



SJTU TODAY

Chinese Researchers Find Thousands of New Species in Deepest Part of Ocean

Fendouzhe, China's self-developed human occupied vehicle, operates in the seabed at Mariana Trench on Nov 8, 2021.

Relying on China's self-developed human occupied vehicle (HOV) Fendouzhe, Chinese scientists have completed an exploration of the hadal zone, the deepest part of the ocean floor, and identified 7,564 species of hadal prokaryotic microorganisms, with 89.4 percent being unreported species previously.

Their diversity is comparable to the total number of already known marine microorganisms all over the world, said the researchers.

The expedition marked several world-first breakthroughs, including the first human descent to the deepest point of the Yap Trench, which is located in the western Pacific Ocean and is nearly 9,000 meters deep. This is the place where many ocean currents converge and is closely related to human living environment and climate change.

Other historic milestones include the first systematic study of hadal ecosystems and the establishment of a publicly shared hadal microbe database. Its size matches all global marine microbial research data from the past decade.

All these achievements signified China's entry into the forefront of deep-sea life sciences research, said the scientists.

The hadal zone, defined as regions exceeding 6,000 meters in depth in the ocean, remains one of the least explored extreme environments on Earth.

"Our research showed the hadal zone microbes exhibit extraordinary novelty and diversity, demonstrating the immense resource potential of the hadal microorganisms in terms of new genes, new structures and new functions," said Xiao Xiang, initiator and convening scientist of this scientific initiative "Mariana Trench Environment and Ecology Research", or MEER.

"Such resources may provide a new option to solve the dilemma of global depletion of biological resources, and also open up prospects for innovative applications in the areas of biotechnology, medicine and energy, among others," said Xiao, a professor at the School of Life Sciences and Biotechnology of Shanghai Jiao Tong University.

Researchers discover a unique



jellyfish in the deepest part of the Yap Trench during this expedition on Oct 24, 2021. [Photo provided to chinadaily.com.cn]

Four papers about the first phase of the MEER research, a joint effort of Shanghai Jiao Tong University, the Institute of Deep-sea Science and Engineering of the Chinese Academy of Sciences, and genome research organization BGI Group, was published in the journal Cell as a cover feature on Friday.

The expedition took place from October to December 2021. Riding Fendouzhe, the scientists systematically explored the 6,000-to-11,000-meter-deep regions of the Mariana Trench, Yap Trench, and the Philippine Basin. More than 2,000 samples of water, sediments, and macroorganisms were collected. Altogether, 21 scientists participated in the voyage, and 17 of them descended to conduct sampling and research.

Fendouzhe is China's first 10,000-meter-class HOV. With its unique sampling capacity and ultra-long seabed operation time, it is the world's only HOV capable of doing systematic sampling and research in the hadal zone system.

By analyzing 1,648 samples of sediments, 622 samples of Hirondeletta gigas, a deep-sea shrimp species, and 11 categories of deep-sea fish species, the research team made groundbreaking discoveries. They included the discovery of strategies employed by the hadal zone microorganisms to keep them flourish in the extreme high-pressure, low-temperature, and low-nutrient environment.

"The utmost simplification of the antioxidant pathways of such organisms in extreme environments may provide new insights for human beings to fight anti-oxidation, aging and diseases," said Zhao Weishu, a researcher on the team.

"We also found that organisms in the hadal zone, where food sources are scarce, consume refractory carbon compounds, which are typically difficult to utilize. If such a practice is replicated in the shallow sea area, it may help solve problems, such as oil spills and plastic pollution," she said.

Regarding the database, Xiao said that these invaluable data served as irreplaceable historical records of the hadal zone life during the period between October and December 2021. The research team has openly shared



the database globally, and urged international scientific collaboration to address hadal zone exploration and life science challenges.

In addition to the HOV, other domestically developed equipment and technologies, including deep-sea exploration and sampling devices, low-cost genetic sequencing technologies, and a comprehensive deep-sea simulation system for microbial cultivation, provided crucial technical support for this scientific research program as well, said the researchers.

