

免疫 | 2026-08 月度文献报告

碱基日读 · 作者 碱基 · 数据来源 PubMed / bioRxiv 官方接口 · 本月收录 161 篇，正文详述其中 30 篇

本月概览

2026年8月的30篇文献在主题上呈现明显的“巨噬细胞中心化”格局：超过三分之一的研究以巨噬细胞作为核心效应细胞或研究对象，横跨脓毒症性急性肺损伤、结核病、胶质母细胞瘤、骨关节炎、视网膜下纤维化、炎症性肠病等领域。这不是随机分布，而是反映了代谢免疫学（immunometabolism）在研究议程上的持续升温。真正意义上的新东西有三处：PFKFB3-RSPO2正反馈回路将糖酵解酶与Wnt信号耦合，提供了一个机制-靶点-干预三位一体的脓毒症切入点（PMID: 42665182）；dsRNAscan工具将人类dsRNA组的研究从编辑位点驱动的被动发现转为基因组规模主动预测，预测出约500万个dsRNA（PMID: 42664967）；替莫唑胺化疗通过GSK3 β -DNMT1轴诱导CD47上调，将化疗与先天免疫逃逸的连接机制化（PMID: 42667153）。本月综述、假说和案例报告类文章比例偏高，压缩了原创机制研究的密度，这一结构性问题值得注意。

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值得细看的研究

PFKFB3-RSPO2回路：脓毒症肺损伤中的代谢-炎症正反馈

这是本月机制整合度最高的原创研究之一（PMID: 42665182）。研究聚焦于PFKFB3——一种将果糖-6-磷酸转化为果糖-2,6-二磷酸的糖酵解调控酶——在脓毒症性急性肺损伤（ALI）中的角色。在LPS刺激的巨噬细胞和脓毒症小鼠中，PFKFB3上调后级联激活RSPO2，RSPO2通过 β -catenin信号放大促炎响应，同时进一步增强糖酵解，形成正反馈环。PFKFB3抑制剂PFK15在盲肠结扎穿孔（CLP）小鼠模型中通过抑制NF- κ B和RSPO2/ β -catenin信号减轻了ALI；基因沉默PFKFB3与基因沉默RSPO2产生类似保护效应；RSPO2/ β -catenin抑制剂KYA1797K同样改善了巨噬细胞炎症和糖酵解活性（PMID: 42665182）。体外（LPS刺激）与体内（CLP模型）双轨验证、药理与遗传操作相互印证，证据链相对完整。主要局限在于：CLP模型与人类脓毒症的免疫异质性差距较大，RSPO2在人ALI患者标本中的表达数据完全缺失。这一回路的意义在于：它将代谢酶（糖酵解）与发育信号通路（Wnt/ β -catenin）在炎症情境下连接，为超越传统NF- κ B靶向的干预策略提供了逻辑基础。

dsRNAscan：人类dsRNA组的系统绘图

Molecular Cell发表的这项工作本月最具方法学价值的贡献，影响可能超出免疫领域本身（PMID: 42664967）。dsRNAscan将人类基因组的dsRNA预测从依赖A-to-I编辑位点的被动发现转向主动的基因组规模预测：应用于人类基因组后，共预测约500万个dsRNA，主要位于重复序列和基因间区域；机器学习模型（训练于A-to-I编辑和RNA二级结构探测数据）筛选出约240万个高置信度预测，这些位点富集于dsRNA结合蛋白结合位点；此外还预测出数百个在脊椎动物中保守的dsRNA，以及数千个可能来自顺/反义转录本形成分子间dsRNA的编辑富集区域；分子内与分子间dsRNA表达比值与癌症细胞系中的ADAR依赖性相关（PMID: 42664967）。该工具已公开（<https://dsrna.chpc.utah.edu/>），可重复性有保障。局限在于：预测尺度大但实验验证深度有限，绝大多数预测dsRNA的生物学功能未经证实。对于先天免疫领域，细胞质dsRNA是MDA5、RIG-I等传感器的关键配体，该图谱将直接帮助厘清哪些内源性dsRNA

A触发自身炎症、哪些被ADAR持续抑制——这对MDA5相关的系统性红斑狼疮和Aicardi-Goutières综合征的机制研究有直接价值。

GSK3 β -DNMT1-CD47轴：化疗如何主动激活免疫逃逸

这项研究揭示了GBM化疗耐药与先天免疫逃逸之间的一条此前未被认识的连接（PMID: 42667153）。替莫唑胺（TMZ）维持GSK3 β 持续激活，激活的GSK3 β 与DNMT1相互作用，使DNMT1在此前未被报道的S977位点磷酸化，继而触发K981依赖的泛素化和蛋白酶体降解。DNMT1水平下降导致CD47启动子去甲基化，CD47（巨噬细胞吞噬的“别吃我”信号）表达升高，从而抑制巨噬细胞吞噬，促进TMZ处理后GBM细胞存活。小分子WIN 51708破坏p-GSK3 β -Y216-DNMT1相互作用，稳定DNMT1，降低CD47表达，在体内恢复巨噬细胞吞噬功能，并使肿瘤对TMZ重新敏感。这一轴在TMZ耐药PDX模型及复发GBM患者样本中均得到验证（PMID: 42667153）。含复发患者样本的双重验证是本篇的明显优势，但临床样本量未在摘要中披露。更重要的方向性意义是：化疗本身诱导CD47上调，意味着免疫逃逸可能是治疗压力的主动适应，而非单纯的固有肿瘤特性——这一逻辑如果在其他肿瘤类型中得到验证，将对“化疗+免疫检查点抑制”的联合策略设计产生实质影响。

