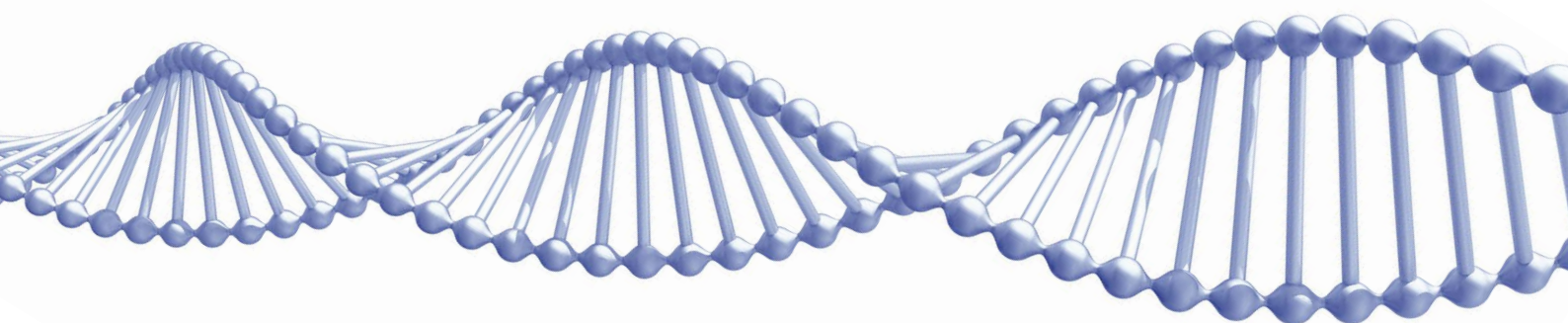


What can I do with a degree in Biochemistry?

Biochemistry.



What is Biochemistry?

Biochemistry is the study of life at the cellular level, giving us insight into the history of all living species – animals, plants, bacteria, and viruses – and how they function.

Biochemistry can be applied to broad and diverse areas, such as developments in genetic engineering, conservation and restoration, biomedical science, and disease treatment.

Biochemistry brings together a number of branches of science which contributes to a dynamic and exciting discipline. It provides foundational insight into areas such as biological processes such as enzyme action, drug action, genetic engineering, photosynthesis and colour vision.

Biochemistry is at the cutting edge of contemporary science, research and industry. Biochemical innovation is critical in adding value to Aotearoa New Zealand's agricultural production, advancing medicine and understanding the fundamentals of the biological world around us.

Some knowledge of Biochemistry is useful for any student majoring in Biological Sciences and many areas of Chemistry.

Learn more

It is important to do some research when planning a future career. Speak with, ask questions of, and follow relevant professional bodies, organisations, companies, thought leaders and industry professionals to learn more about:

- Career opportunities, work environments and salary information
- Education and training requirements.

Examples of professional bodies

- Te Apārangi Royal Society of New Zealand
www.royalsociety.org.nz
- Australasian Association of Clinical Biochemists www.aacb.asn.au
- Australian and New Zealand Society for Comparative Physiology and Biochemistry
www.anzscpb.curtin.edu.au
- New Zealand Microbiological Society
www.nzms.org.nz
- New Zealand Association of Scientists
<http://scientists.org.nz>

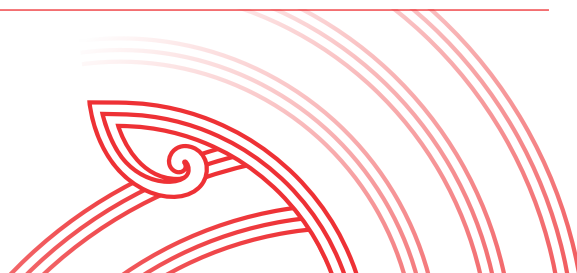
Career and study information

Some study pathways and degrees have a recommended school background, and some careers may require further study beyond a first degree or additional experience.

Gather helpful information from:

- Subject-specific content at
www.canterbury.ac.nz/study/academic-study/subjects/biochemistry
- Job profiles on career websites like
www.careers.govt.nz
- Job adverts/vacancy descriptions
- Industry professional bodies.

This resource is part of a set of brochures focused on subject majors; many can also be studied as minors.





What skills can graduates gain?