(By Zhou Wenting, China Daily)



SJTU News

Editor-in-chief: Hu Hao

Executive Editor: Zheng Mao



SJTU WeChat

Jiang Qianqian

Liu Jian

Hao Jie

University Leaders Visit Singapore and Malaysia



From April 13 to 18, 2025, Yang Zhenbin, Secretary of the Party Committee of Shanghai Jiao Tong University (SJTU), led a university delegation to visit Singapore and Malaysia. During the visit, the delegation attended the inauguration ceremony of the SJTU Alumni Association in Malaysia, the signing ceremony of the strategic co-

operation agreement between SJTU and China Construction Bank (CCB), and the unveiling ceremony of Low Carbon College (LCC) Southeast Asia Center. The delegation also visited key partner universities in Singapore and Malaysia to deepen inter-university co-

operation.

(By International Affairs Division)

SJTU President Meets with Ambassador of Uzbekistan



On February 19, 2025, Kuiling Ding, President of Shanghai Jiao Tong University (SJTU), welcomed H.E. Mr. Farhod Arziev, Ambassador of Uzbekistan to China, and his delegation to the university's Minhang Campus. Vice President Weidong Liu also attended the meeting.

In the future, Ambassador Arziev hopes to further promote cooperation

in higher education between the two nations and strengthen strategic cooperation between the two institutions. He hopes for more expanded faculty and student exchanges in fields such as engineering, agriculture, and renewable energy, as well as the development of joint research projects, dual degree programs, and other initiatives with SJTU.

(By International Affairs Division)

Scientists Leverage AI to Design Protein Dataset

Scientists in Shanghai have made a breakthrough in protein design by leveraging artificial intelligence, establishing the world's largest protein sequence dataset and developing models that enable targeted modification and selection of proteins with specific functions.

The advancement has the potential to drastically reduce the time and cost involved in industrial protein modification, according to researchers from Shanghai Jiao Tong University.

Proteins play key roles in industries ranging from pharmaceuticals to green manufacturing. However, natural proteins often require modification to withstand environmental factors such as temperature shifts and acidity levels. For example, if a protein is used in laundry detergent, it must function in both hot and cold water to effectively break down stains.

Traditionally, modifying proteins required thousands of trial-and-error experiments, a costly and time-consuming process. The Shanghai team's approach transforms this by replacing trial and error with AI-powered design, cutting the research and development timeline from two to five years to as little as six months.

Their technology allows precise modifications to enhance specific properties such as extreme heat resistance, alkaline stability and resilience against



digestion. The approach has broad implications for biotechnology, pharmaceuticals and industrial production.

The breakthrough has already been industrialized alongside automated equipment, making protein design more efficient.

At the core of the research is the Venus-Protein Outsize Database, or Venus-Pod, which contains more than 9 billion protein sequences spanning a wide range of organisms, including extremophiles, the microorganisms that thrive in harsh conditions.

The dataset includes 3.62 billion terrestrial microbial protein sequences,

2.94 billion marine microbial sequences, 2.43 billion antibody sequences and 60 million viral protein sequences. Notably, 500 million of these are labeled with functional tags that indicate their optimal working conditions such as temperature, pressure, acidity and alkalinity.

Using Venus-Pod, researchers trained the Venus series models, which rank at the top of the industry leaderboard in predicting and designing protein functions, according to Hong Liang, the team's lead scientist.

The Venus models have two core functions: AI-directed protein evolution and AI-powered screening.

"The first optimizes underperforming proteins to meet specific application requirements, while the second precisely identifies proteins with exceptional properties, such as extreme heat or gastrointestinal resistance," Hong said.

The team has also developed what they say is the world's first integrated machine capable of high-volume protein expression, purification and functional testing. The system can complete more than 100 tasks in 24 hours, nearly 10 times faster than manual methods, cutting labor and resource costs while accelerating protein engineering research.

Over the past two years, the Venus models have successfully designed multiple proteins that are now moving toward industrialization.

For example, in early diagnosis of Alzheimer's disease, researchers optimized an enzyme known as alkaline phosphatase to perform at three times the activity level of the best global product, allowing for detection of biomarkers at extremely low concentrations. The modified ALP has entered the 200-liter scale-up production stage, marking a significant step toward commercial application.

Researchers say the achievement could have major implications for diagnostic testing projects that require ultra-sensitive detection.