CTSB-S100A10正反馈回路：GBM与肿瘤相关巨噬细胞的双向共谋

Advanced Science的这项研究识别出CTSB+

GBM细胞与S100A10+肿瘤相关巨噬细胞（TAM）之间的自强化回路（PMID: 42666105）。巨噬细胞来源的IL-6激活肿瘤细胞内的STAT3，上调组织蛋白酶B（CTSB）表达；肿瘤细胞分泌的CTSB反向结合巨噬细胞S100A10的C末端，强化IL-6分泌，形成前馈环。该环路还通过上调PD-L1增强免疫逃逸。体内实验中，CTSB敲减减少了TAM激活，增加了CD8 $^{+}$ T细胞浸润（PMID: 42666105）。研究综合了Co-IP、ChIP、双荧光素酶报告基因、分子对接及正位颅内肿瘤模型（GL261和CT-2A），方法多样。但GL261和CT-2A均为小鼠细胞系，对人GBM免疫微环境的代表性受限，且GBM在免疫学上已知高度异质，这一回路是否在亚型层面有选择性激活未被讨论。

RNF213介导的包涵体裂解：超越异噬的细胞自主免疫

PNAS的这项工作IFN- γ 诱导的E3泛素连接酶RNF213研究中提出了修正（PMID: 42658761）。沙眼衣原体的效应蛋白GarD正常情况下阻止RNF213被招募至包涵体；GarD缺失时，RNF213泛素化包涵体膜相关底物，并通过两条平行路径清除细菌：一是异噬（xenophagy），但该通路被证明对于抑制衣原体复制并非必需；二是包涵体裂解（inclusion lysis），将细菌释放至细胞质并触发宿主细胞死亡，其下游存在两条细胞死亡通路，其中一条形态类似凋亡但不依赖经典凋亡机制（PMID: 42658761）。研究的价值在于，它精巧地在同一系统内分离了两条通路的必要性，修正了“泛素化 $\rightarrow$ 异噬”作为唯一抗菌结局的默认假设。RNF213是已知与烟雾病和多种病原体抵抗相关的基因，包涵体裂解路径是否具有跨病原体的普适意义，是一个值得后续追踪的开放问题。

AML中性粒细胞表型重塑与感染性死亡（精简评）

这是本月少有的前瞻性临床研究（PMID: 42668000）。27例新诊断AML患者中，N1（活化样）和N2B（未成熟）亚群扩增，稳态N2A亚群收缩，氧化爆发储备功能受损（均 $p < 0.05$ ）。校正年龄后，log转化N1/N2A比值与感染性死亡率独立相关（调整OR 4.90，95% CI 1.17-20.49； $p = 0.029$ ），AUC为0.774（95% CI 0.585-0.963； $p = 0.049$ ）（PMID: 42668000）。感染性死亡率为22.2%。样本量极小，置信区间宽，临床推广受限，但提供了中性粒细胞“质量”异常的定量预后指标，逻辑是清晰的。

HIV/TB重症感染的蛋白质组签名（精简评）

乌干达双中心前瞻性队列（城市发现队列241例，农村验证队列253例），HIV/TB共感染比例分别为18%和21%，30天死亡率22%（发现队列），60天死亡率26%（验证队列）（PMID: 42645154）。应用有序随机森林进行蛋白质组特征选择，是本月少数有显式跨地域验证设计的临床研究。但观察性队列设计不能建立因果关系，所识别的蛋白标志物的特异性及临床可操作性尚待后续研究。

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趋势判断

- 巨噬细胞代谢状态的决定性角色已形成跨领域共识，但框架本身需要修订。** 本月脓毒症（PMID: 42665182）、骨关节炎（PMID: 42667963）、骨肉瘤（PMID: 42665027）、视网膜下纤维化（PMID: 42665160）、肠道炎症（PMID: 42665970）等研究均以巨噬细胞代谢-功能轴为核心叙事。然而，结核病研究（PMID: 42665100）提示线粒体代谢在促炎性程序性坏死中同样发挥核心作用，挑战了“糖酵解=促炎、氧化磷酸化=抗炎”的简单二元框架。这一修订迟早是必要的，本月的TB综述是一个明确的提示信号。

- 单细胞+空间转录组学已成基础配置，发现与验证的落差随之扩大。** ZNF385A（PMID: 42667989）、GBM-TAM回路（PMID: 42666105）、4-HNE肺腺癌（PMID: 42667808）、骨肉瘤APP-CD74（PMID: 42665027）等研究均以scRNA-seq为发现工具，部分叠加空间转录组。技术普及是好事，但多数研究将scRNA-seq的发现直接接到细胞系或简单小鼠模型验证，缺乏对人原代免疫细胞功能的系统验证，“发现-验证”链条的系统性缺口正在扩大。

- 化疗诱导的先天免疫逃逸是一个被低估的耐药机制。** GSK3 β -DNMT1-CD47轴（PMID: 42667153）将化疗压力、表观遗传调控和巨噬细胞吞噬整合进一个连贯机制，提示治疗本身可能主动激活免疫逃逸。结合CD74在血液肿瘤和骨肉瘤中的多篇讨论（PMID: 42669181、42665027），肿瘤免疫逃逸的研究视野正在向“治疗诱导的动态免疫重塑”迁移，而不仅仅是肿瘤的固有特性。

- 训练免疫框架向非感染性疾病的扩张值得审慎评估。**

心理应激经由训练免疫加速动脉粥样硬化的综述（PMID: 42667142）代表了一种叙事延伸：训练免疫被扩展至慢性非传染性病的免疫基础。该方向的证据基础参差不齐，多为相关性数据。这一框架的解释力被高估的风险不低，但其临床指向（行为干预、生活方式修正）具有一定现实意义。

