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# Strategic determinants of journal selection among Chinese biomedical researchers

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## Abstract

# Background

Academic publishing is a strategic arena where journal choice balances impact, reputation, and timelines under intense “publish or perish” pressure. In China’s metric-driven but reforming system, how biomedical researchers prioritize and rank journals remains unclear. This study investigates the determinants influencing journal selection among Chinese biomedical researchers, providing empirical evidence for reforms in research evaluation systems and the strategic development of academic journals.

# Methods

A cross-sectional survey employing a self-designed electronic questionnaire was administered to 152 Chinese biomedical researchers to analyze submission preferences and decision-making drivers quantitatively.

# Results

Descriptive statistics revealed that the respondents were primarily researchers in clinical medicine and biology, with 66.4% holding doctoral degrees. The findings indicate that the journal impact factor (IF) /five-year IF and Chinese Academy of Sciences (CAS) quartile/Journal Citation Reports (JCR) quartile constitute the primary considerations in submission decisions. Across career stages, junior researchers demonstrate greater reliance on quantifiable metrics (high IF and top-tier categories) than do senior researchers, who prioritize strategic balance between journal reputation and quantitative indicators. With respect to specific journal preferences, high-impact multidisciplinary journals (e.g., *Advanced Science*) significantly outperform traditional specialized journals (e.g., *Journal of Biological Chemistry*) under current evaluation system pressures.

# Conclusions

This study reveals that within the prevailing academic evaluation framework, “metric-driven mentality” continues to profoundly shape researchers’ journal selection behavior, suggesting implications for both academic publishers’ operational strategies and research evaluation system reforms.

## Background

Academic publishing transforms scientific discoveries into public knowledge, serving simultaneously as formal dissemination and essential currency for acquiring academic reputation, career advancement, and research resources. Journal selection involves complex strategic trade-offs across multiple

dimensions, including reputation, acceptance probability, publication timeline, and disciplinary alignment [1]. Over the past two decades, exponential growth in global research output has intensified competition [2], creating a “publish or perish” environment that transforms submission decisions from communication behaviors into survival strategies [3].

This pressure manifests particularly acutely in China. Despite Chinese research output ascending to global leadership, the relative scarcity of high-quality journal venues exacerbates supply–demand imbalances [4]. Quantitative journal metrics, particularly impact factor (IF) and Chinese Academy of Sciences (CAS) quartiles, have become deeply embedded in talent evaluation, professional title assessment, and funding allocation, fostering a “metric-omnipotent” evaluation paradigm [5]. China has systematically promoted reforms since 2018 to eliminate the “Five Onlys” (sole reliance on publications, titles, credentials, awards, and prestigious labels) [6], and the Ministry of Education and Ministry of Science and Technology jointly issued directives in 2020 explicitly requiring a reduced emphasis on publication quantity and IF [7]. However, whether researchers' actual submission preferences have shifted under these policy interventions remains empirically underexplored.

This study focuses on biomedicine, a highly output, intensely competitive field, to address two core research questions systematically through empirical data. First, among multiple journal attributes, including the IF, reputation, review cycle, and open access (OA) policies, which factors do Chinese biomedical researchers prioritize the most when selecting target journals? Second, when confronted with journals exhibiting divergent IF and reputations, what characterizes researchers’ ranking logic? Understanding these questions elucidates contemporary academic submission ecology while providing evidence-based support for stakeholder interventions: journal publishers can optimize brand positioning and service quality, research institutions can construct evaluation systems more aligned with reality, and policymakers can assess existing reform effectiveness and identify optimization pathways.

## Methods

# Study population

The survey targeted research personnel at universities and affiliated hospitals, including university faculty, clinical and basic researchers at university-affiliated hospitals, research assistants, and graduate students (doctoral and master’s candidates). The respondents were concentrated primarily in the basic cancer research and clinical medicine fields. The data were collected from November to December 2025. Among the 154 electronic questionnaires collected, 152 valid responses (98.7% validity rate) were retained after incomplete submissions were excluded.

## Survey instrument and data collection

This cross-sectional study employed a self-designed electronic questionnaire comprising three sections: demographic information (gender, age, educational attainment, academic title, primary discipline), a

hypothetical submission scenario requiring respondents to rank nine representative biomedical journals, and the selection of three key decision factors from nine predefined dimensions. Journal selection balanced direct relevance to respondents' research domains with optimal representation across IF ranges and disciplinary orientations (Fig. 1). The instrument underwent pilot testing with 15 researchers to ensure clarity and validity before full deployment.

# Data analysis

The frequency distributions and percentages describe categorical demographic data. Journal preference rankings were analyzed through position-weighted scoring, where first-choice rankings received the maximum weight (9 points) and last-choice rankings the minimum weight (1 point). Career-stage stratification divides respondents into senior researchers (senior and associate senior titles) and junior researchers (doctoral students, master's students, bachelor's degree holders, and junior titles) to examine differential decision patterns. Descriptive statistics were performed via standard spreadsheet software.