(By Zhou Wenting, China Daily)

International Students from 26 Countries Celebrate Cultural Diversity at SJTU's "Jiaoda Ren Festival"

129 Years of Talent Cultivation, United in Global Spirit

On April 6, international students from 26 countries came together at the "Jiaoda Ren Festival" at Shanghai Jiao Tong University (SJTU) to celebrate and promote cross-cultural exchange. The event, which was organized under the guidance of the International Student Service Center of the Student Affairs Committee, brought vibrant international energy to the heart of campus.

During the event, students were dressed in traditional attire and presented the folk arts, cuisine, and customs of their home countries. The booths attracted a steady stream of faculty members and students who stopped to admire the exhibits and engage in meaningful conversations. The vibrant cultural displays not only allowed the audience to experience the uniqueness of different traditions, but also created cultural connections between China and the rest of the world. International students from Morocco, Mali, South Africa, Indonesia, Sweden, Australia, and other nations—many of whom are fluent in Chinese—expressed their admiration and respect for SJTU.

Distinguished guests included the Consul General of Thailand in Shanghai, Binna Ampornsiri, and Deputy Secretary of the SJTU Party Committee Xin Zhao. They visited the booths and



spoke warmly with students. Consul General Ampornsiri praised the students' creativity and efforts, noting that the longstanding friendship between Thailand and China has created a rich environment for Thai students at SJTU to grow not only academically but also as ambassadors of cultural exchange. Zhao encouraged students to continue serving as cultural bridges, contributing to mutual learning between Chinese and global communities.

As cultures mingled and traditions were shared, the festival broadened the horizons of both faculty and students, and strengthened SJTU's inclusive and vibrant campus culture. Looking ahead, the university remains committed to its inclusive ethos, welcoming students from around the world to build a future and create new milestones together.

(By International Student Service Center)

2025 CAS Journal Ranking Released: SJTU Secures 5 Tier 1 Journals and 11 in the Global Top 20%

On March 20, 2025, the 2025 Journal Ranking of the National Science Library (hereinafter referred to as the Journal Ranking), Chinese Academy of Sciences (CAS) was officially released. A total of 19 journals from Shanghai Jiao Tong University (SJTU) were included in this year's rankings, covering 12 major disciplines including medicine, engineering and technology, materials science, management, education, economics, agriculture and forestry, sociology, biology, mathematics, literature, physics and astrophysics.

Among them, five journals -- *Nano-Micro Letters*, *Translational Neurodegeneration*, *Journal of Ocean Engineering and Science*, *China Finance Review International*, and *Superconductivity* -- are ranked in the Tier 1 of their respective fields and designated as top academic journals, placing SJTU among the top Chinese universities in terms of journal excellence. An additional six journals -- including *Asian Journal of Andrology*, *Interdisciplinary Sciences: Computational Life Sciences*, *Translational Research, Frontiers of Medicine*, *General Psychiatry*, and *Molecular Horticulture* -- were ranked in the Tier 2, placing them in the top 20% globally. Two of the aforementioned journals, *Superconductivity* and *Molecular Horticulture*, made their debut in this year's rankings.

Established by SJTU in 2009, *Nano-Micro Letters* focuses on cutting-edge research in micro/nano materials (e.g., synthesis, characterization, properties), as well as their applications in energy, catalysis, biomedicine, electromagnetic wave absorption and shielding, and many other fields. The journal is indexed in SCI, EI, PubMed, and Scopus. With a JCR impact factor of 31.6 in 2023, it ranks among the global top 100 journals and the top 3% in materials science, nanoscience and nanotechnology, and applied physics. It is included in China's "Excellence Action Plan for Science and Technology Journals (Phase II)" and has received numerous honors, including "China's Most Internationally Influential Academic Journal" and "Outstanding Science and Technology Journal of Chinese Universities". It has remained a consistent Q1 journal in materials science. In 2021, it was nominated for the Journal Award under the China Publishing Government Award.

Translational Neurodegeneration, launched in 2014, is the world's first open-access English journal dedicated to translational research on neurodegenerative diseases. The journal covers all subfields of neuroscience (e.g., behavior, cognition, computation, development and regeneration, neuroanatomy, neurobiology, neurochemis-



try, neuroendocrinology, neurogenetics, neuroimmunology, neuropathology, neuropharmacology, neurophysiology, methodology, neurotoxicology, systems neuroscience), along with relevant areas in neurology, neurosurgery, and psychiatry. With a 2023 JCR impact factor of 10.8, the journal ranks 13th among 310 neuroscience journals worldwide and has maintained its Q1 status in medicine for several years.

