Appointment booklet

The University Of Queensland
AUSTRALIA

CREATE CHANGE

Postdoctoral Research Fellow (Metabolism and Multi-omics Integration)

Australian Institute for Bioengineering and Nanotechnology



CONTENTS

Australian Institute for Bioengineering and Nanotechnology (AIBN)	01
Role of the Postdoctoral Research Fellow (Metabolism and Multi-omics Integration)	02
About you	05
Conditions of employment	06
How to apply	06
The University of Queensland	07
Governance	08
Strategic direction	08
Strategic Plan 2026–2029	09
UQ Leadership Framework	10
About Brisbane	11
Further information	12



Australian Institute for Bioengineering and Nanotechnology (AIBN)

From breakthroughs in personalised medicine; to the creation of clean energy systems; and the use of biological materials to reduce reliance on fossil fuels - the Australian Institute for Bioengineering and Nanotechnology (AIBN) is making an impact and solving some of society's biggest challenges.

Founded in 2005, the AIBN, proudly based within The University of Queensland, is uniquely outward facing and fosters strong industry partnerships. We work closely with our partners, translating cutting edge science from the lab bench to the production line.

Working within the AIBN's labs are some of the world's most recognised academic experts, along with nine of the country's most innovative research infrastructure facilities. All of which position the AIBN perfectly to enable the future.

At the AIBN we provide an innovative, positive environment for developing and enhancing your research career in the fields of precision nanomedicine, advanced biomanufacturing and nanoengineered materials.

Our team includes world-leading chemists, physicists, biologists, mathematicians, engineers, bioinformaticians and neuroscientists. Smart, dedicated and entrepreneurial, our people have a common passion to develop next-level solutions for the world's most complex challenges – if you dream it, we can do it.

IDEA Bio

The Integrated Design Environment for Advanced Biomanufacturing (IDEA Bio) is an NCRIS and UQ-funded biofoundry offering synthetic biology services to Australian researchers and businesses – from fermentation to high-throughput solutions. Based at the AIBN, The University of Queensland, we design the genetic changes needed to scale products from milligrams to kilograms, to take a molecule from first idea to a reliable process – through strain design, fermentation and multi-omics analysis, we turn concept ideas into reality.





Role of the Postdoctoral Research Fellow (Metabolism and Multi-omics Integration)

About this opportunity

Synthetic biology is characterised by a cyclic workflow based on the design, build, test, learn paradigm. The emergence of genome-foundries allows for the rapid, but still costly, generation of large numbers of engineered strains. The University of Queensland hosts a complementary facility to genome-foundries, the Integrated Design Environment for Advanced biomanufacturing (IDEA Bio).

This facility will consist of a TEST capability that allows for a deep phenomic characterisation of mutant strains, in partnership with Queensland Metabolomics and Proteomics (Q MAP) and the Australian Genome Foundry (Macquarie University), as well as a LEARN capability that seeks to learn from fermentation, 'omics and isotope-labelling data sets and direct strain optimisation and metabolic engineering to advance synthetic biology efforts in Australia.

We are seeking a Postdoctoral Research Fellow with a strong understanding of microbial metabolism to lead the biological interpretation of multi-'omics data within the IDEA Bio LEARN team. The successful candidate will integrate fermentation, proteomics, metabolomics (intracellular and extracellular) and ^{13}C-labelling data in the context of metabolic pathways and model-based predictions, to identify metabolic bottlenecks, propose cause-and-effect explanations for observed phenotypes, and translate these into rational strain design and bioprocess optimisation strategies. The role will contribute to the curation of genome-scale metabolic models and to the development of a ^{13}C metabolic flux analysis capability. The position is primarily computationally based and will work closely with systems biologists, software engineers, fermentation scientists and analytical chemists, using existing tools or developing new ones as required.

Whilst the role is academic in nature, as an employee of an NCRIS-funded facility, the position has a strong service focus. Successful candidates will be required to analyse, interpret and report fermentation data to clients by contractual deadlines, which may include researchers and industry, whilst developing novel workflows to allow for high-throughput data analysis.

