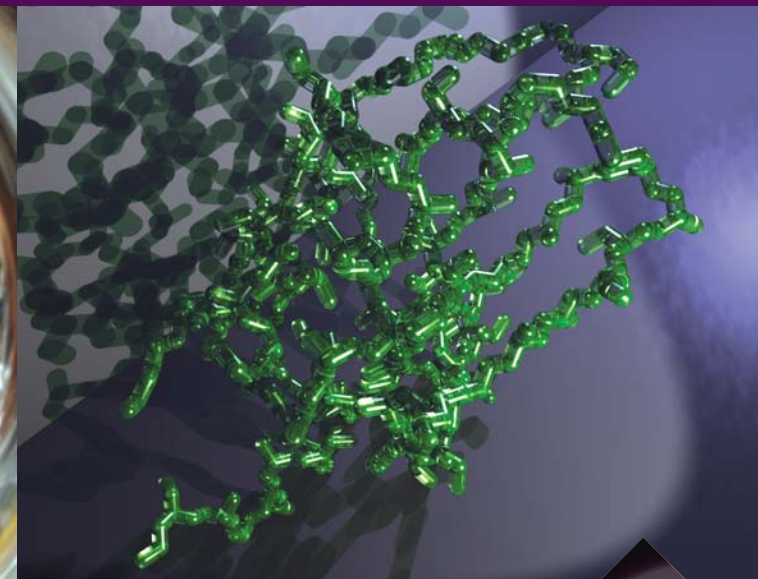


My education has equipped me with the necessary skills to thrive in the private sector.



Dr Bronagh Hayden, BSc (Hons) Biochemistry, PhD
Medical Affairs Manager with Sanofi Pasteur MSD



I knew from an early age that I wanted to study Science and UCD was always my university of choice. Following an exciting four years of hard work (and a thoroughly enriching social life), I graduated with my B.Sc. in 1995 from the Department of Biochemistry at Merville House. I was determined to continue my studies and enrolled as a Ph.D. student. My Ph.D. in enzyme kinetics afforded me the opportunity to develop a range of research techniques, to work with wonderful people and to travel and present at international conferences, including a 3-week tour of Japan.

My introduction to the private sector began with Tyco Healthcare and was soon followed by the role of Scientific Advisor with GlaxoSmithKline. I am now the Medical Affairs Manager with Sanofi Pasteur MSD in Ireland. Despite my love of research, I have thoroughly adapted to the corporate environment.

My education has equipped me with the necessary skills to thrive in the private sector where the ability to comprehend complex scientific information and communicate effectively are valuable assets.

COVER: A model of the Hen egg white lysozyme protein made out of glass, designed in a program called Blender. Lysozyme is an enzyme occurring naturally in egg white, human tears, saliva, and other body fluids, capable of destroying the cell walls of certain bacteria and thereby acting as a mild antiseptic. Image by: Damien Farrell, UCD Biochemistry PhD student.

Lab environment © UCD

How do I find out more about this degree programme?

You can get information about this degree programme by calling, emailing or writing to:

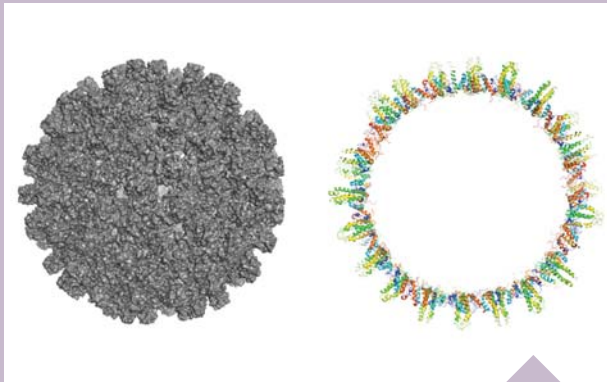
Professor Philip Newsholme
UCD School of Biomolecular & Biomedical Science
University College Dublin
Belfield, Dublin 4
Tel: + 353 1 716 6561
Email: philip.newsholme@ucd.ie

Undergraduate Office
UCD School of Biomolecular & Biomedical Science
Tel: + 353 1 716 6867

www.ucd.ie/sbbs

BSc in Biochemistry & Molecular Biology

University College Dublin



A low resolution X-ray structure of human hepatitis B virus (left) and a slice through the same virus (right) showing its atomic structure and that it is basically a molecular 'ping pong ball' used to carry the viruses genetic material. Source: Dr Neil Ferguson © UCD
 Worldwide over 350 million people have incurable hepatitis B virus infections, killing 1 million people annually. Dr Ferguson's research group uses cutting-edge biophysical and structural biology techniques to help develop new therapeutics to cure this disease. UCD students can get a chance to contribute to this effort in their Stage 4 Biochemistry projects.

