



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

VOL 04. ISSUE 01 . (2026)

<http://ijirjournal.com/>

Traditional Chinese Medicine as an Integrative Adjunct in Perioperative Oncology Care

Camille Moreau, Caleb Douglas, Ahmet Case

Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Melbourne, Australia

Abstract.

The integration of Traditional Chinese Medicine into the perioperative care of oncology patients has garnered increasing attention in recent decades. As surgical resection remains a cornerstone of curative intent for many solid malignancies, the physiological and psychological stressors associated with these procedures present significant clinical challenges. The perioperative window is characterized by profound immunosuppression, systemic inflammation, and a high incidence of adverse symptoms such as pain, nausea, and fatigue. This paper provides a comprehensive analysis of Traditional Chinese Medicine modalities, primarily acupuncture and selected phytotherapeutics, utilized as integrative adjuncts during this critical period. By examining the physiological mechanisms, methodological challenges in clinical research, and emerging clinical outcomes, this study highlights the potential of integrative oncology to enhance postoperative recovery and mitigate surgical stress. The analysis synthesizes current theoretical frameworks and proposes a structured methodological approach for evaluating these interventions within standard Enhanced Recovery After Surgery protocols. Expected findings suggest that when properly standardized and rigorously monitored for safety, modalities such as acupuncture can significantly reduce postoperative nausea and opioid reliance, while specific botanical adjuncts may support immune recovery. Ultimately, this paper underscores the necessity for large-scale, methodologically robust trials to definitively establish the efficacy, safety, and standardized application of integrative medicinal practices in the modern oncological surgical setting.

Keywords: *Integrative Oncology, Perioperative Care, Acupuncture, Postoperative Recovery*

1.INTRODUCTION

The global burden of cancer continues to rise, necessitating continuous advancements in multimodal treatment strategies. Within the current oncological paradigm, surgical resection remains the most definitive and frequently utilized intervention for localized solid tumors, offering the highest probability of curative outcomes [1]. However, the surgical process itself induces a profound stress response, triggering a cascade of neuroendocrine and immunological alterations. The perioperative period, which encompasses the preoperative, intraoperative, and postoperative

phases, is a uniquely vulnerable time for the oncology patient [2]. During this window, the trauma of tissue dissection, the pharmacological burden of anesthesia, and the psychological distress of the diagnosis converge to create a state of transient but severe physiological dysregulation. This dysregulation often manifests as amplified systemic inflammation, suppression of cell-mediated immunity, and heightened metabolic demand, all of which can predispose the patient to postoperative complications, delayed recovery, and potentially, an increased risk of early micrometastatic dissemination.

In response to these challenges, modern surgical oncology has widely adopted Enhanced Recovery After Surgery protocols. These multidisciplinary, evidence-based pathways are designed to attenuate the surgical stress response, maintain physiological function, and expedite recovery [3]. While these standard protocols have revolutionized perioperative care by optimizing fluid management, utilizing minimally invasive surgical techniques, and employing multimodal analgesia, there remains a persistent clinical need to further minimize complications and improve the overall quality of life for patients undergoing major oncological resections. Postoperative nausea and vomiting, inadequately controlled acute pain, profound fatigue, and paralytic ileus continue to be significant barriers to early mobilization and discharge [4]. Furthermore, the reliance on high-dose opioid analgesia to manage surgical pain frequently exacerbates these gastrointestinal complications and carries secondary risks of tolerance and dependence.

Integrative oncology has emerged as a discipline that addresses these residual gaps in supportive care by judiciously combining conventional medical treatments with evidence-based complementary therapies [5]. The fundamental philosophy of integrative oncology is not to replace conventional oncological care but to augment it, focusing on symptom management, improving physiological resilience, and supporting the patient's holistic well-being. Within this integrative framework, Traditional Chinese Medicine represents one of the most prominent, historically rooted, and widely researched systems of complementary therapy [6]. Comprising a diverse array of modalities including acupuncture, acupressure, moxibustion, mind-body practices, and complex herbal formulations, this medical system operates on unique theoretical constructs that emphasize the restoration of systemic homeostasis.