Through studying a degree in Biochemistry, graduates develop a valuable set of skills and competencies, which can include:

- The ability to understand complex biological processes
- Knowledge of molecular biology techniques
- Practical laboratory skills
- Observation, research and development, and data analysis
- The ability to assemble an argument and engage in debate
- Critical and analytical thinking and problem solving
- Capacity to think creatively, logically and quantitatively
- Mathematical and computer competencies
- Good planning and organisation
- Communication, presentation and report writing
- Teamwork and leadership.

Applied learning

Applied learning opportunities are available such as laboratory sessions and field trips. These experiences deepen your skillset, awareness of others, working knowledge and employability.

What do employers look for?

Many employers look for generic skills such as communication, client/customer-focus, bicultural competence, cultural awareness, teamwork and initiative.

With technology, globalisation, and other drivers changing society, skills such as resilience, problem solving, and adaptability are important.

Skills that are likely to grow in importance include analytical and creative thinking, systems thinking and technological literacy.*

*World Economic Forum: www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills

How can these skills be developed?

- Some skills are gained through studying
- Extra-curricular activities can help, such as getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities, whether it is undertaking work experience, overseas exchange, skills seminar, or joining an industry group.

Where have graduates been employed?

Biochemistry graduates are found working in a number of different sectors and industries, including:

- Government bodies and state-owned enterprises e.g. AsureQuality
- Healthcare and laboratories e.g. Te Whatu Ora | Waitaha Canterbury, Canterbury Health Laboratories, HillLabs
- Tertiary sector e.g. University of Canterbury
- Agriculture / agribusiness e.g. Livestock Improvement Corp, Ballance Agri-Nutrients
- Biomedicine
- Biotechnology
- Crown Research Institutes e.g. Plant and Food Research, ESR NZ, Manaaki Whenua
- Diagnostic departments in hospitals
- Environmental sustainability
- Engineering consultancies e.g. Aurecon
- Food and beverage producers e.g. Deep South Ice Cream, Goodman Fielder, Westland Milk Products
- Health and beauty care organisations
- Manufacturing and processing companies
- Pharmaceuticals e.g. Baxter Healthcare
- Secondary schools teaching biology, chemistry and other science subjects
- Water management e.g. Hydroxsys.

Biochemistry graduates may choose to start their own company or be self-employed as a consultant.

What jobs and activities might graduates do?

Graduates with this degree are employed in a range of jobs — see some examples below.

Note: This list is not exhaustive, and some jobs may require further study, training or experience. It is recommended to start with the section 'How can I gain a sense of career direction?'

Laboratory roles

- Lab technician - perform experiments, analyse data, and maintain equipment
- Lab assistant - support technicians and scientists, often by preparing materials and organising the lab
- Lab demonstrator - guide and teach students in an educational lab setting, emphasising learning over experimentation

Trainee medical laboratory technician

- Gather and label samples
- Perform tests, including blood matching and disease detection
- Conduct antibiotic sensitivity and allergy testing

Graduate environmental scientist

- Collect and analyse data, and ensure regulatory compliance
- Perform fieldwork, write reports, and collaborate with diverse teams

Research assistant, graduate scientist

- Assist senior researchers with research, and administration duties
- Write literature reviews, and grant proposals
- Conduct research, analyse data, and write reports

Science journalist, technical writer

- Research specialist scientific publications
- Interview scientists, medical staff, academics
- Write and edit scientific articles, journals, organisational documents e.g. reports, manuals

Manufacturing scientist, product formulation specialist

- Research a client's brief, a social need, or a gap in the market
- Design and develop prototype samples
- Commercialise products through trials, industry submissions and production runs
- Comply with quality standards/regulations

Biotechnology technician, biotechnologist

- Study plants, animals, humans and/or micro-organisms
- Meet with clients to discuss biotechnology solutions to their problems
- Develop and test methods of making new products

Secondary school teacher

- Prepare and deliver learning experiences in specialised subjects
- Understand the learning needs of rangatahi, observe progress to personalise support
- Promote the wellbeing of rangatahi

Examples of other job titles and careers include:

- Laboratory field technician
- Production technician
- Quality control technician
- Patent examiner
- Medical receptionist
- Health and safety inspector
- Teaching assistant
- Academic
- Toxicologist
- Data analyst, bioinformatician

Examples of postgraduate roles:

Biochemist

- Study the composition of all living things
- Develop and test new pharmaceutical products
- Study how disease or vaccines interact.