## Results

# Respondent demographic characteristics

The study analyzed 152 Chinese biomedical researchers exhibiting characteristics typical of high educational attainment and relatively young people, which is consistent with frontline active researchers (Fig. 2). Doctorate holders and doctoral candidates comprised 66.4% (101 individuals), whereas master's degree holders and candidates constituted 25.7%. The age distribution revealed that the 30–39 years bracket represented the predominant cohort (50.0%), followed by researchers under 30 years (32.2%). Clinical medicine (40.8%) and biology (31.6%) dominated professional backgrounds, with research focused predominantly on basic cancer research (46.7%).

# Quantifiable metrics as primary decision drivers

Quantitative analysis demonstrated that quantifiable metrics occupy an absolutely dominant position in submission decisions (Fig. 3). The journal IF/five-year IF was identified as the most critical factor by 76.3% of the respondents, followed closely by the CAS quartile/Journal Citation Reports (JCR) quartile (73.7%) and journal reputation and prestige in the field (67.1%). These three factors constitute a distinct first tier, with importance significantly exceeding other considerations.

In contrast, journal scope and manuscript relevance (30.9%) and peer review/publication speed (11.2%) received relatively less attention. Publication fees (Article Processing Charges, APCs) were scarcely considered critical (4.6%), suggesting that economic costs no longer constitute primary barriers when pursuing high-metric returns. While OA represents a prominent topic in publishing circles, it did not

emerge as a core consideration (0%) among this sample, potentially indicating that authors remain insensitive to publication models provided that journals satisfy high-metric requirements.

## Overall journal preference rankings

Journal ranking analysis revealed pronounced “high-impact-factor preference” trends (Fig. 4). *Advanced Science*, with the highest five-year IF (15.6), emerged as the first choice for 39.5% of the respondents. Despite its illustrious history in biochemistry, *Journal of Biological Chemistry*, with a lower IF (4.3), was ranked last by 57.9% of the respondents. Mid- to high-tier journals such as *Cell Reports* and *Oncogene* occupied intermediate positions, demonstrating clear hierarchical stratification aligned with IF rankings.

## Career stage stratification in journal selection

Respondent stratification into senior researchers (senior/associate senior titles, n = 37, 24.3%) and junior researchers (doctoral students, master students, bachelor’s degree holders, junior titles, n = 115, 75.7%) revealed significant differences in weighting journal reputation versus quantitative metrics across career stages (Fig. 5).

# Senior researchers prioritize strategic balance between reputation and metrics

Researchers holding senior titles exhibit more complex decision models, manifesting a significant preference for “journal reputation”. They balance the pursuit of high-IF with the historical accumulation and credibility of journals within academic circles. Many senior-titled respondents positioned *Cancer Research* and the *Journal of Clinical Investigation* at exceptionally high ranks, reflecting emphasis on established journal reputations. For this cohort, publishing in journals with deep historical foundations represents the consolidation of academic standing, often transcending mere IF values. One respondent (aged 40–49, senior title) ranked *Oncogene* (5-year IF = 7.4), which enjoys prestige in oncology despite relatively lower metrics, at position 1, while placing the high-scoring emerging journal *Advanced Science* at position 5, reflecting senior scholars’ adherence to academic reputation rather than pure metric-chasing.

# Junior researchers exhibit survival-driven metric pragmatism

Doctoral students and junior-titled personnel under age 30 demonstrate pronounced “metric pragmatism” in submission strategies. Their primary objectives typically involve satisfying graduation requirements or promotion thresholds; consequently, they exhibit purer pursuit of high-IF and top-tier categories while remaining sensitive to publication speed. Most doctoral student respondents ranked *Advanced Science* (5-year IF = 15.6) first. This journal, known for its high IF and relatively rapid

publication, ideally meets early-career needs to “rapidly accumulate high-scoring publications” for graduation or job-seeking thresholds. Within this cohort, established journals such as the *Journal of Biological Chemistry* were frequently relegated to last positions (8th or 9th). Despite its century-long publishing history, *Journal of Biological Chemistry*’s 4.3 IF offers extremely low cost-effectiveness for young researchers, who urgently need to accumulate academic capital.

## Disciplinary background distribution across career stages

The career stage distribution exhibited pronounced skewness, with junior researchers comprising more than three-quarters of the total sample (75.7%) (Fig. 6). This numerical dominance explains why overall preference rankings showed high-impact-factor pursuit (e.g., *Advanced Science*) overwhelming adherence to traditional reputation (e.g., *Oncogene*). Within junior cohorts, medical backgrounds occupy absolute dominance (59.1%), reflecting the substantial base of clinical physicians and medical graduate students bearing publication pressures for title promotion or graduation. Among senior cohorts, medical representation declined proportionally (44.4%), potentially indicating steeper pyramidal advancement structures in medical fields or partial transition of medically trained senior researchers toward administrative or purely clinical work with reduced academic activity. Biology backgrounds remained relatively stable across both groups (senior 38.9% vs. junior 36.4%), suggesting a relatively robust academic pipeline in biological sciences with well-connected career progression pathways.

