



Australian Government



THE PRIME MINISTER'S
PRIZES FOR SCIENCE

ADJUNCT PROFESSOR ALISON TODD AND DR ELISA MOKANY

SPEEDX

2022 PRIME MINISTER'S PRIZE FOR INNOVATION

Adjunct Professor Alison Todd and Dr Elisa Mokany have successfully commercialised ground-breaking molecular diagnostics technology that has been adopted worldwide.

Molecular diagnostics combines laboratory testing with molecular biology to study human diseases. It has transformed the way we investigate human, viral and microbial genomes. Molecular diagnostics tests such as PCR are fast becoming the preferred method over conventional tests.

During the Global Financial Crisis, Adjunct Professor Alison Todd and Dr Elisa Mokany raised venture capital, negotiated the assignment of IP they invented at Johnson & Johnson Research and in 2009 founded SpeedX as a vehicle to commercialise their technology.

SpeedX tackles two major problems of modern medicine – cancer and antibiotic resistance. It distributes over 45 sophisticated molecular diagnostic tests in 19 countries for conditions including cancers, sexually transmitted infections, respiratory infections, SARS-CoV-2 and fungal skin infections.

SpeedX creates faster, more accurate and cost-effective solutions to analyse and interpret genetic information. The company has developed hundreds of products for basic research and clinical diagnostics for both oncology and infectious diseases, empowering clinicians to make more informed decisions.

The company's molecular technology has greatly enhanced opportunities for personalised clinical diagnostic tests which allow clinicians to select the most appropriate therapy for a range of infectious diseases and cancers. To date, SpeedX has used its technology to develop tests and reagents which have been used for more than 10 million patients. This includes about 6 million for infectious diseases, 3.5 million of which were sold in Australia, and another 4 million oncology tests sold by their European licensee. In Australia, more than 80 per cent of laboratories are using at least one SpeedX test to report patient samples.

SpeedX also produced the first worldwide test that simultaneously detects an STI and determines its antibiotic susceptibility. This facilitated a 40 per cent increase in cure rates of the STI and led to new international guidelines being introduced that recommend antibiotic resistance testing.

Adjunct Professor Todd and Dr Mokany are driven by the shared goal of having a positive impact on health and addressing rising rates of antibiotic resistance. Their innovative technology has played a significant role in fighting antimicrobial resistance by identifying drug-resistant infections, meaning that medical practitioners can avoid prescribing unnecessary or ineffective antibiotics.

A major reason for the success of SpeedX is its highly scalable and agile technology, meaning the company can develop new tests more quickly than its competitors. Its local manufacturing efforts have also meant the company is better placed to respond to instances of increased demand, such as during the COVID-19 pandemic.

The work of SpeedX has strengthened Australia's ability to respond to current and future public health crises. In addition to their outstanding contribution to medical science and innovation, Adjunct Professor Todd and Dr Mokany are prime examples of successful entrepreneurs. Their commercialisation efforts have helped establish Australia as a global leader in molecular technology, while giving Australian scientists the opportunity to work with large multinational healthcare companies.

They have also forged a trailblazing path for women in STEM and the biotechnology industry in Australia. Currently, 70 per cent of SpeedX's workforce and 50 per cent of management are women.

ADJUNCT PROFESSOR ALISON TODD

Adjunct Professor Alison Todd worked in the pharmaceuticals and diagnostics industry for 17 years prior to founding SpeedX.

Her passion for personalised medicine and diagnosis began when she was completing her PhD in 1990, which explored the potential for DNA to not only diagnose diseases, but to assist in the selection of appropriate therapy and disease monitoring.

Adjunct Professor Todd led a research program at Johnson & Johnson Research where she began collaborating with Dr Mokany, who was one of her PhD students.

Adjunct Professor Todd has invented a suite of powerful complementary technologies, which power all SpeedX and partner products.

