

A portrait of Professor Ann Dooms, a woman with long, wavy brown hair, smiling. She is wearing a maroon cardigan over a blue and white patterned top, with a blue scarf. The background is a blurred indoor setting.

Professor Ann Dooms is a Belgian mathematician at the Vrije Universiteit Brussel who uses maths to analyse digital images, including scans of works of art.

She has worked with museums and galleries, developing mathematical techniques to reveal sketches hidden beneath layers of paint, detect forgeries, and recover writing from damaged manuscripts.

Professor Hasibun Naher is a mathematician from Bangladesh who studies the equations that describe how waves travel.

She applies mathematical modelling and numerical methods to storm surges and tsunamis, some of the most dangerous natural hazards.

Her work helps to predict where and when surges will strike, giving coastal communities more time to prepare.





Professor Daniela Witten is an American statistician at the University of Washington who develops statistical methods for analysing large biological datasets.

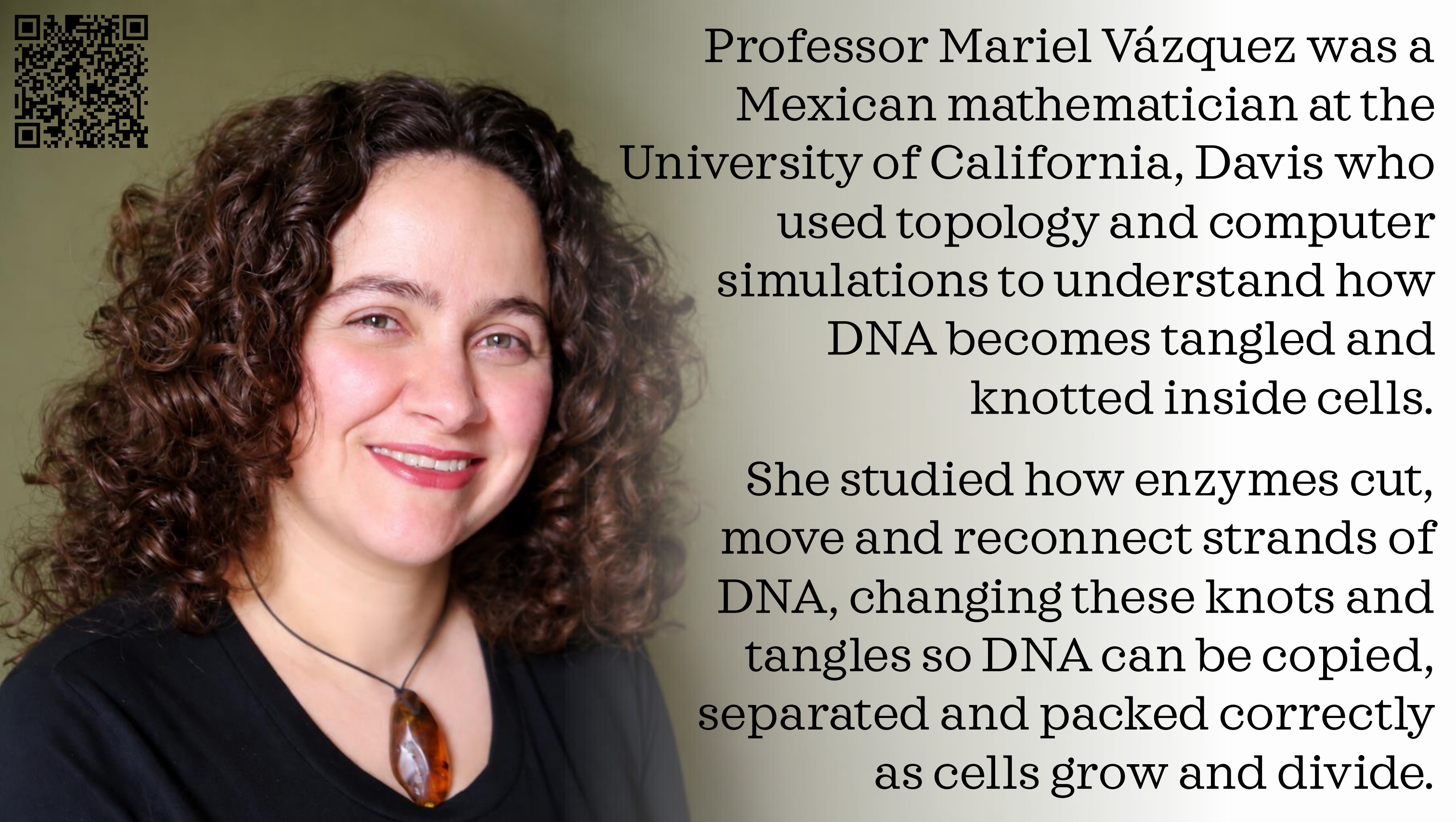
When researchers measure thousands of genes at once, her techniques can help identify which genes are associated with particular biological patterns or diseases, so researchers can target the genes most worth studying.

