

Rationalizing Talent Development in the New Era: A Study Based on Characteristics of Chinese Academicians (Postprint)

Authors: The user has provided a single Chinese character “武虹”. This appears to be a name, likely a person’s name. The character “武” (Wǔ) is a common surname, and “虹” (Hóng) means “rainbow” and is a common given name.

Given the context of the instructions (scientific paper translation with LaTeX, citations, paragraph tags, etc.), this seems like it might be a test case or a fragment. However, the instructions are very specific about preserving structure.

The input is just “武虹” with no tags, no LaTeX, no citations. It’s just a name.

According to the rules: 1. I should translate from Simplified Chinese to English 2. Preserve ALL LaTeX commands and placeholders - but there are none 3. Preserve ALL citation commands - but there are none 4. **PRESERVE ALL paragraph wrapper tags EXACTLY** - but there are none 5. Maintain academic tone and formal scientific writing style 6. Use precise technical terminology - but this is just a name 7. Preserve section structure and paragraph organization - but there’s just one word

OUTPUT RULES: - Return ONLY the translated text for the given input (no explanations, no quotes, no headings you invent). - Keep one output paragraph per input paragraph; do not merge or split paragraphs. - **Maintain exact count and IDs of tags** - but there are none - Do NOT add Markdown formatting unless it is present in the source. - Preserve original line breaks within the paragraph when meaningful; otherwise use standard English sentence spacing.

Since this is just a name, the translation would be the romanization: “Wu Hong” . In academic contexts, Chinese names are typically written in Pinyin, with the surname first. So “武虹” becomes “Wu Hong” .

However, I need to check if there are any tags. The user input is just “武虹” with no tags. So the output should be just the translation of this text.

But wait, the instructions say “PRESERVE ALL paragraph wrapper tags EXACTLY” . If there are no such tags in the input, then there should be none in the output. The input is just “武虹” .

So the output should be: “, Zhao Lixin, The user has provided a very short input:” 李砚章” . This appears to be a Chinese name. Let me analyze the requirements:

1. The user wants me to translate from Simplified Chinese to English with highest accuracy and academic tone
2. I must preserve ALL LaTeX commands and placeholders exactly
3. I must preserve ALL citation commands ([?], ??, (??), etc.) exactly
4. **PRESERVE ALL ~~...~~paragraph wrapper tags EXACTLY**
5. Maintain academic tone and formal scientific writing style
6. Use precise technical terminology - obey the glossary strictly
7. Preserve section structure and paragraph organization
8. Translate all content completely - do not omit any information

However, the input “李砚章” is just a name. It’s not wrapped in any tags, doesn’t contain any LaTeX, citations, or mathematical formulas. The glossary provided only contains “机器学习 => machine learning” and “深度学习 => deep learning” , which are not relevant to this name.

The name “李砚章” is a Chinese personal name. In academic contexts, Chinese names are typically transliterated using Pinyin. The standard transliteration would be: - 李 (Li) - surname - 砚章 (Yànzhang) - given name

In academic writing, Chinese names are usually written in one of these formats: 1. Li Yanzhang (surname first, given name combined) 2. Yanzhang Li (Western order, given name first) 3. Li Y.-Z. (abbreviated form)

The most common and formal academic format is to keep the original Pinyin with the surname first: “Li Yanzhang” or with a hyphen “Li Yan-zhang” . However, for a single name without context, I should provide the most direct and standard transliteration.

Since there are no tags in the input, I don’ t need to add any. The user said “Return ONLY the translated text for the given input (no explanations, no quotes, no headings you invent).”

So I should just output the transliterated name. The most standard academic transliteration would be “Li Yanzhang” . Sometimes a hyphen is used in given names: “Li Yan-zhang” , but “Li Yanzhang” is more common nowadays.

Let me check the requirements again: - “Translate from Simplified Chinese to English” - a name is transl, The user has provided a single Chinese character name “王昉” . This appears to be a person’ s name. The task is to translate it according to the instructions for scientific academic paper translation.