# Discussion

## The paradox of rational irrationality in metric-driven behavior

Despite China's sustained promotion of research evaluation reforms aimed at breaking “sole reliance on publications and IF” [8], IF remain dominant determinants of submission decisions at operational levels [9]. This phenomenon does not simply reflect individual cognitive lag but represents inevitable outcomes of rational individual choices under institutional constraints, a condition we characterize as “rational irrationality”. For individual researchers, when quantitative metrics become deeply embedded in graduation requirements, title promotions, funding reviews, and talent programs, pursuing high-IF constitutes the optimal career survival strategy. However, this individually rational behavior evolves into system-level irrationality within highly competitive academic environments, leading to decreased journal-audience matching, wasted peer review resources, and reduced knowledge dissemination efficiency [10]. This dilemma cannot be resolved through appeals to "change mindsets" but requires structural adjustment and optimization of evaluation systems.

## Generational discontinuity in journal prestige hierarchies

The stark divergence between senior and junior researchers’ preferences reveals generational discontinuity in journal prestige hierarchies. Senior researchers’ elevated rankings of the *Journal of Clinical Investigation*, *Cancer Research*, and *Oncogene* reflect traditional academic values emphasizing

disciplinary depth, editorial rigor, and long-term influence. Conversely, junior researchers' overwhelming preference for *Advanced Science*, a comprehensive “OA + high IF + multidisciplinary” journal launched in 2014, precisely captures critical demands within China’s current evaluation system. This journal’s broad scope and high IF align perfectly with survival foundations in early-career trajectories. The *Journal of Biological Chemistry* serves as a cautionary case: despite century-accumulated academic reputation, its 4.3 IF has become a negative selection signal under current evaluation inertia. Particularly for junior researchers operating under resource constraints, choosing *Journal of Biological Chemistry* implies “losing at the starting line” in subsequent competitions. This adverse selection warns traditional prestigious journals that historical reputation alone no longer suffices to maintain adequate attractiveness amid intense metric races; failure to enhance metric performance while preserving academic quality triggers structural loss of quality manuscripts and vicious cycles.

# Career stage stratification and differential incentive sensitivities

Our findings demonstrate that career stage stratification profoundly shapes submission strategies through differential sensitivity to institutional incentive structures. Junior researchers, comprising 75.7% of our sample, exhibit “survival and advancement” logic, whereas numerically smaller but academically influential senior researchers demonstrate “reputation maintenance” logic. This stratification has critical implications for understanding the dynamics of the academic publishing market. The numerical dominance of junior researchers drives aggregate demand toward high-impact multidisciplinary journals, creating market pressures that favor emerging high-scoring titles over traditional specialized journals. For policymakers, this finding suggests that evaluation reforms must address career-stage-specific incentive structures rather than implement uniform policies. Junior researchers require protection from excessive metric pressures that distort research topic selection and submission strategies, whereas senior researchers need incentives to mentor junior colleagues toward more sustainable academic practices rather than reinforcing metric-driven cultures.

# Research hotspot clustering and field-specific dynamics

The concentration of 46.7% of respondents in basic cancer research directly explains *Cancer Research*’s steady second-place ranking, reflecting “hotspot clustering effects” in academic publishing. In highly competitive, well-funded fields, researchers remain willing to target specialized top journals provided that IF reaches psychological thresholds. Our data suggests that when specialized top journals’ IF exceeds 10, their attractiveness to same-field researchers approaches or surpasses that of multidisciplinary journals. However, when IF falls below 5, even scientifically prestigious journals face manuscript source attrition. In popular research areas such as cancer and immunology, specialized journals maintain competitiveness by increasing metrics [11]. Simultaneously, “research clustering” phenomena warrant vigilance: when researchers concentrate heavily within hotspot fields driven by metric considerations rather than scientific curiosity, research homogenization tendencies may undermine innovation and diversity in knowledge production.

# Implications for publishers, institutions, and policymakers

For journal publishers, enhancing IF and quartile rankings constitutes the most effective strategy for attracting high-quality Chinese manuscripts under current conditions. However, publishers must balance metric enhancement with editorial quality and disciplinary identity to avoid erosion of long-term reputation. Traditional specialized journals face strategic choices: either invest aggressively in metric improvement through increased rejection rates and citation-boosting editorial practices or differentiate through alternative value propositions such as rapid publication, rigorous peer review, and strong disciplinary communities.

