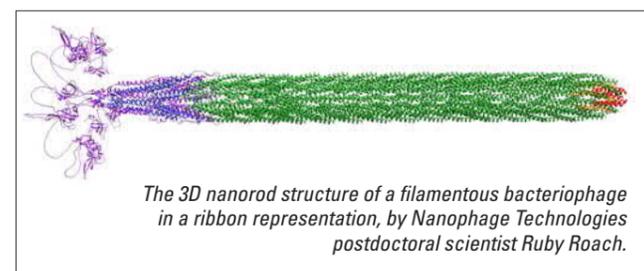


# MASSEY RESEARCHERS MAKE MAJOR BIOTECH BREAKTHROUGH



Professor Jasna Rakonjac invented the nanorods used in the groundbreaking research with the University of Exeter.



The 3D nanorod structure of a filamentous bacteriophage in a ribbon representation, by Nanophage Technologies postdoctoral scientist Ruby Roach.

Massey researchers have helped map for the first time all the atoms of a filamentous bacteriophage, a nanometre-sized, thread-like, bacteria-infecting virus that is widely used in biotechnology and nanotechnology.

The breakthrough – a collaboration with the University of Exeter – is a key step in understanding how these bacteriophages reproduce. It will also spur the development of new and enhanced bio-based cancer treatments, diagnostics and vaccines.

The team of Massey University and Nanophage Technologies researchers produced short nanorods – biological nanoparticles derived from filamentous bacteriophages. The short length of the nanorods permitted mapping of the entire structure using cryo-electron microscopy at the University of Exeter.

The project – which began in 2017 – has been part-funded through the Massey University Foundation, with \$114,000 from Massey alumni Anne and Bruce Carmine and a contribution from an anonymous donor.

Jasna Rakonjac, Professor in Microbiology at Massey's School

of Natural Sciences and Nanophage Technologies president and chief scientific officer, says researchers have previously relied on incomplete reconstructions of the filamentous bacteriophages to inform their work.

The complete structure will also allow sophisticated applications in biology-inspired nanotechnology.

The research, published in *Nature Communications* in May this year by Jasna, Massey researchers Rayén Ignacia León-Quezada and Nicholas J Bennett, and researchers from the laboratory of Vicki Gold at the University of Exeter, has generated a huge response in the bacteriophage research and technology community.

“Key bacteriophage researchers and biotechnologists have praised this collaborative effort, recommending it as a must-read for scholars in this area,” says Jasna.

The Carmine’s contribution was crucial to the project’s success, says Jasna, as it funded Rayén’s work to improve the production system of the nanorods sent to the University of Exeter.

“We are truly grateful for their generous support.”

The nanorods produced by Massey University and Nanophage Technologies are 10-100-fold brighter than antibodies. They are quickly and cost-effectively produced and applied in a variety of diagnostic tests for agricultural, medical, environmental and food samples.

“Biological nanorods will transform diagnostic testing as they have potential to detect the presence of molecules at far lower levels than other diagnostic tools on the market, allowing for early action or medical intervention.”

**Nature Communications:**

<https://www.nature.com/articles/s41467-023-37915-w>

## UPCOMING EVENTS

- **Auckland donor function**  
Nov 16: 5pm-7pm  
KPMG, Infinity Room  
18 Viaduct Harbour Avenue
- **Wellington donor function**  
Nov 30: 5pm-7pm  
Massey University  
Tussock Cafe, Wellington Campus  
Entrance E, Tasman Street
- **Palmerston North donor function**  
Dec 8: 3pm-5pm  
Refectory Building  
Massey University

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## \$500,000 GIFT BUILDS UP AGRICULTURE BURSARY



Dr Brian Wickham gained his PhD at Cornell University in the United States.

A \$500,000 donation by farm animal genetics pioneer Dr Brian Wickham will boost support for Massey agriculture students struggling financially.