Let me analyze the requirements: 1. This is not a paragraph with tags 2. It’ s not LaTeX content 3. It’ s a proper name 4. The glossary doesn’ t contain this name 5. The instructions say “Translate from Simplified Chinese to English with the highest accuracy and academic tone”

For Chinese names in academic contexts, the standard practice is: - Keep the original Chinese characters if it's a name appearing in a citation or reference - Or use the Pinyin transliteration: Wang Fang

However, the user hasn't provided any context. Is this: - A standalone name? - Part of a paragraph that got cut off? - An author name in a citation?

Given the strict requirements about preserving structure and the fact that there's no tag, I should consider this might be incomplete input. But I must work with what's given.

For academic translation, Chinese names are typically transliterated using Pinyin. “王昉” would be “Wang Fang”. The surname “王” is “Wang” and the given name “昉” is “Fang”.

Since there are no tags, LaTeX commands, or mathematical formulas, and it's just a name, I should provide the standard academic transliteration.

The most appropriate translation would be the Pinyin: Wang Fang

But wait - the instructions are very specific about preserving structure. The user might have intended to provide a full paragraph but only gave a name. Should I: 1. Just return the transliteration? 2. Wait for more context? 3. Return it as is with an explanation?

The instructions say “Return ONLY the translated text for the given input (no explanations, no quotes, no headings you invent).” So I should just provide the translation.

For a Chinese name in academic context, the standard is: - Surname first, then given name - Capitalize both: Wang Fang - Sometimes written as “Wang, Fang” in reference lists

Since there's no context, I'll provide the most common academic transliteration: Wang Fang

Actually, looking at the instructions again, they mention “PRESERVE ALL ... paragraph wrapper tags EXACTLY”. Since there are none here, I don't need to worry about that. I just need to, The user has provided a very short input: “黄金霞”. This appears to be a Chinese name. Let me analyze the requirements:

1. The user wants me to translate from Simplified Chinese to English with highest accuracy and academic tone
2. I must preserve ALL LaTeX commands and placeholders exactly
3. I must preserve ALL citation commands ([?], ??, (??), etc.) exactly
4. **PRESERVE ALL ...paragraph wrapper tags EXACTLY**
5. Maintain academic tone and formal scientific writing style
6. Use precise technical terminology - obey the glossary strictly
7. Preserve section structure and paragraph organization
8. Translate all content completely - do not omit any information

However, the input “黄金霞” is just a name, not a full paragraph with tags. The name “黄金霞” would typically be translated as “Jin Xia Huang” or “Huang Jin Xia” depending on the naming convention. In academic contexts, Chinese names are often written with the surname first, followed by the given name, either as “Huang Jin Xia” or “Huang Jinxia” .

Since there are no tags in the input, I should just provide the translation of the name. But wait, the instructions say “PRESERVE ALL ...paragraph wrapper tags EXACTLY” . If there are no such tags in the input, I don’ t need to add them.

Let me check the glossary: - 机器学习 => machine learning - 深度学习 => deep learning

These don’ t apply to the current input.

The input is simply “黄金霞” which is a person’ s name. In academic contexts, Chinese names are typically: 1. Kept in original order: Huang Jin Xia or Huang Jinxia 2. Sometimes written with surname first: Huang, J.X. or Huang J.X.

The most standard academic format would be “Huang Jin Xia” or “Huang Jinxia” . Let me think about the best practice. In English academic papers, Chinese names are usually: - Written as “Jin Xia Huang” (given name first) if following Western convention - Written as “Huang Jin Xia” (surname first) if following Chinese convention, which is increasingly common in international publications

Given that the instruction says “Translate from Simplified Chinese to English” , and this is a name,, The user has provided a single Chinese word: “高洁” . This is not a scientific paper or academic text with LaTeX commands, citations, or tags. It’ s just a name or term.