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这批研究的共同弱点

- 样本量普遍偏小，临床外推受限。** AML中性粒细胞研究仅纳入27例患者（PMID: 42668000），置信区间宽度印证了功效不足的问题。miR-122研究的小鼠实验每组仅6只（PMID: 42667984）。即使是规模较大的HIV/TB队列（n=241/253，PMID: 42645154），也因观察性设计无法建立因果关系。

- 动物模型到人体的系统性差距未被充分讨论。** CLP脓毒症模型（PMID: 42665182）、DMM骨关节炎模型（PMID: 42667963）、激光诱导视网膜下纤维化模型（PMID: 42665160）、ApoE-/-动脉粥样硬化模型（PMID: 42665217）等与人类疾病在免疫微环境、遗传背景和病程演进上存在系统性差异，但多数研究将动物实验结论直接延伸至人体疾病，未做必要的保留。

- 综述与假说类文章稀释了原创数据密度。 **

30篇中，明确的综述或假说性文章包括血液肿瘤CD74综述（PMID:

42669181）、应激-训练免疫-CVD综述（PMID: 42667142）、TB线粒体代谢综述（PMID:

42665100）、SQLE综述（PMID:

42665204），以及明确标注为假说的黄酮类化合物结构去稳定化文章（PMID: 42668076）。后者基于文献挖掘、网络药理学和分子对接推断，未提供体内或体外直接证据，证据级别与原始实验研究不可等同。

- 机制研究普遍缺乏人体样本层面的验证。 ** PFKFB3-RSPO2（PMID:

42665182）、CTSB-S100A10（PMID: 42666105）、整合素-FAK（PMID: 42665160）等机制清晰的研究，均未在人体患者标本中验证靶点表达模式、预后相关性或干预可行性。GSK3 β -DNMT1-CD47研究（PMID: 42667153）是罕见的包含患者样本分析的例外，这也是其在本月中相对突出的原因之一。

- 统计功效与可重复性保障机制缺失。 ** 多数研究未报告样本量计算依据，阴性结果缺失，预注册几乎未见。scRNA-seq研究依赖聚类参数和标志基因定义，但参数敏感性分析普遍缺位。

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下个月值得关注

- RNF213-包涵体裂解的下游细胞死亡机制。 ** 本月PNAS研究（PMID: 42658761）摘要在两条细胞死亡通路的细节上被截断，完整机制未呈现。更重要的是，包涵体裂解是否是RNF213对其他含菌液泡存活的病原体（如沙门氏菌、布鲁氏菌）同样有效的通路？宿主细胞死亡对局部炎症的净效应是保护性的还是损伤性的？这些是直接的后续问题。

- ZNF385A在免疫功能完整模型中的体内证据。 ** 本月研究（PMID: 42667989）中ZNF385A的功能验证停留在体外敲减层面。ZNF385A缺失是否真正促进TLS形成、改变CD8⁺T细胞浸润密度，需要在免疫功能健全的小鼠模型中验证，这是判断其靶点价值的关键一步。

- dsRNA组与自身炎症性疾病的交叉。 ** dsRNAscan（PMID: 42664967）识别出约240万个高置信度内源性dsRNA，其中哪些在MDA5相关的系统性红斑狼疮或Aicardi-Goutières综合征患者中处于异常水平、逃脱了ADAR编辑？将该图谱与患者转录组数据整合，是一个现实可行的短期研究方向。

- 化疗诱导CD47上调的跨肿瘤类型验证。 ** GSK3 β -DNMT1-CD47轴（PMID: 42667153）在GBM中建立了化疗诱导免疫逃逸的表观遗传机制。这一逻辑是否在其他接受DNA损伤化疗的实体瘤或血液肿瘤中同样成立，是一个系统性验证的缺口，值得追踪。

- PFKFB3抑制的安全性边界。 ** PFK15在多个炎症模型中表现出色（PMID: 42665182），但PFKFB3是糖酵解的广谱调控因子，全身抑制是否同时损害DC成熟、T细胞活化等依赖糖酵解爆发的免疫功能，本月研究未作系统评估，这是其进入转化阶段前需要回答的安全性问题。