Brian, a Massey alumnus who passed away in August, spearheaded the development of world-leading animal genetic and breeding evaluation systems. He was named a Companion of the New Zealand Order of Merit this year for services to the dairy industry and statistical genetics.

Between 2016 and 2021, Brian and his wife Alison donated \$200,000 to the Massey University Foundation to establish and supplement the Violet Wickham Memorial Bursary in honour of his mother. The Wickhams contributed a further \$500,000 in August to bolster the fund.

Ten students have together received more than \$31,000 through the bursary since 2019.

Before he passed, Brian said he felt a desire to “give back” and support students today, as his professional success meant he could afford to help, and he had benefited from free tertiary education.

His mother Violet had been extremely generous in helping families in need, while raising nine children of her own.

“She felt it was really important to respect and support those who were less well-off.”

Brian said he and Alison wanted to donate to the bursary directly, rather than through a will.

“It’s more personal. We feel as though we should be doing our giving while we’re alive, that’s when we have control over it.”

He had contact with a number of bursary recipients, who have been very grateful for the financial support.

“I feel it’s really been worth it. I love seeing them getting on and achieving their goals in their lives.”

Bachelor of Agricultural Science student Anna Wilson received \$3000 through the bursary in 2022 and \$4000 this year.

Anna is self-funding her university education through work and the student loan, and was recently awarded a Commonwealth Supported Place – a subsidy – to do a Master in Agricultural Science, majoring in AgriBusiness, at the University of Melbourne.

“My goal has always been to go overseas to continue studying, and as soon as you leave New Zealand, your student loan starts accruing interest. The bursary has allowed me to keep my student loan as low as possible, making overseas study more financially feasible.”

Anna, who plans to return to New Zealand to work in agribusiness, is “incredibly grateful” to the Wickhams for their generous and selfless support, which will benefit university students for generations to come, she says.

Fellow 2023 recipient Maggie White, in her third and final year of a Bachelor in Agricultural Science, says the bursary helped cover her course and rising living costs after ill-health meant she was unable to work and build up savings over summer.

“It’s been a huge help this year. My rent has gone up \$20 a week and at the supermarket what used to be a \$50 shop is now \$70.”

Professor Paul Kenyon, Head of the School of Agriculture and Environment, says the cost of tertiary education can be an obstacle for many potential undergraduates.

“This scholarship will help remove that hurdle for students wishing to gain further education in agriculture, some of whom will hopefully go on to make a significant contribution to New Zealand agriculture, as Brian Wickham did.”

Brian completed a Bachelor of Agricultural Science in 1970 and a Master of Agricultural Science in 1973 through Massey, and said his years there were hugely formative.

Even though the costs associated with study were relatively low at the time, not everyone could afford the privilege.

“If I had not been able to study for financial reasons, my life would have been very different.”

Brian said he would love to see more of his contemporaries give back.

“I think there’s an issue with the transfer of wealth from our generation to the next generation or two. Our generation are perhaps overdoing the accumulation part, and underdoing it when it comes to repaying in recognition of the benefits we had.”

## UPDATE FROM THE DIRECTOR

Kia ora whānau,

Spring has transformed the Manawātū campus, and the young leaves on the trees are so green and translucent that they appear almost phosphorescent in the sunshine!

As spring deepens, we prepare to bid farewell to our wonderful students. It feels like they arrived only yesterday, and they are now sitting final exams and preparing to depart campus, many for the last time!

At the Foundation, we are getting ready for the 11th Annual Alumni Appeal, which this year runs from the 13th of November to the 22nd of December. Once again, we are reaching out to alumni and asking them to support hardship bursaries for disadvantaged students and scholarships for our nursing students, as we try to encourage more young people into the career. The appeal is a highlight of our year, as it brings us into contact with so many alumni and donors, something the team and I really enjoy.

It has been a tough year for many, including the staff of the university. Many of you will have heard that the university is retrenching under financial pressure. Massey is not alone in this predicament, as higher education in New Zealand faces uncertainty and change at an unprecedented level. Much of this has been driven by rapidly rising operational and salary costs that have exceeded any increases in income, combined with reduced international enrolments post-Covid.