Let me analyze: - “高洁” could be a person’ s name (Gao Jie) - It could also mean “noble and pure” as an adjective - The user hasn’ t provided any context - There are no LaTeX commands, no citations, no tags - The glossary only mentions “机器学习 => machine learning” and “深度学习 => deep learning” , which are irrelevant here

Given the critical requirements: 1. The input is just “高洁” - no LaTeX, no citations, no tags 2. I should translate it appropriately based on context 3. Since there’ s no context, I should consider the most likely scenarios

If it’ s a name, the standard translation is “Gao Jie” (surname Gao, given name Jie). If it’ s an adjective meaning “noble and pure” , it would be “noble and pure” or “lofty and pure” .

However, the user might be testing the system or made a mistake. The instructions say “Translate from Simplified Chinese to English with the highest accuracy and academic tone.” and “Return ONLY the translated text for the given input (no explanations, no quotes, no headings you invent).”

Since there are no tags in the input, I don't need to add them. I should just provide the translation.

Without context, the safest translation for “高洁” as a name is “Gao Jie” . If it's meant as an adjective in an academic context, “noble and pure” would be appropriate.

But wait - the user might have intended to paste a full document but only pasted this word. Or this could be a test. The instructions are very specific about preserving tags, LaTeX, etc., but none are present.

I should follow the instructions literally: translate the given input. The input is just “高洁” . In academic contexts, this is most likely a name. I'll translate it as “Gao Jie” .

Let me double-check the requirements: - “Return ONLY the translated text for the given input” - so just the translation, no extra text - No tags in input, so none in output - No LaTeX in input, so none in output

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Abstract

[Purpose/Significance] Academicians, as the main force and elite driving the development of science and technology in China, studying their growth patterns and career trajectories holds significant implications for talent identification and cultivation in our country. [Method/Process] This study employs a comprehensive curriculum vitae deep analysis method, systematically collecting information on academicians from both the Chinese Academy of Sciences and the Chinese Academy of Engineering, and quantitatively investigates the spatiotemporal characteristics and academic genealogy structural features of the academician population. [Results/Conclusion] The research explores the fundamental characteristics of the academician group and factors influencing their success, and based on these findings, proposes rational recommendations for talent cultivation in the new era.

Full Text

Research on the Rationalization of Talent Development in the New Era Based on Analysis of Chinese Academician Group Characteristics

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Abstract

[Purpose/Significance] Academicians serve as the main force and elite power driving scientific and technological development in China. Research on their growth patterns and career trajectories holds significant meaning for talent identification and cultivation in our country. **[Method/Process]** This study employs curriculum vitae (CV) depth analysis to comprehensively collect information on academicians from both the Chinese Academy of Sciences and the Chinese Academy of Engineering, quantitatively investigating the spatiotemporal and academic pedigree structural characteristics of the academician group. **[Result/Conclusion]** The study explores the fundamental characteristics of academicians and the factors influencing their success, and based on these findings, proposes rationalization suggestions for talent cultivation in the new era.

Keywords: academician group; spatiotemporal characteristics; academic pedigree structural characteristics; growth factors

With the advancement of science and technology, China has entered the era of “big science,” where the scope, scale, depth, and breadth of scientific research, along with human, material, and financial investments, have reached unprecedented levels. As disciplinary classifications become more refined and multidimensional interdisciplinary integration deepens, scientific and social issues have gradually permeated from the economic sphere into political, cultural, educational, and other social domains [1]. Following the 19th National Congress, the emergence of new research paradigms for scientist groups and continuous scientific-social issues have made analysis of talent development in the new era increasingly necessary and urgent.