Professor Trachette Jackson is an American mathematician at the University of Michigan who investigates how cancers grow and respond to treatment.

Her models describe the interactions between tumour cells and the blood vessels that supply them.

Combined with laboratory experiments, her models can identify promising treatments and how best to use them.





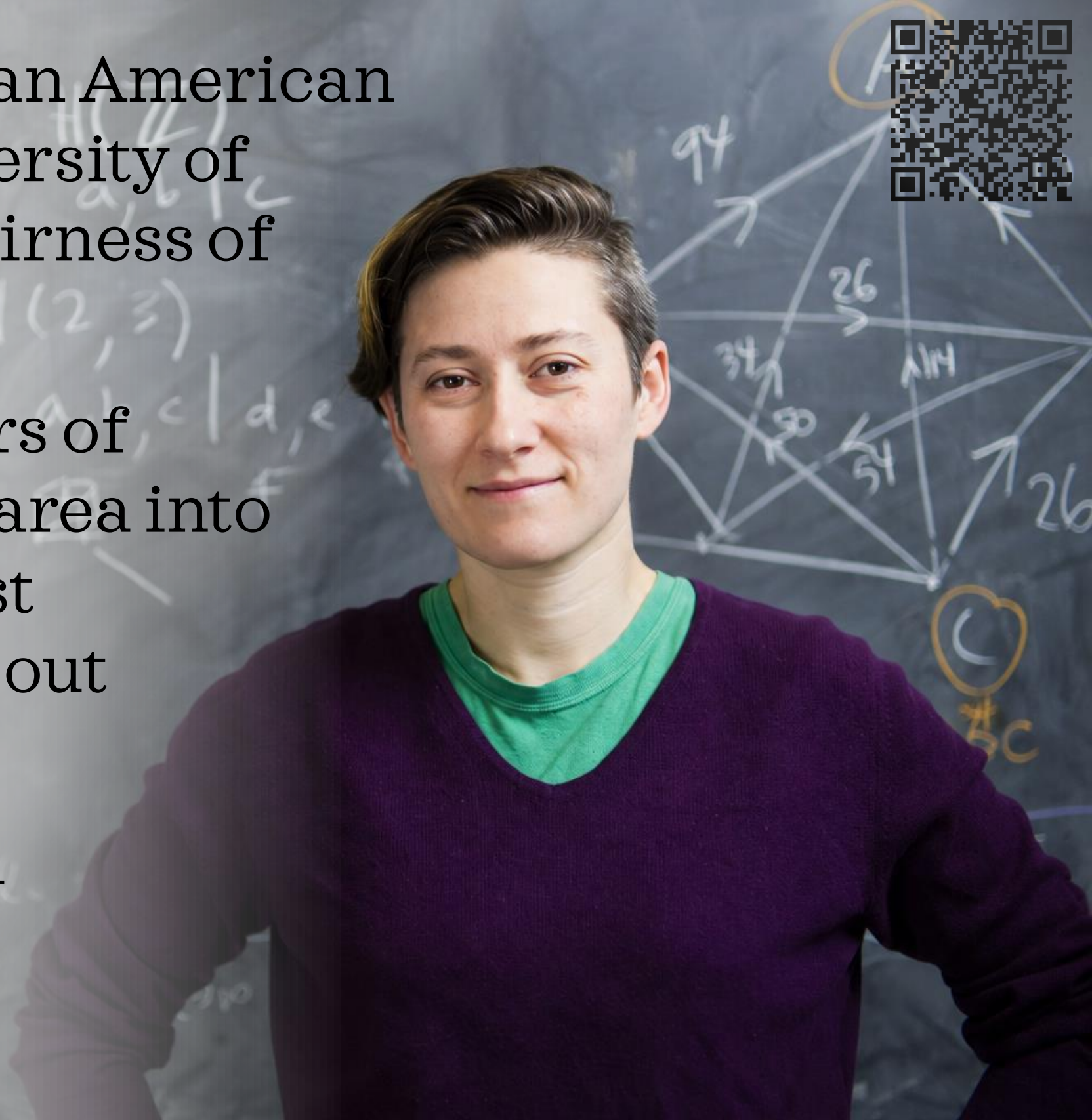
Professor Mariel Vázquez was a Mexican mathematician at the University of California, Davis who used topology and computer simulations to understand how DNA becomes tangled and knotted inside cells.