For research institutions, our findings suggest that current evaluation reforms have not yet manifested microlevel incentive effects. Institutions should develop researcher classification evaluation systems that differentiate career stage expectations, explicitly protect junior researchers from excessive metric pressures, and reward senior researchers for mentoring and building sustainable academic cultures rather than perpetuating metric-driven behaviors.

For policymakers, the persistence of metric-driven behaviors despite policy interventions indicates that symbolic reforms, merely articulating aspirational values, prove insufficient to modify deeply embedded institutional practices. Effective reforms require concrete mechanisms: delinking specific metric thresholds from high-stakes decisions (graduation, promotion, funding), implementing delayed evaluation systems that assess cumulative contributions over longer time horizons, and creating protected spaces for exploratory research unburdened by immediate metric demands.

# Limitations and future directions

This study has several limitations. First, the sample size (n = 152) and concentration in cancer research and clinical medicine limit generalizability to other disciplines with different publishing ecologies. Second, the cross-sectional design captures preferences at a single time point and cannot assess temporal shifts in response to ongoing policy reforms. Third, self-reported rankings of hypothetical scenarios may not fully capture actual submission behaviors under real-world constraints. Future research should expand sample sizes across diverse disciplines, employ longitudinal designs to track behavioral changes over time, and combine survey data with bibliometric analysis of actual submission and publication patterns to triangulate findings. Additionally, qualitative interviews with researchers at different career stages would enrich the understanding of the cognitive and emotional dimensions underlying journal selection decisions.

## Conclusions

This study provides systematic empirical evidence that journal selection among Chinese biomedical researchers remains highly driven by quantifiable metrics despite sustained policy reforms aimed at reducing reliance on IF. The dominance of IF and quartiles in submission decisions, coupled with pronounced career stage stratification, where junior researchers exhibit survival-driven metric

pragmatism while senior researchers balance metrics with journal reputation, reveals persistent “rational irrationality” under institutional constraints. High-impact emerging multidisciplinary journals are rapidly encroaching upon traditional specialized journals' ecological niches, exemplified by *Advanced Science*'s overwhelming preference over the *Journal of Biological Chemistry*. These findings suggest that current evaluation reforms have not yet manifested microlevel incentive effects and that effective policy interventions require structural adjustments beyond the symbolic articulation of aspirational values. For academic publishers, strategic positioning must balance metric enhancement with long-term editorial quality; for policymakers, reforms must address career-stage-specific incentive structures and create concrete mechanisms that delink metric thresholds from high-stakes decisions. Understanding these dynamics is essential for optimizing academic publishing markets and aligning evaluation systems with scientific values.

# Abbreviations

APCs: Article Processing Charges;

CAS: Chinese Academy of Sciences;

IF: Impact Factor;

JCR : Journal Citation Reports;

OA: Open Access.

# Declarations

### Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki and approved by the Medical Ethics Committee of Zhongnan Hospital of Wuhan University (Approval No. 2024061K). With the approval of the ethics committee, this project was granted a waiver of written informed consent. Although this survey involved minimal risk and employed anonymous data collection, an introductory statement was included at the beginning of the questionnaire to ensure greater rigor, explaining the study's purpose, the voluntary nature of participation, the anonymity of responses, and participants' right to withdraw at any time. Informed consent was obtained through participants' voluntary completion and submission of the questionnaire.

### Consent for publication

Not applicable.

### Availability of data and materials

All data generated or analyzed during this study are included in this published article.

### Competing interests

The authors declare that they have no competing interests.

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### Authors' contributions

S.L., C.X., Y.X., and Z.X. conceived and designed the study. H.S., K.Q., X.C., L.J., and G.W. participated in the questionnaire design and collected the data. S.L., F.C., G.W., Y.X., and Z.X. reviewed the literature and analyzed the data. Y.Z., G.W., and Y.X. validated the results and reviewed the draft of the manuscript. S.L., C.X., G.W., Y.X., and Z.X. contributed to the writing of the manuscript.