Duties

Research

- Integrate proteomics, metabolomics and fermentation data in the context of metabolic pathways to interpret metabolic phenotypes and identify likely bottlenecks and regulatory changes.
- Interpret constraint-based and kinetic model outputs against experimental data, and generate testable cause-and-effect hypotheses.
- Contribute to the curation and refinement of genome-scale metabolic models (e.g. biomass composition, cofactor specificity, transport) based on biochemical evidence.
- Contribute to ^{13}C metabolic flux analysis, including network and atom-transition definition, isotopologue data processing and biological interpretation of flux results.
- Translate integrated analyses into rational strain design and bioprocess optimisation recommendations, working closely with metabolic engineers and fermentation scientists.





- Produce quality research outputs consistent with discipline norms by publishing or exhibiting in high quality outlets.
- Participate in applications for competitive research funding to support projects and activities.
- Work with colleagues in the development of joint research projects and applications for competitive research funding support.
- Contribute to progressing towards transfer of knowledge, technology and practices to research end users through translation, including commercialisation of UQ intellectual property.
- Develop a coherent research program and an emerging research profile.
- Review and draw upon best practice research methodologies.

Supervision and researcher development

- Contribute to the effective supervision of Honours and Higher Degree by Research students (as appropriate).
- Demonstrate personal effectiveness in supervision and the management of researcher development.
- Effectively lead and develop supervisee performance and conduct by providing feedback, coaching, and professional development.
- As appropriate, manage research support staff effectively throughout the employee lifecycle in accordance with University policy and procedures.
- Work to promptly resolve conflict and grievances when they arise in accordance with University policy and procedures.

Citizenship and service

- Perform in-depth phenotypic and metabolic characterisation of bioreactor runs from data generated by the fermentation scientists, integrating proteomics and metabolomics data where available, and provides this as a report to clients.
- Demonstrate citizenship behaviours that align to the UQ values.
- Show leadership of self through collaboration and active participation in priority activities for the unit
- Provide support to other academic positions and unit operations as needed during other team members absences.
- Contribute to internal service roles and administrative processes as required, including participation in decision-making and service on relevant committees.
- Collaborate in service activities external to the immediate organisation unit.
- Begin to develop external links and partnerships by cultivating relationships with industry, government departments, professional bodies and the wider community.





Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties a, including but not exclusive to:

- The University's Code of Conduct.
- Requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University, Faculty, Institute or School.
- The adoption of sustainable practices in all work activities, and compliance with associated legislation and related University sustainability responsibilities and procedures.
- Requirements of the *Education Services for Overseas Students Act 2000*, the *National Code 2007* and associated legislation, and related responsibilities and procedures developed by the University.
- The University's Strategic Plan.
- The University's Stretch Reconciliation Action Plan (RAP).

Organisational relationships

This position reports to the Senior Data Scientist and Team Leader.





About you

Essential

- Completion or near completion of a PhD in biochemistry, metabolic engineering, systems biology or a related field, with a strong focus on microbial metabolism.
- Demonstrated experience integrating at least two ‘omics data types (e.g. proteomics and metabolomics) to explain metabolic phenotypes mechanistically, beyond enrichment-based analysis.
- Sound working knowledge of statistical analysis of ‘omics data, including differential abundance testing, multiple-testing correction, and awareness of replication, batch effects and experimental design.
- An in-depth understanding of microbial metabolism, including central carbon metabolism, energy and redox balancing, and metabolic regulation, with the ability to reason about cause and effect in metabolic networks. A background knowledge of yeast metabolism is favourable, but not required.
- Familiarity with constraint-based metabolic modelling (e.g. flux balance analysis) sufficient to interpret, critique and refine model predictions using experimental data.
- Evidence of publications in peer-reviewed journals.
- Proficiency in Python or R for data analysis and visualisation.
- Good organisational and problem-solving skills.
- Proven ability to work collaboratively as part of a multi-disciplinary team.
- Strong interpersonal and communication skills.
- Ability to be agile and adaptable – able to independently identify and overcome challenges associated with analysing ‘omics data and create bespoke solutions.

Desirable

- Hands-on experience in fermentation and/or metabolic engineering, sufficient to recognise experimental artefacts in bioprocess data and to propose practically feasible strain modifications.
- Experience interpreting metabolomics data, including awareness of the limitations of intracellular metabolomics.
- Experience with multivariate analysis of ‘omics data (e.g. PCA, PLS).
- Experience with stable-isotope labelling experiments and/or ^{13}C metabolic flux analysis (e.g. INCA, 13CFLUX2, OpenFLUX), including natural isotope correction.
- Experience curating genome-scale metabolic models.
- Experience with enzyme-constrained or kinetic metabolic models.





