Matthew G Vander Heiden

List of Publications by Citations

140 papers	39,075 citations	68 h-index	158 g-index
158 ext. papers	47,910 ext. citations	21.2 avg, IF	7.8 L-index

#	Paper	IF	Citations
140	Understanding the Warburg effect: the metabolic requirements of cell proliferation. *Science*, **2009**, 324, 1029-33	33.3	9509
139	Cancer-associated IDH1 mutations produce 2-hydroxyglutarate. *Nature*, **2009**, 462, 739-44	50.4	2558
138	Molecular mechanisms of cell death: recommendations of the Nomenclature Committee on Cell Death 2018. *Cell Death and Differentiation*, **2018**, 25, 486-541	12.7	2160
137	The M2 splice isoform of pyruvate kinase is important for cancer metabolism and tumour growth. *Nature*, **2008**, 452, 230-3	50.4	2056
136	Aerobic glycolysis: meeting the metabolic requirements of cell proliferation. *Annual Review of Cell and Developmental Biology*, **2011**, 27, 441-64	12.6	1680
135	Activation of a metabolic gene regulatory network downstream of mTOR complex 1. *Molecular Cell*, **2010**, 39, 171-83	17.6	1294
134	Reductive glutamine metabolism by IDH1 mediates lipogenesis under hypoxia. *Nature*, **2011**, 481, 380-4	50.4	1165
133	Targeting cancer metabolism: a therapeutic window opens. *Nature Reviews Drug Discovery*, **2011**, 10, 671-84	64.1	1018
132	Macropinocytosis of protein is an amino acid supply route in Ras-transformed cells. *Nature*, **2013**, 497, 633-7	50.4	989
131	Understanding the Intersections between Metabolism and Cancer Biology. *Cell*, **2017**, 168, 657-669	56.2	971
130	Inhibition of pyruvate kinase M2 by reactive oxygen species contributes to cellular antioxidant responses. *Science*, **2011**, 334, 1278-83	33.3	800
129	Phosphoglycerate dehydrogenase diverts glycolytic flux and contributes to oncogenesis. *Nature Genetics*, **2011**, 43, 869-74	36.3	788
128	Pyruvate kinase M2 is a phosphotyrosine-binding protein. *Nature*, **2008**, 452, 181-6	50.4	767
127	Supporting Aspartate Biosynthesis Is an Essential Function of Respiration in Proliferating Cells. *Cell*, **2015**, 162, 552-63	56.2	586
126	Tyrosine phosphorylation inhibits PKM2 to promote the Warburg effect and tumor growth. *Science Signaling*, **2009**, 2, ra73	8.8	520
125	Evidence for an alternative glycolytic pathway in rapidly proliferating cells. *Science*, **2010**, 329, 1492-9	33.3	501
124	Pyruvate kinase M2 activators promote tetramer formation and suppress tumorigenesis. *Nature Chemical Biology*, **2012**, 8, 839-47	11.7	476

123	Human pancreatic cancer tumors are nutrient poor and tumor cells actively scavenge extracellular protein. *Cancer Research*, **2015**, 75, 544-53	10.1	466
122	Environment Impacts the Metabolic Dependencies of Ras-Driven Non-Small Cell Lung Cancer. *Cell Metabolism*, **2016**, 23, 517-28	24.6	463
121	Growth factors can influence cell growth and survival through effects on glucose metabolism. *Molecular and Cellular Biology*, **2001**, 21, 5899-912	4.8	425
120	Targeting Metabolism for Cancer Therapy. *Cell Chemical Biology*, **2017**, 24, 1161-1180	8.2	414
119	Elevation of circulating branched-chain amino acids is an early event in human pancreatic adenocarcinoma development. *Nature Medicine*, **2014**, 20, 1193-1198	50.5	383
