Environments in infancy have lasting effects on human physiological systems that influence health and well-being in adulthood. Chronic inflammation is involved in many diseases of aging, and it is a potentially important mechanism linking environments and health over the life course. But this understanding is based almost exclusively on research in affluent industrialized populations, which are epidemiologically and ecologically unique in comparison with most populations globally, and historically. Comparative studies challenge key assumptions of the chronic inflammation paradigm, and point toward early life microbial and nutritional factors as important determinants of inflammatory phenotypes. A developmental ecological model of inflammation has potentially important implications for understanding the complex associations among ecology, inflammation, and disease.