

Mark R Prausnitz

List of Publications by Citations

Source: <https://exaly.com/author-pdf/6738889/mark-r-prausnitz-publications-by-citations.pdf>

Version: 2024-04-25

This document has been generated based on the publications and citations recorded by exaly.com. For the latest version of this publication list, visit the link given above.

The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

254
papers

26,796
citations

84
h-index

160
g-index

266
ext. papers

30,221
ext. citations

9
avg, IF

7.53
L-index

#	Paper	IF	Citations
254	Transdermal drug delivery. <i>Nature Biotechnology</i> , 2008 , 26, 1261-8	44.5	1870
253	Microneedles for transdermal drug delivery. <i>Advanced Drug Delivery Reviews</i> , 2004 , 56, 581-7	18.5	995
252	Microneedles for drug and vaccine delivery. <i>Advanced Drug Delivery Reviews</i> , 2012 , 64, 1547-68	18.5	993
251	Current status and future potential of transdermal drug delivery. <i>Nature Reviews Drug Discovery</i> , 2004 , 3, 115-24	64.1	906
250	Microfabricated microneedles: a novel approach to transdermal drug delivery. <i>Journal of Pharmaceutical Sciences</i> , 1998 , 87, 922-5	3.9	769
249	Biodegradable polymer microneedles: fabrication, mechanics and transdermal drug delivery. <i>Journal of Controlled Release</i> , 2005 , 104, 51-66	11.7	639
248	Dissolving polymer microneedle patches for influenza vaccination. <i>Nature Medicine</i> , 2010 , 16, 915-20	50.5	613
247	Microfabricated needles for transdermal delivery of macromolecules and nanoparticles: fabrication methods and transport studies. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2003 , 100, 13755-60	11.5	601
246	Dissolving microneedles for transdermal drug delivery. <i>Biomaterials</i> , 2008 , 29, 2113-24	15.6	580
245	Coated microneedles for transdermal delivery. <i>Journal of Controlled Release</i> , 2007 , 117, 227-37	11.7	489
244	Insertion of microneedles into skin: measurement and prediction of insertion force and needle fracture force. <i>Journal of Biomechanics</i> , 2004 , 37, 1155-63	2.9	486
243	Membrane disruption by optically controlled microbubble cavitation. <i>Nature Physics</i> , 2005 , 1, 107-110	16.2	419
242	Permeability of cornea, sclera, and conjunctiva: a literature analysis for drug delivery to the eye. <i>Journal of Pharmaceutical Sciences</i> , 1998 , 87, 1479-88	3.9	400
241	Effect of microneedle design on pain in human volunteers. <i>Clinical Journal of Pain</i> , 2008 , 24, 585-94	3.5	372
240	Lack of Pain Associated with Microfabricated Microneedles. <i>Anesthesia and Analgesia</i> , 2001 , 92, 502-504	3.9	355
239	Polymer microneedles for controlled-release drug delivery. <i>Pharmaceutical Research</i> , 2006 , 23, 1008-19	4.5	334
238	Transdermal delivery of insulin using microneedles in vivo. <i>Pharmaceutical Research</i> , 2004 , 21, 947-52	4.5	334

