Gajdusek, Blumberg, and Prions

In relation to the article by Marcia Stone on prions (Microbe, December 2012, p. 551), it is not correct that Baruch Blumberg worked on kuru. The connection between D. Carleton Gajdusek and Baruch S. Blumberg is that they shared the Nobel Prize for Physiology or Medicine in 1976 “for their discoveries concerning new mechanisms for the origin and dissemination of infectious diseases.” Gajdusek studied the neurodegenerative disease kuru in people living in the remote Papua New Guinean highlands and showed that it was caused by an unusual infectious agent that he called an unconventional virus. Blumberg studied serum factors in various populations and the “Australia antigen” that he discovered in the serum of Aboriginal Australians was eventually shown to be hepatitis B virus. Because of the unusual human populations that enabled these discoveries this Prize was in some circles regarded as the closest one could get to a Nobel Prize awarded for anthropology. Blumberg visited the Gajdusek laboratory at the National Institutes of Health when I was there. We looked for Australia antigen in Papua New Guinean sera, and found plenty, but Blumberg never became involved in our kuru work.

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On the Terms Holobiont and Hologenome

The term holobiont was first introduced by Mindell (Biosystems 27:53–62, 1992) to describe a host and its primary symbiont; the definition was subsequently expanded to the host plus all of its symbiotic microorganisms, including viruses (Rohwer et al., Mar. Ecol. Prog. Ser. 243:1–10, 2002). The hologenome is defined as the sum of the genetic information of the host and its symbiotic microorganisms (Zilber-Rosenberg and Rosenberg, FEMS Microbiol Rev 32:723–735).

The term metagenome is often used in the literature to describe the sum of the genetic information of an environmental sample, including an animal or plant host and its symbiotic microorganisms (e.g., Knight et al. Nature Biotechnology 30:513–520, 2012). However, we consider hologenome to be a more appropriate term for describing the total genomes of animals and plants for three reasons: first, metagenome is a general term for all the genetic material retrieved from any environmental sample, whereas hologenome is specific to the genetic material of a holobiont; accordingly, using a search engine with the word hologenome will direct you more precisely to the target. Second, the prefix meta- (from Greek: μετά = “after,” “beyond,” “adjacent,” “self”), is used in English to indicate a concept which is an abstraction from another concept, used to complete or add to the latter, such as in metaphysics, whereas the prefix holo- (from Greek: holos = whole) is more appropriate because it is used in English to denote whole; entire; entirely. Third, the term holobiont fits nicely with the accepted term hologenome.

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Correction

The author for the February 2012 Small Things Considered, “Two Tales of Symbiosis,” is incorrectly listed as being Merry Youle. The installment was written by Elio Schaechter. Microbe regrets the error.