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# Figures

| Question | Options |
|---|---|
| 1. Gender (Single choice) | Male / Female |
| 2. Age group (Single choice) | Under 30 / 30-39 / 40-49 / 50-59 / 60 and above |
| 3. Highest educational attainment (Single choice) | Bachelor's / Master's student / Master's / Doctoral student / Doctorate |
| 4. Current academic title (Single choice) | Junior / Intermediate / Associate senior / Senior / Other___ |
| 5. Primary discipline (Single choice) | Biology / Biotechnology / Clinical medicine / Medical laboratory science / Nonbiology, nonmedicine / Other___ |
| 6. Assuming you are preparing a high-quality manuscript, which discipline best describes it? (Single choice) | Cancer basic research (e.g., signaling pathways, cell biology) / Cancer translational research (e.g., biomarker discovery, preclinical models) / Clinical oncology (e.g., clinical trials, patient prognosis) / Biochemistry / Molecular biology (noncancer) / Other___ |
| 7. For the hypothetical manuscript described in Question 6, please rank the following journals by your submission preference (Instruction: Drag journal names to your preferred order. First choice at position 1, last choice at position 9). (Ranking) | *Advanced Science* (Q1, 5-year IF=15.6) / *Cell Reports* (Q1, 5-year IF=8.1) / *Cell Death & Disease* (Q1, 5-year IF=9.8) / *Journal of Biological Chemistry* (Q2, 5-year IF=4.3) / *Journal of Clinical Investigation* (Q1, 5-year IF=14.4) / *Journal of Experimental & Clinical Cancer Research* (Q1, 5-year IF=12.2) / *Oncogene* (Q1, 5-year IF=7.4) / *Theranostics* (Q1, 5-year IF=13.1) / *Cancer Research* (Q1, 5-year IF=13.4) |
| 8. Which three factors most critically influenced your ranking in the previous question? (Multiple choice) | Journal impact factor / 5-year impact factor / CAS quartile / JCR quartile / Journal reputation and prestige in the field / Journal scope and manuscript relevance / Target readership and audience / Peer review and publication speed / Open access vs. subscription model / Publication fees (APCs) / Previous positive or negative experiences with the journal |

**Figure 1**

Electronic survey questionnaire for analyzing determinants of journal selection.

| Characteristic | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Gender** | Male | 85 | 55.9 |
| | Female | 67 | 44.1 |
| **Age** | Under 30 | 49 | 32.2 |
| | 30-39 | 76 | 50.0 |
| | 40-49 | 26 | 17.1 |
| | 50-59 | 1 | 0.7 |
| **Highest degree** | Doctorate | 63 | 41.4 |
| | Doctoral student | 38 | 25.0 |
| | Master's | 34 | 22.4 |
| | Master's student | 5 | 3.3 |
| | Bachelor's | 12 | 7.9 |
| **Academic title** | Intermediate | 51 | 33.6 |
| | Junior | 28 | 18.4 |
| | Associate senior | 27 | 17.8 |
| | Senior | 10 | 6.6 |
| | Other | 36 | 23.7 |
| **Professional background** | Clinical medicine | 62 | 40.8 |
| | Biology | 48 | 31.6 |
| | Medical laboratory science | 14 | 9.2 |
| | Biotechnology | 8 | 5.3 |
| | Nonbiology, nonmedicine | 10 | 6.6 |
| | Other | 10 | 6.6 |

## Figure 2

Demographic characteristics of the respondents (n=152).

