

Supplementary Table 1 Top 10 most cited publications about mechanotransduction in cancer

Rank	Title	Journal	Type	Author	Year	Citations
1	Dissemination and growth of cancer cells in metastatic sites	<i>Nature Reviews Cancer</i>	review	Chambers, AF et al.[1]	2002	2882
2	YAP/TAZ at the Roots of Cancer	<i>Cancer Cell</i>	review	Zanconato, F et al.[2]	2016	1060
3	A Mechanical Checkpoint Controls Multicellular Growth through YAP/TAZ Regulation by Actin-Processing Factors	<i>Cell</i>	article	Aragona, M et al.[3]	2013	1021
4	The extracellular matrix modulates the hallmarks of cancer	<i>Embo Reports</i>	review	Pickup, MW et al.[4]	2014	1008
5	Mechanotransduction gone awry	<i>Nature Reviews Molecular Cell Biology</i>	review	Jaalouk, DE et al.[5]	2009	878
6	The Hippo pathway: regulators and regulations	<i>Genes & Development</i>	review	Yu, FX et al. [6]	2013	866
7	Biomechanics and biophysics of cancer cells	<i>Acta Biomaterialia</i>	article	Suresh, S et al. [7]	2007	835
8	Mechanotransduction and YAP-dependent matrix remodelling is required for the	<i>Nature Cell Biology</i>	article	Calvo, F et al.[8]	2013	828

generation and
maintenance of cancer-
associated fibroblasts

Multi-step pericellular
proteolysis controls the

9 transition from *Nature Cell Biology* article Wolf, K et
individual to collective al.[9] 2007 734
cancer cell invasion

Balancing forces: *Nature Reviews*

10 architectural control of *Molecular Cell* review DuFort, CC et
mechanotransduction *Biology* al.[10] 2011 683

Supplementary Table 2 The top 10 productive journals publishing papers about mechanotransduction in cancer

Rank	Journals	Number	Percentage	Total citations	Average citations	Country	IF(2021)	H-index
1	<i>Cancers International</i>	29	4.86%	645	22.24	Switzerland	6.575	15
2	<i>Journal of Molecular Sciences</i>	20	3.35%	321	16.05	USA	6.208	9
3	<i>Journal of Cell Science</i>	17	2.85%	1263	74.29	UK	5.235	12
4	<i>Frontiers in Cell And Developmental Biology</i>	13	2.18%	70	5.38	Switzerland	6.081	5
5	<i>Scientific Reports</i>	12	2.01%	334	27.83	UK	4.996	9
6	<i>Cells</i>	10	1.68%	149	15.90	Switzerland	7.666	6
7	<i>Proceedings of The National Academy of Sciences of The United States of America (PNAS)</i>	9	1.51%	1089	121.00	USA	12.779	9
8	<i>Biomaterials</i>	9	1.51%	431	47.89	Netherlands	15.304	8
9	<i>Cancer Research</i>	8	1.34%	515	64.38	USA	13.312	7

	<i>Biochemical</i>							
	<i>and</i>							
10	<i>Biophysical</i>	8	1.34%	118	14.75	USA	3.322	6
	<i>Research</i>							
	<i>Communicatio</i>							
	<i>ns</i>							

Supplementary Table 3 The top 10 authors publishing papers about mechanotransduction in cancer

Rank	Name	Country	Publications	Total citations	Average citations	H-index
1	Weaver Valerie M	USA	10	2495	249.50	9
2	Piccolo Stefano	Italy	9	3167	351.89	8
3	Gargalionis Antonios	Greece	9	156	17.33	7
4	Basson Marc D	USA	8	447	55.88	7
5	Pancieri Tito	Italy	7	2076	296.57	6
6	Karamouzis Michalis	Greece	7	146	20.86	7
7	Basdra Efthimia K	Greece	7	126	18.00	6
8	Cordenonsi Michelangelo	Italy	6	1983	330.50	5
9	Keely Patricia J	USA	6	1478	246.33	6
10	Dupont Sirio	Italy	6	1252	208.67	5

Supplementary Table 4 The clusters organized by keyword co-occurrence.

