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**2021 Pujiang Innovation Forum Bulletin V**  
**Stimulate the Continuous Vitality of the Youth in Science and**  
**Technology Innovation**

**Editor’s Note:** In 2021 Pujiang Innovation Forum – Young Elite Scientist Summit, with the theme of “The Future Features of Science Community: Diversity, Connection and Sharing” , a number of outstanding young innovators had discussions on the new trends of global science and technology innovation, and how to support young scientific and technological talents to keep pace with the times and accelerate their development, and put forward some important insights and constructive and forward-looking suggestions. This bulletin is a summary based on the reports from the participating guests<sup>1</sup>, and is intended for reference.

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<sup>1</sup> Participating guests include: ZHU Yanmei, Executive Member of Board, Executive Vice President of BGI, Council Member of Shenzhen Mammoth Charity Foundation; XU Guanhua, Chairman of Pujiang Innovation Forum; Academician of Chinese Academy of Sciences; YU Shaoliang, Deputy Secretary of CPC Shanghai Municipal Committee; LI Xin, Deputy Director-General of Department of Foreign Expert Services, MOST; ZHANG Yunfei, Director of Tencent Future Network Lab and General Manager of Tencent Smart Transportation; FENG Jingchun, Professor, Institute of Environmental and Ecological Engineering, Guangdong University of Technology; ZHOU Fubao, Vice President of China University of Mining and Technology; Nicolas Berthet, Research Fellow, Institut Pasteur of Shanghai, Chinese Academy of Sciences; CHEN Yunwen, Chairman and CEO of DataGrand; YAO Rui, Associate Researcher, National Astronomical Observatories of Chinese Academy of Sciences; TIAN Ye, Researcher, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences; WANG Wei, Deputy Director of Department at Daping Hospital, Army Medical University; ZHOU Nanjia, Founder of Enovate 3D, Research Fellow of College of Engineering, Westlake University and Deputy Director of Key Laboratory of 3D Micro/Nano Fabrication and Characterization of Zhejiang Province; ZHENG Lei, Postdoctoral Fellow at Sun Yat-Sen University, School of Geospatial, Engineering and Science; Maitarad Phornphimon (WANG Meijia), Associate Professor of Nano Center, College of Sciences, Shanghai University.

## **2021 Pujiang Innovation Forum Bulletin V**

### **Stimulate the Continuous Vitality of the Youth in Science and Technology Innovation**

Innovation is the engine of development, while youth becomes the main force of promoting innovation. President Xi Jinping profoundly put forward that “The future of science and technology lies in the youth. We should encourage young people to be brave in innovation and bring young talents into full play like springs.” In 2021 Pujiang Innovation Forum – Young Elite Scientist Summit, the participating outstanding young innovators from home and abroad generally believed that it is necessary to inspire young scientific and technological talents to shoulder the main responsibility of science and technology innovation as soon as possible, promote the intersecting, crossover and diversified development of young talents, give full play to their vitality, potential and creativity to promote cutting-edge science and technology innovation, and make Shanghai an innovative place for young talents to realize their dreams and achieve success.

#### **I. New Trends of Global Science and Technology Innovation and New Missions of Young Scientific and Technological Talents**

Against the backdrop of the profound development of new scientific and technological revolution and industrial transformation, and the great changes in international relations and global science and technology

innovation paradigm brought by COVID-19 pandemic, vision-driven diversified, intersecting, and crossover innovation have become the mainstream, raising higher requirements for the ability and quality of young scientific and technological talents.

