# SCI-TECH

*"I not only want to be able to extend my career and perform well at this stage for as long as I can, but also, I love the wellness and longevity."*
**NOVAK DJOKOVIC** SERBIAN TENNIS PLAYER

## Decorated researcher combines neuroscience and engineering at Yale

BY ISABELLA TRAN
CONTRIBUTING REPORTER

Yale's Wu Tsai Institute embraces an interdisciplinary approach to research — one that mirrors the philosophy of a new, widely-anticipated member of its faculty.

Dani Bassett, a physicist and neuroscientist, joined the institute in July as the Wu Tsai professor in the departments of Biomedical Engineering and Psychology. The institute aims to bring researchers studying human cognition together across disciplines including neuroscience, psychology, engineering and computer science, according to its website. Bassett uses mathematical and computational models to study how interconnected systems — from the brain to society — function and change.

"Professor Bassett is one of the world's foremost experts on graph theory and network analysis," Nick Turk-Browne GRD '05 '07 '09, the Susan Nolen-Hoeksema professor of psychology and director of the Wu Tsai Institute, wrote in an email to the News.

Bassett graduated with a B.S. in physics from Pennsylvania State University and a PhD in physics and psychiatry from the University of Cambridge. As a research fellow at the University of Santa Barbara, they developed concepts in network science, which they combined with research in neuroscience and cognition. They are the author of over 350 peer-reviewed publications.

Bassett did not respond to a request for comment for this article.

Kat Hefter, a PhD student at the University of Pennsylvania, joined Bassett's lab without a research focus in neuroscience or engineering. Hefter studies networks in human-made systems. Her research has examined how patients move through hospital systems and how network models can inform healthcare policy — a field far removed from those that dominate Bassett's research.

But Bassett took Hefter on anyway.

"There aren't a lot of faculty who would take a student like me, who has interests that are so different from what they usually do, but would still find a way to realize why I care about it and care about it for my sake and help me with it," Hefter said.

For Hefter, that openness is characteristic of Bassett's approach to research.

Bassett's lab itself functions as a network: researchers from radically different backgrounds are connected by a shared set of computational tools and an openness to interdisciplinary questions.

"It feels like everyone in the lab is doing their own research under the umbrella of the same method or the same field of the method," Huili Sun ENG '23 GRD '25, a postdoctoral researcher in Yale's Department of Psychology, said.

Many of the researchers in their lab have diverse backgrounds in fields like neuroscience, mathematics, engineering, public health and other fields. They then use network-based methods to investigate questions that do not necessarily fit within a single discipline.

"Dani is a once-in-a-generation thought leader and an extremophile in multidisciplinarity, right at the fulcrum of WTI's core mission," Kia Nobre, associate director of the Wu Tsai Institute, wrote to the News. "They are a pioneer in developing mathematically and physics-grounded graph theoretical network modelling and in applying the approach to understand biological systems, the human brain, cognition, social behavior, mental disorders, and machine intelligence."




MARTIN PERALTA / HEAD PHOTOGRAPHY EDITOR
Dani Bassett, who arrived at Yale's Wu Tsai Institute this summer, brings network science to the University's study of human cognition. Bassett's lab embraces interdisciplinary methods that span neuroscience, psychology and engineering.

Network science can serve as a kind of common language for the Wu Tsai Institute, allowing researchers with different academic backgrounds to communicate even when they do not share the same disciplinary vocabulary.

For instance, one of Bassett's postdoctoral researchers, Leah Banellis, uses network models to understand connections in the brain. Hefter, who studies healthcare systems, uses similar mathematical tools to understand how patients move through a hospital. Although the systems themselves are fundamentally different, the underlying methods can provide a common vocabulary.

"Bassett will significantly bolster computational research and teaching at Yale," Nobre said, "and will help integrate various strands of scholarship that have remained more segregated than desirable."