The situation has been distressing for all involved, and the work of the Foundation has never been more appreciated by staff and students. Funds invested in the Foundation give the university a small degree of financial independence, and scholarship and research funds are guaranteed and protected within the Foundation.

While it has been a tough year, there have been some outstanding donations from alumni that have both boosted morale and humbled us. I received a call from Brian Wickham in June of this year. Brian wanted to make another gift to the Violet Wickham Memorial Bursary on behalf of himself and his wife Alison. Brian and Alison made a monumental gift of \$500,000 before he tragically lost his battle with cancer in late August. Kua hinga te tōtara i Te Wāonui a Tāne.

Our thoughts are with the Wickham family, who have done so much for so many at Massey.

Finally, I hope to see many of you in person at our end-of-year functions. We would love to see you to thank you for your ongoing contribution to success at Massey – in these difficult times we appreciate your support more than ever.

Ngā manaakitanga,

Mitch Murdoch

## \$1.97 MILLION BEQUEST BOOSTS POSTGRAD SCHOLARSHIP SUPPORT

A \$1.97 million gift has more than quadrupled a scholarship fund for top Massey postgraduates, with up to 15 students to receive support each year in perpetuity.

The endowment by Massey alumna Berys Clark, when combined with the sum of \$500,000 originally donated in 2002 after the passing of her husband Lovell, constitutes the second biggest bequest in the Massey University Foundation's history.

The Lovell and Berys Clark Scholarships are awarded to postgraduate students studying science, biotechnology, agriculture, humanities, arts or business, based on academic merit.

Over 50 students have together received more than \$400,000 through the scholarships since they were first awarded in 2003.

Berys' bequest means the fund can now support between five and 15 students with scholarships each year indefinitely, with the number of recipients depending on the value of scholarships awarded.

Berys completed a Bachelor of Business Studies extramurally through Massey in 1994, and while Lovell never had the opportunity to study, he wanted to help others reap the benefits of higher education.

John Donnelly, Lovell's nephew, says the Clarks – who farmed for many years in Hunua in south Auckland - were kind, down-to-earth people with a deep love for farming and the land.

Berys, a schoolteacher, had an intrepid streak – often veering off the beaten track on overseas trips with friends from school.

"There were bike trips through China and they ended up in the Congo at one point. They even drove a car into Russia for a holiday in the early 1950's – which was a big "no-no" at the time."

Lovell's affinity for rural life kept him closer to the farm. That's always where he was happiest and Berys came to feel that way as well, says John.

"They were generous to a tee, and they were always interested in helping young farmers get ahead, because there wasn't a great deal of extra support for them."

Aryan McKay, who received a total of \$15,600 as a scholarship recipient in 2022 and again this year, says the funding has helped

cover a range of costs associated with her Doctorate in Clinical Psychology, including for travel, accommodation, koha and kai to share with research participants, and research equipment expenses.

"[Without the scholarship] I might have been able to pull this off, but it would have been a lot more stressful, and I would have had to go into debt to manage it.

"I'm very grateful for the support of the scholarship. It's been really meaningful for me."

Emma Furness, a single parent, received \$9000 through the scholarship fund this year. The money supported her family's living costs and allowed her to cut back her work hours, including taking a month off so she could fully focus on her Masters thesis in Psychology. The funding also helped cover research-related costs.

"Having a bit of a money cushion I could use definitely helped with stress levels.

"It was a big decision to prioritise study for such a long period of time while needing to be responsible for the care of my kids."

Alice Buckingham, who is studying remotely and this year will complete a Bachelor of Science with Honours, majoring in Psychology, sought support to replace her failing laptop and to help cover her living costs.

The \$8000 scholarship significantly eased her financial pressure, she says.

"University study can be stressful enough as it is. I haven't had to worry as much about the money side of it."