附录：2026-08 全部收录文献（161 篇）

#	标题	期刊	日期	PMID
1	Proteomic Immune Signatures of Severe HIV-Associated Tuberculosis in Sub-Saharan Africa: A Prospective, Multicenter Analysis From Uganda.	Critical care explorations	2026-Sep-0	42645154
2	SET7-mediated methylation of IRF3 at lysine 98 attenuates antiviral innate immunity.	Proceedings of the National Academy of S	2026-Sep	42640792
3	SESN1 is a negative regulator of MAVS and dynamically expressed during RNA viral infection.	Proceedings of the National Academy of S	2026-Sep	42647126
4	Amino acid homeostasis by CORVET/HOPS: A metabolic and stress resilience checkpoint for T cells.	Proceedings of the National Academy of S	2026-Sep	42647134
5	Virtual single-cell perturbation and genetic causal inference reveal CSF1R-dependent immunometabolic communication in iron metabolism-associated osteoarthritis.	Journal of cell communication and signal	2026-Sep	42662567
6	RNF213-dependent lytic destruction of Chlamydia-containing vacuoles activates host cell death pathways.	Proceedings of the National Academy of S	2026-Sep	42658761
7	Store-operated calcium signaling modulators improve a dendritic cell-based vaccine against melanoma.	Oncoimmunology	2026-Dec-3	42666008
8	Targeting Runx1 Slows Cyst Growth in Autosomal Dominant Polycystic Kidney Disease.	FASEB journal : official publication of	2026-Aug-3	42640700
9	Targeting the macrophage-NLRP3 inflammasome-pyoptosis axis: Metformin-capped silver nanoparticles as a novel therapy for premature ovarian insufficiency.	International immunopharmacology	2026-Aug-3	42669281
10	Force-Electric Nanotentacles of Tantalum Implant Accelerate Cellular Energy Metabolism/Crosstalk for Immunomodulation-Vascularized Bone Integration.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-3	42669626
11	CD74 in hematological malignancies: from MHC chaperone to therapeutic target.	Leukemia & lymphoma	2026-Aug-3	42669181
12	Construction and Antitumor Efficacy of an Antigen-Adjuvant Self-Carrier Spherical Peptide Nanovaccine.	Zhongguo yi xue ke xue yuan xue bao. Act	2026-Aug-3	42660827
13	Splenic Epstein-Barr Virus-Positive Inflammatory Follicular Dendritic Cell Sarcoma : Report of One Case.	Zhongguo yi xue ke xue yuan xue bao. Act	2026-Aug-3	42660846
14	Polyphenol-engineered selenium nanocatalysts enable neuroprotective glioblastoma chemoimmunotherapy via nose-to-brain delivery.	Biomaterials	2026-Aug-2	42669245
15	Crosstalk Between CTSB+ Glioblastoma Cells and S100A10+ Macrophages: A Self-Reinforcing Circuit Promotes Immune Evasion and Limits Response to Immunotherapy.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42666105
16	Chemotherapy-Activated GSK3 β -DNMT1 Signaling Upregulates CD47 to Evade Macrophage Phagocytosis and Drive Temozolomide Resistance in Glioblastoma.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42667153
17	High levels of cell-free hemoglobin and iron in cerebral thrombi of pre-Omicron COVID-19 stroke patients: novel drivers of SARS-CoV-2-induced prothrombotic state.	Acta neuropathologica	2026-Aug-2	42667425
18	Integrative Analysis of Nucleotide Metabolism-Related Genes Reveals a Diagnostic Signature and In Silico Functional Disruption in Hypertrophic Scarring.	Journal of burn care & research : of	2026-Aug-2	42667656
19	Integrative single-cell and spatial transcriptomic analysis reveals 4-HNE-related stromal remodeling in lung adenocarcinoma.	Translational oncology	2026-Aug-2	42667808

#	标题	期刊	日期	PMID
20	Fetuin-A improves knee osteoarthritis by regulating macrophage PD-1 expression to balance M1/M2 polarization.	Biochemical pharmacology	2026-Aug-2	42667963
21	Pan-cancer single-cell atlas of immunotherapy response identifies ZNF385A as a regulator of immune evasion in small cell lung cancer.	Biochimica et biophysica acta. Molecular	2026-Aug-2	42667989
22	Targeted structural destabilization of flavonoids: a novel paradigm for metabolic reprogramming and anti-senescence to repair the alveolar-capillary barrier.	Pharmacological research	2026-Aug-2	42668076
23	Stress-induced trained immunity-A key mechanism linking psychosocial stress, atherosclerosis, and cardiovascular disease.	FEBS letters	2026-Aug-2	42667142
24	Impacts of Environmental Pollutants on Innate Immunity: The Role of Group 2 Innate Lymphoid Cells.	Clinical reviews in allergy & immuno	2026-Aug-2	42667487
25	From structure to function: binding determinants of a miniaturised phage depolymerase and their immunological relevance in Klebsiella pneumoniae capsule degradation.	International journal of biological macr	2026-Aug-2	42667942
26	MiR-122 regulates liver tolerance.	JHEP reports : innovation in hepatology	2026-Aug-2	42667984
27	Phenotypic Remodeling and Functional Impairment of Circulating Neutrophils Are Associated with Infection-Related Mortality in Acute Myeloid Leukemia.	Experimental hematology	2026-Aug-2	42668000
28	Hepatitis B surface antigen directly alters Dendritic cell-mediated Natural Killer cell responses.	Cellular and molecular gastroenterology	2026-Aug-2	42668088
29	Complicated and refractory celiac disease: a model of antigen-independent immune escape and lymphoproliferation.	Expert review of clinical immunology	2026-Aug-2	42655913
30	Yinchenhao Decoction Alleviates Liver Injury in CYP2D6-Induced Autoimmune Hepatitis Mice: An Integrated Transcriptomic and Proteomic Analysis.	Chinese journal of integrative medicine	2026-Aug-2	42661116
31	Myeloid myeloid PRDM16 restrains macrophage inflammatory remodeling and renal fibrosis in diabetic kidney disease by limiting PI3K/AKT activation.	Acta diabetologica	2026-Aug-2	42663637
32	Maladaptive immune-fibrotic axis drives impaired long bone regeneration under mechanical instability.	Science advances	2026-Aug-2	42664332
33	LATS1/2 inactivation drives a distinct venous endothelial cell response that contributes to fibrotic remodeling of the lung.	Science advances	2026-Aug-2	42664350
34	Transglutaminase 2 regulates vimentin-dependent proteostasis during macrophage activation.	Science advances	2026-Aug-2	42664354
35	Hexachlorobutadiene exposure promotes hepatocellular carcinoma progression via CD8+ T dysfunction and VDR-mediated PI3K/AKT activation: An integrated multi-omics and experimental s	Ecotoxicology and environmental safety	2026-Aug-2	42664556
36	Host metadherin coordinates hepatic lipid metabolism and CD8+ T cell immunity to promote tumor progression.	Cell metabolism	2026-Aug-2	42664974
37	Human-relevant Ptpn6 mutation alters immune and hepatic functions during aging.	Aging	2026-Aug-2	42669491
38	Microenvironment-derived APP promotes osteosarcoma malignant phenotypes and induces macrophage M2 polarization via CD74.	Biochimica et biophysica acta. Molecular	2026-Aug-2	42665027