She is an inventor on 20 patent families in molecular diagnostics technology and continues to be a driving force for scientific innovation at SpeedX, identifying further next generation technologies and new approaches for delivering clinical diagnostics to improve patient outcomes.

Adjunct Professor Todd's role at SpeedX spans everything from envisaging new diagnostic approaches for precision medicine, through to inventing intricate technical solutions to enable their implementation.

She is an Adjunct Professor at UNSW who is passionate about both mentoring the next generation of innovators and building bridges between industry and academia. She supervises PhD students at SpeedX, lectures at UNSW, mentors scientists through the Industry Mentoring Network in STEM (IMNIS) and is on numerous university/industry advisory committees.

Adjunct Professor Todd serves on the AusBiotech NSW Leadership Committee and is an elected Fellow of the Australian Academy of Technology and Engineering (FTSE).

DR ELISA MOKANY

Dr Elisa Mokany joined Adjunct Professor Todd's research program at Johnson & Johnson Research and commenced a PhD which focused on exploiting DNA enzymes (known as DNAzymes) for diagnostic applications.

Her ambition to pursue a career in genetics started back in high school where she was first introduced to genes and inheritance. Since then, she has had an insatiable thirst to learn and discover everything possible about RNA and DNA.

During her PhD, Dr Elisa Mokany and Adjunct Professor Todd invented a new class of gene detector called PlexZymes. This formed the basis of highly sensitive tests with the ability to detect multiple genetic markers in one sample, making them more efficient and accurate than others. This ground-breaking invention and broad application resulted in five patent families and is the foundation IP that powers all products sold by SpeedX and its partners. Before joining Johnson & Johnson Research, Dr Mokany conducted novel tests for colorectal cancer and genetic tests for canine genetic diseases. She now has 25 years' experience in developing diagnostic tests.

Dr Elisa Mokany leads SpeedX's development team and helps deploy scientific developments into new products and technology through to commercialisation.

She has been at the forefront of commercialising SpeedX's inventions, playing an active role in IP development, identifying markets and partners, technology development and more.

She is passionate about supporting other women entrepreneurs. Elisa is an alumnus of the SBE Australia program (2015) and now continues to mentor and support the next generation of females founding businesses.

She also holds an adjunct appointment at UNSW and is a mentor with UNSW Career Discovery Mentoring Program and the Industry Mentoring Network in STEM (IMNIS). In this capacity, Dr Mokany often speaks at the Australian Society for Medical Research High School Careers Day.

Dr Mokany holds a PhD in Biochemistry and Molecular Genetics from UNSW.

Career highlights

ADJUNCT PROFESSOR ALISON TODD AND DR ELISA MOKANY

- 2021 AusBiotech and Johnson & Johnson Industry Excellence Award for “Australian Company of the Year” – SpeeDx
- 2021 Mentioned in The List: 100 Innovators, The Australian
- 2020 Clunies Ross Award for Innovation, Australian Academy of Technological Sciences & Engineering (ATSE)

ADJUNCT PROFESSOR ALISON TODD

- 2019 Fellow, Australian Academy of Technology and Engineering (ATSE)
- 2017 True Leaders Game Changer, The Australian Financial Review
- 1997 Phillip B. Hoffman Research Scientist Award, Johnson & Johnson
- 1991 Young Investigator’s Award, Clinical Oncological Society of Australia
- 1985 Colin Dunlop Prize for Academic Achievement, University of Sydney

DR ELISA MOKANY

- 2022 SBE Impact Awards, “Been There Built That”
- 2022 AmCham Alliance Award for Biotechnology – Highly Commended
- 2017 Outstanding Achievement Award, Medical Technology Association of Australia
- 2017 Most Innovating Woman in Biotechnology (New South Wales), Influential Businesswoman Awards
- 2017 Best Modular Diagnostic Solutions Company (Australia), Influential Businesswoman Awards
- 2015 Winner, Startup China competition, UNSW