118	A roadmap for interpreting (13)C metabolite labeling patterns from cells. *Current Opinion in Biotechnology*, **2015**, 34, 189-201	11.4	368
117	Tracing compartmentalized NADPH metabolism in the cytosol and mitochondria of mammalian cells. *Molecular Cell*, **2014**, 55, 253-63	17.6	361
116	PKM2 isoform-specific deletion reveals a differential requirement for pyruvate kinase in tumor cells. *Cell*, **2013**, 155, 397-409	56.2	333
115	Amino Acids Rather than Glucose Account for the Majority of Cell Mass in Proliferating Mammalian Cells. *Developmental Cell*, **2016**, 36, 540-9	10.2	324
114	Tissue of origin dictates branched-chain amino acid metabolism in mutant Kras-driven cancers. *Science*, **2016**, 353, 1161-5	33.3	324
113	Keap1 loss promotes Kras-driven lung cancer and results in dependence on glutaminolysis. *Nature Medicine*, **2017**, 23, 1362-1368	50.5	301
112	The alternative splicing repressors hnRNP A1/A2 and PTB influence pyruvate kinase isoform expression and cell metabolism. *Proceedings of the National Academy of Sciences of the United States of America*, **2010**, 107, 1894-9	11.5	293
111	Heterogeneity of tumor-induced gene expression changes in the human metabolic network. *Nature Biotechnology*, **2013**, 31, 522-9	44.5	279
110	Pyruvate kinase: Function, regulation and role in cancer. *Seminars in Cell and Developmental Biology*, **2015**, 43, 43-51	7.5	261
109	A PHGDH inhibitor reveals coordination of serine synthesis and one-carbon unit fate. *Nature Chemical Biology*, **2016**, 12, 452-8	11.7	251
108	PKM2, cancer metabolism, and the road ahead. *EMBO Reports*, **2016**, 17, 1721-1730	6.5	249
107	Altered metabolite levels in cancer: implications for tumour biology and cancer therapy. *Nature Reviews Cancer*, **2016**, 16, 680-693	31.3	224
106	Cell-state-specific metabolic dependency in hematopoiesis and leukemogenesis. *Cell*, **2014**, 158, 1309-1323	32	220

105	Circadian Rhythm Disruption Promotes Lung Tumorigenesis. *Cell Metabolism*, **2016**, 24, 324-31	24.6	219
104	SHMT2 drives glioma cell survival in ischaemia but imposes a dependence on glycine clearance. *Nature*, **2015**, 520, 363-7	50.4	216
103	The importance of serine metabolism in cancer. *Journal of Cell Biology*, **2016**, 214, 249-57	7.3	203
102	Direct evidence for cancer-cell-autonomous extracellular protein catabolism in pancreatic tumors. *Nature Medicine*, **2017**, 23, 235-241	50.5	199
101	Dysregulated metabolism contributes to oncogenesis. *Seminars in Cancer Biology*, **2015**, 35 Suppl, S129-S150	12.7	189
100	Environment Dictates Dependence on Mitochondrial Complex I for NAD+ and Aspartate Production and Determines Cancer Cell Sensitivity to Metformin. *Cell Metabolism*, **2016**, 24, 716-727	24.6	185
99	Collagen-derived proline promotes pancreatic ductal adenocarcinoma cell survival under nutrient limited conditions. *Nature Communications*, **2017**, 8, 16031	17.4	178
98	Quantification of microenvironmental metabolites in murine cancers reveals determinants of tumor nutrient availability. *ELife*, **2019**, 8,	8.9	178
97	Pyruvate kinase isoform expression alters nucleotide synthesis to impact cell proliferation. *Molecular Cell*, **2015**, 57, 95-107	17.6	164
96	Environmental cystine drives glutamine anaplerosis and sensitizes cancer cells to glutaminase inhibition. *ELife*, **2017**, 6,	8.9	159