**Firstly, global science and technology innovation takes on the new trend of accelerated intersection and integration.** With the rapid development of information technology, artificial intelligence and other fields, the future advancement of science and technology will increasingly depend on the cross-disciplinary and cross-field intersection and integration. According to **LI Xin**, the current development trend of emerging technologies is undergoing great changes, and arts, science, engineering and medicine are all facing the problem of intersection and integration, making innovation and cooperation an irresistible trend. In the long run, under the unstoppable megatrend of international scientific and technological exchanges, all scientific research teams should be well prepared for cross-border, cross-disciplinary, cross-cultural and cross-agency cooperation. In the opinion of **ZHANG Yunfei**, represented by the Internet of Vehicles and Digital Twin, the innovations stimulated by industry, discipline and organization collaboration will gradually become the mainstream; the open, collaborative and ecological innovation community jointly built by multiple subjects will become a new carrier of innovation, thus there is a pressing need to strengthen the organizational skills for crossover and collaborative innovation. As pointed out by **CHEN Yunwen**, artificial intelligence and robots have

been more efficient than human in many traditional fields. In the future, human-machine cooperation will become the key to better displaying creativity.

**Secondly, international scientific and technological exchanges and cooperation appear in new forms in the “post-pandemic era”.**

With the advent of the “post-pandemic era”, the global scientific research and academic development is experiencing a far-reaching paradigm shift. According to **LI Xin**, during the pandemic, many international academic exchanges have been transferred to online channels seamlessly and successfully, which may bring profound changes to the way of scientific research and communication in the new era. In addition, the number of academic thesis available on online academic platforms has also seen an explosive growth in recent years, meaning that open innovation is becoming the mainstream. As pointed out by **ZHOU Nanjia**, since the outbreak of the COVID-19 pandemic, exchanges and communication through information platforms among young scientists at home and abroad have surprisingly increased. Network communities and WeChat official accounts have become more effective and convenient ways for today’s young scientists to share and obtain information.

**Thirdly, young scientists are undertaking new missions of greater significance in the new era.** In recent years, an increasing number of great original innovation achievements as well as strategic science and technology tasks have been realized or completed by research

teams led by young talents. In the opinion of **TIAN Ye**, the combination of basic science with applied research and engineering technology is now getting inseparably associated. The effort of young researchers in basic fields plays an increasingly significant role in supporting the research into cutting-edge technologies and promoting industrial development in the future. The scientific research efforts of **FENG Jingchun, Nicolas Berthet and ZHOU Fubao** represents that the combination of the creativity of young researchers, with the national strategic needs and social missions, can make prominent contributions to climate change, carbon emission reduction, infectious disease control, disaster prevention and other major common issues faced by the world.

## **II. Provide Healthy Space and Good Opportunities for the Innovation-Driven Development of Young Scientific and Technological Talents**

Young scientific and technological talents are in the golden time of making great contributions. We should provide young people with opportunities to take responsibility, good conditions and flexible environment, allowing them to develop in an all-round way without restrictions, and transform their innovative vitality into the driving force for national development.

**Firstly, we shall give young scientific and technological talents more responsibilities and opportunities.** Faced with the least

ideological constraints, young talents possess most innovation passion, motivation and creativity, and often can play a critical role in accomplishing major scientific and technological research tasks. According to **TIAN Ye**, the policies of China as well as Shanghai encourage young researchers to “take the lead” regardless of their background; Chinese Academy of Sciences inspires young researchers to set up independent research groups and explore new directions, which is of great importance to the development of scientific research. As pointed out by **YAO Rui**, it is of great significance for innovation to fully support and trust young researchers to give full play to their creativity, to do the research they want to do, and to make bold trials and creations.

**Secondly, we shall provide good conditions of scientific research for young scientific and technological talents.** Scientific and technological innovation and talent training require a series of support such as funds, projects, facilities and management. As expressed by **YAO Rui**, in recent years, young researchers with overseas experience may be given more opportunities to apply for research projects, but overall the gap between local talents and returnees is narrowing. According to **WANG Wei**, the two bottleneck factors affecting the development of young scientific and technological talents in China are the dependence on key scientific research reagents and instruments from foreign countries and the restricted proportion of project labor fee. In the opinion of **WANG Meijia**, compared with those of foreign countries, the classrooms and laboratories of Shanghai University are relatively narrow with limited

space for young people to study and think independently. As pointed out by **ZHENG Lei**, foreign universities and research institutes have more sophisticated management and services for scientific researchers, so that young scientists can concentrate better on their research, while Chinese young scientists are often distracted by their administrative duties.