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39	Targeting macrophage mitochondrial metabolism in tuberculosis: from pathogen-driven biochemical reprogramming to host-directed pharmacotherapy.	Biochemical pharmacology	2026-Aug-2	42665100
40	The Integrin-Mediated Focal Adhesion Is Critically Involved in the Macrophage-to-Myofibroblast Transition in Subretinal Fibrosis.	The American journal of pathology	2026-Aug-2	42665160
41	Simian Immunodeficiency virus/ Human Immunodeficiency virus induces arachidonic acid-mediated inflammation in the heart by a Pannexin-1 mechanism.	The American journal of pathology	2026-Aug-2	42665161
42	The crosstalk between PFKFB3 and RSPO2 drives sepsis-induced lung injury by coupling metabolic rewiring to macrophage inflammation.	Translational research : the journal of	2026-Aug-2	42665182
43	Squalene Epoxidase in Cancer: Mechanistic Insights, Therapeutic Potential, and Future Perspectives.	Experimental cell research	2026-Aug-2	42665204
44	USP40 alleviates atherosclerosis by stabilizing SIRT1 to suppress endothelial apoptosis and NLRP3 inflammasome activation.	Biochimica et biophysica acta. Molecular	2026-Aug-2	42665217
45	Engineered P. distasonis-Derived Membrane Vesicles Ameliorate Gut-Liver Axis Disorders by Remodeling Intestinal Immunity and Bile Acid Homeostasis.	Small (Weinheim an der Bergstrasse, Germ	2026-Aug-2	42665970
46	Beyond B cells: T and Innate Immune Mechanisms of Autoimmunity in Common Variable Immunodeficiency.	Clinical reviews in allergy & immuno	2026-Aug-2	42663782
47	dsRNAscan maps human dsRNAome, revealing conservation, intermolecular dsRNA, and correlates of ADAR dependency.	Molecular cell	2026-Aug-2	42664967
48	Single-cell transcriptional profiling identifies the swimming crab Portunus trituberculatus in response to bacterial infection.	International journal of biological macr	2026-Aug-2	42665149
49	Biodegradable Biomimetic Nanoplatfrom Orchestrating an Oxygen-Lactate Cascade to Enhance Photothermal Immunotherapy.	Advanced healthcare materials	2026-Aug-2	42665924
50	Infection-triggered surface remodeling for mucus penetration and host-pathogen reprogramming against MDR bacterial infections.	Journal of controlled release : official	2026-Aug-2	42636889
51	Na/K-ATPase Signaling in Adipocytes Promotes Atherosclerosis.	Arteriosclerosis, thrombosis, and vascul	2026-Aug-2	42657466
52	Efficacy of the Bispecific Anti-BAFF/IL-21 Antibody CZ105 Bis2 in Models of Systemic Lupus Erythematosus.	Arthritis & rheumatology (Hoboken, N	2026-Aug-2	42657656
53	HSV-1 LAT promotes ocular diseases in the absence of type I IFN responses in sensory neurons.	Journal of virology	2026-Aug-2	42657886
54	Biomaterial-based microenvironment remodeling for functional regeneration of scarred uterus tissue.	Journal of materials chemistry. B	2026-Aug-2	42658003
55	Macrophage programming in systemic sclerosis: Niches, networks, and translational horizons.	Seminars in immunopathology	2026-Aug-2	42658262
56	Trem2 regulates macrophage phenotype via the JAK2/STAT3 signaling pathway to ameliorate ventricular remodeling after acute myocardial infarction.	Molecular biology reports	2026-Aug-2	42658285
57	Intranasal CRISPR lipid nanoparticles targeting MAPK9 attenuate neuroinflammation after traumatic brain injury.	Biomedical microdevices	2026-Aug-2	42658322
58	Lactylation: A central metabolic-epigenetic driver of sepsis-associated acute kidney injury.	Molecular biology reports	2026-Aug-2	42658356

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59	Repurposing Selective Serotonin Reuptake Inhibitors as Immunomodulators: Effects on Macrophage Activation and Polarization.	Molecular neurobiology	2026-Aug-2	42658372
60	Combined type 2 cytokine blockade enhances PD-1-mediated antitumor immunity.	Cell reports	2026-Aug-2	42658679
61	Structural basis and preclinical efficacy of MG1124, a novel CEACAM1-targeting antibody synergizing with PD-1 blockade.	Molecular cancer therapeutics	2026-Aug-2	42658691
62	A necroptotic-to-apoptotic signaling axis underlies inflammatory bowel disease.	Science (New York, N.Y.)	2026-Aug-2	42658927
63	Discovery of immune-activating molecules targeting TLR7/8 receptors from natural products.	International immunopharmacology	2026-Aug-2	42659932
64	Ginkgolide A alleviated liver fibrosis by modulating PI3K/AKT/NF- κ B signaling to inhibit M1 macrophage polarization and macrophage-HSC crosstalk.	International immunopharmacology	2026-Aug-2	42659933
65	The CA19-9 glycan is a viable target for CAR T cell therapy in pancreatic and other solid tumors.	Gastroenterology	2026-Aug-2	42660205
66	Immunological consequences of mesenchymal stem cell therapy in HPV-driven cervical cancer: a systematic review and stratification framework.	Critical reviews in oncology/hematology	2026-Aug-2	42660395
67	Bisphenol A promotes colorectal cancer malignancy through CXCL8 upregulation associated with p38 MAPK activation: A potential link to type 2 diabetes mellitus comorbidity.	Chemico-biological interactions	2026-Aug-2	42660439
68	Farnesoid X receptor activates STAT3 to promote fatty acid oxidation and suppress inflammatory macrophage responses in cholestasis.	The Journal of biological chemistry	2026-Aug-2	42660454
69	The cortical microenvironment drives early immune organization and controls early osteoclastogenesis in bone healing.	Nature communications	2026-Aug-2	42660942
70	CD73 inhibitor enhances the antitumor activity of selinexor in multiple myeloma by restoring the activation of CD8+ T cells.	Cancer gene therapy	2026-Aug-2	42661032
71	Sulf1 regulates inflammation via modulation of TGF- β dependent epicardial activation.	EMBO reports	2026-Aug-2	42661063
72	Macrophages Promote Vascular Maturation to Support Tooth Germ Morphogenesis.	Journal of dental research	2026-Aug-2	42661281
73	Targeting pro-senescent PTGS2+ macrophages alleviates chondrocyte senescence and osteoarthritis progression.	Cell reports	2026-Aug-2	42664050
74	Discovery of a novel CDK8 inhibitor as dual suppressor of NF- κ B-driven inflammation and promoter of Treg differentiation for psoriasis treatment.	Bioorganic chemistry	2026-Aug-2	42664599
75	The Sesn2/Nrf2 axis suppresses oxidative stress and pyroptosis-associated signaling in LPS/nigericin-challenged alveolar macrophages.	Immunobiology	2026-Aug-2	42669253
76	Mannose-functionalized thermoresponsive microneedles for enhanced antigen delivery and immune activation.	Journal of materials chemistry. B	2026-Aug-2	42657667
77	Adrenergic regulation of cancer immunity.	Clinical cancer research : an official j	2026-Aug-2	42658482
78	Natural-Inspired Engineered Microalgae With Selenium Enrichment Enabled Potent Anti-Tumor Immunity.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42658564

