Race is one of the most powerful concepts for examining, explaining and classifying human variation. Ideas about “race” acquire legitimacy and persist in part through its historical construction as a scientific “fact” reflecting presumably inherent biological differences and social attributes. However, there is no real biological basis for sorting human beings into different races. Drawing on insights from biological anthropology, this talk examines why and how this concept persists, despite its historical, political and cultural underpinnings, rather than biological basis. Focusing on concrete applications of race theory in science and medicine, this talk explores practical consequences and limitations of DNA tests that measure for “race”, debates about “race” in forensic analyses of human skeletal remains, and the perils of race-based approaches for health risks that reduce racial health disparities to biology, rather than social and historical contexts.