95	Aspartate is an endogenous metabolic limitation for tumour growth. *Nature Cell Biology*, **2018**, 20, 782-788	19.4	150
94	Transaminase Inhibition by 2-Hydroxyglutarate Impairs Glutamate Biosynthesis and Redox Homeostasis in Glioma. *Cell*, **2018**, 175, 101-116.e25	56.2	140
93	Small molecule activation of PKM2 in cancer cells induces serine auxotrophy. *Chemistry and Biology*, **2012**, 19, 1187-98		117
92	Targetable signaling pathway mutations are associated with malignant phenotype in IDH-mutant gliomas. *Clinical Cancer Research*, **2014**, 20, 2898-909	12.9	116
91	Famine versus feast: understanding the metabolism of tumors in vivo. *Trends in Biochemical Sciences*, **2015**, 40, 130-40	10.3	116
90	Cell-programmed nutrient partitioning in the tumour microenvironment. *Nature*, **2021**, 593, 282-288	50.4	111
89	Activation of the NRF2 antioxidant program generates an imbalance in central carbon metabolism in cancer. *ELife*, **2017**, 6,	8.9	109
88	Increased Serine Synthesis Provides an Advantage for Tumors Arising in Tissues Where Serine Levels Are Limiting. *Cell Metabolism*, **2019**, 29, 1410-1421.e4	24.6	102

87	Germline loss of PKM2 promotes metabolic distress and hepatocellular carcinoma. *Genes and Development*, **2016**, 30, 1020-33	12.6	91
86	Emerging Roles for Branched-Chain Amino Acid Metabolism in Cancer. *Cancer Cell*, **2020**, 37, 147-156	24.3	89
85	Targeting MTHFD2 in acute myeloid leukemia. *Journal of Experimental Medicine*, **2016**, 213, 1285-306	16.6	85
84	Metabolomic Biomarkers of Prostate Cancer: Prediction, Diagnosis, Progression, Prognosis, and Recurrence. *Cancer Epidemiology Biomarkers and Prevention*, **2016**, 25, 887-906	4	82
83	Cytosolic Aspartate Availability Determines Cell Survival When Glutamine Is Limiting. *Cell Metabolism*, **2018**, 28, 706-720.e6	24.6	79
82	Serine Synthesis via PHGDH Is Essential for Heme Production in Endothelial Cells. *Cell Metabolism*, **2018**, 28, 573-587.e13	24.6	77
81	Altered exocrine function can drive adipose wasting in early pancreatic cancer. *Nature*, **2018**, 558, 600-604	50.4	77
80	Lack of Evidence for PKM2 Protein Kinase Activity. *Molecular Cell*, **2015**, 59, 850-7	17.6	77
79	A DERL3-associated defect in the degradation of SLC2A1 mediates the Warburg effect. *Nature Communications*, **2014**, 5, 3608	17.4	77
78	A metastasis map of human cancer cell lines. *Nature*, **2020**, 588, 331-336	50.4	76
77	Allosteric regulation of PKM2 allows cellular adaptation to different physiological states. *Science Signaling*, **2013**, 6, pe7	8.8	76
76	Metabolic requirements for cancer cell proliferation. *Cancer & Metabolism*, **2016**, 4, 16	5.4	75
75	Microenvironmental regulation of cancer cell metabolism: implications for experimental design and translational studies. *DMM Disease Models and Mechanisms*, **2018**, 11,	4.1	72
74	EGLN1 Inhibition and Rerouting of Ketoglutarate Suffice for Remote Ischemic Protection. *Cell*, **2016**, 164, 884-95	56.2	71
73	Biochemical Underpinnings of Immune Cell Metabolic Phenotypes. *Immunity*, **2017**, 46, 703-713	32.3	69
72	The nutrient environment affects therapy. *Science*, **2018**, 360, 962-963	33.3	68
71	Limited Environmental Serine and Glycine Confer Brain Metastasis Sensitivity to PHGDH Inhibition. *Cancer Discovery*, **2020**, 10, 1352-1373	24.4	62