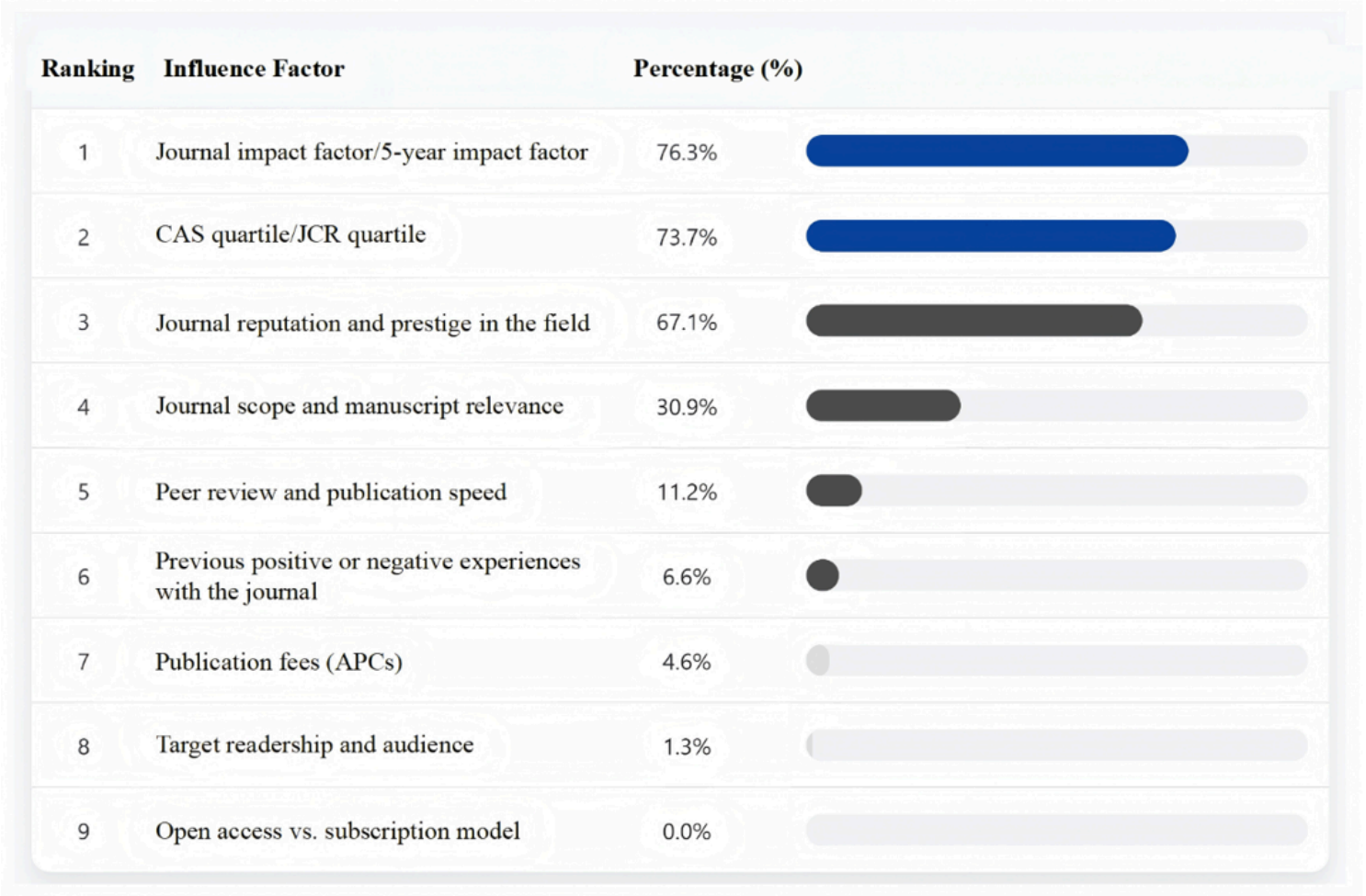



**Figure 3**

Key influencing factors in journal selection among Chinese biomedical researchers (n=152). Bar chart showing the IF/5-year IF (76.3%), CAS/JCR quartile (73.7%), journal reputation (67.1%), journal scope relevance (30.9%), peer review speed (11.2%), previous experience with the journal (6.6%), publication fees/APCs (4.6%), target readership and audience (1.3%), and OA (0%).