Conditions of employment

Employment type

This is a full-time fixed-term position for up to two years.

Salary and benefits

Base salary will be in the range $85,373 - $113,660 plus 17% superannuation.

Classification

This is an Academic Research Focused position at Academic Level A.

Relocation

Relocating from interstate or overseas? We may support you with obtaining employer-sponsored work rights and a relocation support package, however upfront costs will still be expected to be covered. You can find out more about life in Australia's Sunshine State here.

How to apply

For more information about this opportunity, please contact Dr Timothy McCubbin, Senior Data Scientist and Team Leader, at t.mccubbin@uq.edu.au.

For application inquiries, please reach out to the Talent Acquisition team at talent@uq.edu.au, stating the job reference number (R-69666) in the subject line.

To satisfy prerequisite questions and ensure your application can be considered in full, all candidates must apply via the UQ Careers portal by the job closing deadline. When you apply, please ensure you upload a resume, cover letter, and responses to the 'About You' section. Please note that applications received via email will not be accepted.

Other Information

Pre-employment checks may include: verification of the right to work in Australia, qualifications, mandatory immunisations. This may also include checks relating to gender-based violence matters or other integrity and conduct requirements.

Applications close 3 December 2026 at 11.00pm AEST (R-69666).

Please note that interviews have been tentatively scheduled for early December 2026.



The University of Queensland

The University of Queensland (UQ) is consistently ranked among the world's top 50 universities and one of Australia's leading teaching and research universities. UQ is driven by its mission to deliver for the public good through its transformative education, pioneering research, and meaningful engagement with local and global communities. For more than 100 years, our graduates, researchers, and educators have shaped industries, solved complex challenges, and made meaningful contributions to communities.

Four vibrant campuses

UQ's four campuses are located in South East Queensland, known for its safety, liveability and natural beauty. Our riverside St Lucia campus in Brisbane features world-class teaching and research facilities, heritage architecture, and onsite student accommodation. The Herston and Dutton Park campuses are located in the city's biomedical precinct, close to major hospitals and research hubs. Our Gatton campus is located in an agricultural region near Brisbane, offering hands-on learning in agriscience and veterinary studies, and student accommodation options.

Teaching and learning excellence

UQ has Australia's most awarded university teachers – an achievement that reflects the passion and expertise of our educators and the success of our students. Students can choose from one of Australia's most comprehensive study options offering 320+ undergraduate and postgraduate programs. UQ graduates are highly sought after and we are number 1 in Queensland for graduate employment outcomes. UQ postgraduates earn an average 33% salary increase within 3 years of graduation.

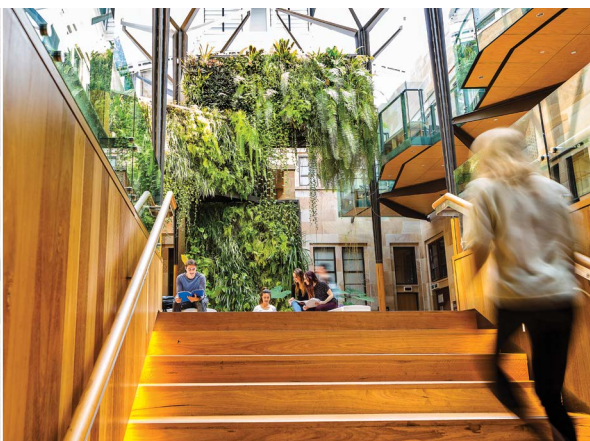
Research and innovation leadership

More than 2,500 UQ scientists, social scientists and engineers work alongside government and industry on 2,500+ active research projects – from discovery to commercialisation. Their strengths span critical areas including climate change, health and biomedical innovation, advanced manufacturing, sustainable agrifood and infrastructure. UQ is also Australia's number 1 university for commercialisation. Some of our proudest inventions include the Molecular Clamp vaccine technology recently acquired by Sanofi as part of a landmark acquisition, the world's first cervical cancer vaccine (Gardasil), and Inflazome acquired by Roche in 2020. UQ is a key partner to the delivery organisation appointed by the Queensland Government to lead the integrated masterplan for the Brisbane 2032 Olympic and Paralympic Games main stadium, venue and village precinct.

