

The MIDORI Prize for Biodiversity 2020 Winner

Paul Hebert (Canada)

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Remarks

A decade ago, the AEON Environmental Foundation established the MIDORI Prize for Biodiversity to signal its support for the goals of the CBD and to recognize individuals who have contributed to them. I was surprised and honoured to receive Chairman Okada's notice that I had been selected as a recipient. My surprise reflected the fact that most past laureates have advanced the protection of biodiversity through direct action at a national or international level. My work has a different goal; it is provisioning humanity with a scientific approach that will both speed the inventory of life and enable a global biosurveillance system. I have pursued these goals for 20 years aided by a wonderful research alliance, the International Barcode of

Life (iBOL) Consortium. I am honoured to accept this award on behalf of iBOL.

The MIDORI Prizes have great symbolic importance; they focus attention on the fact that we are embedded in the biosphere – for better or worse. The surge in human populations over recent decades has set the stage for biotic devastation in diverse forms. This year has seen an unknown virus shatter the global economy and transform our lives. Its impact stands as a stark reminder that we know very little about life on our planet. However, a far more serious crisis looms – the threat that our species will induce the first mass extinction in 65 million years. COVID-19 has shown that humanity can mobilize tremendous resources in times of crisis. We need to get serious, really serious, about ensuring that the wonderful diversity of organisms that share our planet are not crushed by the human pandemic. The CBD plays a key role in avoiding this outcome; it is mobilizing individuals, organizations, and nations to seek knowledge and take actions that will allow humanity to better support nature. iBOL will be there to help.

Achievement

Dr. Paul Hebert is an evolutionary biologist at the University of Guelph where he holds a Canada Research Chair in Molecular Biodiversity and is the Director of its Centre for Biodiversity Genomics. He carried out his undergraduate studies in biology at Queen's University, his doctoral work in genetics at the University of Cambridge, and then held a Rutherford Fellowship at the University of Sydney before taking up his first faculty position at the University of Windsor.

For the past 20 years, Dr. Hebert's research has focused on the development of an innovative technique termed DNA barcoding which employs sequence variation in short standardized gene regions to speed specimen identification and species discovery. His work not only provides a simple solution to the otherwise difficult task of discriminating species but is generating important new insights into the ages of species and their phylogenetic affinities. Since proposing the concept of DNA barcoding in 2003, Dr. Hebert has focused on building the research infrastructure and collaborations needed for its large-scale application. His efforts began in Canada where he established a national DNA barcoding network in 2004 and secured the funding needed to support its operation and to establish the Centre for Biodiversity Genomics at his home university. Operating in a purpose-built facility, this Centre provides informatics and sequencing support to biodiversity scientists around the world. Building on these capabilities, Dr. Hebert established the International Barcode of Life (iBOL) consortium in 2010 and has served as its Scientific Director since then. Now involving organizations in more than 30 nations, iBOL completed its first research program, BARCODE 500K, in 2015. By delivering DNA barcode coverage for millions of specimens belonging to more than 500,000 different species, it demonstrated the capacity of DNA barcoding to speed biodiversity assessments in different taxonomic groups at sites around the world. As well, it introduced new analytical approaches that enabled the consortium to lay plans for BIOSCAN, its second major program. Launched in 2019, this 7-year, \$180 million project represents the largest research effort ever undertaken in biodiversity science. By taking advantage of recent technological advances in computational hardware, digital imaging, and DNA sequencing, BIOSCAN is charting a course that will make it possible to register all multi-cellular species within 20 years while also revealing their interactions. As well, BIOSCAN will lay the scientific foundation needed to enable a global biosurveillance system. Its activation will represent a massive advance in humanity's capacity to better protect biodiversity.

We feel Dr. Hebert's efforts to advance DNA barcoding represent a fantastic gift of knowledge to a modern society that understands the value of nature. As the technique now needs to be broadly applied, we hope his receipt of the MIDORI Prize will help to reinforce his activities.