= Sunil Kumar Verma =

Sunil Kumar Verma (born 28 September 1974) , is an Indian biologist and as of January 2015 the principal scientist at the Centre for Cellular and Molecular Biology , Hyderabad , India . Verma is primarily known for his contributions to the development of " universal primer technology " , a DNA barcoding method , that can identify any bird , fish , reptile or mammal from a small biological sample , and satisfy legal evidence requirements in a court of law . This technology has revitalised the field of wildlife forensics and is now routinely used across India to provide a species identification service in cases of wildlife crime .

Verma received his D.Phil. in medical oncology from the University of Oxford , and has worked in the areas of signal transduction in cancer and on molecular biology applications in wildlife conservation . He is the recipient of several national awards , including the 2008 CSIR Technology Award , the 2009 NRDC Meritorious Invention Award and the 2009 BioAsia Innovation Award in recognition of his contribution to Indian science and technology .

= = Education and research career = =

= = = Early life and education = = =

Verma was born in a small village in the northern Indian state of Uttar Pradesh . Verma grew up primarily in Tikri and up to the twelfth standard studied at the government school in Tikri . After completing his twelfth standard in the science group from this school in 1991 , he attended the G. B. Pant University of Agriculture and Technology , Pantnagar to complete his Bachelor of Science in agriculture and animal husbandry .

= = = Research career = = =

Verma started his research career at G. B. Pant University of Agriculture and Technology , Pantnagar , where he worked on the DNA fingerprinting of Indian scented basmati rice for identification of duplicate accessions . In 1998 , Verma was appointed as a scientist at the Centre for DNA Fingerprinting and Diagnostics (CDFD) where he continued his research on the DNA @-@ based identification system , and in 1999 , he received the Emerging Forensic Scientist Continental Award from the International Association of Forensic Sciences at the University of California , USA for his work on DNA microsatellite based identification of wild animals .

In 2000 , Verma was appointed as a scientist at the Centre for Cellular and Molecular Biology , where in 2001 , he and Lalji Singh invented universal primer technology for wildlife identification , for which he later received a number of international patents , and several national awards including the CSIR Technology Award in 2008 (jointly conferred to Verma and Lalji Singh) , the 2009 NRDC Award (jointly conferred on Verma and Singh) and the BioAsia Innovation Award in 2009 .

In 2003 , Verma received a Lindau Fellowship to represent Indian scholars at the Lindau Nobel Laureate Meetings in physiology and medicine . During the same year , he also received a Commonwealth Scholarship to carry out his doctoral studies at the University of Oxford . Verma completed his D.Phil. in medical oncology at the University of Oxford in 2007 , and in January 2008 returned to India to continue his work at the CCMB . In 2010 , he subsequently became principal scientist at the CCMB and as of January 2015 , he remains in that position .

Verma was a visiting fellow at the Max Planck Institute for Infection Biology during 2010 ? 2013 . Starting in 2010 , as of January 2015 he is a research ambassador for the DAAD to promote bidirectional research collaboration between India and Germany .

Along with his team , Verma 's research in the area of wildlife conservation led to the reclassification of the pygmy hog , an endangered endemic species , from Sus salvanius to Porcula salvania

= = Universal primer technology = =

In March 2001 , Verma and Lalji Singh claimed to have invented a method that they called " universal primer technology " , which allowed the identification of any unknown biological sample and its assignment to a known species source .

Through its ability to work across a large range of animal species , universal primer technology can identify any bird , fish , reptile or mammal and satisfy legal evidence requirements in a court of law . Patents relating to this invention have been filed in several countries and the research papers published in various journals . This technique of CSIR @-@ CCMB revitalised the field of wildlife forensics . It is currently being used routinely in LaCONES at the CSIR @-@ CCMB to provide a wildlife forensics service across India in cases pertaining to wildlife crime .

Verma 's and Singh 's contribution to the development of universal primer technology has been recognised by the Indian minister of Science and Technology and the Ministry of Earth Sciences in a written report to the Lok Sabha .

Universal primer technology was also used by Therion International , an independent animal testing lab in New York , to uncover the noted seafood scandal in Florida and other parts of America . Several undercover investigations carried out by the ABC7 Whistleblower and WKRG News5 investigators , revealed that almost half of the seafood was inaccurately labelled as a more expensive variety . This method of species identification used by the Therion International to uncover the seafood scam , was cited as " gold standard " by various labs worldwide .

= = = Universal primer technology and DNA barcoding = = =

In February 2015 , a credit dispute between universal primer technology and DNA barcoding came to light . Verma has argued that DNA barcoding , a technique independently described by zoologist Paul D N Hebert in 2003 , is essentially the same as universal primer technology (UPT) and that both utilize standardized , short stretch of DNA from mitochondrial genome , amplified using the specific universal primers , to assign the identity of an unknown biological sample to a particular species . Verma claimed that UPT was described earlier than DNA barcoding in his patents , and publication ; therefore , it should be fairly credited . However , Hebert argued that he was not aware of UPT because its patents were not visible to the broader scientific community due to a substantial interval from its filing in 2001 to grant in 2006 .

= = Literature = =

Verma has written several collections of Hindi poetry on social issues such as the 2012 Delhi gang rape . In 2014 , his work was showcased in Hyderabad by the Association of British Scholars .

= = Awards and honors = =

Some notable fellowships and awards conferred to Verma are as follows :

ICAR merit Scholarship (1991 @-@ 1995)

DBT national merit scholarship (1995 @-@ 1997)

Emerging Forensic Scientist Continental Award (1999) from the International Association of Forensics Sciences

Lindau Fellowship (2003) to represent Indian scholars at the Lindau Nobel Laureate Meetings in Physiology and Medicine in 2003

Commonwealth Scholarship (2003)

CSIR Technology Award for Life Sciences " (2008) , Jointly conferred to Sunil Kumar Verma and Lalji Singh

NRDC Societal Invention Award (2009) , Jointly conferred to Sunil Kumar Verma and Lalji Singh

The BioAsia Innovation Award (2009)

Fellowship of Max Planck Institute for Infection Biology Berlin (2010 ? 2013)

Research ambassador of DAAD (2010 @-@ till date)

= = Selected publications = =

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Verma , Sunil Kumar ; Khanna , Vijay ; Singh , Nagendra (1999) . " Random amplified polymorphic DNA analysis of Indian scented basmati rice (Oryza sativa L.) germplasm for identification of variability and duplicate accessions , if any " . Electrophoresis 20 : 1786 ? 1789 @.@ doi : 10 @.@ 1002 / (sici) 1522 @-@ 2683 (19990101) 20 : 8 < 1786 : : aid @-@ elps1786 > 3.0.co ; 2 @-@ 5 . PMID 10435450 .