She studied how enzymes cut, move and reconnect strands of DNA, changing these knots and tangles so DNA can be copied, separated and packed correctly as cells grow and divide.

Professor Moon Duchin is an American mathematician at the University of Chicago who studies the fairness of electoral maps.

By generating huge numbers of possible ways to divide an area into voting districts, she can test whether a real map stands out from other possible maps.

Her analysis has been used as expert evidence in redistricting court cases.





Professor Hong Wang is a Chinese mathematician at IHES in France specialising in harmonic analysis.

In 2025, she and Joshua Zahl proved the three-dimensional Keakeya conjecture, first proposed over one hundred years before by Japanese mathematician Sōichi Keakeya.

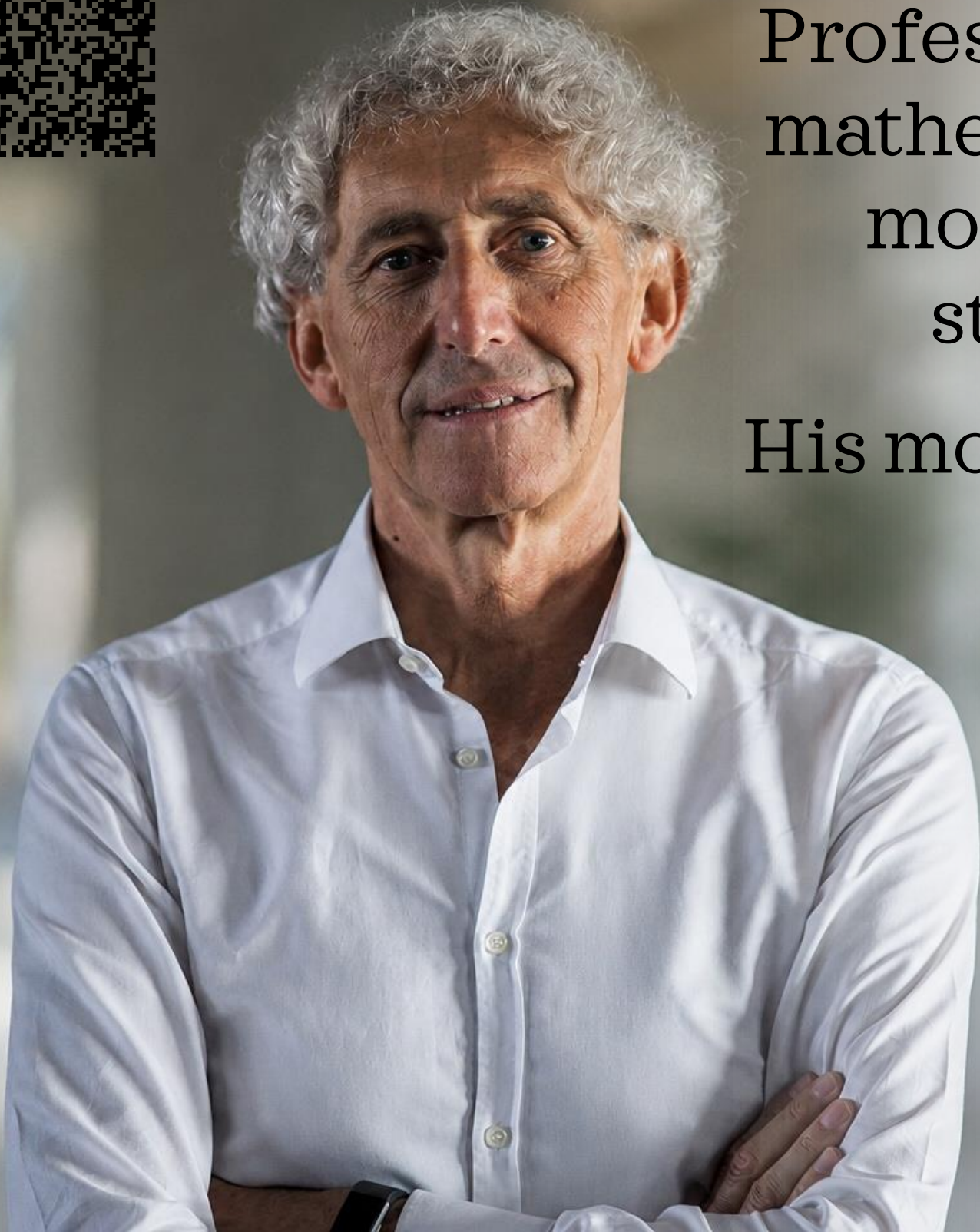
Wang's work on this helped lead to her receiving a Fields Medal in 2026.

Professor Nalini Anantharaman is a French mathematician who studies chaotic systems, where small differences can lead to dramatically different outcomes.

She combines geometry and quantum physics to investigate how waves behave in chaotic systems.

Her breakthroughs have helped reveal how chaos at large scales is reflected in the strange behaviour of the quantum world.





Professor Alfio Quarteroni is an Italian mathematician who uses mathematical models and computer simulations to study complex real-world systems.

His models of the human heart combine its electrical activity, muscular contraction and blood flow to simulate how the organ works.

He also used mathematical simulations to optimise the design of Alinghi, the yacht that twice won the America's Cup.



Professor Hannah Fry is a British mathematician who has used mathematical models and large datasets to study patterns in human behaviour, particularly in cities.

She is widely known for her books, podcasts and television programmes about maths.

In 2025 she became the University of Cambridge's first Professor of the Public Understanding of Mathematics.

