

SARAH JANE FLINT



Born in Farnborough, England, Sarah Jane Flint, professor of molecular biology, became enthralled with science at the age of 13, when introduced to the explanatory power of chemistry as a high school student. As a result, Jane pursued undergraduate and graduate degrees in biochemistry at University College London. She then trained as a postdoctoral fellow, first at Cold Spring Harbor Laboratory in Cold Spring Harbor, New York, and next at Massachusetts Institute of Technology. Jane came to Princeton in 1977. Her first appointment was in the Department of Biochemical Sciences, where she served as director of its Program in Molecular Biology, and she moved as a founding member to the Department of Molecular Biology in 1984.

Jane's graduate thesis focused on the template specificity of DNA-dependent RNA polymerases, the enzymes that control expression of the information stored in DNA, the enzymes that produce mRNAs coding for proteins. This work was the start of a deep interest in mechanisms controlling gene expression that has spanned her career. As a postdoctoral fellow, Jane was introduced to the system she has used to study gene expression, the human adenoviruses. Adenoviruses primarily cause respiratory disease and gastroenteritis in humans, but they are rarely life-threatening. However, in contrast to human infections, the adenoviruses in rodents disrupt the control of cellular growth and induce tumors. As a postdoctoral fellow, Jane developed the first map of mRNAs produced by adenovirus within infected human cells, and she followed up by studying how viral gene expression was different in rodent cells. At Princeton, Jane maintained her interest in transcriptional mechanisms and regulation, and she expanded her interests to include investigation of how adenovirus gene products modulate host cell processes that control proliferation and anti-viral defenses. Her body of work has provided numerous fundamental, mechanistic insights to adenovirus replication and pathogenesis—insights that have informed our understanding of how a virus infection can subvert a cell to produce progeny and how it can alter the growth of a cell to become cancerous.

Jane has published more than 130 research reports, reviews, and book chapters, and nearly 120 of her works were published while a faculty member at Princeton. Her published work addresses important problems, and it is marked by experimental precision and deeply insightful interpretation. In 2016, she co-authored the definitive book on her experimental system, *Human Adenoviruses: From Villains to Vectors*, a fitting capstone to a remarkably productive research career.

In addition to her research accomplishments, Jane has taught and mentored numerous undergraduates, graduate students, and postdoctoral fellows at Princeton. She has taught them how to identify the big questions and has imbued in them a true sense of scientific rigor. Outside of Princeton, Jane has served the scientific community through service on editorial boards and National Institutes of Health study sections that evaluate grant proposals, including the Biochemistry Study Section, which she chaired, and the National Institutes of Health Recombinant DNA Advisory Committee. Jane was elected to the American Academy of Microbiology in 2000.

Jane has a fascination with the marvelous variety of the virus world. In particular, she enjoys the challenge of understanding the molecular complexity of the different types of virus particles and the diverse tactics for expression of the genetic information delivered by these particles. She also takes great pleasure in writing and clear use of language to explain complicated things. These two passions spurred her in the early 1990s to lead a team of four authors to write a popular textbook, *Principles of Virology: Molecular Biology, Pathogenesis, and Control*. This book now is a leading virology text all around the world. The rapidly changing field of virology requires constant attention and as a result, the book is now in its fourth edition and a fifth is underway.

Her vision was to write a book that did more than collect and present facts about individual viruses. Instead, her idea was to facilitate an understanding of basic virology by examining the shared processes and capabilities that define this group of curious biological agents. Using a set of representative viruses, her rational approach enables students to understand how reproduction and transmission are accomplished, how these processes evolved, and how they might be controlled. Perhaps more important, her approach provides the tools to understand future encounters with viruses that have not yet been discovered.

This textbook was not a simple exercise in writing. It was a sea change in the way virology textbooks were written. To accomplish this, Jane assembled her co-authors with care. All are accomplished researchers as well as teachers and share her passion for clear exposition. One of the fundamental characteristics of this textbook was that despite being written by several authors, the text appears seamless, in one voice. To accomplish this magic, Jane supervised regular meetings of all the authors who read out loud and critiqued each draft chapter. The lack of jargon, the beautiful figures, the common iconography, and the flow of information from chapter to chapter stem from Jane's careful editorial eye and unfailing command of the Queen's English.

Jane published her first paper at Princeton in 1977, and her most recent report appeared in 2017. Forty years of contributions from Princeton! Forty years, first as a rising star and then as a world-class leader in the field of virology.