

new neighbourhoods and that privileged groups are more likely to relocate to “healthier” environments and experience positive health outcomes. Overall, despite increasing evidence of the central role of social determinants and life stages as important contributors to health, efforts and tools to integrate the social environment as a central part of the external exposome remain scarce and insufficient. A systematic integration of these factors in large-scale cohort studies and exposome research should gradually alleviate social inequities in health and mitigate the emergence of new inequalities.

The chemical context of the exposome

JOAN GRIMALT

The exposome constitutes an inventory of the plethora of exposures to synthetic chemicals, dietary components, psychosocial stressors, and physical factors, as well as their biological responses that might impact human health. This talk outlines the main physico-chemical characteristics that determine the potential toxicity of environmental contaminants and discusses the environmental equivalence of Paracelsus’ adage: “the dose makes the poison”, considering the effects of chronic exposure to low concentrations of contaminants over long periods or an entire lifetime. The increasing incidence of various non-infectious diseases and their possible relationship with environmental contaminants are also examined. The talk concludes by lending support to the proposal currently under debate at the United Nations, as promoted by some 20 researchers and supported by about 2,000 more, to establish an international panel on chemical contaminants and residues.

An overview of 10 years of early-life exposome research

LÉA MAITRE

Chemical pollution, characterised by the shift from traditional pollution (e.g. wood stoves) to modern pollution (e.g. lead and air pollution), represents an enormous burden for human health worldwide. Current technologies to monitor pollution of this type are, however, manifestly underperforming: most organic constituents of biological and environmental samples go unidentified and potential chemical stressors are disregarded. The exposome seeks to change the dominant paradigm and shift the focus in disease aetiology to the environment, escaping the genocentrism of the Human Genome Project.

Early-life exposome research at ISGlobal has been conducted in existing birth cohorts. This talk examines the application of interdisciplinary research – omics,

environmental epidemiology, and toxicology – to understand early-life environmental influences on health and biological mechanisms and considers how this understanding can improve mental health outcomes in children and in their families by the close monitoring of environmental influences on the disease course. The influence of perinatal and childhood exposure to tobacco and mercury in children's gut microbiota is also described.

The impact of natural environments on maternal and child health

PAYAM DADVAND

Contact with natural environments, including green spaces, has been associated with a wide range of health benefits in humans. In this context, exposure to greenspace has been related to reduced risks of pregnancy complications (e.g. gestational diabetes and pre-eclampsia) and adverse pregnancy outcomes (e.g. low birth weight). Greenspace also plays a critical role in the growth and development of children, having been associated with improved neurodevelopment (e.g. cognition, behaviour, and motor) and lower risks of both neurodevelopmental (e.g. ADHD and autism spectrum disorders) and mental health conditions (e.g. depression and anxiety) in children and adolescents. Exposure to green spaces has also been related to better physical health, including cardiometabolic health, in these age groups. The association with respiratory and allergic outcomes remains heterogeneous. All in all, available evidence supports the beneficial role of greenspace in maternal and child health.