Founded in 2016, the *Journal of Ocean Engineering and Science* supports Naval Architecture and Ocean Engineering at SJTU, a discipline selected for China's "Double First-Class" Initiative. The journal publishes

high-impact research on ocean engineering and its applications in design and experimentation. Indexed in SCIE, Scopus, DOAJ, and Inspec, the journal has led the world in JCR impact factors in both "Engineering, Ocean" and "Engineering, Marine" categories for two consecutive years. Additionally, the journal was recognized as a Top Journal in engineering and a T1 journal by the Chinese Society of Naval Architects in 2024, and has received the "Most Internationally Influential Academic Journal" award.

Since its inception in 2011, the *China Finance Review International* has been a key platform for scholarly

work in economics and finance. The English-language journal is indexed in over 20 major international databases, including Web of Science, Scopus, and ProQuest, and recognized by ranking bodies such as ABDC, ABS, FMS, and AMI. With a JCR impact factor ranking of 3rd in business and finance in 2023, the journal has held its Tier 1 status in economics since entering the CAS rankings in 2023.

A new entrant to the rankings, *Superconductivity* is an international journal focused on promoting research in applied superconductivity. Although the journal is relatively new, it currently holds the highest impact factor among superconductivity journals worldwide and is the only Q1-ranked journal in this field. With a JCR impact factor of 5.6 in 2023, it has quickly become a central voice in global superconductivity research, exemplifying the rapid rise of high-quality Chinese academic publishing.

Established in 2021 and sponsored by SJTU, *Molecular Horticulture* is a journal focused on molecular regulation in horticulture, bringing attention to translational research from model plants to horticultural crops. The journal also serves as a global platform for academic exchange, bringing together scientists engaged in horticulture-related research. Indexed in 21

databases including SCIE, PubMed Central, Scopus, and DOAJ, *Molecular Horticulture* has achieved a JCR impact factor of 10.0 in 2023, ranking first globally in JCR's 'Horticulture' category. Additionally, the journal is part of "Excellence Action Plan for Science and Technology Journals". The journal debuted in the Tier 2 of agriculture and forestry sciences in this year's CAS ranking, highlighting its growing international influence.

Under the strong leadership of the University Party Committee and guided by the principles found in Xi Jinping Thought, SJTU has prioritized the development of high-quality academic journals as part of its broader "Double First-Class" initiative. This direction reflects a significant enhancement in the university's global academic reputation. As the "14th Five-Year Plan" approaches its conclusion and the "15th Five-Year Plan" begins, SJTU is committed to implementing the spirit of the Two Sessions, which aims to strengthen its journal cluster, foster scientific and technological innovation, attract global talent, and contribute to China's strategic goal of scientific and technological self-reliance. Together, these efforts will shape a new chapter in SJTU's role in advancing world-class academic publishing and scientific leadership. (By Journal Center)

Empowering Graduate Students' Academic English Writing with AI: Innovations from SJTU's Graduate Public English Teaching Center

Shanghai Jiao Tong University's Graduate Public English Teaching Center has integrated AI tools to enhance academic writing for graduate students. Since 2022, faculty have used large language models to create teaching materials and launched the AI-Empowered Academic English Writing Research Project in 2023.

Teachers observed significant improvements in students' writing clarity, structure, and depth. While beginners progressed in grammar and sentence structure, advanced students refined higher-level skills. Notably, students demonstrated increased confidence even without AI assistance. Educators also leveraged AI for lesson planning and feedback.

A 2024 survey revealed AI's transformative impact: students' self-satisfaction scores for revised writing rose from 4.45/10 to 7.69/10, and confidence levels ($\geq 6/10$) surged from 10.72% to 66.14%. AI tools scored 8.07/10 in satisfaction, excelling in grammar correction (81.36%), logical flow (65.09%), and vocabulary (59.32%). Critically, students engaged with AI-generated content analytically, strengthening independent thinking.