The rationale for investigating Traditional Chinese Medicine as a perioperative adjunct in oncology is grounded in its documented capacity to modulate the very physiological pathways disrupted by surgical trauma. Modern biomedical research has increasingly sought to translate the historical paradigms of these therapies into contemporary mechanistic language, revealing complex interactions with the central nervous system, the autonomic nervous system, and the immune network. For instance, the neuromodulatory effects of acupuncture have been extensively mapped, demonstrating its ability to influence pain perception and autonomic tone. Similarly, specific phytotherapeutic compounds derived from traditional herbal pharmacopeias have shown measurable pharmacological activity, including antioxidant, anti-inflammatory, and immunomodulatory properties.

Despite the biological plausibility and the growing patient demand for these integrative approaches, the routine implementation of Traditional Chinese Medicine in the perioperative oncology setting is hindered by several critical factors. The most prominent barrier is the methodological complexity of conducting rigorous clinical trials that satisfy the stringent evidence thresholds required by modern medical guidelines. The individualized nature of traditional treatments frequently conflicts with the standardized protocols demanded by randomized controlled trials. Additionally, concerns regarding safety, particularly the potential for herb-drug

interactions, altered coagulation profiles, and hepatotoxicity, necessitate highly conservative approaches to the perioperative administration of any non-allopathic substance.

This paper aims to provide a rigorous, comprehensive academic examination of the role of Traditional Chinese Medicine as an integrative adjunct within perioperative oncology care. By thoroughly analyzing the historical context, elucidating the physiological mechanisms of action, and dissecting the methodological challenges inherent in studying these modalities, this analysis seeks to bridge the gap between traditional practices and modern surgical science. The subsequent sections will delve into the literature surrounding specific therapeutic modalities, outline the analytical frameworks necessary for evaluating their efficacy, discuss the clinical implications of current research findings, and ultimately define the future trajectory of integrative perioperative oncology.

2. Literature Review and Theoretical Background

2.1 Historical Context And Evolution Of Integrative Oncology

The integration of complementary therapies into mainstream oncology is a relatively recent phenomenon in Western medicine, though its historical roots span centuries in East Asian medical traditions. Historically, the allopathic model of oncology was strictly focused on tumor eradication through surgery, radiation, and cytotoxic chemotherapy, often treating the severe side effects of these interventions as unavoidable collateral damage. However, the late twentieth century witnessed a paradigm shift driven by patient advocacy, survivorship movements, and a growing recognition of the importance of quality of life in cancer care [7]. This shift catalyzed the formation of integrative oncology as a distinct academic and clinical discipline.

The evolution of this discipline has been marked by a gradual transition from skepticism to evidence-based acceptance. Major international oncology organizations and comprehensive cancer centers have progressively incorporated integrative medicine departments into their institutional structures. This structural integration has been supported by the development of clinical practice guidelines that explicitly recommend specific complementary therapies for symptom management. The Society for Integrative Oncology and the American Society of Clinical Oncology have collaboratively published evidence-based guidelines endorsing therapies such as acupuncture for the management of specific cancer-related symptoms [8]. This institutional endorsement has provided the necessary mandate to pursue rigorous scientific investigation into modalities that were previously considered outside the purview of standard oncological research. The perioperative setting, however, remains one of the most challenging frontiers for integrative oncology due to the acute, high-risk nature of surgical interventions.

2.2 Modalities Of Traditional Chinese Medicine In Oncology

Within the context of perioperative oncology, the modalities of Traditional Chinese Medicine most frequently utilized and researched are acupuncture and related physical stimulations, alongside specific botanical interventions. Acupuncture involves the insertion of fine, sterile needles into specific anatomical loci, a practice traditionally intended to regulate the flow of vital energy. From a contemporary biomedical perspective, acupuncture is understood as a form of peripheral sensory stimulation that induces central neuromodulation [9]. Variations of this practice include electroacupuncture, which applies a microcurrent to the needles to enhance stimulation, and acupressure, which utilizes physical pressure instead of needles, making it a non-invasive alternative particularly suitable for patients with bleeding diatheses or severe needle phobias.