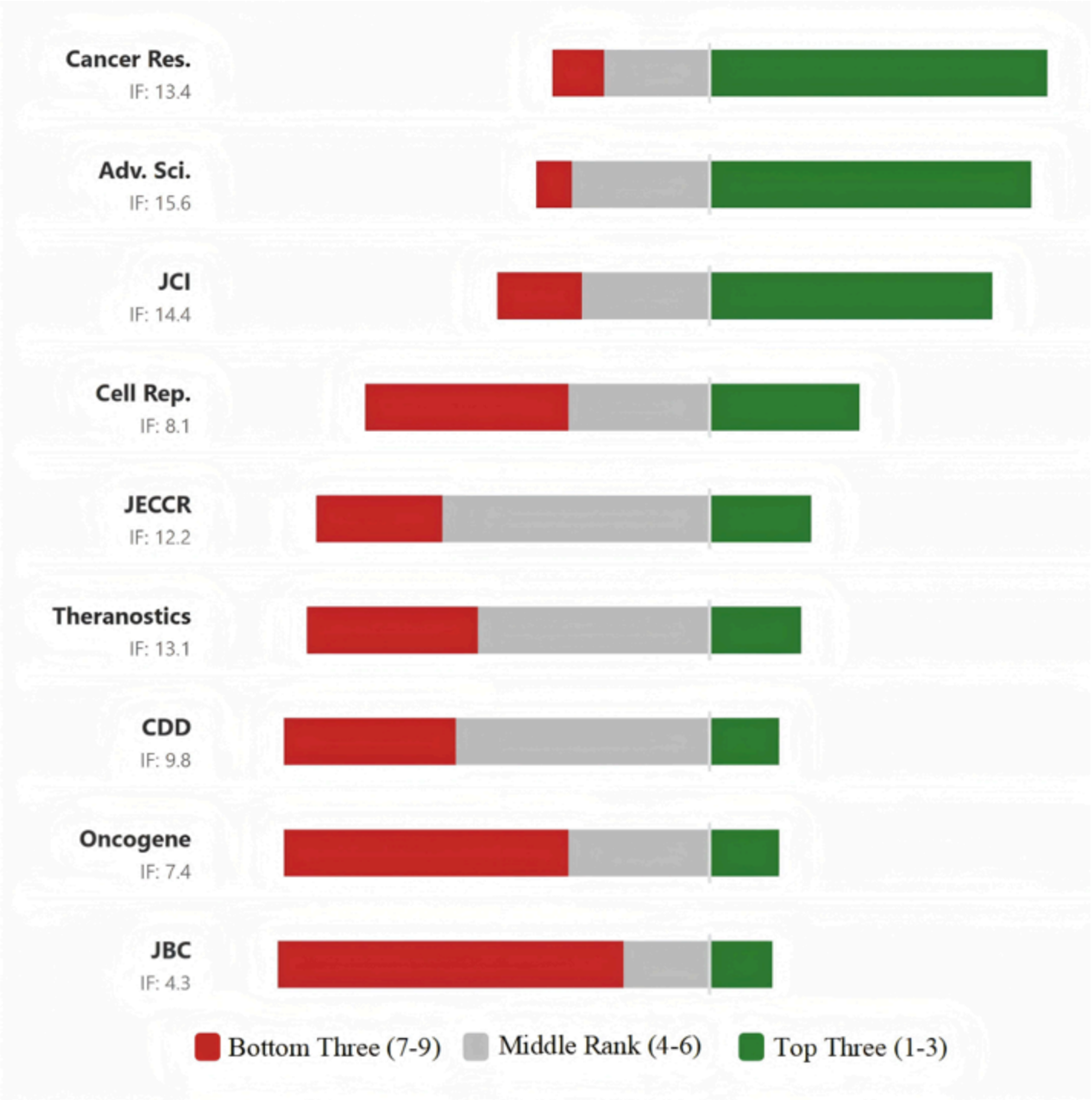



**Figure 4**

Overall journal preference ranking. Stacked bar chart showing the distribution of rankings 1-9 for each journal, with *Advanced Science* showing 39.5% first-choice preference and *Journal of Biological Chemistry* showing 57.9% last-place ranking.