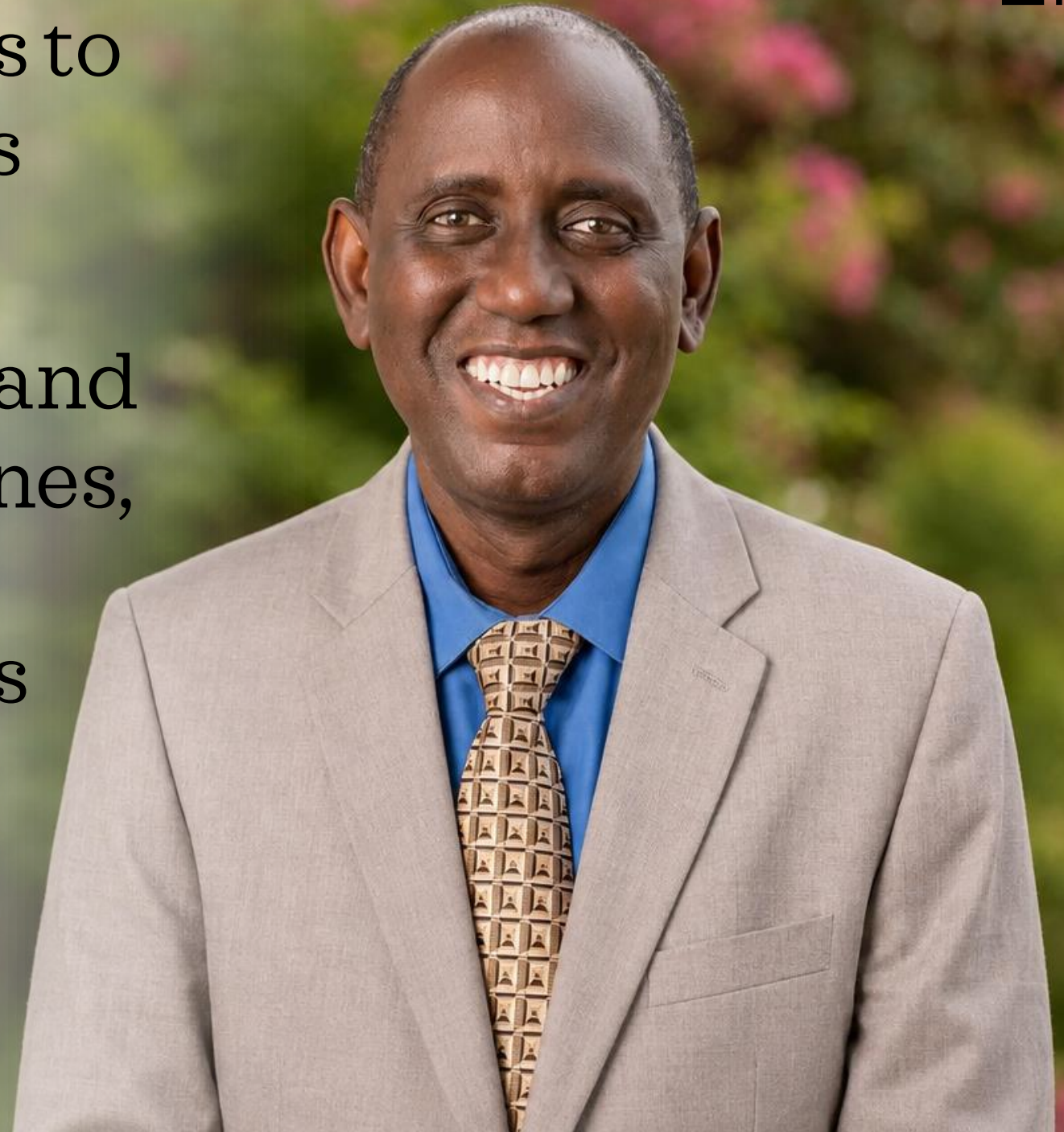




Professor Lisa Piccirillo is an American mathematician at the University of Texas at Austin who studies topology, the mathematics of shapes and spaces. While still a graduate student, she solved the 50-year-old Conway knot problem less than a week after first hearing about it. Her proof showed that the famous Conway knot could not be a slice of a shape in four dimensions.

Professor Abba Gumel is a Nigerian mathematician at the University of Maryland who uses equations to study how infectious diseases spread.

His models of malaria, Ebola and COVID-19 explore how vaccines, treatments and changes in behaviour can slow outbreaks and help identify the most effective combinations of measures to control them.





Professor Ingrid Daubechies is a Belgian-American mathematician who pioneered wavelets, mathematical tools that break signals and images into simpler components at different scales.

Her wavelets underpin JPEG 2000, which compresses high-quality images into smaller files, and are used to process images from medical scans such as MRI and CT.