Moving forward, the center advocates an AI + HI approach—using AI to supplement, not replace, core skills—while expanding applications to research writing and presentations.

Future Work
The Teaching Center's future devel-

opment strategy focuses on three key areas:

- Technological Integration: Increase the use of AI tools in academic writing instruction.

- Instructional Innovation: Enhance teaching methods to support student growth and learning outcomes.

- Assessment Enhancement: Develop an AI-supported evaluation system for more effective and personalized writing feedback.

Currently, the center is piloting a new initiative—AI-Empowered Academic English Oral Practice—which uses speech recognition and intelligent dialogue to provide real-time feedback on pronunciation and expression. This helps students improve their oral flu-

ency and build confidence in authentic academic communication scenarios.

In the future, the Graduate Public English Teaching Center will remain committed to its vision of "technology as the oar and education as the core". The center will continue exploring AI's integration with education, aiming to cultivate globally competent postgraduates with strong English skills in listening, speaking, reading, and writing. By improving students' academic literacy and international communication skills, SJTU is nurturing future scholars who will be able to confidently participate in global academic discourse—and share China's academic voice with clarity and conviction.

(By School of Foreign Language)

McGill University's Faculty of Education Visits SJTU to Explore Academic Collaboration

On March 5, 2025, A delegation from the Faculty of Education at McGill University, led by Dean Vivek Venkatesh and Assistant Professor Pengfei Zhao, visited Shanghai Jiao Tong University (SJTU) for an exchange meeting to explore academic collaboration. The event was hosted by Assistant Dean of SJTU's School of Education (SEO) Yuhao Cen. Professor Jingyi Wu, Vice Dean Fengkuang Chiang, Cen, and International Affairs Officer Ruoxi Chen also attended the meeting.

The meeting began with introductions from both sides. Ruoxi Chen provided an overview of SOE's development and academic strengths, emphasizing its integration SJTU's "Double First-Class" initiatives. She highlighted the school's strong foundation in higher education management and basic education research, noting that 85% of full-time faculty members possess overseas research experience. She also showcased recent

breakthroughs in AI-driven education applications and education policy analysis.

During the meeting, Dean Vivek Venkatesh presented McGill University's distinguished legacy. As one of Canada's oldest English-language institutions, McGill's Faculty of Education is consistently ranked among the top three in Canada by QS Rankings, and is globally recognized for its excellence in teacher training and medical/clinical education. With over 2,000 enrolled students, the faculty has produced numerous provincially certified outstanding educators.

The two institutions then discussed potential areas for collaboration, tentatively agreeing on initiatives such as student exchange programs and joint teacher training initiatives. Both sides expressed enthusiasm for building cross-regional and cross-cultural educational partnerships that could help tackle common challenges in global education reform. (By School of Education)

Shaping Futures Through UN Internships

At Shanghai Jiao Tong University, students are gaining firsthand experience through internships with the United Nations—bringing Chinese insight to the international stage.

For many countries, China's development model has become a source of learning and inspiration. Wei Wu, a 26-year-old PhD student from the School of Marxism, has been interning at the UN University Institute on Comparative Regional Integration Studies in Belgium for two months. She has observed that in her team's meetings, China's practical experiences are referred to frequently—even in projects unrelated to China.

"Every time I hear others acknowledge China's accomplishments, I feel a deep sense of pride," she said. "In moments like those, simply being present as someone from China feels meaningful."

From Theory to Practice
Wu's research has long centered on China's contributions to global governance, but it wasn't until her internship at the UN that she truly realized how these theoretical ideas could translate into real-world solutions.

"At school, I constantly felt that what I was writing was abstract and disconnected from reality," she explained. "But here, the problems we address are concrete, specific, and real. Everything we do here is solution-oriented, which has allowed me to understand the practical applications of my research."

Chaoyue Zhang, a 25-year-old grad-



build sustainable livelihoods.

Reflecting on the contrast, Zhang noted, "The UNHCR relies on companies for investment or assistance, but in China, no one is left behind. I can see the advantages of China's system in a way I hadn't before."

Jiaqi Feng, 22, an undergraduate from the School of Foreign Languages, has also been working to support the underprivileged. Since October, she has been interning with the UN's Food and Agriculture Organization in Accra, Ghana.