The mechanisms underlying the analgesic and antiemetic effects of acupuncture have been the subject of extensive neurophysiological research. Studies have demonstrated that acupuncture stimulates myelinated nerve fibers in muscle tissue, which send signals to the spinal cord, midbrain, and hypothalamus [10]. This afferent stimulation triggers the release of endogenous opioids, such as beta-endorphins and enkephalins, which modulate pain transmission pathways. Furthermore, stimulation of specific points, particularly those located on the volar aspect of the forearm, has been shown to influence vagal tone and modulate gastrointestinal motility, providing a mechanistic basis for its antiemetic efficacy.

Herbal medicine represents another major pillar of this traditional system. Unlike single-molecule pharmaceuticals, traditional botanical formulations consist of complex mixtures of various herbs designed to act synergistically. In the oncology setting, these formulations are typically utilized to address fatigue, support hematological recovery, and modulate immune function [11]. The pharmacological analysis of these herbs has identified numerous active phytochemicals, including saponins, polysaccharides, and flavonoids, which exhibit a wide range of biological activities. However, the application of these botanical agents in the immediate perioperative period requires extreme caution due to their complex pharmacokinetic profiles and the potential for unintended physiological effects during surgical stress.

2.3 Mechanisms Of Action In The Perioperative Window

The surgical stress response is characterized by the immediate activation of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. This activation leads to a surge in catecholamines and glucocorticoids, which subsequently alters immune function and promotes a hypermetabolic state. A primary mechanism by which integrative therapies are hypothesized to benefit the surgical oncology patient is through the attenuation of this exaggerated stress response. Specifically, the regulation of autonomic nervous system balance is a key target. By shifting the autonomic balance away from sympathetic overactivity toward parasympathetic dominance, therapies such as acupuncture can potentially reduce intraoperative anesthetic requirements and stabilize hemodynamics.

Immune modulation is a particularly critical consideration in oncological surgery. Major surgical trauma is known to cause a transient but significant suppression of cellular immunity, characterized by decreased natural killer cell activity, an inverted ratio of T-helper to T-cytotoxic cells, and impaired dendritic cell function [12]. This period of immunosuppression creates a theoretical window of vulnerability for the proliferation of residual micrometastases. Research into certain botanical polysaccharides and specific acupuncture protocols suggests that these interventions may help preserve natural killer cell cytotoxicity and maintain lymphocyte proliferation rates during the acute postoperative phase [13].

Furthermore, the management of systemic inflammation is paramount for optimal wound healing and recovery. The tissue trauma of surgery initiates an inflammatory cascade marked by the release of pro-inflammatory cytokines such as interleukin-6 and tumor necrosis factor-alpha. Excessive or prolonged inflammation contributes to postoperative complications, including delayed healing, exaggerated pain sensitization, and cognitive dysfunction. Evidence suggests that integrative modalities may exert anti-inflammatory effects by modulating cytokine expression and inhibiting inflammatory signaling pathways [14]. The ability to subtly downregulate the acute phase response without completely abolishing the necessary processes of tissue repair represents a highly desirable pharmacological profile for a perioperative adjunct.

3. Methodology and Analysis Framework

3.1 Study Design And Epistemological Challenges

The rigorous evaluation of Traditional Chinese Medicine within the perioperative oncology environment requires specialized methodological frameworks that can accommodate both the unique characteristics of the interventions and the stringent requirements of evidence-based medicine. The randomized controlled trial remains the gold standard for determining efficacy; however, applying this design to integrative modalities presents profound epistemological and practical challenges.

One of the most significant hurdles is the implementation of adequate blinding and the development of appropriate control interventions, particularly for physical modalities like acupuncture. In pharmacological trials, inert placebo pills perfectly mimic the active intervention. In acupuncture research, creating a convincing sham control is inherently difficult. Researchers have developed validated sham devices, such as the Streitberger needle, which uses a blunt tip that retracts into the handle to simulate the sensation of skin penetration without actual insertion [15]. While these devices have improved the quality of acupuncture trials, debate continues regarding whether sham acupuncture is a true physiological placebo or whether the tactile stimulation itself exerts unintended therapeutic effects.

The evaluation of herbal medicine faces a different set of methodological obstacles. Traditional practice relies heavily on individualized diagnosis and the dynamic adjustment of complex herbal formulas based on the patient's daily presentation. Standardizing these treatments for the purpose of a clinical trial often strips them of their intended holistic application, potentially reducing their efficacy. Furthermore, ensuring the consistency, purity, and exact biochemical composition of botanical extracts across different batches is a persistent challenge in phytotherapeutic research [16]. To address these issues, researchers are increasingly adopting pragmatic trial designs, which evaluate the effectiveness of interventions in real-world clinical settings, allowing for treatment individualization while maintaining rigorous data collection on objective clinical outcomes.