Cluster	Research hot spots	Number of items	Keywords
1	Mechanical regulation of signal transduction in angiogenesis	19	angiogenesis, cadherin, caveolin, cell death, endothelial cell, epithelial cell, growth factor/receptor, hypoxia, integrin, invadopodia, MAPK/ERK, mechanical force, MMP, mTOR, NF- κ B, PI3K/AKT, plasma membrane, signal transduction, traction force microscopy
2	How mechanotransduction remodels cytoskeletal and nucleoskeletal networks to modulate cancer cell migration	19	AMPK, cell cycle, cell morphology, cytoskeleton or cytoskeleton remodeling, epigenetic regulation, gene regulation, heterogeneity, lamin, linc complex, mechanotransduction, metabolism, microfluidics, migration, nuclear envelope, nuclear mechanics, nucleoskeleton, nucleus, pancreatic stellate cell, SRC
3	Ion channels are involved in mechanical signal-mediated cancer invasion and metastasis	16	calcium, cancer, DNA damage, dormancy, immunology, invasion, ion channel, mechanobiology, metastasis, motility, oxidative stress, piezo1/2, post-translational modification, SRF, stem cell, TRP
4	The pharmaceutical research and development based on mechanobiology	11	3D culture, autophagy, cancer diagnosis, cancer stem cell, drug resistance, hydrogel, immunotherapy, organoid, pd-1/pd-11, pharmacology, polycystin
5	The mechanical property of the tumor microenvironment and its therapeutical applications	8	atomic force microscopy, cancer-associated fibroblast, ECM or ECM remodeling, mechanical property, oncophysics, therapy, tumor microenvironment, tumor model
6	Contact Inhibition and cancer cell growth	8	contact inhibition, GPCR, growth, Hippo, polarity, TAZ, transcription factor, YAP
7	The role of Wnt signaling in epithelial-mesenchymal transition	7	catenin, epithelial-mesenchymal transition, fibrosis, non-coding RNA, TGF- β , transcription, Wnt

Reference

- 1 **Chambers AF**, Groom AC, MacDonald IC. Dissemination and growth of cancer cells in metastatic sites. *Nat Rev Cancer* 2002; **2**: 563-572 [PMID: 12154349 DOI: 10.1038/nrc865]
- 2 **Zanconato F**, Cordenonsi M, Piccolo S. YAP/TAZ at the Roots of Cancer. *Cancer Cell* 2016; **29**: 783-803 [PMID: 27300434 DOI: 10.1016/j.ccell.2016.05.005]
- 3 **Aragona M**, Panciera T, Manfrin A, Giulitti S, Michielin F, Elvassore N, Dupont S, Piccolo S. A mechanical checkpoint controls multicellular growth through YAP/TAZ regulation by actin-processing factors. *Cell* 2013; **154**: 1047-1059 [PMID: 23954413 DOI: 10.1016/j.cell.2013.07.042]
- 4 **Pickup MW**, Mouw JK, Weaver VM. The extracellular matrix modulates the hallmarks of cancer. *EMBO Rep* 2014; **15**: 1243-1253 [PMID: 25381661 DOI: 10.15252/embr.201439246]
- 5 **Jaalouk DE**, Lammerding J. Mechanotransduction gone awry. *Nat Rev Mol Cell Biol* 2009; **10**: 63-73 [PMID: 19197333 DOI: 10.1038/nrm2597]
- 6 **Yu FX**, Guan KL. The Hippo pathway: regulators and regulations. *Genes Dev* 2013; **27**: 355-371 [PMID: 23431053 DOI: 10.1101/gad.210773.112]
- 7 **Suresh S**. Biomechanics and biophysics of cancer cells. *Acta Biomater* 2007; **3**: 413-438 [PMID: 17540628 DOI: 10.1016/j.actbio.2007.04.002]
- 8 **Calvo F**, Ege N, Grande-Garcia A, Hooper S, Jenkins RP, Chaudhry SI, Harrington K, Williamson P, Moendarbary E, Charras G, Sahai E. Mechanotransduction and YAP-dependent matrix remodelling is required for the generation and maintenance of cancer-associated fibroblasts. *Nat Cell Biol* 2013; **15**: 637-646 [PMID: 23708000 DOI: 10.1038/ncb2756]
- 9 **Wolf K**, Wu YI, Liu Y, Geiger J, Tam E, Overall C, Stack MS, Friedl P. Multi-step pericellular proteolysis controls the transition from individual to collective cancer cell invasion. *Nat Cell Biol* 2007; **9**: 893-904 [PMID: 17618273 DOI: 10.1038/ncb1616]

10 **DuFort CC**, Paszek MJ, Weaver VM. Balancing forces: architectural control of mechanotransduction. *Nat Rev Mol Cell Biol* 2011; **12**: 308-319 [PMID: 21508987 DOI: 10.1038/nrm3112]