Dr Katherine Evans is an American statistician who applies data science to professional basketball.

With a doctorate in biostatistics from Harvard, she developed models for player evaluation, on-court strategy and assessing potential draft picks.

In 2021, she became the first woman to lead an analytics department for an NBA franchise, joining the Washington Wizards as their Vice President of Research.

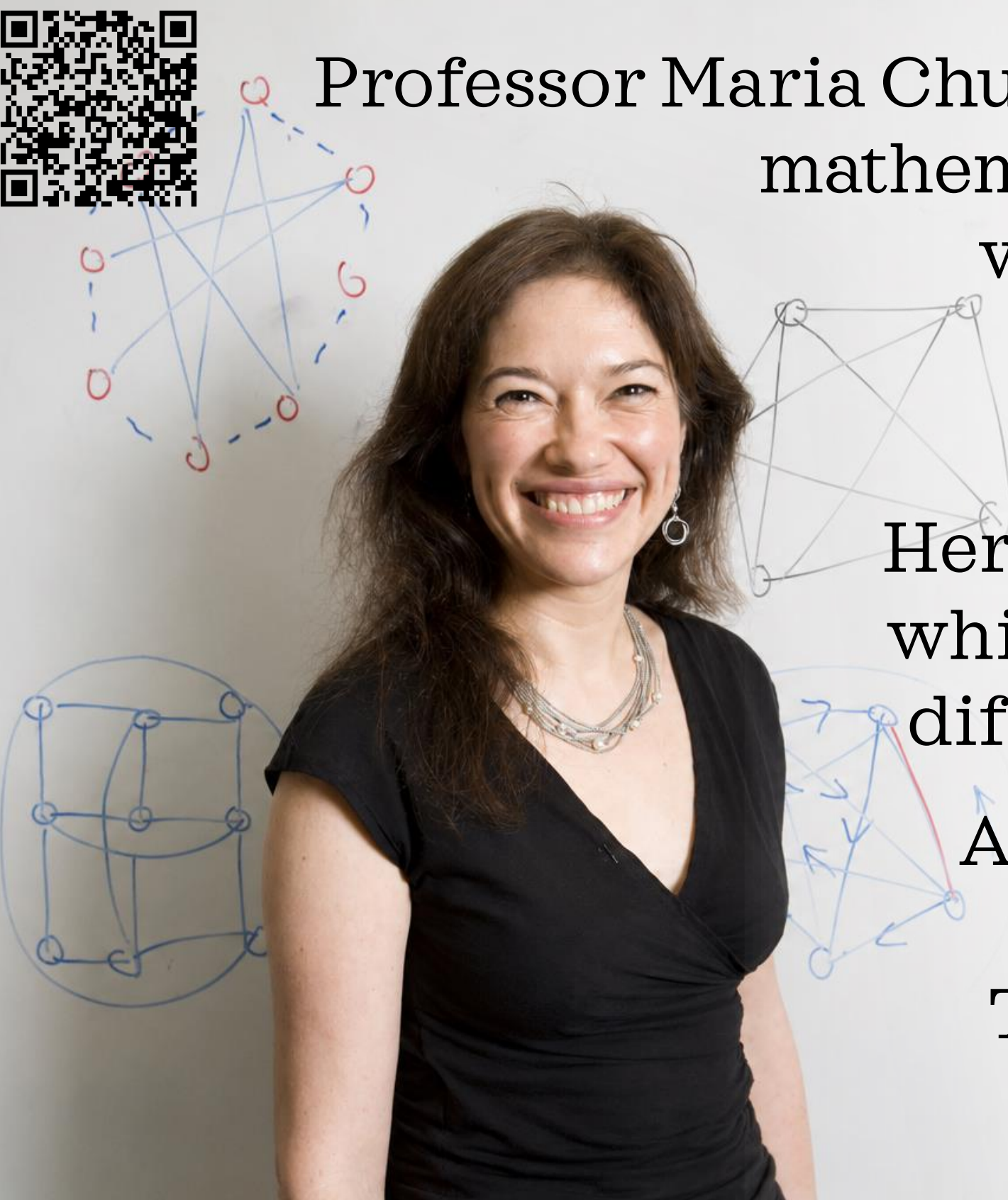




Professor Maria Chudnovsky is an Israeli-American mathematician at Princeton University who studies graph theory, where points and lines represent connections between objects.