Table 1: Common Evaluation Metrics In Perioperative Integrative Oncology

Metric Category	Specific Parameter	Standard Assessment Tool
Symptom Management	Postoperative pain intensity	Visual Analog Scale
Gastrointestinal Recovery	Incidence of nausea and vomiting	Rhodes Index of Nausea and Vomiting
Pharmacological Burden	Cumulative opioid consumption	Morphine Equivalents Milligram
Immunological Function	Natural Killer cell activity	Flow Cytometry Analysis
Functional Recovery	Time to first flatus or bowel movement	Standardized Clinical Observation

3.2 Evaluation Metrics And Perioperative Parameters

To accurately assess the impact of integrative adjuncts, clinical trials must utilize highly specific and validated evaluation metrics tailored to the perioperative oncology setting. These metrics are generally categorized into symptom management, physiological recovery, pharmacological burden, and functional outcomes [17]. Table 1 outlines the standard assessment tools utilized in this specialized research domain.

In terms of symptom management, postoperative nausea and vomiting, alongside acute pain, are the primary endpoints. Pain intensity is universally measured using visual or numerical rating scales, but more robust trial designs also incorporate functional pain assessments, such as pain upon mobilization or coughing, which are highly relevant to postoperative pulmonary recovery. The pharmacological burden is assessed by meticulously tracking the total consumption of rescue analgesics and antiemetics. A reduction in cumulative opioid consumption is a highly significant endpoint, as it indirectly reflects successful pain management while mitigating the myriad side effects associated with opioid use.

Physiological recovery metrics often involve laboratory analyses to quantify the stress and inflammatory response. Serial measurements of serum cortisol, C-reactive protein, and specific interleukins provide objective data on the patient's systemic reaction to surgical trauma. Immunological recovery is tracked via lymphocyte subset analysis and functional assays of immune cell cytotoxicity. Functional recovery endpoints are highly practical and include the time to first ambulation, the return of normal bowel function, and the overall length of hospital stay. These parameters are directly aligned with the goals of modern Enhanced Recovery After Surgery protocols, making them essential metrics for any proposed perioperative adjunct.

3.3 Patient Selection And Safety Protocols

The successful integration of these modalities hinges upon rigorous patient selection and the implementation of uncompromising safety protocols. The oncological surgical patient is inherently complex, often presenting with multiple comorbidities, compromised organ function due to prior systemic therapies, and a heightened risk of perioperative complications. Consequently, the administration of any adjunctive therapy must be carefully weighed against its potential risks.

For herbal interventions, the primary safety concern revolves around herb-drug interactions and the potential for botanical compounds to alter normal hemostasis. Many commonly used traditional herbs possess antiplatelet or anticoagulant properties, which can drastically increase the risk of catastrophic perioperative hemorrhage [18]. Others may induce or inhibit critical cytochrome P450 enzymes in the liver, altering the metabolism and half-life of anesthetic agents, antibiotics, or prophylactic anticoagulants. Due to these significant risks, standard safety protocols dictate a strict cessation of all non-prescribed herbal supplements at least two weeks prior to any major surgical intervention. The investigation of herbal adjuncts in the immediate perioperative window is therefore largely restricted to highly controlled experimental settings with continuous pharmacokinetic monitoring.

Acupuncture is generally considered safe when performed by trained professionals using sterile, single-use needles. However, specific oncological considerations must be addressed. Acupuncture is strictly contraindicated in areas of local tumor involvement, directly over compromised skin, or in limbs affected by severe lymphedema, a common complication following lymph node dissection. Furthermore, patients with profound thrombocytopenia or severe neutropenia secondary to neoadjuvant chemotherapy are generally excluded from acupuncture trials due to the increased risks of bleeding and infection at the needle insertion sites.