70	Exploiting tumor metabolism: challenges for clinical translation. *Journal of Clinical Investigation*, **2013**, 123, 3648-51	15.9	59

69	Increased demand for NAD relative to ATP drives aerobic glycolysis. *Molecular Cell*, **2021**, 81, 691-707.e6	17.6	58
68	Cellular redox state constrains serine synthesis and nucleotide production to impact cell proliferation. *Nature Metabolism*, **2019**, 1, 861-867	14.6	56
67	The redox requirements of proliferating mammalian cells. *Journal of Biological Chemistry*, **2018**, 293, 7490-7498	5.4	56
66	Metabolomics in cancer research and emerging applications in clinical oncology. *Ca-A Cancer Journal for Clinicians*, **2021**, 71, 333-358	220.7	55
65	JAK2/IDH-mutant-driven myeloproliferative neoplasm is sensitive to combined targeted inhibition. *Journal of Clinical Investigation*, **2018**, 128, 789-804	15.9	47
64	Deoxycytidine Release from Pancreatic Stellate Cells Promotes Gemcitabine Resistance. *Cancer Research*, **2019**, 79, 5723-5733	10.1	46
63	A framework for examining how diet impacts tumour metabolism. *Nature Reviews Cancer*, **2019**, 19, 651-661	36.3	45
62	Nature and Nurture: What Determines Tumor Metabolic Phenotypes?. *Cancer Research*, **2017**, 77, 3131-3134	10.1	43
61	Identification of DHODH as a therapeutic target in small cell lung cancer. *Science Translational Medicine*, **2019**, 11,	17.5	40
60	Yap regulates glucose utilization and sustains nucleotide synthesis to enable organ growth. *EMBO Journal*, **2018**, 37,	13	39
59	Induction of a Timed Metabolic Collapse to Overcome Cancer Chemoresistance. *Cell Metabolism*, **2020**, 32, 391-403.e6	24.6	33
58	Pyruvate Kinase Inhibits Proliferation during Postnatal Cerebellar Neurogenesis and Suppresses Medulloblastoma Formation. *Cancer Research*, **2017**, 77, 3217-3230	10.1	32
57	FATTY ACID SYNTHESIS IS REQUIRED FOR BREAST CANCER BRAIN METASTASIS. *Nature Cancer*, **2021**, 2, 414-428	15.4	31
56	Netrin G1 Promotes Pancreatic Tumorigenesis through Cancer-Associated Fibroblast-Driven Nutritional Support and Immunosuppression. *Cancer Discovery*, **2021**, 11, 446-479	24.4	31
55	Metabolism in the Tumor Microenvironment. *Annual Review of Cancer Biology*, **2020**, 4, 17-40	13.3	30
54	The Metabolic Landscape of RAS-Driven Cancers from biology to therapy. *Nature Cancer*, **2021**, 2, 271-283	15.4	30
53	An epitope tag alters phosphoglycerate dehydrogenase structure and impairs ability to support cell proliferation. *Cancer & Metabolism*, **2015**, 3, 5	5.4	26
52	Dissecting cell-type-specific metabolism in pancreatic ductal adenocarcinoma. *ELife*, **2020**, 9,	8.9	26

51	Reactive metabolite production is a targetable liability of glycolytic metabolism in lung cancer. *Nature Communications*, **2019**, 10, 5604	17.4	25
50	Circulating Metabolites and Survival Among Patients With Pancreatic Cancer. *Journal of the National Cancer Institute*, **2016**, 108, djv409	9.7	24
49	Low glycaemic diets alter lipid metabolism to influence tumour growth. *Nature*, **2021**, 599, 302-307	50.4	24
48	PKM2 is not required for colon cancer initiated by APC loss. *Cancer & Metabolism*, **2017**, 5, 10	5.4	21
47	PKM2 is not required for pancreatic ductal adenocarcinoma. *Cancer & Metabolism*, **2018**, 6, 17	5.4	20