237	Micro-scale devices for transdermal drug delivery. <i>International Journal of Pharmaceutics</i> , 2008 , 364, 227-36	6.5	324
236	Tolerability, usability and acceptability of dissolving microneedle patch administration in human subjects. <i>Biomaterials</i> , 2017 , 128, 1-7	15.6	314
235	Minimally invasive protein delivery with rapidly dissolving polymer microneedles. <i>Advanced Materials</i> , 2008 , 20, 933-938	24	272
234	Microfabricated microneedles for gene and drug delivery. <i>Annual Review of Biomedical Engineering</i> , 2000 , 2, 289-313	12	272
233	Mechanism of intracellular delivery by acoustic cavitation. <i>Ultrasound in Medicine and Biology</i> , 2006 , 32, 915-24	3.5	267
232	Hollow metal microneedles for insulin delivery to diabetic rats. <i>IEEE Transactions on Biomedical Engineering</i> , 2005 , 52, 909-15	5	247
231	Coating formulations for microneedles. <i>Pharmaceutical Research</i> , 2007 , 24, 1369-80	4.5	222
230	Microneedles permit transdermal delivery of a skin-impermeant medication to humans. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2008 , 105, 2058-63	11.5	217
229	Precise microinjection into skin using hollow microneedles. <i>Journal of Investigative Dermatology</i> , 2006 , 126, 1080-7	4.3	213
228	The safety, immunogenicity, and acceptability of inactivated influenza vaccine delivered by microneedle patch (TIV-MNP 2015): a randomised, partly blinded, placebo-controlled, phase 1 trial. <i>Lancet, The</i> , 2017 , 390, 649-658	4.0	211
227	Microneedle-based vaccines. <i>Current Topics in Microbiology and Immunology</i> , 2009 , 333, 369-93	3.3	204
226	Suprachoroidal drug delivery to the back of the eye using hollow microneedles. <i>Pharmaceutical Research</i> , 2011 , 28, 166-76	4.5	203
225	Dissolving microneedle patch for transdermal delivery of human growth hormone. <i>Small</i> , 2011 , 7, 531-9	11	202
224	Quantitative study of electroporation-mediated molecular uptake and cell viability. <i>Biophysical Journal</i> , 2001 , 80, 755-64	2.9	197
223	Formulation and coating of microneedles with inactivated influenza virus to improve vaccine stability and immunogenicity. <i>Journal of Controlled Release</i> , 2010 , 142, 187-95	11.7	196
222	Engineering Microneedle Patches for Vaccination and Drug Delivery to Skin. <i>Annual Review of Chemical and Biomolecular Engineering</i> , 2017 , 8, 177-200	8.9	192
221	Kinetics of skin resealing after insertion of microneedles in human subjects. <i>Journal of Controlled Release</i> , 2011 , 154, 148-55	11.7	188
220	Microneedle patches: usability and acceptability for self-vaccination against influenza. <i>Vaccine</i> , 2014 , 32, 1856-62	4.1	179

219	Rapidly separable microneedle patch for the sustained release of a contraceptive. <i>Nature Biomedical Engineering</i> , 2019 , 3, 220-229	19	177
218	Mechanism of fluid infusion during microneedle insertion and retraction. <i>Journal of Controlled Release</i> , 2006 , 112, 357-61	11.7	175
217	Immunization by vaccine-coated microneedle arrays protects against lethal influenza virus challenge. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009 , 106, 7968-73	11.5	171
216	Microinfusion using hollow microneedles. <i>Pharmaceutical Research</i> , 2006 , 23, 104-13	4.5	168
215	Ultrasound-mediated disruption of cell membranes. I. Quantification of molecular uptake and cell viability. <i>Journal of the Acoustical Society of America</i> , 2001 , 110, 588-96	2.2	166
214	Fabrication of dissolving polymer microneedles for controlled drug encapsulation and delivery: Bubble and pedestal microneedle designs. <i>Journal of Pharmaceutical Sciences</i> , 2010 , 99, 4228-38	3.9	165
213	Minimally invasive extraction of dermal interstitial fluid for glucose monitoring using microneedles. <i>Diabetes Technology and Therapeutics</i> , 2005 , 7, 131-41	8.1	161
212	Separable arrowhead microneedles. <i>Journal of Controlled Release</i> , 2011 , 149, 242-9	11.7	156
211	Targeted administration into the suprachoroidal space using a microneedle for drug delivery to the posterior segment of the eye 2012 , 53, 4433-41		153
210	Coated microneedles for drug delivery to the eye. <i>Investigative Ophthalmology and Visual Science</i> , 2007 , 48, 4038-43		153
209	The effects of electric current applied to skin: A review for transdermal drug delivery. <i>Advanced Drug Delivery Reviews</i> , 1996 , 18, 395-425	18.5	153
208	Lack of pain associated with microfabricated microneedles. <i>Anesthesia and Analgesia</i> , 2001 , 92, 502-4	3.9	151
207	Ocular delivery of macromolecules. <i>Journal of Controlled Release</i> , 2014 , 190, 172-81	11.7	148
206	A practical assessment of transdermal drug delivery by skin electroporation. <i>Advanced Drug Delivery Reviews</i> , 1999 , 35, 61-76	18.5	145
205	Transdermal influenza immunization with vaccine-coated microneedle arrays. <i>PLoS ONE</i> , 2009 , 4, e4773	3.7	141
204	Mechanisms of sampling interstitial fluid from skin using a microneedle patch. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018 , 115, 4583-4588	11.5	139
203	Intrascleral drug delivery to the eye using hollow microneedles. <i>Pharmaceutical Research</i> , 2009 , 26, 395-403	4.5	134
202	Minimally invasive insulin delivery in subjects with type 1 diabetes using hollow microneedles. <i>Diabetes Technology and Therapeutics</i> , 2009 , 11, 329-37	8.1	128