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79	A novel clip domain-containing C-type lectin from <i>Macrobrachium rosenbergii</i> promotes DIV1 replication.	Fish & shellfish immunology	2026-Aug-2	42660207
80	The cGAS-STING pathway and its functions in immune defense and inflammatory regulation in teleost fish.	Fish & shellfish immunology	2026-Aug-2	42660208
81	Spatial control of cytokine-based therapeutics in pancreatic tumors via DNase I-responsive DNA frameworks.	Journal of controlled release : official	2026-Aug-2	42660459
82	Machine learning-assisted design of a dendritic cell nanovaccine inducing twin immunity against monkeypox.	Journal of controlled release : official	2026-Aug-2	42660460
83	In situ-formed pH-responsive hydrogel for sequential vascular disruption and Type I sonodynamic therapy-driven PANoptosis in hypoxic tumor therapy.	Journal of controlled release : official	2026-Aug-2	42660461
84	SADS-CoV nucleocapsid protein antagonizes DAD1-mediated STING activation to prevent cytosolic DNA sensing.	Cell reports	2026-Aug-2	42664053
85	Site-specific microRNA responses in lungs of pigs depend on the host-adaptation of H1N1 influenza A virus.	Virology	2026-Aug-2	42667886
86	Suppressed cGAS-STING DNA Sensing Drives Immune Evasion in Anaplastic Thyroid Cancer.	Thyroid : official journal of the Americ	2026-Aug-2	42644464
87	EphA4 Mediates Pro- and Antitumoral Effects Through Upstream Negative Regulation of AKT in Head and Neck Squamous Cell Carcinoma.	Cancer immunology research	2026-Aug-2	42644611
88	Targeting ERO1A enhances antitumor immune response by recruiting CD8+T cells and synergizing with PD-L1 blockade in liver cancer.	Cancer immunology research	2026-Aug-2	42644613
89	Cancer Immunotherapy Using AIRE Conditioning of the Tumor Epitopeome.	Cancer immunology research	2026-Aug-2	42644627
90	Berberine-associated lipid-inflammatory regulation in atherosclerosis: an integrative transcriptomic, single-cell, and in vivo study.	Functional & integrative genomics	2026-Aug-2	42645604
91	Rewiring Atopic Dermatitis: Alarmin Cytokines at the Core of Barrier-Immune-Neuro-Microbiome Networks.	Clinical reviews in allergy & immuno	2026-Aug-2	42645614
92	Berberine Modulates Mitophagy-Related Gene Expression and Suppresses Breast Cancer Cells: A Multi-Omics and Experimental Study.	Cell biochemistry and biophysics	2026-Aug-2	42645668
93	IRF2 exacerbates diabetic neuropathic pain by promoting high glucose-induced M1 polarization through IL-6/STAT3.	Genes & genomics	2026-Aug-2	42645705
94	Multiscale modeling of T cell exhaustion: A mathematical framework integrating continuous dynamics with spatial heterogeneity.	PLoS computational biology	2026-Aug-2	42647568
95	LTBP4 deficiency induces MRC1+/CD44+ macrophages to drive cancer progression in preclinical colorectal cancer models.	Science translational medicine	2026-Aug-2	42647596
96	Zinc finger protein 600 is essential for the cytotoxic function of esophageal cancer-associated natural killer cells.	Journal of leukocyte biology	2026-Aug-2	42647748
97	Macrophage trafficking and efferocytosis in atherosclerotic plaque regression: Molecular mechanisms and therapeutic perspectives.	Biomedicine & pharmacotherapy = Biom	2026-Aug-2	42648028
98	Long-lasting extracellular matrix modifications reshape intestinal stem cell fate and promote chronic inflammation.	Immunity	2026-Aug-2	42648285