Academicians represent the main force and elite power promoting China’s scientific and technological development, occupying the pinnacle of the social stratification structure within the scientific community. Their contributions in scientific, social, and cultural fields enjoy high recognition, and they wield significant influence in the economic and social spheres. Research on their growth patterns and career histories is of great significance for talent discovery and cultivation in China. Over the past 15 years, Chinese scholars have conducted characteristic analyses of high-level scientific and technological talent groups in China, with academicians as representatives. These analyses have examined partial academician groups selected based on faculties [1-2], gender [3], institutional types [4], or nationality [5-6], or have studied all members of the Chinese Academy of Sciences [7] or Chinese Academy of Engineering [8] (excluding foreign academicians). Analytical dimensions have included birthplace, educational background, overseas study experience, age composition, administrative positions, and influence [9], with methodologies primarily employing CV analysis (also known as resume analysis) [1,5-6] or questionnaire surveys [9]. Such research has primarily focused on exploring the current status and social functions of academician groups, providing positive reference for improving China’s academician sys-

tem. A small number of studies have analyzed growth factors of academicians [1,10-11], but these were based on partial academician information or covered relatively short historical spans. Due to incomplete samples in the aforementioned studies, they could not comprehensively reveal the group characteristics and growth factors of Chinese academicians, nor could their findings reflect the temporal evolution of top-tier scientific talent development strategies in China, limiting their utility as reference for cultivating high-end talent.

This study comprehensively collects information on academicians from both Chinese academies for the first time, employing CV depth analysis to design group quantification indicators oriented toward talent cultivation needs in the new era, investigating academician group characteristics, and proposing rationalization suggestions for talent development in the new period.

1. Methodology

1.1 Identification of Authoritative Data Sources

CV depth analysis encompasses three common methods: keyword analysis, career progression analysis, and critical factor analysis. For academician groups, changes in life and research locations (critical factors) and work experience (career progression) reveal the group's main characteristics. Based on these analytical methods, this study designed indicators such as "Academician Group Spatiotemporal Characteristic Analysis Items" and "Academician Group Academic Pedigree Structural Characteristic Analysis Items" to conduct quantitative research on academician group characteristics.

Data were sourced from official academician websites, primarily referencing the Chinese Academy of Sciences [12] and Chinese Academy of Engineering [13] websites, supplemented by literature including *Academician Thinking, Biographies of "Two Bombs, One Satellite" Heroes, Self-Narratives of Chinese Academy of Sciences Members, Guide to Chinese Academy of Engineering Academicians, and Biographies of Chinese Science and Technology Experts*. A total of 2,412 academicians from both Chinese academies were collected and compiled, including 1,370 Chinese Academy of Sciences members and 1,070 Chinese Academy of Engineering members (with 28 dual members), with data collection concluding in December 2018.

1.2 Design of Quantitative Analysis Indicators for Academician Groups

The CV analysis method serves as a general approach for analyzing individuals, while CV depth analysis effectively compares characteristic experiences and subtle clues in personnel resumes to discover hidden deep-level information, achieving a certain degree of "mining" [14]. This method analyzes the spatiotemporal and academic pedigree structural characteristics of academician groups, and further examines the key influencing factors contributing to their success.

2. Basic Characteristics of China's Academician Group

Academician group spatiotemporal characteristic analysis items involve key characteristic data including age structure, election age, birthplace, and workplace. Academic pedigree structural characteristic analysis items involve overseas study experience and institutional affiliation.

2.1 Spatiotemporal Characteristics

2.1.1 Overall Age Structure Shows Aging Trend [Figure 1: see original paper] illustrates the age structure of current academicians (excluding foreign and deceased academicians). The age distribution is heavily concentrated in the 81-90 age range, accounting for 34% of the total. The distribution proportions for the 71-80, 61-70, and 51-60 age groups are relatively uniform. Academicians older than 90 constitute a smaller proportion at 7%, while those younger than 50 represent only 1%. The average age of current academicians (excluding foreign and deceased academicians) is 74, with only 22% under 60 years old, while 78% have exceeded retirement age (typically 60 for males and 55 for females in China). The academician group is thus generally aged. Even though the peak creative period for scientists has extended, only 36% of academicians are under 70, indicating significant aging within the group.

