
How does urbanization affect the human gut microbiome? - A case study in Cameroon

Ana Lokmer*¹, Sophie Aflalo¹, Sophie Lafosse¹, Alain Froment¹, and Laure Ségurel¹

¹Eco-Anthropologie et Ethnobiologie (EAE) – Museum National d’Histoire Naturelle, Université Paris Diderot - Paris 7, Centre National de la Recherche Scientifique : UMR7206 – Dpt Hommes Natures Sociétés 57 rue Cuvier 75231 Paris Cedex 05Musée de l’Homme, place du Trocadéro 75016 Paris, France

Abstract

How does urbanization affect the human gut microbiome? - A case study in Cameroon
The gut microbiota (GM) seems strongly associated with human health status, as illustrated by a number of lifestyle-related diseases that have been linked to a loss of diversity and to a disruption of GM community structure (dysbiosis). These "modern" diseases, such as obesity and allergies, are on the rise in industrialized countries and understanding the mechanisms behind their increase in prevalence is vital for restoring and maintaining health. The higher GM diversity observed in multiple non-industrialized countries indicates that there is something about the industrialized lifestyle that causes impoverishment of gut microbial communities. Is this effect linked to diet, sanitary conditions, medical practices, latitude or other yet unexplored factors? It is so far unclear as previous studies have compared geographically distant populations that differ in a variety of ways. Moreover, gut protists, which have likely shaped human-GM interactions throughout their coevolutionary history but are virtually absent from industrialized populations are rarely taken into account. To address these limitations, we examined the GM diversity and composition in Cameroonian populations along an urbanization gradient at a local scale. Apart from GM metagenetic (SSU gene) and metagenomic data from 140 subjects, we recorded a number of ethnological, medical, sanitary and parasitological parameters in order to disentangle diverse urbanization-related factors that influence GM diversity. Our results shed light on the link between various aspects of urbanization and GM structure and question the hypothesis that GM diversity declines along the urbanization gradient.

*Speaker