scientific projects of genomic sequencing of DNA extracted from biological materials of Pleistocene hominids had made remarkable advances. One of these achievements consisted of the description of large segments of the genome of specimens of *Homo neanderthalensis*, a hominid species close to *Homo sapiens*, of which there have been several - and opposing - paleoanthropological interpretations since its first scientific description in the 1860s. These same 'paleogenomics' projects also described, between 2010 and 2013, bioinformatic evidence of possible 'cross-linking' events between Neanderthal individuals and archaic *H. sapiens*, which occurred some tens of thousands of years ago. At the end of 2013, a transnational research consortium dedicated to the genomic sequencing of DNA from diabetic patients reported a surprising result: that some regions of the genome of people studied in a project involving Mexican and Latin American populations probably came from some of those 'hybridization' events between *H. sapiens* and *H. neandertalensis*. In the present work, I analyze what is involved in the fact that these results, published in a scientific research journal, have been interpreted in various scientific dissemination media as evidence that 'Mexican diabetics inherited the predisposition for this disease from Neanderthal ancestors'. To frame this analysis, I have used information obtained from my studies of the historiography of physical anthropology in the twentieth century, as well as the critical conceptual resources provided in the work of the North American biological anthropologist and historian of science Jonathan Marks. The notion of the "natural/cultural character of 'genetic facts'" presented by Marks in a recent publication has been especially useful for my analysis. In this presentation, my main conclusion is that ethnographic studies of genomic research in diabetes and other diseases can find important support in the comparative historiography of biological anthropology, which includes paleoanthropological as well as genomic-medical themes.



Obese-phobic ideology and epistemic strategies: the scientific professionalization of a cultural stigma

María Christiansen Luján, Universidad de Guanajuato

The main objective of this paper is the epistemological exploration of certain guiding premises of the official political discourse about overweight and childhood obesity in the current Mexican population, spread mainly through the mass media. This work is part of a set of critical studies in the field of medical philosophy, especially in relation to the reflection on the link between epistemology and “health sciences”. Fundamentally, we will try to identify some of the conditions of possibility and validation of certain beliefs and practices that contribute to the pathologization of “fat bodies” and to the standardized modeling of subjectivities influenced by the “obesophobic ideology”.

Taking as a reference the positions of George Canguilhem, Michel Foucault, Ludwik Fleck and Ian Hacking on the opacities of the concept of “normality”, will begin a journey through the means of justification emanating from disciplines legitimized and overvalued by contemporary society (such as Bariatrics and dietology), with special emphasis on the construction of the notion of “BMI” (Body Mass Index) as a device for the biologicalization of a cultural stigma (in the Irving Goffman sense). Particular attention will be paid to the recent “Fat Studies” (Fat Studies, Fat Activism), returning to problems and categories posed by authors such as E. Rothblum, S. Solovay, M. Wann and J. Guthman, who observe the style of presenting the phenomenon of obesity from an enriched cultural perspective, addressing the food conditions as complex situations (not reducible to the medical-essentialist apriorism, which tends to immediately convert anomalies into diseases). The line of investigation that is tried to follow from this articulation of authors and currents is oriented to the reformulation of the research questions, abandoning the interest by the causal explanations and chasing, instead, a perspective that problematizes the pathologization of the corporal weight from its intrinsic epistemic pretension. From there, some of the most important implications that such deconstruction throw on the official political uses that are perpetrated in the name of a “scientifically established truth” and on the assumptions that operate in the service of a functional dietary rhetoric in a context of deep cultural paradoxes.



Blood diseases in the backyard: population genetics, and the rise of biomedicine in the mid-1960s.

Edna Suárez-Díaz, UNAM

New modes of circulation of practices and knowledge characterized the decades after World War II. International and national agencies fostered technical assistance programs and massive health campaigns as part of the internationalization of scientific practice in several fields, but also as political tools in the struggle against social unrest.

