



## **Epigenetics and moral responsibility: the challenging task of identifying epigenetic normality and the internal contradiction of plasticity+inheritance**

Charles Dupras and Vardit Ravitsky

*Université de Montréal*

### **Abstract**

Epigenetics is the study of potentially inheritable variations in gene expression that cannot be explained by DNA modification. Epigenetic variants (e.g. DNA methylation, histone modifications) can be induced by the natural and social environments of the developing child and threaten health later in life. Thus, epigenetic mechanisms appear as a physical and conceptual bridge between two famously contested (and opposed) pillars of human identity: 'nature' (the inherited physical body; genes) and 'nurture' (social determinants of health; acquired traits).

As knowledge about epigenetics expands, an important discussion is now emerging regarding the ethical, legal and social implications of epigenetics. The idea of a moral 'epigenetic responsibility' has been proposed, meaning that individuals and/or governments should be accountable for the epigenetic programming of children and/or citizens. However, these discussions have been – to date – over-simplistic and have neglected important biological nuances and ambiguities inherent in the field of epigenetics. This may undermine the ethically-sound translation of epigenetics.

I will argue that before making premature normative claims, bioethicists should pay close attention to the complex nature of epigenetic mechanisms. Assigning moral epigenetic responsibilities should take into account existing differences between epigenetic modifications and variants and not focus merely on simplistic comparisons between the fields of epigenetics and genetics. More specifically, we should pay attention to the ambiguous notions of 'epigenetic normality' and 'epigenetic plasticity', which may play a crucial role in shaping this emerging debate.