Research scientist

- Design and execute experiments to develop scientific solutions to problems
- Carry out field and lab tests, record and analyse data, and write technical reports
- Communicate results/impact to various audiences such as policymakers and the public

Further study options

Biochemistry graduates can progress into a number of programmes from honours to master's and PhD level. These develop advanced research skills and provide the chance to specialise. Studying at Masters or PhD level is usually required for a career in research.

Some prepare for a career through further training e.g. in teaching and learning, business, and product information.

Further study may facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability.

It is important to determine which, if any, further study options align with future career aspirations.

For further UC study options visit:

www.canterbury.ac.nz/study/academic-study

How can I gain a sense of career direction?

Understanding yourself and others is important to gain a sense of direction. This grows with experience; therefore, trying new things and reflecting on an ongoing basis is important.

Career planning checklist

Discover and reflect on:

- Your values, interests, strengths, abilities, and aspirations
- Your connection to whānau, people, and places
- Lifestyle preferences and location
- The skills you want to gain, use, or enhance

Engage in a variety of experiences to learn about:

- How you want to contribute to society, the environment, and global challenges
- The tasks, responsibilities and work environments you prefer
- Your work values, priorities and interests

Learn more and gather career and study information (refer to page one of this resource)

- Speak with people working in careers that interest you; check the realities of a job/career
- Gather information from various sources

Identify your next steps

- Talking to a career consultant can help you to identify your next steps. Visit: www.canterbury.ac.nz/life/jobs-and-careers

What have other students and graduates done?

Explore career stories of students' university experiences and UC alumni who make a difference globally in varied ways.

Visit: www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories



Lisa

CEO, Gigvvy Science

Postdoctoral Fellow, Centre for Soil and Environmental Research (CSER) and New Zealand – China Water Research Centre, Te Whare Wānaka o Aoraki | Lincoln University

Master of Science in Biochemistry
Bachelor of Science in Biochemistry

Why are you passionate about the sciences?

I am curious about everything around me, from how nature works to why nature works that way. Science is a beautiful subject, it is intellectually challenging, and it makes me feel alive!

I always feel excited when thinking about the future, and how we can solve bigger problems.

What was your inspiration behind creating Gigvvy Science?

After graduating from the University, I realised science knowledge is locked behind a huge paywall. Gigvvy Science is a platform for independent academics to publish their own open-access journal. Our mission is to create a world where science is open, transparent, and freely accessible to everyone.

We have published over 100 COVID-19 related research articles as a collaborative effort with Aerosol and Air Quality Research. Our goal is to disseminate scientific knowledge as fast as possible, but most importantly freely accessible to all.

Do you have other big science challenges you want to tackle next?

The rapid expansion of the New Zealand dairy industry is putting us at high risk from exposing nitrate contamination into our drinking water. We are now at an urgent time for clean drinking water, swimmable rivers and lakes, and a sustainable environment for our future generations. My career goal is to eliminate nitrate from drinking water and at the same time develop an ecosystem approach for sustainable, healthy agro-ecosystems for New Zealand.

What advice do you have for our future scientists wanting to make a difference?

Failure is a beautiful thing, because you can only learn by failing. No matter what you do, whichever path you choose, don't be afraid to fail, keep trying and keep innovating!

Career guidance

Career services are available for future and current students, and recent graduates. To learn more, contact:

Te Rōpū Rapuara | Careers

T: +64 3 369 0303

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/life/jobs-and-careers

Helpful career insights

- Speaking with employers is key to finding opportunities; not all jobs are advertised
- Developing an online presence is useful as employers can search for future employees online
- Learning about recruitment patterns and where to find opportunities is important.

Study advice

Student Advisors at UC help with questions focused on starting, planning and changing studies. To connect with Student Advisors, visit:

www.canterbury.ac.nz/study/study-support-info/study-support

Future students – contact:

The Future Students team

T: 0800 VARSITY (0800 827 748)

E: futurestudents@canterbury.ac.nz

First year students – contact:

Kaitoko | First Year Student Advisors

T: +64 3 369 0409

E: firstyearadvice@canterbury.ac.nz

Continuing students – contact:

Te Kaupeka Pūtaiao | Faculty of Science

T: +64 3 369 4141

E: science@canterbury.ac.nz

www.canterbury.ac.nz/study/academic-study/science