A global community

UQ welcomes a diverse and vibrant community of more than 54,000 students from 191 countries, including 17,500+ postgraduate students engaged in advanced study and research. Our alumni network spans more than 365,000 people across 191 countries, making meaningful contributions as business leaders, educators, politicians, humanitarians, philanthropists, athletes, artists, and more. We value collaboration with 450 international partners, including world-leading institutions and global agencies, to advance research, teaching and global development. UQ is a proud member of Universitas 21, Group of Eight, Universities Australia, Worldwide Universities Network, and the Association of Pacific Rim Universities.





Governance

The University of Queensland is governed by a 22-member Senate representing University and community interests. Senate is led by the Chancellor, elected by the Senate. The University of Queensland Act 1998 grants Senate wide powers to appoint staff, manage and control University affairs and property, and manage and control finances to promote the University's interests.

about.uq.edu.au/leadership-governance

Strategic direction

Together, our objectives and strategies drive progress toward 6 long-term ambitions that define the transformative impact UQ aims to deliver.

Our 2032 ambition

As the University of, for and with Queensland, UQ's ambition is to:

- Deliver highly sought-after graduates who are ready to succeed in the workforce, through diverse, future-focused educational experiences
- Contribute to Queensland's prosperity through The Queensland Commitment by reducing barriers to education and delivering social benefits
- Leverage the breadth and depth of our research strengths and innovation precincts to address pressing global challenges, including climate change, technological disruption and increasing societal complexity
- Be a trusted and agile partner, recognised as a leader in entrepreneurship, knowledge exchange and commercialisation
- Have an extensive global reach in education and research, with a strong commitment to capacity building in the Indo-Pacific and beyond
- Be values-led, committed to delivering for the public good, supporting our people, advancing reconciliation, driving sustainability and embracing diverse experiences and perspectives.





Strategic plan 2026–2029

Our vision

Knowledge leadership for a better world.

Our mission

Our core purpose is to deliver for the public good through excellence in education, research and engagement with our communities and partners: local, national and global.

Our values

What we strive for

Creativity

We apply our creativity as a way of seeking progress. We value new ideas, seek fresh perspectives and pursue game-changing innovations and opportunities.

Excellence

We strive for excellence in everything we do. We apply the highest standards to our work to achieve the greatest impact for the benefit of communities everywhere.

Central to what we do

Truth

Truth is central to all that we do as a university. We seek truth through our focus on the advancement and dissemination of knowledge, and our deep commitment to academic freedom and freedom of expression.

How we work together

Integrity

We always act with integrity. As stewards of the University's resources and reputation, we are honest, ethical and principled.

Courage

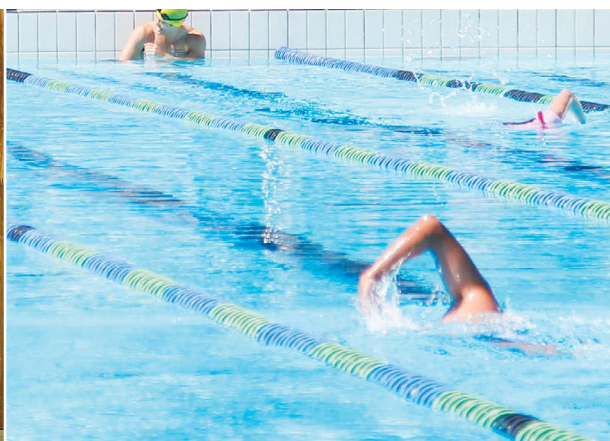
We are courageous in our decision-making. We are ambitious, bold and agile. We demonstrate moral courage, so that we are always guided by a sense of what is right.