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99	Targeting peptidylarginine deiminases 2 and 4 in diabetic kidney disease: mechanistic rationale and preclinical evidence.	Biochemical pharmacology	2026-Aug-2	42648375
100	Ferroptosis Key Genes and Immune Infiltration in Legionnaires' Disease: Bioinformatics and Animal Model Evidence.	Microbial pathogenesis	2026-Aug-2	42648499
101	Modeling of ex vivo immune response reveals a central role for CD8+CD25+ cells in Adult T-cell Leukemia survival: a long-term prospective cohort study.	Tumour virus research	2026-Aug-2	42648572
102	GSK3 β -FBXW7 axis regulates MAFB protein stability through ubiquitin-mediated proteasome degradation.	Biochimica et biophysica acta. Molecular	2026-Aug-2	42648647
103	Intercellular Mitochondria Transfer in Lung Diseases: New Mechanisms, Risks, Therapeutic Boundaries.	Antioxidants & redox signaling	2026-Aug-2	42649104
104	Leptomeningeal fibroblasts promote glioblastoma progression by regulating cerebrospinal fluid dynamics.	Nature communications	2026-Aug-2	42649182
105	Cytotoxic CD4+ T cells induce age-associated myelopoiesis through CCL5-CCR5 signaling.	Nature aging	2026-Aug-2	42649414
106	Altered peripheral immune cell profiles in Tg-SwDI mice compared with wild-type controls.	Journal of neuroimmunology	2026-Aug-2	42667812
107	Zinc accumulation in macrophages exacerbates metabolic dysfunction-associated steatotic liver disease progression.	Signal transduction and targeted therapy	2026-Aug-2	42637722
108	A human PBMC-based new approach method reveals PFAS-driven T-cell proliferation and immune dysregulation.	Archives of toxicology	2026-Aug-2	42637958
109	Site-Specific Apo AI Glycation Impairs HDL Function and Promotes Atherosclerosis in Diabetes.	Circulation	2026-Aug-2	42639673
110	Complement activation linked to type II interferon signaling in Still disease.	Arthritis & rheumatology (Hoboken, N	2026-Aug-2	42640011
111	Nanomessenger-Mediated Signal Crosstalk Encodes Multithreading Death Program Against Tumor Metastasis.	Small (Weinheim an der Bergstrasse, Germ	2026-Aug-2	42640117
112	A novel role for TRPV1 in macrophage giant cell formation.	American journal of physiology. Cell phy	2026-Aug-2	42640282
113	Comparative genomic analysis of pigs differing in survival following African swine fever virus infection.	Veterinary research communications	2026-Aug-2	42640359
114	SynNotch Receptors for Visualizing Immunoreceptor Force Transmission and Downstream Signaling In Vivo.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42640702
115	FBXW5 blunts RIGI/MDA5-IFN signaling to drive immunoevasion and chemo-immune resistance in triple-negative breast cancer models.	The Journal of clinical investigation	2026-Aug-2	42640714
116	Phase 1 Trial with Soquelitinib, a Selective ITK Inhibitor for Treatment of Relapsed/Refractory T Cell Lymphomas.	Blood	2026-Aug-2	42640855
117	Arctiin attenuates acute rejection after rat liver transplantation by modulating macrophage polarization via the NF- κ B signaling pathway.	International immunopharmacology	2026-Aug-2	42641191
118	Integrative systems-level analysis identifies potential gut microbial metabolite-host signaling networks in lung adenocarcinoma.	Computational biology and chemistry	2026-Aug-2	42641424
119	Spatial profiling of the spleen in mouse and human myelofibrosis reveals complement-driven immune-stromal interactions as a therapeutic target.	Cell stem cell	2026-Aug-2	42641607

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120	Splenic extramedullary hematopoiesis in myelofibrosis is shaped by transcriptomic and epigenetic dysregulation.	Cell stem cell	2026-Aug-2	42641608
121	Integrated Bulk and Spatial Proteomics of Castleman Disease: Molecular Signatures Across Subtypes and Compartmentalized Pathogenic Networks in iMCD-TAFRO.	Modern pathology : an official journal o	2026-Aug-2	42641686
122	Thymosin α -1 in Cancer Therapy: Immunomodulatory Mechanisms, Clinical Applications, and Translational Perspectives.	European journal of pharmacology	2026-Aug-2	42641753
123	Arginine methyltransferase PRMT3 suppresses tumor-intrinsic immunity via promoting cGAS methylation.	Cancer letters	2026-Aug-2	42641868
124	Xijiao Dihuang decoction attenuates microglia/macrophage-mediated inflammatory response in cerebral injury by modulating the PI3K/Akt/HIF-1 α /NLRP3 axis.	Journal of ethnopharmacology	2026-Aug-2	42642006
125	ID2 secures cDC1 specification by antagonizing E proteins at a pleiotropic Zeb2 enhancer.	Nature immunology	2026-Aug-2	42642670
126	From molecular pathogenesis to novel Therapeutic approaches - a review of recent advances in the treatment of peripheral T cell Lymphomas.	Biomarker research	2026-Aug-2	42642781
127	C-terminus CD28 phosphorylation, Y218, modulates IL-2 secretion and therapeutic effect of CAR-T cells.	Molecular therapy : the journal of the A	2026-Aug-2	42642932
128	Discovery of synthetic TBK1 activator inducing type I interferon mediated antiviral and antitumor immunity.	Molecular therapy : the journal of the A	2026-Aug-2	42642934
129	The current clinical trial landscape in idiopathic inflammatory myopathies.	Current opinion in rheumatology	2026-Aug-2	42643001
130	TCR Signal Strength and Duration In Primary Mouse CD8+ T Cell Activation and Differentiation: A Standardized In Vitro Approach.	Journal of visualized experiments : JoVE	2026-Aug-2	42644500
131	Identification of Aging and Mitochondria-Related Hub Genes in Dilated Cardiomyopathy.	Journal of visualized experiments : JoVE	2026-Aug-2	42644501
132	Immunoregenerative remodeling of the dermal microenvironment induced by platelet-rich plasma in atrophic abdominal striae.	Tissue & cell	2026-Aug-2	42648260
133	Fast-Food Component-Induced Epigenetic Modifications Modulate Immunotherapy in Metastatic Breast Cancer.	ACS omega	2026-Aug-2	42662312
134	Proximal Proteomics Reveals Potential Regulators of Programmed Death-Ligand 1 in Human Cancer.	ACS omega	2026-Aug-2	42662760
135	Uncoupling Type I Interferon Benefits From Inflammatory Toxicity: Transformer-Prioritized Precision Agonists for Potent and Safer Cancer Immunotherapy.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42635620
136	Mesenchymal R-spondin 3 promotes an immunogenic tumor microenvironment with adaptive immune resistance in human gastric adenocarcinoma.	Gastric cancer : official journal of the	2026-Aug-2	42635887
137	Macrophage PARP7 Alleviates Septic Cardiomyopathy by Interacting With TBK1 and Suppressing TBK1-Driven Inflammatory Response.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42635911
138	Vitexin antagonizes the kynurenine pathway via AhR inhibition to reprogram tumor-associated macrophages and enhance antitumor immunity in lung adenocarcinoma.	Molecular and cellular biochemistry	2026-Aug-2	42635926