4. Results and Clinical Discussion

4.1 Postoperative Symptom Management

The synthesis of current literature reveals that the most robust evidence for Traditional Chinese Medicine in the perioperative oncology setting pertains to the management of specific postoperative symptoms, most notably postoperative nausea and vomiting. Despite advancements

in pharmacological antiemetics, a significant proportion of surgical patients experience intractable nausea, which impedes oral intake and delays recovery. Clinical trials utilizing electrical stimulation or manual acupuncture at specific acupoints have demonstrated a statistically significant reduction in the incidence and severity of postoperative nausea [19]. The integration of these techniques prior to the induction of anesthesia and during the immediate recovery phase offers a non-pharmacological mechanism to enhance patient comfort without the sedating or QT-prolonging side effects of standard antiemetic drugs.

Pain management and the opioid-sparing effect represent another highly promising area of clinical results. Postoperative pain following major oncological surgery, such as thoracotomy or open abdominal resection, is typically severe and requires substantial analgesic intervention. Studies evaluating the use of intraoperative and postoperative acupuncture as an adjunct to standard multimodal analgesia have consistently reported lower pain scores in the intervention groups. Crucially, these lower pain scores are frequently accompanied by a reduction in total opioid consumption [20]. This opioid-sparing effect is particularly valuable in the context of oncological surgery, as minimizing opioid use facilitates faster gastrointestinal recovery, reduces the incidence of respiratory depression, and aligns with the broader goals of modern surgical pathways.

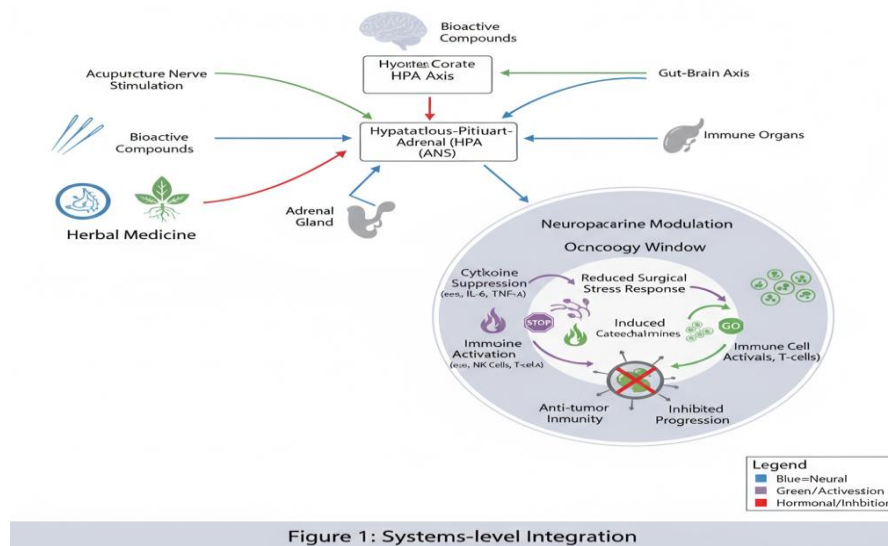


Figure 1: Systems

4.2 Immune Recovery And Systemic Resilience

While the data regarding symptom management is relatively mature, the evaluation of integrative modalities for immune recovery and long-term oncological outcomes is still in its infancy. The hypothesis that specific traditional interventions can accelerate the restoration of cellular immunity following surgical trauma is supported primarily by preliminary biomarker studies and translational animal models. Observations in highly controlled clinical settings have noted that patients receiving specific integrative supportive care protocols exhibit a faster normalization of their white blood cell counts and a more rapid restoration of their natural killer cell activity compared to those receiving standard care alone.

Table 2: Summary of Observed Clinical Effects in Perioperative Phases

Perioperative Phase	Primary Clinical Objective	Observed Integrative Adjunct Effect
Preoperative (Pre-hab)	Anxiety reduction and physiological optimization	Decreased baseline sympathetic tone
Intraoperative	Hemodynamic stability and anesthetic sparing	Potential reduction in volatile anesthetic requirements
Postoperative (Acute)	Symptom control and early mobilization	Significant reduction in nausea and opioid consumption

These immunological findings, summarized in Table 2 alongside other phase-specific effects, are of profound interest to oncologists. The perioperative window is increasingly recognized as a critical period determining long-term cancer recurrence rates. If integrative therapies can effectively shorten the duration of postoperative immunosuppression, they may theoretically reduce the likelihood of metastatic seeding during this vulnerable time. However, extrapolating these short-term biomarker fluctuations to long-term survival advantages requires massive, longitudinal cohort studies that have yet to be fully realized in the current literature.