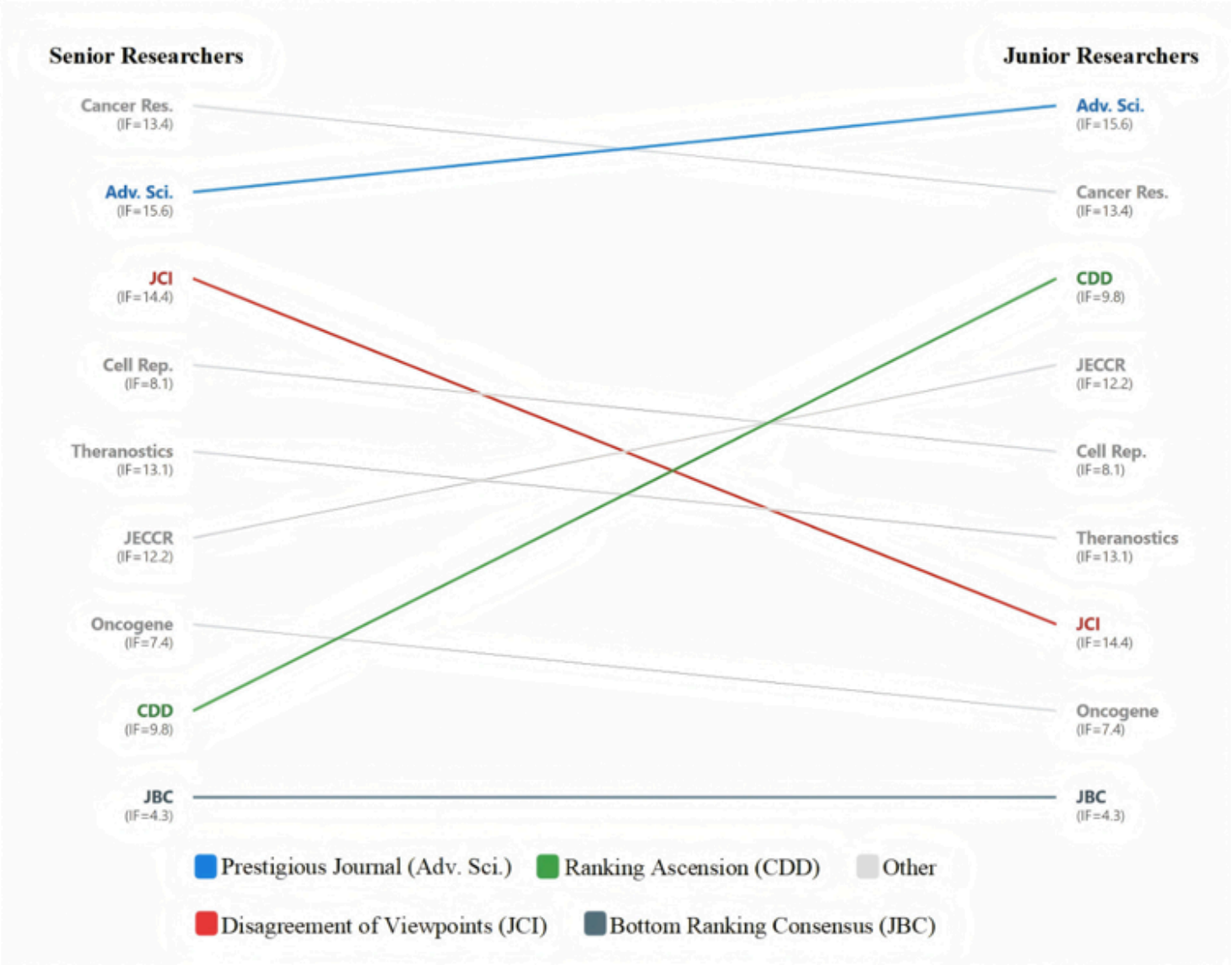
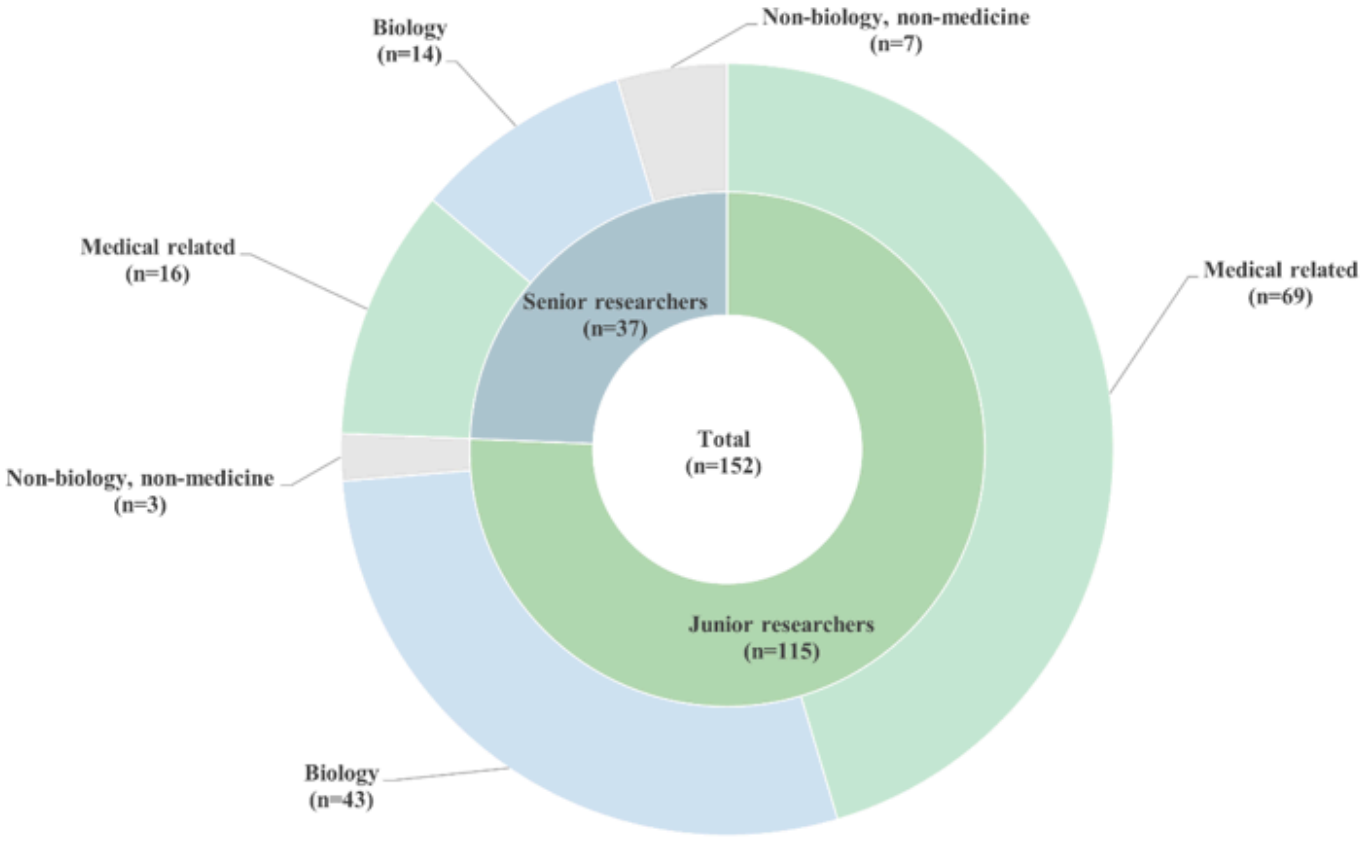



**Figure 5**

Comparison of journal selection preferences across career stages. Comparative ranking chart showing the preferences of senior researchers and junior researchers for the 9 journals.




## Figure 6

Distribution of respondent titles and educational backgrounds. Two pie charts showing (1) junior vs. senior distributions (75.7% vs. 24.3%) and (2) disciplinary backgrounds within each group.