Her work includes graph colouring, which assigns connected objects to different groups to avoid conflicts.

As a research student, she helped prove the Strong Perfect Graph Theorem, solving a problem that had been open for forty years.





Professor Maryna Viazovska is a Ukrainian mathematician at EPFL in Switzerland who studies number theory and geometry.

In 2016, she solved the centuries-old sphere packing problem in eight dimensions, proving the densest possible way to arrange eight-dimensional spheres.

Her remarkably short and elegant proof was soon extended to solve the problem in 24 dimensions.



Professor Talithia Williams is an American statistician at Harvey Mudd College who applies statistics to problems in health and the environment.

She has modelled rainfall to predict flooding in Houston and worked with the World Health Organisation to estimate the need for cataract surgery across Africa.

She also studies how measurements such as heart rate and blood pressure can reveal patterns in our health.

Professor Julia Gog is a British mathematician at the University of Cambridge who uses mathematical models to understand how infectious diseases spread.

Her research explores how influenza moves through populations and how human contact shapes epidemics.

During COVID-19, her modelling helped advise the UK government on decisions including reopening schools, work for which she was awarded an OBE.





Dr Kristin Lauter is an American mathematician at Meta who specialises in number theory and its applications in cryptography.

She helped develop homomorphic encryption, which allows computers to perform calculations on encrypted information without revealing the data inside.

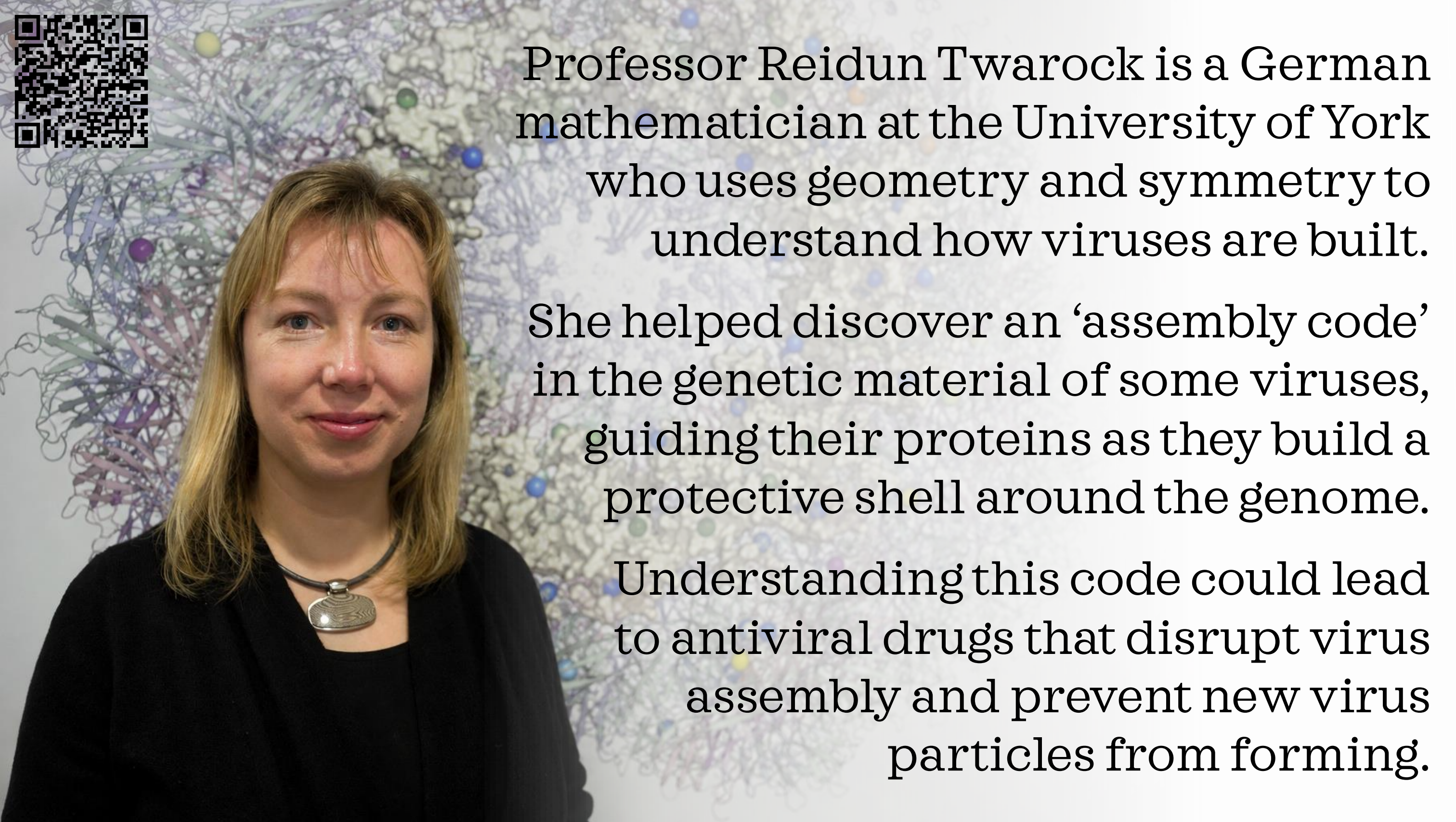
This could allow sensitive medical data to be analysed while still remaining private.