Respect and inclusivity

We provide a caring, inclusive and empowering environment for all. We engage respectfully with one another and promote the value that our diversity brings to our whole community.

about.uq.edu.au/strategic-plan

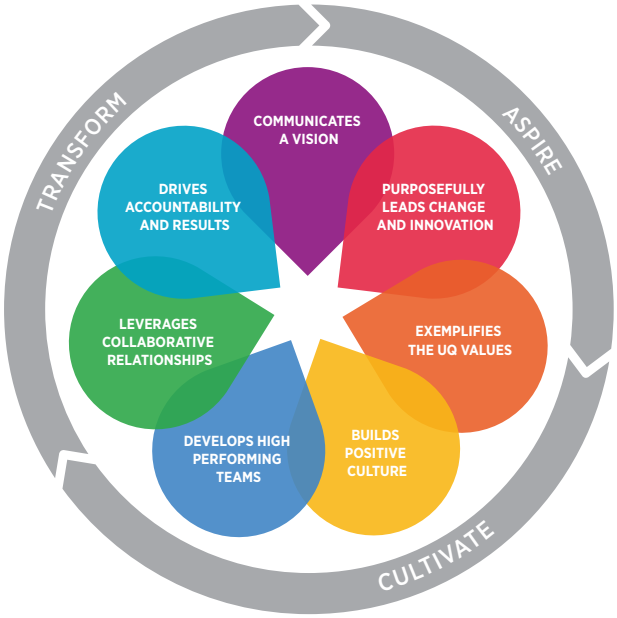




UQ Leadership Framework

As a leader at UQ you are a role model for our values.

Our leaders act with integrity and prioritise the development and growth of our people to ensure excellence for the long term.



The Leadership Framework is underpinned by seven capabilities expected by all UQ leaders.

Aspire

Enact UQ's vision, anticipate change and leverage innovation.

1. Communicates a Vision

Develops and communicates a clear vision and direction for the future, aligned with UQ's vision, values and aspirations.

2. Purposefully leads change and innovation

Remains agile and effectively manages change and unexpected disruption by finding innovative solutions.

Cultivate

Exemplify the UQ values and develop high performing teams and positive culture.

3. Exemplifies the UQ Values

Role models UQ values and demonstrates loyalty to the University.

4. Develops high performing teams

Develops empowered and high performing teams, investing time, energy and resources into helping people achieve their potential.

5. Builds positive culture

Creates respectful and constructive workplaces where people feel safe and valued, and addresses unacceptable behaviours.

Transform

Deliver results that make a difference and create long-term value.

6. Leverages collaborative relationships

Identifies opportunities to collaborate and forges partnerships, embracing the ethos of 'One UQ'.

7. Drives accountability and results

Holds self and others accountable for delivering against objectives and is focused on creating long-term value for UQ.





About Brisbane

Brisbane is the sunny, sophisticated capital city of Queensland and gateway to many famous attractions. Australia's third largest city and fastest-growing capital with a population of more than 2.5 million, it offers a safe, friendly, multicultural environment characterised by the Brisbane River, parklands, convention facilities, museums, theatres, art galleries, a casino, malls, shopping districts, and a host of cosmopolitan restaurants and cafes.

Selected as host city for the 2032 Olympic and Paralympic Games, Brisbane offers visitors unbeatable sports experiences in 37 world-class venues, set against a backdrop of iconic beachfronts, breath-taking rural hinterland, and an exciting city rich in culture and entertainment.

Brisbane also offers a range of lifestyle benefits. Combine artistic and outdoor adventures at South Bank, where cultural institutions and restaurants meet riverside gardens and a lagoon. Take a paddle steamer or ferry down the Brisbane River, abseil Kangaroo Point cliffs, or bike ride through the City Botanic Gardens. Or enjoy a day trip to Moreton Island, Noosa, the Sunshine Coast or Gold Coast, or visit beautiful national parks, rainforests and tourist attractions such as Australia Zoo, Dreamworld and other theme parks.

The perfect place to raise a family, Brisbane has been dubbed a food and drink lover's paradise, and is also one of Australia's most liveable and affordable capital cities, with sunny days almost all year round and enough rainfall to keep the city and suburbs cool and green.

A few hours' drive north from Brisbane is the Great Barrier Reef, one of the 'natural wonders of the world'. As the largest World Heritage Area, it stretches more than 2,000 kilometres alongside the coast, and is home to around 1,500 species of fish and 350 types of coral. Stradbroke Island and K'gari (formerly Fraser Island) are also world-famous attractions close to Brisbane, featuring some of the largest sand dunes in the world.