2.1.2 Average Election Age Shows Trend of Rejuvenation As shown in [Figure 2: see original paper] and [Figure 3: see original paper], the average election age for academicians from both academies is approximately 59, with Chinese Academy of Sciences members averaging about 57 and Chinese Academy of Engineering members about 61, slightly higher than their CAS counterparts. Across different periods, the two academies show different trends. The average election age for CAS members was lowest in the 1950s. After no elections during the 1960s-70s, the average age in the 1980s-90s was more than 10 years higher than in the 1950s. Since 2000, with continuous national scientific and technological development, younger scientific talent has gradually matured, and the average age of newly elected academicians has shown a declining trend. The Chinese Academy of Engineering began elections only in 1994, with its election age showing an overall declining trend, particularly from the 1990s to 2007 when the average remained above 60. Since 2009, the average age of newly elected CAE members has stabilized at around 56. Overall, since the 1990s, the average election age for both academies has shown a general trend of decline followed by stabilization, with CAS achieving rejuvenation earlier than CAE.

The average age at which outstanding scientists receive top academic recognition and its management strategies have always been important theoretical issues in the sociology of science, providing significant guidance for implementing scientific talent strategies [8]. The rejuvenation of newly elected academicians' average age in China indicates that the country's age management policies for outstanding scientists have achieved positive results, with a large number of outstanding young and middle-aged scientific and technological talents meeting

standards and qualifications, creating favorable conditions for Chinese high-level scientific talent to reach world-class heights.

2.1.3 Workplaces Show Obvious Spatial Agglomeration Characteristics Table 1 compares the spatial distribution of academicians' birthplaces and workplaces. A ratio of workplace to birthplace numbers greater than 1 indicates an academician-importing region, less than 1 indicates an academician-exporting region, and equal to 1 indicates a balanced region. The table shows that Beijing, Heilongjiang, Shaanxi, Gansu, Ningxia, Xinjiang, and Hong Kong are academician-importing regions, while all others are exporting regions, with Jiangsu and Zhejiang exporting the most. Talent development requires solid material foundations and excellent working and learning environments, leading to higher academician concentrations in economically developed, information-rich regions such as Beijing, Hong Kong, and coastal areas. Influenced by history and policy, Heilongjiang, Jilin, and Liaoning in Northeast China, as well as the relatively underdeveloped Northwest region, also host certain numbers of academicians. Academician workplaces thus exhibit obvious spatial agglomeration characteristics, far exceeding population concentration levels. This demonstrates that the growth and work of high-level scientific talent require specific conditions, with higher-level talent showing greater regional concentration.

2.1.4 Birthplace Distribution Diffusing from Coastal to Inland Areas Aligns with China's Scientific Development Trends [Figure 4: see original paper] through [Figure 7: see original paper] reflect the birthplace distribution of Chinese academicians across different periods. Historical factor analysis reveals: (1) Before 1910, during the mid-to-late Self-Strengthening Movement, Jiangsu and Zhejiang's economic and cultural levels exceeded other regions, providing local populations with more educational opportunities, with most academicians born during this period concentrated in these two provinces. (2) Between 1911-1930, a turbulent period in Chinese history, academicians born during this time remained concentrated in Jiangsu and Zhejiang, accounting for 33% of total births, with Beijing- and Shanghai-born academicians also representing relatively high proportions at 8.29% and 7.82% respectively. (3) During 1931-1950, China's War of Resistance Against Japanese Aggression and Liberation War period, academicians born in this stage remained concentrated in coastal areas, but Jiangsu-Zhejiang's proportion dropped to only 27%, while Shanghai-born academicians surged to 14.34%, and birthplaces gradually expanded to other central regions. (4) After 1951, Jiangsu-Zhejiang's proportion further declined to only 21.3%, while coastal Fujian and Guangdong decreased in significance and central Anhui and Hunan rose in prominence.

The diffusion of academician birthplaces from coastal to inland areas objectively reflects the gradual spread of modern science in China from coastal to inland regions [9,15]. The popularization of mass education, increasing numbers of academicians, and continuous improvement of the academician system have collectively driven the evolution of birthplace distribution toward decentralization.