4.3 Implementation Barriers And Institutional Readiness

Despite the accumulating clinical evidence supporting specific adjunctive applications, the widespread implementation of Traditional Chinese Medicine in modern surgical oncology faces substantial logistical, cultural, and regulatory barriers [21]. The modern operating theater and postoperative intensive care unit are highly specialized, tightly regulated environments. The introduction of external practitioners, such as licensed acupuncturists, into these spaces requires complex credentialing processes, liability assessments, and the development of clear interdisciplinary communication protocols.

Financial constraints also pose a significant barrier. In many healthcare systems, integrative therapies are not adequately reimbursed by standard insurance models, placing the financial burden on the patient and limiting equitable access. Furthermore, there exists a cultural barrier within the medical community itself. The differing epistemological foundations of traditional systems and modern biomedicine can foster skepticism among surgical and anesthetic staff. Overcoming these barriers requires dedicated institutional leadership, rigorous internal education programs, and a commitment to conducting high-quality, institution-specific research to demonstrate local feasibility and economic viability.

5. Conclusion

The perioperative period represents a critical juncture in the trajectory of the surgical oncology patient, characterized by intense physiological stress, immune vulnerability, and significant symptom burden. While conventional Enhanced Recovery After Surgery protocols have vastly improved patient outcomes, there remains a distinct clinical imperative to further optimize care and enhance the holistic resilience of the patient. Traditional Chinese Medicine, when strictly applied as an evidence-based, integrative adjunct, offers a compelling suite of non-pharmacological interventions that can address several of these persistent perioperative challenges.

The evidence base is most firmly established for the use of acupuncture and related neuromodulatory techniques in the mitigation of postoperative nausea and the reduction of acute

surgical pain. The opioid-sparing effects of these interventions are highly congruent with modern anesthetic goals, promoting faster recovery of gastrointestinal and respiratory function. Conversely, the perioperative application of complex botanical formulations requires extreme caution. While these substances hold theoretical promise for immune modulation and fatigue reduction, the risks of herb-drug interactions and bleeding complications necessitate that their use be restricted to rigorously monitored clinical trials until definitive safety profiles are established for specific surgical contexts.

Moving forward, the advancement of integrative perioperative oncology depends entirely upon the execution of methodologically impeccable research. Future trials must prioritize the use of validated sham controls, standardize intervention protocols while allowing for necessary pragmatic flexibility, and focus on objective, biologically relevant endpoints. Additionally, research must expand beyond short-term symptom management to investigate the potential impact of these therapies on long-term oncological outcomes, such as recurrence rates and overall survival. Ultimately, the successful integration of these traditional modalities into the high-stakes environment of surgical oncology will rely not merely on their historical precedence, but on their proven capacity to safely, measurably, and reproducibly improve the clinical trajectory of the cancer patient.