46	Isoform-specific deletion of PKM2 constrains tumor initiation in a mouse model of soft tissue sarcoma. *Cancer & Metabolism*, **2018**, 6, 6	5.4	17
45	Keap1 mutation renders lung adenocarcinomas dependent on Slc33a1. *Nature Cancer*, **2020**, 1, 589-602	15.4	16
44	Biophysical changes reduce energetic demand in growth factor-deprived lymphocytes. *Journal of Cell Biology*, **2016**, 212, 439-47	7.3	16
43	Suppression of pancreatic ductal adenocarcinoma growth and metastasis by fibrillar collagens produced selectively by tumor cells. *Nature Communications*, **2021**, 12, 2328	17.4	15
42	Determinants of nutrient limitation in cancer. *Critical Reviews in Biochemistry and Molecular Biology*, **2019**, 54, 193-207	8.7	14
41	Hepcidin sequesters iron to sustain nucleotide metabolism and mitochondrial function in colorectal cancer epithelial cells. *Nature Metabolism*, **2021**, 3, 969-982	14.6	12
40	Height, Obesity, and the Risk of -Defined Prostate Cancer. *Cancer Epidemiology Biomarkers and Prevention*, **2018**, 27, 193-200	4	11
39	Postdiagnosis Loss of Skeletal Muscle, but Not Adipose Tissue, Is Associated with Shorter Survival of Patients with Advanced Pancreatic Cancer. *Cancer Epidemiology Biomarkers and Prevention*, **2019**, 28, 2062-2069	4	10
38	Antibody-mediated neutralization of perfringolysin o for intracellular protein delivery. *Molecular Pharmaceutics*, **2015**, 12, 1992-2000	5.6	10
37	REV1 inhibitor JH-RE-06 enhances tumor cell response to chemotherapy by triggering senescence hallmarks. *Proceedings of the National Academy of Sciences of the United States of America*, **2020**, 117, 28918-28921	11.5	10
36	Cancer-associated mutations in human pyruvate kinase M2 impair enzyme activity. *FEBS Letters*, **2020**, 594, 646-664	3.8	10
35	Lack of evidence for substrate channeling or flux between wildtype and mutant isocitrate dehydrogenase to produce the oncometabolite 2-hydroxyglutarate. *Journal of Biological Chemistry*, **2018**, 293, 20051-20061	5.4	10
34	When cancer needs what is non-essential. *Nature Cell Biology*, **2017**, 19, 418-420	23.4	8

33	Netrin G1 promotes pancreatic tumorigenesis through cancer associated fibroblast driven nutritional support and immunosuppression		7
32	Monitoring and modeling of lymphocytic leukemia cell bioenergetics reveals decreased ATP synthesis during cell division. *Nature Communications*, **2020**, 11, 4983	17.4	7
31	MFSD7C switches mitochondrial ATP synthesis to thermogenesis in response to heme. *Nature Communications*, **2020**, 11, 4837	17.4	7
30	Phenotypic selection with an intrabody library reveals an anti-apoptotic function of PKM2 requiring Mitofusin-1. *PLoS Biology*, **2019**, 17, e2004413	9.7	6
29	A Metabolomics Analysis of Adiposity and Advanced Prostate Cancer Risk in the Health Professionals Follow-Up Study. *Metabolites*, **2020**, 10,	5.6	6
28	Increased PHGDH expression promotes aberrant melanin accumulation. *BMC Cancer*, **2019**, 19, 723	4.8	4
27	Metabolism and Congenital Malformations - NADP Effects on Development. *New England Journal of Medicine*, **2017**, 377, 509-511	59.2	4
26	Deficiency of malate-aspartate shuttle component SLC25A12 induces pulmonary metastasis. *Cancer & Metabolism*, **2020**, 8, 26	5.4	4