For Bassett's researchers, the appeal of the method is its applicability to a multitude of disciplines. Banellis, a visiting researcher from Denmark who is joining Bassett's lab this year, said she was drawn to the group in part because of its ability to use mathematical approaches to answer questions about interactions between the brain and the body, particularly concerning anxiety. The common thread across the lab, Banellis said, is not necessarily the subject being studied, but the methods used to understand it.

Hefter's own research demonstrates that breadth. With a background in law, Hefter's work has examined how patients move through hospital networks and how network models could help inform healthcare policy. Bassett's expertise in computational methods and network models has allowed Hefter to approach those questions, she said, even though Bassett does not have a traditional health policy background.

Bassett has received many accolades before arriving at Yale, including a MacArthur Fellowship and a National Science Foundation CAREER award and is a Fellow of the American Physical Society.

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## With magic and protest signs, activists throw ocean a birthday party

BY ANNA KOONTZ
STAFF REPORTER

Around a dozen people celebrated the ocean's birthday in Broadway Triangle Park on Thursday. The group sang around a cake with flickering candles, but opted not to chant the age of the ocean — it is 3.8 billion years old.

The event, led by the New Haven Climate Movement, featured snacks, climate bingo, a magic show and speeches. Participants expressed hope that the event's optimistic framing would raise awareness about environmental problems.

"In climate change, there's sort of a rhetoric being pushed that it's all 'doom and gloom,'" said Mercy John, a Climate Movement intern and second-year masters student at the University of Connecticut. "Why don't we celebrate what we have now?"

Appreciation for the ocean inspires activism to protect it, such as "holding our officials accountable," John said. Both hand-painted banners and rallying speeches at the event encouraged using buses or bikes instead of cars to decrease carbon emissions.

"This is an important occasion to appreciate the priceless resources provided by the amazing biodiversity of the ocean, whether that's oxygen, seafood, medicine, minerals and the power of international human connection," Luannie Wang, a high schooler who attends the Hopkins School and serves as chair of the organization's Climate Education Committee, said. "But also to motivate people to take action against the forces endangering these things."

The Climate Movement also hosted a birthday event in honor of the ocean last September. This year's iteration featured different programming, including a magic show led by Cyril John May YSE '89, a New Haven native and self-described "Merlin of environmental magic."

Wearing a wizard's hat and robe, May wowed the crowd with magic tricks serving as analogies for global warming, recycling and strength in community.

"If you were to come up to somebody and say, 'The world is in trouble, it's your fault, you're a bad person if you don't recycle,' that's not a way to help inspire people," May said.

Whether rope and ring tricks, a flaming book or a levitated plastic bottle, he hopes his shows can instead "entertain" and "empower."

May is the refuse and recycling coordinator for Waterbury, Connecticut and previously worked for over twenty years as a recycling coordinator at Yale. He said he combines this expertise with wizardry in interactive demonstrations to educate students on sustainability.

"You can use magic to talk about recycling, because recycling and magic can both change old things into new things," May said.

In addition to coordinating with May, planning the celebration involved several meetings among interns, according to Climate Movement volunteer Katarina Rutka. Organizers wanted attendees to think about "how to adjust their lifestyle to be more ocean friendly," Rutka said.

In recent years, the Climate Movement has advocated for free public transportation fares in order to make public transportation more accessible.

Bryan Arriaga-Ventura, a Climate Movement intern and junior at West Haven High School, said that expanding free student bus passes would be "climate friendly" and relieve a "massive barrier" for participating in afterschool activities.

The Climate Movement is also currently planning a "Women Rock the Future" hike on Sept. 26 and ongoing advocacy for the regional greenhouse gas initiative.

Alongside cake, attendees left the oceans' birthday party with brochures on carbon-mindful transportation and plenty of ideas toward creating a better future.

"Humans and the earth, we're very resilient," John said.

Earth's liquid oceans formed roughly 10 billion years after the Big Bang.




ANNA KOONTZ / CONTRIBUTING PHOTOGRAPHER
Members of the New Haven Climate Movement said they wanted to raise awareness around environmental issues through positivity — reflected in the attitudes of magicians and high school students as they celebrated in Broadway Triangle Park on Thursday.

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