Massey University Vice-Chancellor Jan Thomas says the significant bequest helps ensure financial support for Massey students at a time when students and higher education institutions are grappling with rising costs and the continuing impact of Covid on enrolments and revenue.

"The impact of such gifts in alleviating financial pressure cannot be underestimated. The Clarks' generosity has supported the success of many deserving Massey students for the past 20 years and will continue to do so into the future. We are incredibly honoured to help continue their legacy."

## COOL RUNNING: BIG TICK FOR NATIONAL CROSS COUNTRY CHAMPIONSHIPS

More than 850 runners vied for top honours at the New Zealand Secondary School Cross Country Championships, over a classically rustic course through and around Massey's Manawatū campus.

The hugely successful two-day event in June drew entrants from 132 schools and included seven individual races, traditional relay races and a para-athlete event.

The course showcased Massey's strong agricultural and athletic traditions, traversing undulating farmland, logs, steeplechase hurdles, sports fields - and plenty of mud.

Over 1500 spectators lined the course, witnessing several exhilarating "breakaway" race finishes.

The Massey University Foundation applied for and received a grant of \$12,000 from the New Zealand Community Trust, to cover expenses including a sound caravan, sound system, first aid supplies and portaloos.

The event was also supported by volunteers from the Manawatū athletics community, particularly Feilding Moa Harrier and Athletic Club and Palmerston North Boys' High School, and with sponsorship from the Palmerston North City Council, Sport Manawatū, and the Central Economic Development Agency.



## \$1 MILLION TO FUND NEW HORTICULTURE SCHOLARSHIPS



David Brundell won the "People's Favourite" trophy at the 2005 Auckland Clivia Show for his "Heaven Scent" clivia.

A \$1 million gift in memory of the late horticulturalist and Massey alumnus David Brundell will from next year fund two Masters scholarships annually worth up to \$25,000 each.

June Brundell, David's sister, has pledged \$1 million to the David Brundell Masters Scholarship fund, with the first \$250,000 to be paid over the next five years.

David completed a Bachelor of Horticulture at Massey in 1970 and a Master in Horticulture in 1974, with his thesis investigating flower development in kiwifruit.

Throughout his varied career, he conducted research for the Ministry of Agriculture and Fisheries and took on floricultural consulting roles, including for the Commonwealth Secretariat in Jammu and Kashmir.

June says David's years at Massey were very formative, and he believed in creating opportunities for education and encouraging young people in the industry.

The scholarships are a "perfect vehicle" to honour him, assist students and potentially benefit New Zealand long-term.

David was effervescent, tenacious, and possessed strong intelligence and great artistic flair, she says.

These qualities were displayed to great effect at Gardenza – the distinctive and celebrated home and garden that he crafted over 30 years at Glenbrook Beach, south of Auckland.

"He created a volcano at the back corner of his property and planted silver-backed gazanias, giving the effect of snow around the cone, with red flowering plants used to create the effect of a lava flow.

"He loved to laugh and make others laugh."

A move to Rarotonga with the aim to establish a botanic garden – "and wear stubbies and jandals all year round" - was cut short when David suffered a serious accident that left him a tetraplegic in 2018. He returned to New Zealand and passed away in December 2021.

Plants "were in David's DNA", says June. He began collecting and propagating African Violet leaves from around ten years of age, and his interest never waned.

"He was always reading about plants and looking into ways to improve their health and breeding."

Paul Kenyon, Head of Massey's School of Agriculture and Environment, says the scholarship will help address a paucity of researchers and tertiary-educated horticulture specialists in New Zealand, at a time when there is a pressing need in the industry for innovation and highly skilled individuals.

Undergraduate students are in high demand in the workforce, meaning postgraduate study has not been financially attractive.

"This scholarship will allow students to study at postgraduate level without the financial burden."

The David Brundell Masters Scholarship will be awarded based on academic merit to horticulture students undertaking Masters research in either flowers, fruit, vegetables, or crops for human consumption. It is intended that two scholarships will be awarded each year.