2019 ISCB Innovator Award Recognizes William Stafford Noble

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The ISCB Innovator Award honors an ISCB scientist who is within two decades of having completed his or her graduate degree and has made outstanding contributions to the field of computational biology. The 2019 winner is Dr. William Stafford Noble, Professor in the Department of Genome Science, University of Washington. Noble will receive his award and deliver a keynote presentation at the 2019 Joint International Conference on Intelligent Systems for Molecular Biology/European Conference on Computational Biology in Basel, Switzerland being held on July 21–25, 2019.

William Stafford Noble—interested in learning stuff

William Stafford Noble was raised in Naperville, IL, with his brothers and his parents who were both college professors. As a child, he didn’t have a specific interest in science, but he remembered, ‘I was just interested in learning stuff’. A simple test gave Noble a peek into his future career path. Noble recalled, ‘I took a career aptitude test in high school, and the results said I should be a college professor or computer scientist, but at that point I had never touched a computer’.

Noble went to Stanford University to complete a bachelor’s degree in Symbolic Systems, with a concentration in Philosophy. He has come to appreciate the multidisciplinary nature of his undergraduate degree, which included a broad range of coursework in computer science, cognitive science, linguistics, philosophy and mathematics. After graduating in 1991, Noble gained work experience in the field of speech recognition, and he also spent two years in the US Peace Corps in Lesotho, Africa. Noble said, ‘Both of my brothers went overseas after college, so I picked the Peace Corps. It seemed to be a little better organized than some other options’.

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Noble spent two years teaching math, physics and English literature to secondary students and had to develop teaching skills to explain complex material in a clear and straightforward way, training that has served him well throughout his career. All the while, he kept thinking about computer programming, and he would write down programs on paper in his free time. At the end of his first year in Lesotho, his parents visited him and brought him a laptop, so he could use the brief hours of evening electricity to transfer his programs from paper to a computer. Noble also developed an interest at this time in artificial life, which was a relatively new field. He got his hands on several artificial life conference proceedings and set off to study this area as a newly minted graduated student at the University of California, San Diego in 1994. Relatively quickly, he came to feel that this field was too descriptive, so he began to search for a different dissertation subject. His future Ph.D. mentor, Charles Elkan, emailed him about a funding opportunity that would allow him to study hidden Markov models (HMMs) in protein and DNA sequences. Noble was open to this topic because he was already familiar with HMMs from his work in speech recognition, and he went on to complete his Ph.D. in computer science and cognitive science in 1998. Noble’s first bioinformatics publication, which was based on his Ph.D. research, described a web server for motif-based sequence analysis (the MEME Suite) that is still in use today.

Noble went on to David Haussler’s lab at the University of California, Santa Cruz as a Sloan/DOE postdoctoral fellow and co-authored the first paper that applied support vector machines to microarray gene expression data. He also developed kernel
functions that could be used to represent a variety of data types, and
he showed how kernels could be used to perform inference jointly
from these heterogenous types of data. This work was ultimately
developed into applications in inference of protein-protein interac-
tions and gene function that are used by many researchers.

In 1999, Noble became an Assistant Professor in the Department
of Computer Science at Columbia University, with a joint appoint-
ment at the Columbia Genome Center. He moved to his current ap-
pointment at the University of Washington in 2002 in the newly
formed Department of Genome Sciences with adjunct appointments
in the Department of Computer Science and Engineering, the
Department of Medicine and the Department of Biomedical
Informatics and Medical Education. As an independent investigator,
Noble has expanded his research interests including the develop-
ment of unsupervised machine learning methods for semi-automated
genome annotation, and the application of machine learning and
statistical methods to analyze proteomic data. He has also worked
with collaborators to develop high-throughput assays to character-
ize the 3D structure of DNA in the nucleus.

Throughout his career, Noble has grown as a scientist and men-
tor by learning from those who have mentored him, as well as
observing how his collaborators mentor students and run their labs.
Noble also credits his wife, Nancy Stafford Noble, for being a valu-
able sounding board and providing her expertise as an executive
coach as he has navigated the many challenges of being a PI. Noble’s
prodigious body of work includes authorship of over 230 peer-
reviewed articles. He has trained and advised 15 graduate students
and 21 postdoctoral fellows, many of whom now hold faculty
appointments, and he was honored with the Postdoc Mentor of the
Year Award by the University of Washington Postdoctoral
Association.

Outside of the lab, Noble is an active member of the global
computational biology community through his service on multiple
editorial boards, conference committees, study sections and roles on
the ISCB Board and various committees. Noble has been a part of
ISCB since its early years and has always felt at home at ISMB meet-
ings, which he considers one of the few gatherings that brings to-
gether computational biologists who bridge the gap between basic
computer science and applications in biology. Noble feels deeply
honored by his recognition with the 2019 ISCB Innovator Award,
particularly as this award is bestowed upon him by colleagues for
whom he holds great respect and admiration.