Professor Carola-Bibiane Schönlieb is an Austrian mathematician at the University of Cambridge who develops mathematical methods for reconstructing and analysing images from incomplete or noisy data.

Her techniques can improve medical scans and identify features in images of the brain and heart, sharpen astronomical images, and digitally restore damaged works of art.





Professor Reidun Twarock is a German mathematician at the University of York who uses geometry and symmetry to understand how viruses are built.

She helped discover an ‘assembly code’ in the genetic material of some viruses, guiding their proteins as they build a protective shell around the genome.

Understanding this code could lead to antiviral drugs that disrupt virus assembly and prevent new virus particles from forming.

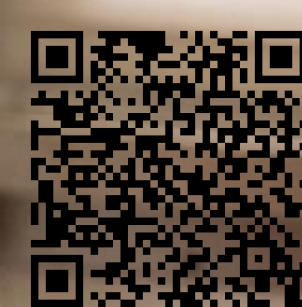


Chemotaxis

Professor Angela Stevens is a German mathematician at the University of Münster who uses equations to study how cells move, interact and organise into larger structures.

She investigates chemotaxis, where cells detect chemical signals and move towards them, and how the behaviour of individual cells can produce complex patterns across an entire population.





Professor Andrea Bertozzi is an American mathematician at UCLA who studies equations governing how thin layers of liquid flow, spread and form patterns.

She found that the same ideas could be adapted to remove noise and identify features in images.

Similar equations have also helped her model how crime hotspots emerge and change across cities.

Professor Motoko Kotani is a Japanese mathematician who uses geometry to understand the structures formed by atoms inside materials.

She studies crystal lattices, where atoms form repeating networks, and develops mathematics connecting these microscopic patterns to properties such as elasticity and colour, which could help scientists design new materials with specific characteristics.





Professor Melanie Matchett Wood is an American mathematician at Harvard University who combines number theory with probability.

She looks for statistical patterns in mathematical structures that might seem completely deterministic.

She studies expanded number systems, using probability to investigate how familiar ideas such as prime numbers and factorisation behave within them.