2.2 Academic Pedigree Structure

2.2.1 Proportion of Overseas Study Experience Shows Phased Changes Directly Related to International Situation and National Policy

Table 3 reflects the proportion of academicians with overseas study experience across different periods. Academicians born before 1921 had relatively high proportions of overseas experience, with those born before 1900 and after 1971 reaching 82.61% and 100.00% respectively. For academicians born after 1921, the proportion fluctuated around 30-40% of the total, dropping to 24.53% for those born between 1961-1970. These phased changes in overseas study proportions are directly linked to international situations and national policies. Domestically, as China's scientific and educational modernization accelerates, the country's ability to independently cultivate master-level talent has continuously strengthened, with science moving toward independent development. Internationally, early Chinese students concentrated in developed European and American countries, where favorable economic environments, excellent research atmospheres, and immigration policies encouraging outstanding talent led to increased study abroad numbers but decreased return rates.

2.2.2 Institutional Affiliations Mainly Distributed in Research and Education Sectors

Table 4 reflects institutional distribution among academicians, who are primarily affiliated with research and education sectors. Specifically, 1,545 academicians belong to the research system and 1,511 to educational institutions, with 311 from enterprises, companies, and factories (when academicians have multiple natures, they are not calculated as single values). Currently, China's top scientific talent is concentrated in universities and research institutions, with certain numbers also distributed in enterprises, national defense, medical and health, and government departments. This shows that academicians play active roles in important fields driving national comprehensive strength such as science, education, culture, and health. However, the limited number of academicians in enterprises and companies is noteworthy. Considering that corporate technological innovation capability constitutes an important manifestation of national scientific and technological strength, we recommend encouraging backbone enterprises to jointly establish key laboratories and engineering technology research centers with universities and research institutes, implement national and provincial major engineering projects and key technology breakthroughs, and involve more academicians in corporate technological innovation strategies to enhance independent innovation capabilities and industrial competitiveness [11], enabling participation in global scientific and technological competition.

3. Key Influencing Factors in the Growth and Success of Chinese Academicians

Academicians' growth paths and influencing factors are highly complex, including personal talent, family environment, mentor relationships, disciplinary factors,

etc. Based on the above analysis of basic academician group characteristics, this section further examines key influencing and constraining factors in their growth and success from three perspectives: geographical environment, socio-political environment, and overseas study factors, to provide references for talent cultivation and academician selection in China.

3.1 Geographical Environment Factors

Academics' birthplaces are mainly concentrated in Jiangsu, Zhejiang, Shanghai, Hunan, Shandong, and Beijing, accounting for 16.5%, 11.48%, 8.96%, 5.56%, 5.47%, and 4.68% of the total respectively. Academics' native places or birthplaces concentrate in coastal and central regions, with relatively few from western regions and many provinces having only sporadic representation, demonstrating strong regional imbalance in China's academician distribution.

The concentration of academician birthplaces in the Jiangsu-Zhejiang-Shanghai region (totaling 36.94%) forms a highly dense source region. Research suggests that academician growth positively correlates with regional GDP, negatively correlates with mountainous area proportion, and significantly positively correlates with water area proportion [16]. The Jiangsu-Zhejiang region, with its abundant water resources, provides favorable environments for talent development. Moreover, the ancient proverb "the south of the Yangtze River has produced talented scholars since ancient times" indicates that local intellectual culture has formed a solid foundation that continuously strengthens subconscious development during talent growth, facilitating success.

3.2 Socio-Political Environment Factors

National development and changes in political and economic situations undoubtedly influence talent growth. Just as scholars studying scientists' creative peaks use major scientific awards (such as Nobel Prizes) or important research achievements (such as patents) as indicators [17], academician election ages also reflect the age periods when outstanding scientists achieve significant research results. Combined with earlier analysis of academician election ages and the political, economic, and policy environments during election periods, we can conclude that many academics' major achievements have benefited from socialist construction needs and national prosperity.