**Thirdly, we shall create a flexible and inclusive innovation environment for young scientific and technological talents.** An open and inclusive scientific research environment encouraging innovation serves as the foundation of the healthy growth of young scientific and technological talents. According to **LI Xin**, in recent years, the gap between China and foreign countries in the field of scientific research hardware is constantly narrowing, but there still exists a relatively large gap in software, that is environment, system and culture, especially in tolerating failure, encouraging innovation and supporting non-utilitarian research. China should learn more from developed countries in cultivating an atmosphere that encourages discipline integration, crossover exchanges and international openness. As pointed out by **ZHOU Nanjia**, the reason why top universities such as Harvard University support the frontier explorations with uncertain prospects that are driven by curiosity, as well as some audacious and new tentative ideas is that the seemingly deviant exploratory research is often what opens up the new fields of science and technology.

### **III. Support the Healthy and Comprehensive Development**

## **of Young Scientific and Technological Talents**

More attention shall be paid to the care in life, the help in social relations and the guidance in way of thinking in the critical stages of growth of the young scientific and technological talents, so that they can grow into the new-generation scientific and technological pillars with all-round and comprehensive development.

**Firstly, we shall give young scientific and technological talents considerate care for their healthy growth.** It is essential to further strengthen the care and support for young scientific and technological talents, and manage to help young scientific researchers achieve a good balance between life and career. As pointed out by **TIAN Ye**, for young scientists, the age of 25 to 35 is an critical phase of life from, which not only means the growth and change in scientific research, but also a major turning point in their family and life. We should help young researchers remove the restrictions of short-term interests, go deep into practical problems and technologies, and pursue their values. According to **YAO Rui**, young scientists, especially young female scientists, need to strike a balance between family and career, as they have to overcome many difficulties in family life while adhering to the path of scientific research, when the understanding, tolerance and support of leaders and units are particularly important and valuable.

**Secondly, we shall promote the all-round development of young**

**scientists through more extensive and in-depth communications and cooperation.** Facing the trend of global science and technology innovation towards a more crossover and open pattern, more academic exchange opportunities are of great significance to the development of young scientists. In the opinion of **WANG Wei**, academic exchanges can create more opportunities of crossover cooperation to researchers, especially young researchers, and expand the boundaries and horizons of scientific research. Therefore, we shall encourage young scientists to step out of their laboratories and keep all kinds of communication while doing their own work well. According to **ZHOU Nanjia**, academic exchanges such as keynote speeches and academic lunch meetings can provide young scientists with good chances to acquire diversified information, and also help to establish crossover research cooperation. As expressed by **WANG Meijia**, from the international perspective, foreigners often feel that Chinese students are not willing to make social relations. At the beginning of young scientists' career, there shall be tutors guide them to build up their own academic social network, which can help them catch more useful and important information, better choose the direction of their future development, and obtain more opportunities.

**Thirdly, we shall ensure the innovation vitality of young people will never decline with the development and inheritance of scientific research spirits and culture.** We should strongly protect the valuable curiosity and the spirit of exploring the unknown world of young scientific and technological talents, and support young scientists to

continuously explore more new things driven by their missions, interests and dreams. According to **LI Xin**, broadening the common knowledge scope and facing the common challenges of all mankind are the two unchanging themes of global science and technology innovation, which are also the directions for young scientists to work together and make persistent efforts. As pointed out by **TIAN Ye**, the examples set by the tutors is of great guiding significance to their students. Especially in the faithfulness of scientific research, we should teach students to always stick to the moral principles of scientific community, and carry forward the persistent and dedicated scientific research spirits of our pioneers generation by generation. In the opinion of **YAO Rui**, the charm of exploring the unknown world at the frontiers of science comes from human's desire to know the reason, which is worthy of young scientists to devote their whole life. It will definitely be the most fulfilling moment in life while seeing the scientific research achievements flying to the universe with the aerospace craft.

**Summarized by Wang Xueying**