What is Biochemistry and Molecular Biology?

The study of biological phenomena at the molecular level. The excitement of new discovery in Biochemistry is set to continue for many years to come. Our most important contribution to society will be the young graduates and post-graduates who will be leaders in scientific research, industry, government and teaching. Biochemistry is often described as the 'Chemistry of Life' because it aims to understand how the molecules that define the structure, function and diversity of all living things interact to create and sustain 'life'. It is an exciting science that combines the molecular approach of Chemistry with the breadth of Biology. Biochemists use varied and powerful experimental techniques to examine living organisms, their component parts and the molecules that play a role in the chemistry of the cell. Biochemists are at the centre of current advances being made in medical and biological research.

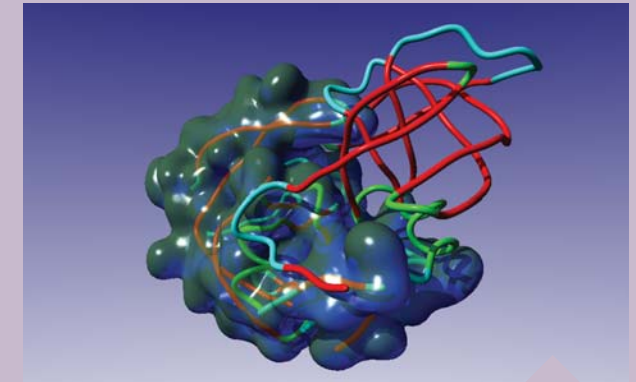


A Biochemistry student purifying proteins by chromatography in the state of art lab in the UCD Conway Institute. Image by SBBS.

What will I study as part of my degree?

In year 1 of the BSc in Biochemistry and Molecular Biology in UCD Dublin, students select modules in biology, chemistry, mathematics, at least 3 other science modules and 2 elective modules. In years 2 and 3, core modules in Biochemistry and Molecular Biology will introduce students to a range of biomolecules, such as DNA, RNA, genes, amino acids, antibodies, enzymes, receptors, lipids, nucleic acids, neurotransmitters, and hormones. Students will take an additional chemistry and mathematics module and 4 elective modules. Year 4 in Biochemistry and Molecular Biology offers a range of modules that include cell biology; protein structure and function, membrane transport and cell signaling; immunology; intermediary metabolism; molecular genetics and biotechnology; the biochemical basis of disease.

In the final year, each student undertakes a research project in a specified topic in the laboratory of an academic staff member and attends lectures in 8 different modules which cover key areas of biochemical research, such as protein engineering, neurochemistry, cancer studies, the regulation of gene expression, and molecular immunology and endocrinology. The laboratory project will provide training in essential research skills including development of independent ideas, team work and critical appraisal of the literature.



HIV protease is an enzyme that is essential for the spread of the HIV virus, which causes AIDS. Many anti-HIV medications (such as Saquinavir, Indinavir) bind to HIV protease and prevent the enzyme from carrying out its function. With its protease knocked out, HIV no longer spreads efficiently from cell to cell. However, random mutations occur spontaneously in HIV protease and as a result of this, drug-resistant forms of the enzyme often develop. Researchers are thus constantly looking for new drugs that will shut down HIV protease and other HIV enzymes. Source: Dr Jens Nielsen © UCD

What are the opportunities for graduates in Biochemistry and Molecular Biology?

Graduates of Biochemistry and Molecular Biology will be able to obtain positions in a wide range of academic, government and industrial facilities, including the food, pharmaceutical and biotechnological industries, forensic science and clinical laboratories. In addition, graduates may pursue careers in teaching, publishing and management. A degree in Biochemistry and Molecular Biology would also be most appropriate for those students wishing to apply for graduate entry into Medicine. Many students will continue studies at PhD level at Universities in Ireland, UK (recent UCD Biochemistry graduates have taken places in leading laboratories in Cambridge and London), Europe, Australia and USA. A high standard of scientific and biochemical education is crucial in creating a society with a high level of scientific literacy, which is essential as society will rely increasingly on science to provide solutions to problems such as diseases of aging, food security and climate change.