A leader in education

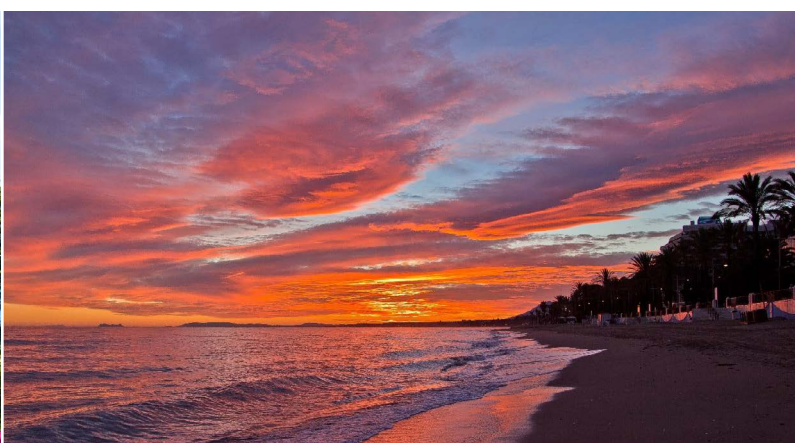
Brisbane has a wide range of high-quality schools at primary and secondary level, religious and non-denominational, single-sex and co-educational, with many offering excellence programs or other specialty features such as the International Baccalaureate. Brisbane also offers some of the greatest learning institutes in Australia, with 3 internationally recognised universities covering all areas of study from law and medicine through to business, marketing, tourism, IT and biotechnology. The University of Queensland (UQ) is one of Australia's leading research and teaching institutes, ranking among the world's top universities.

Lifestyle

In the heart of Brisbane city, Queen Street Mall is a vibrant shopping and lifestyle precinct and is Australia's most popular pedestrian mall. Brisbane is also the home for many of Queensland and Australia's major sporting events in rugby league, rugby union, AFL and cricket.

Brisbane residents have excellent access to health care in both public and private sectors, covering hospitals, general practitioners, dentists, and other allied healthcare professionals. The numerous public and private hospitals include the Princess Alexandra Hospital, the Mater Hospital network, the Queensland Children's Hospital, and the Royal Brisbane and Women's Hospital. Urgent and emergency medical care is readily available to everyone.





Further information

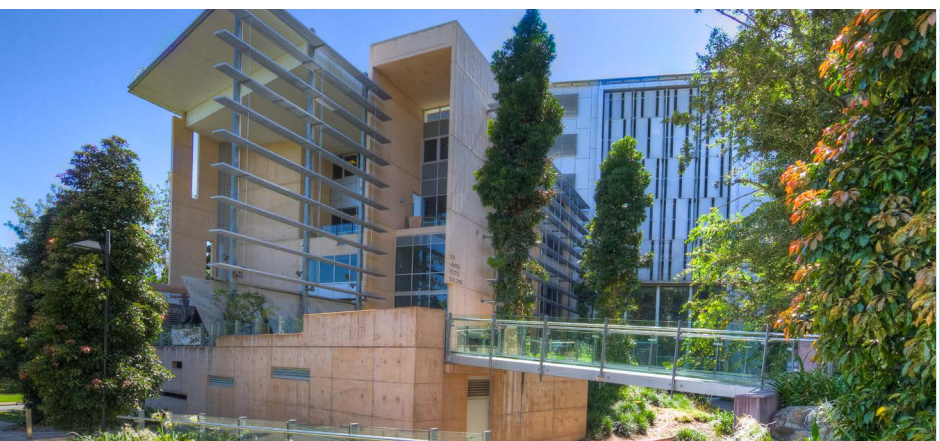
General information on the University is available through the University's website.

Other documents which you may wish to refer to include:

- Annual Report
- Governance and organisational structure
- Key statistics
- Organisational chart
- Research at UQ
- UQ Strategic Plan 2026–2029
- Global Partnerships
- Reconciliation at UQ
- Indigenous Employment Strategy

Other useful links

- Brisbane City Council
- City of Gold Coast
- Moving to Queensland
- Australian Taxation Office





THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

For more information

Talent Acquisition Team

talent@uq.edu.au

about.uq.edu.au/careers

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