Feng works with the gender and communications team, organizing workshops and training programs for local women entrepreneurs. These programs empower women to launch or grow their businesses, access financial support, expand their distribution networks, and overcome gender barriers.

This work reflects Feng's passion for making a positive impact on marginalized communities.

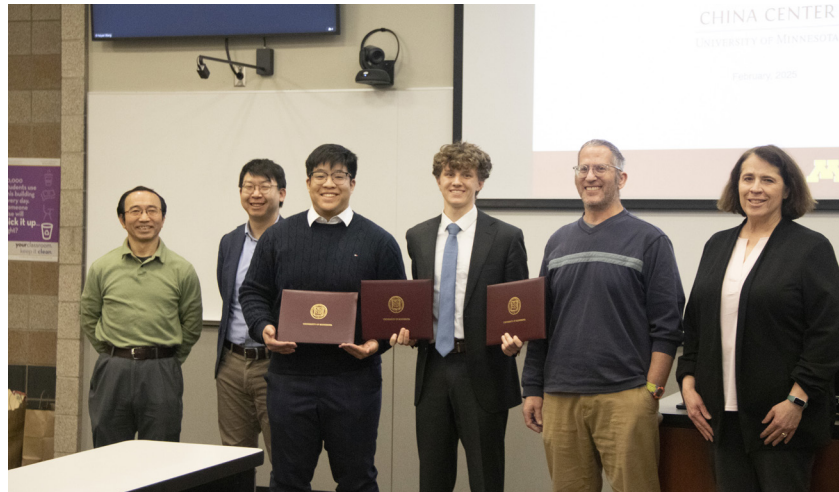
"What attracts me most to international organizations is knowing that I'm not working for self-interest, but for a greater purpose—to help others improve their lives," she said.

(By International Affairs Division)

SJTU-UMN China Bridge Challenge Program Concludes Successfully

The inaugural China Bridge Challenge Program, co-hosted by Shanghai Jiao Tong University (SJTU) and the University of Minnesota (UMN), concluded successfully, marking a significant milestone in cross-cultural academic exchange. Centered on the theme "Strategies for an Evolving U.S.-China Relationship: Joint Initiatives in Renewable Energy and Green Technology", the competition brought together exceptional students from both universities to explore opportunities and challenges in bilateral collaboration on green innovation. Over the course of nearly three months, student teams from SJTU and UMN worked together across time zones, engaging in online discussions and interdisciplinary teamwork. Their mission: to propose creative, feasible proposals that support Sino-U.S. cooperation in renewable energy and green technology. Two teams eventually emerged as winners, claiming the championship and runner-up titles!

The champion team presented a forward-looking proposal titled "Global City Connections for a Greener Future: Collaborative Learning, Shared Efforts, and Scalable Actions." Their solution stood out for its strategic vision and demonstration of strong cross-cultural synergy. Team members included Xiaohan Ding (Zhiyuan College), Yanjie Liang (School of Mechanical Engineering), and Tianyu Zhou (School of Environmental Science and Engineering) from SJTU, and Xiaotong Liu, Akshay Rai, and Yichen Yao from UMN.



The runner-up team, composed of Zixuan Wang (School of Foreign Languages) and Xiwen Wang (School of Design) from SJTU, and Christian Stuart, Max Wang, and Bradley Vincent from UMN, focused on "Embracing the Future: Joint Energy Storage Initiative". This project presented an innovative proposal on future energy storage technology, showcasing the potential of interdisciplinary cooperation.

The competition stood out for its unique model of cross-cultural and interdisciplinary collaboration, bringing together students from diverse academic backgrounds—engineering, environmental science, foreign languages, design, and more. Despite time zone differences, language barriers, and cultural differences, students were able to over-

come these hurdles through continuous communication and mutual respect.

By combining expertise from various disciplines, teams were able to present well-rounded, impactful solutions to real-world challenges in renewable energy and green technology. The experience not only strengthened students' problem-solving abilities but also deepened their appreciation for international cooperation and cultural exchange.

This inaugural SJTU-UMN China Bridge Challenge Program demonstrated the potential of student-led innovation in addressing pressing global issues. It also highlighted the importance of dialogue, partnership, and mutual understanding between future leaders of China and the U.S.

(By International Affairs Division)