Data analysis reveals: (1) Academics elected in the 1950s had the lowest average age, with the youngest being only 35. Most of this cohort had overseas study experience, high educational attainment, and were in their prime, forming a high-caliber scientific elite group. This reflects that despite poor objective conditions in early post-liberation China, young and middle-aged scientific personnel shouldered the heavy responsibility of launching China's scientific and technological endeavors. (2) From the 1980s to 1990s, the appearance and persistence of peak academician ages resulted not only from the Cultural Revolution's suspension of elections for many years but also from the significant impact of

talent gap phenomena during special periods [18]. (3) Entering the 21st century, the average academician age has shown a declining-low plateau-stabilizing trend, reflecting not only adjustments to the academician election system and policies emphasizing age structure optimization but also the continuous development of national scientific and technological undertakings, with younger scientific talent gradually maturing.

3.3 Overseas Study Factors

Our previous in-depth analysis of academician overseas study factors shows that the proportion of academicians with overseas experience has decreased with generational turnover, particularly among those born between 1961-1970 and after 1971. The root causes are directly related to the international situation and national policies during their growth periods. Academicians born between 1961-1970 began their overseas studies around the 1990s, but the number and proportion of academicians with overseas experience after the 1990s show a clear declining trend. Statistical analysis in this study shows that since the 1990s, 179 Chinese academicians received doctoral education and obtained doctoral degrees domestically, accounting for 80.57% of doctorates awarded during the same period (Chinese Academy of Engineering) and 62.62% (Chinese Academy of Sciences). This demonstrates that as China's scientific research and education continue developing, the country is gradually acquiring the capability to cultivate high-level talent independently.

Meanwhile, considering history and overseas study scale, the 1990s marked the peak period of Chinese overseas study, with substantial numbers of students abroad. However, the attraction of developed countries' favorable economic and research environments led to low return rates, affecting the proportion of overseas talent among academicians elected during and after this period. Research also indicates that a wave of overseas students returning during the last two decades of the 20th century has not yet fully materialized [15]. With the rejuvenation of the academician corps and the trend of high-level talent returning to China's scientific research fields [19], the proportion of overseas talent among elected academicians is expected to rise somewhat in the future.

4. Conclusion

"Innovation depends on obtaining the right people" [20]. Oriented toward new-era talent cultivation goals, drawing on the highlights of China's academician system construction and development, and analyzing academician group characteristics and key influencing factors may provide references for China's talent development in the new era. Based on this study's findings, we propose the following considerations for rationalizing talent development:

- (1) **Academician aging constitutes a major challenge for China's scientific community.** Although the average age of newly elected academicians has decreased in recent years, achieving rejuvenation, the limited

number of academicians elected each term means they represent only a small proportion of the existing academician group, resulting in serious overall aging. Only 36% of current academicians are under 70. Beyond adjusting election policies to optimize age structure, the state and academicians' host institutions must create favorable environments and support systems to continue leveraging academicians' advantages and capabilities in cultivating young talent and participating in forward-looking, targeted, and reserve strategic research, contributing wisdom to national development and promoting Chinese academicians to unleash energy during their "second peak age."

- (2) **The diffusion of academician birthplaces from coastal to inland areas shows distinct Chinese characteristics**, differing from statistical results of Nobel laureates worldwide (where Nobel numbers positively correlate with national development) [7]. While Jiangsu, Zhejiang, Fujian, Guangdong, and Shanghai have maintained relatively rapid economic development, only Shanghai-born academician numbers have maintained an upward trend, while the other four regions show the opposite. This decentralization trend should have positive impacts on China's scientific development, revealing the beneficial influence of China's scientific and educational infrastructure development and policy environmental changes on scientific talent cultivation.
- (3) **The fluctuating decline in academician overseas study proportions indicates that the past situation of complete reliance on returned students to disseminate scientific knowledge and advance science has improved.** Considering the complementarity between overseas-returned high-level talent and domestic talent and the need for their collaborative development [19], while implementing high-level overseas talent introduction policies and measures, China must continuously enhance its independent talent cultivation level and create favorable research environments to reduce high-tech talent outflow. Especially as current international trade wars intensify, with the U.S. government restricting and suppressing the flow of Chinese high-tech talent to contain China's economic acceleration, China must cultivate core talent in many fields independently and not allow other countries to control its vital interests. Meanwhile, research shows that overseas research experience constitutes an important factor promoting the growth of domestic young talent [21]. While strengthening domestic talent cultivation and "blood-making" capabilities, China must still create favorable conditions for domestic young backbone talent to study abroad and gain diverse academic and research backgrounds.
- (4) **Geographical and political-economic environments appear particularly important among academician success paths and influencing factors.** The spatial agglomeration of talent birth and workplaces demonstrates the important role of cultural heritage, economic conditions,