Amidst technological advances in the study of genetic variants, the new molecular approach to biomedicine provided a rationale for an increasing interest in human populations around the world. The study of blood diseases in human populations concentrated resources on the study of sickle cell anemia, different thalassemias, and other genetically transmitted diseases, including G6PD deficiency (glucose-6-phosphate dehydrogenase). Without respect for national borders, those diseases affected the “backward” African-American populations in the segregationist US South, and the malaria-infested populations of Latin America, Africa and Asia. My contribution will focus on the intersection of public health care campaigns, and the molecularization of population genetics, as crucial aspects in the rise of biomedicine.

Population and Genetic Studies in Mexico during the Cold War

Ana Barahona, UNAM

One of the effect of the Second World War life sciences was the reconfiguration of human genetics, when multicenter inter-laboratory studies emerged and transnational networks of collaboration were established in which there was an intense circulation of knowledge, both, theoretical and material (the development of molecular biology, the introduction of the use of genetic markers and novel techniques such as electrophoresis, tissue culture and staining), which allowed collective production, among others, of evolutionary studies on the estimation of population variability in human populations, and the chromosomal characterization of certain diseases.

The first population and genetics studies first appeared in Mexico in the 1940s, and developed strongly since the 1960s, framed in the context of the end of the SGM with the discourse of peaceful uses of Nuclear power and the beginning of the Cold



War, when there was an international concern to measure the effects of the radiation caused by the bombings in Japan. In this paper I will speak of three research groups that are considered fundamental in genetic studies, both for their contributions to the field of population genetics, for medical and anthropological genetics, and for their membership in international collaboration networks. Dr. Rubén Lisker's group at the Hospital de Enfermedades de la Nutrición; and Alfonso León de Garay's group in the Genetics and Radiobiology Program of the National Nuclear Energy Commission, who had among their interests in the genetic characterization of Mexican indigenous populations, while the group of Salvador Armendares in the Mexican Social Security Institute, would focus on the chromosomal characterization of malnutrition and Down Syndrome, among others.

The limits of genetics in explanatory models of complex conditions

José Antonio Alonso Pavon, UNAM

The study of genetics and its implications for health has been a subject on which a considerable amount of research has been done in the last couple of decades. The golden dream of functional genomics has been to find a causal mechanism that can explain complex conditions such as obesity and other diseases associated with metabolic syndrome such as diabetes. However, this dream has collapsed repeatedly since genetic information alone has not been able to offer such an explanatory model. In this paper I will present an argument that proposes the comprehensive integration of genetic, epigenetic and environmental information such as culture and socioeconomic circumstances to obtain an explanatory model that will help us to understand the causal agents of complex phenomena such as the metabolic syndrome and associated conditions.



Ancestry and identity in Los Altos de Jalisco: from colonial classifications to genomic studies.

Rafael Omar Mojica González, CIESAS

One of the uses that have been made of knowledge about the human genome is the application of tests that show the proportions of ancestry of the users. Beyond the criticisms made to this type of studies and their possible lack of rigor, there are people who do it themselves and this information is used to interpret the past and reinforce / confront identities, as is the case of some inhabitants of the region Of Los Altos de Jalisco, in western Mexico

This region, according to some authors, has distinctive features that differentiate it from other areas of the country, one of which is having had a process of settlement during the viceroyalty in which the European colonists predominated over the indigenous and black, which generated a society little mixed. However, this version contradicts the historical evidence of the presence of several groups and the existence of miscegenation. To date, there is a predominance of a narrative that ponders the European about the indigenous, from the black to the mestizo, as part of the “identifiable” traits of the region, which differentiate it from the identity narrative of postrevolutionary Mexico that valued the miscegenation.

In this sense, this presentation will show the general guidelines on this research in process in which it is sought to observe how an identity narrative based on ancestry was constructed from oral and written sources and how the vision of the past can be reactualized with the new evidence such as those offered by genomic tests. Thus, this latter information comes into play with existing narratives that can be confirmed / confronted and which give a view of what it is to be a member of a region