References

- Liu, Z. Q., Xiong, Y. J., Yu, X., Lv, T., & Xu, H. Y. (2026). Female reproductive factors, genetic susceptibility and incident osteoporosis risk. *Climacteric*, 1-8.
- Wen, X., Qi, L. M., & Zhao, K. (2025). Influence of gut bacteria on type 2 diabetes: Mechanisms and therapeutic strategy. *World Journal of Diabetes*, 16(1), 100376.
- Xie, C., Zhu, D., Wang, Z., Zhang, H., & Wei, Z. (2026). Compliance-Aware Discharge Agent for Auditable ICU Discharge Planning: A Pilot Feasibility Study Using Structured eICU Records. Available at SSRN 6429758.
- Hao, X., Chen, M., Shi, A., Chen, L., & Chang, M. (2025). Cardiovascular Mortality Trends Among Elderly Non-Hispanic White Patients With Inflammatory Bowel Disease in the United States: Divergent Trends in Crohn's Disease and Ulcerative Colitis (1999–2023). *Medicine Bulletin*, 1(2), 100-103.
- Chu, Y. B., Li, J., Jia, P., Cui, J., Zhang, R., Kang, X., ... & Zhang, S. (2021). Irf1-and Egr1-activated transcription plays a key role in macrophage polarization: A multiomics sequencing study with partial validation. *International Immunopharmacology*, 99, 108072.
- Kwaan, M. R., Ren, Y., Wu, Y., & Xirasagar, S. (2021). Colonic stent use by indication and patient outcomes: a nationwide inpatient sample study. *Journal of Surgical Research*, 265, 168-179.
- Li, Y., Liao, X., Tang, S., Wang, Q., Lin, H., Yu, X., ... & Zhong, T. (2025). Potential Therapeutic Targets for Androgenetic Alopecia (AGA) in Obese Individuals as Revealed by a Gut Microbiome Analysis: A Mendelian Randomization Study. *Nutrients*, 17(11), 1892.
- Li, Yuqi, et al. "Ammkd: Adaptive multimodal multi-teacher distillation for lightweight vision-language models." *arXiv preprint arXiv:2509.00039* (2025).
- Tao, X., Wu, X., Wu, H., Tu, L., Dong, M., Xiao, Y., ... & Zhong, T. (2026). A structural roadmap to gut health: A comprehensive review of edible insect chitin–protein complexes as alternative protein-derived, structure-specific prebiotics. *International Journal of Biological Macromolecules*, 151312.
- Wang, Siheng, et al. "DeCo-DETR: Decoupled Cognition DETR for efficient Open-Vocabulary Object Detection." *arXiv preprint arXiv:2604.02753* (2026).

- Sievers, F., Wilm, A., Dineen, D., Gibson, T. J., Karplus, K., Li, W., et al. (2011). Fast, scalable generation of high-quality protein multiple sequence alignments using Clustal Omega. *Molecular Systems Biology*, 7, 539.
- Chen, G., Yang, Y., & Zhu, X. (2025). P4-ATPases as Phospholipid Flippases: From Membrane Dynamics to Human Disorders. *Medicine Bulletin*, 1(2), 121-135.
- Xie, C., Zhu, D., Wang, Z., Zhang, H., & Wei, Z. (2026). Explainable AI for Mental Health Detection from Social Media: A Comparative Study of Traditional Machine Learning and a Large Language Model. Available at SSRN 6429778.
- Zhao, H., Wang, Q., Zhan, G., Min, W., Zou, Y., & Cui, S. (2022). Need only one more point (NOOMP): Perspective adaptation crowd counting in complex scenes. *IEEE Transactions on Multimedia*, 25, 1414-1426.
- Peng, Q., Planche, B., Gao, Z., Zheng, M., Choudhuri, A., Chen, T., ... & Wu, Z. (2024). 3d vision-language gaussian splatting. arXiv preprint arXiv:2410.07577.
- Zhang, H. J., Zhou, G. J., Li, C., Muhammad, M., Yang, S. Q., Xie, J. Y., & Kang, X. (2025). Activation of the cGAS/STING Pathway Contributes to Neuroinflammation in Diabetes-Associated Cognitive Decline. *Medicine Bulletin*, 1(2), 200-212.
- Thompson, J. D., Higgins, D. G., & Gibson, T. J. (1994). CLUSTAL W: Improving the sensitivity of progressive multiple sequence alignment through sequence weighting, position-specific gap penalties and weight matrix choice. *Nucleic Acids Research*, 22(22), 4673–4680.
- Ren, Y. (2024). Using Machine Learning and Deep Learning Algorithms to Improve Low Birthweight Prediction.
- Choy, L. L., & Lo, Y. D. (2025). The Longer, the Better? The Past, Present and the Future of Long Cell-Free DNA-Based Liquid Biopsy. *Medicine Bulletin*, 1(1), 86-91.
- Cai, Lie, et al. "Deep learning model for breast shear wave elastography to improve breast cancer diagnosis (INSPIRED 006): An international, multicenter analysis." *Journal of Clinical Oncology* 43.32 (2025): 3482-3493.
- Zhang, X., Chen, Z., Becker, B., Shan, T., Chen, T., & Gong, Q. (2025). Abnormal developmental of hippocampal subfields and amygdalar subnuclei volumes in young adults with heavy cannabis use: A three-year longitudinal study. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 136, 111156.