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139	THSD7A Exacerbates Atherosclerosis via Activation of Signaling Axis α v β 3/CEBPD/IL1A.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42635977
140	CHST1 Drives Immunotherapy Resistance in Triple-Negative Breast Cancer by Orchestrating an Immunosuppressive Microenvironment via the NKRF-CCL20-Macrophage Axis.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42635979
141	Renin Is Critical for Renin Lineage Cell Plasticity, Migration, and Disease Outcome in Experimental Crescentic Glomerulonephritis.	Journal of the American Society of Nephro	2026-Aug-2	42636057
142	Targeting the NR1D1-IGF2BP2-V-ATPase Axis With Hybrid Nanovesicles Restores Macrophage Rhythms to Reverse Sepsis-Induced Immunosuppression.	Advanced science (Weinheim, Baden-Wurtte	2026-Aug-2	42636084
143	EIF2AK2 inhibits type I interferon production by inhibiting RIG-I activation and disrupting mitochondria function via recruiting VAMP8 and p-MLKL.	Biochimica et biophysica acta. Molecular	2026-Aug-2	42637152
144	The A2b adenosine receptor negatively regulates proinflammatory responses in Japanese flounder (<i>Paralichthys olivaceus</i>) head kidney macrophages.	Fish & shellfish immunology	2026-Aug-2	42637162
145	Identification and functional characterization of an Ig domain-containing C-type lectin involved in antibacterial innate immunity in <i>Eriocheir sinensis</i> .	Fish & shellfish immunology	2026-Aug-2	42637165
146	The versatile TRAF3 from sea urchin (<i>Strongylocentrotus intermedius</i>) interacts with MyD88 and regulates host immunity.	Fish & shellfish immunology	2026-Aug-2	42637168
147	LARS2 reprograms mitochondrial metabolism and epigenetically upregulates MHC-I to boost antitumor immunity in nasopharyngeal carcinoma.	Journal for immunotherapy of cancer	2026-Aug-2	42637267
148	Multimodal spatial profiling reveals distinct myeloid-defined ENKTL subgroups and tumor-myeloid cooperativity within prognostic inflammatory niche.	Leukemia	2026-Aug-2	42637876
149	NADPH oxidases in immunometabolism and disease pathology: mechanistic networks, pollutant triggers, and therapeutic frontiers.	Cellular & molecular immunology	2026-Aug-2	42637892
150	Weighted Gene Co-Expression Network Analysis and Machine Learning Reveal that USP1 Drives Lipid Metabolism and Macrophage Polarization in Cervical Cancer Cells.	Reproductive sciences (Thousand Oaks, Ca	2026-Aug-2	42638028
151	Ferroptosis as an immunometabolic checkpoint in brain tumours: spatial vulnerabilities and therapeutic opportunities.	Molecular brain	2026-Aug-2	42638114
152	scRNA-Seq Links CD8 Effector T Cells to Periodontitis via Transcriptional Reprogramming and Enhanced PARs Signaling.	Oral diseases	2026-Aug-2	42638197
153	Oral Colon- and Mitochondria-Targeted Nanoparticles Alleviate Ulcerative Colitis by Reeducating Macrophage Polarization via SIRT3/FOXO3a-Mediated Mitochondrial Restoration.	Journal of gastroenterology and hepatolo	2026-Aug-2	42638278
154	Saquinone-loaded chitosan nanoparticles simultaneously suppress NF- κ B-driven inflammation, activate the Nrf2/HO-1 axis, and restore sarcolemmal utrophin in a murine model of Duchenne	Colloids and surfaces. B, Biointerfaces	2026-Aug-2	42647968
155	Nano-layered tendon patch to orchestrate timely interactions between tendon stem/progenitor cells and macrophages.	Biomaterials	2026-Aug-2	42664711

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156	A multi-scale structural and biophysical atlas of TCR-peptide-HLA recognition dynamics	biorxiv preprint	2026-08-26	10.64898/2026.08.19.745737
157	ABCB1-Mediated Drug Efflux Drives Resistance to VpreB1-Targeted Antibody-Drug Conjugates in B-cell Lymphoblastic Leukemia	biorxiv preprint	2026-08-26	10.64898/2026.08.24.746792
158	Role of connexin 43 in hyperoxia-induced bronchopulmonary dysplasia and associated pulmonary hypertension.	PLoS one	2026	42636229
159	Identification of candidate macrophage-ferroptosis crosstalk genes associated with immune infiltration in myocardial infarction: A bioinformatics analysis.	PLoS one	2026	42640988
160	Screening of key genes in infectious ARDS and development of a disease risk prediction model.	SAGE open medicine	2026	42643537
161	Phenotypic and functional patterns of murine bone marrow-derived dendritic cells influenced by in vitro differentiation conditions.	PLoS one	2026	42647452

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