25	Endothelial Cells Get Box-ed In to Support Lymphangiogenesis. *Developmental Cell*, **2017**, 40, 118-119	10.2	3
24	Putting the K in Kaloric Restriction. *Immunity*, **2019**, 50, 1129-1131	32.3	3
23	Interactions with stromal cells promote a more oxidized cancer cell redox state in pancreatic tumors.. *Science Advances*, **2022**, 8, eabg6383	14.3	3
22	Methionine synthase is essential for cancer cell proliferation in physiological folate environments. *Nature Metabolism*, **2021**, 3, 1500-1511	14.6	3
21	Author response: Activation of the NRF2 antioxidant program generates an imbalance in central carbon metabolism in cancer **2017**,		3
20	PKM1 Exerts Critical Roles in Cardiac Remodeling Under Pressure Overload in the Heart. *Circulation* , **2021**, 144, 712-727	16.7	3
19	Differential Dependence On Aerobic Glycolysis In Normal and Malignant Hematopoietic Stem and Progenitor Cells To Sustain Daughter Cell Production. *Blood*, **2013**, 122, 793-793	2.2	2
18	Transcriptional activation of macropinocytosis by the Hippo pathway following nutrient limitation. *Genes and Development*, **2020**, 34, 1253-1255	12.6	2
17	Ketogenic HMG-CoA lyase and its product hydroxybutyrate promote pancreatic cancer progression.. *EMBO Journal*, **2022**, e110466	13	2
16	Nucleotide imbalance decouples cell growth from cell proliferation		1

15	Interactions with stromal cells promote a more oxidized cancer cell redox state in pancreatic tumors		1
14	Caloric restriction alters lipid metabolism to contribute to tumor growth inhibition		1
13	Quantification of microenvironmental metabolites in murine cancer models reveals determinants of tumor nutrient availability		1
12	Pancreatic ☐tells put the glutamine engine in reverse. *Cell Metabolism*, **2021**, 33, 702-704	24.6	1
11	Differential substrate use in EGF- and oncogenic KRAS-stimulated human mammary epithelial cells. *FEBS Journal*, **2021**, 288, 5629-5649	5.7	1
10	Mitochondrial NADPH is a pro at Pro synthesis. *Nature Metabolism*, **2021**, 3, 453-455	14.6	1
9	Pyruvate kinase M1 suppresses development and progression of prostate adenocarcinoma		1
8	Arginase Therapy Combines Effectively with Immune Checkpoint Blockade or Agonist Anti-OX40 Immunotherapy to Control Tumor Growth. *Cancer Immunology Research*, **2021**, 9, 415-429	12.5	1
7	Protocols for Studies on TMPRSS2/ERG in Prostate Cancer. *Methods in Molecular Biology*, **2018**, 1786, 131-151	1.4	1
6	The CAT-SIR is out of the bag: tumors prefer host rather than dietary nutrients. *BMC Biology*, **2021**, 19, 92	7.3	0
5	Association of Prediagnostic Blood Metabolomics with Prostate Cancer Defined by ERG or PTEN Molecular Subtypes. *Cancer Epidemiology Biomarkers and Prevention*, **2021**, 30, 1000-1008	4	0
4	Gene Expression Pathways in Prostate Tissue Associated with Vigorous Physical Activity in Prostate Cancer. *Cancer Epidemiology Biomarkers and Prevention*, **2021**, 30, 751-756	4	0
3	Inhibiting GLUTtony in cancer.. *Cell Chemical Biology*, **2022**, 29, 353-355	8.2	0
2	Regulation of chromatin accessibility by the histone chaperone CAF-1 sustains lineage fidelity.. *Nature Communications*, **2022**, 13, 2350	17.4	0
1	Patient-Derived Xenografts to Study Cancer Metabolism: When Does X Mark the Spot?. *Cancer Research*, **2021**, 81, 4399-4401	10.1	