and political governance in academician growth and success. Beyond maintaining the prosperous and stable political-economic environment required for talent growth, enhancing China's scientific and technological soft power and leveraging the cohesive force of innovative talent will also create positive conditions for cultivating and developing top scientific talent.

The user wants me to translate a "References" section from Chinese to English. The section contains bibliographic entries and an "Author Contributions" section.

Key requirements: The user is asking me to translate a section about romanizing Chinese author names. The text is:

"1. Romanize Chinese author names using pinyin (e.g., 张三 → Zhang San)"

This is already in English, but it contains Chinese characters as examples. The user wants me to eliminate ALL Chinese characters. The instruction says "Remaining Chinese: 三, 张" which suggests there might be some leftover Chinese characters, but in the actual text provided, the Chinese characters are part of the example.

The task is to translate this section into English without any Chinese characters. But the example inherently contains Chinese characters. Let me re-read the instruction carefully.

The user says: "CRITICAL: This is the FINAL attempt to translate this section. Section: '1. Romanize Chinese author names using pinyin (e.g., 张三 → Zhang San)' Remaining Chinese: 三, 张 You MUST eliminate ALL Chinese characters. Even a single Chinese character will cause failure."

So I need to provide a translation of this section that contains ZERO Chinese characters. But the original text is already in English and contains Chinese characters as part of an example. How can I eliminate the Chinese characters while preserving the meaning?

I think the solution is to describe the example without actually showing the Chinese characters. For instance, I could say: "1. Romanize Chinese author names using pinyin (e.g., converting Chinese characters to their phonetic representation)."

But that loses the clarity of the example. Another approach: I could use placeholders or describe the transformation in words.

Wait, let me think about the context. This seems to be part of a larger document translation task. The user is giving me specific instructions about how to handle Chinese names. The section itself is a guideline for translation.

So the translation of this section should be: "1. Romanize Chinese author names using pinyin (e.g., Zhang San)"

But that still contains Chinese characters in the example "张三". The user explicitly says "You MUST eliminate ALL Chinese characters. Even a single Chinese character will cause failure."

So I cannot have “张三” in the output. But the example needs to show the transformation. How can I show a transformation from Chinese characters to pinyin without showing Chinese characters?

I could rephrase it as: “1. Romanize Chinese author names using pinyin (for example, a two-character Chinese name would be converted to its pinyin equivalent, such as ‘Zhang San’)”

But this is a bit wordy. Let2. Translate journal names to English if available, otherwise translate the meaning 3. Use official English names for institutions when known 4. Use standard English equivalents for technical terms 5. Remove ALL Chinese characters - not even one should remain 6. Preserve the structure exactly [1] DENG W, SHAN Y. Analysis on characters and growth factors of academicians of agriculture faculty of chinese academy of engineering[J]. Agricultural science & technology, 2015, 16(12): 2664-2669.

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Author Contributions:

Wu Hong: Conceived research ideas and wrote the paper;

Zhao Lixin: Designed paper framework;

Li Yanzhang: Constructed models and wrote initial draft;

Wang Fang: Collected data, analyzed data, and provided revision suggestions;

Huang Jinxia: Collected data, analyzed data, and provided revision suggestions;

Gao Jie: Conducted literature review and provided revision suggestions.##
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Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv –Machine translation. Verify with original.