201	Poly[di(carboxylatophenoxy)phosphazene] is a potent adjuvant for intradermal immunization. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2009 , 106, 18936-41	11.5	125
200	Microneedle patches for vaccination in developing countries. <i>Journal of Controlled Release</i> , 2016 , 240, 135-141	11.7	124
199	Delivery of molecules into cells using carbon nanoparticles activated by femtosecond laser pulses. <i>Nature Nanotechnology</i> , 2010 , 5, 607-11	28.7	124
198	Layer-by-layer assembly of DNA- and protein-containing films on microneedles for drug delivery to the skin. <i>Biomacromolecules</i> , 2010 , 11, 3136-43	6.9	123
197	Non-invasive assessment and control of ultrasound-mediated membrane permeabilization. <i>Pharmaceutical Research</i> , 1998 , 15, 918-24	4.5	121
196	Bioeffects caused by changes in acoustic cavitation bubble density and cell concentration: a unified explanation based on cell-to-bubble ratio and blast radius. <i>Ultrasound in Medicine and Biology</i> , 2003 , 29, 1211-22	3.5	121
195	Transdermal delivery of molecules is limited by full epidermis, not just stratum corneum. <i>Pharmaceutical Research</i> , 2013 , 30, 1099-109	4.5	118
194	A microneedle roller for transdermal drug delivery. <i>European Journal of Pharmaceutics and Biopharmaceutics</i> , 2010 , 76, 282-9	5.7	118
193	Measurement and correlation of acoustic cavitation with cellular bioeffects. <i>Ultrasound in Medicine and Biology</i> , 2006 , 32, 1111-22	3.5	118
192	A microneedle patch containing measles vaccine is immunogenic in non-human primates. <i>Vaccine</i> , 2015 , 33, 4712-8	4.1	116
191	Model of transient drug diffusion across cornea. <i>Journal of Controlled Release</i> , 2004 , 99, 241-58	11.7	113
190	Tapered conical polymer microneedles fabricated using an integrated lens technique for transdermal drug delivery. <i>IEEE Transactions on Biomedical Engineering</i> , 2007 , 54, 903-13	5	112
189	The rule of five for non-oral routes of drug delivery: ophthalmic, inhalation and transdermal. <i>Pharmaceutical Research</i> , 2011 , 28, 943-8	4.5	111
188	Ultrasound-mediated disruption of cell membranes. II. Heterogeneous effects on cells. <i>Journal of the Acoustical Society of America</i> , 2001 , 110, 597-606	2.2	111
187	Physical parameters influencing optimization of ultrasound-mediated DNA transfection. <i>Ultrasound in Medicine and Biology</i> , 2004 , 30, 527-38	3.5	109
186	Intradermal vaccination with influenza virus-like particles by using microneedles induces protection superior to that with intramuscular immunization. <i>Journal of Virology</i> , 2010 , 84, 7760-9	6.6	108
185	Inkjet printing of transdermal microneedles for the delivery of anticancer agents. <i>International Journal of Pharmaceutics</i> , 2015 , 494, 593-602	6.5	98
184	Improved influenza vaccination in the skin using vaccine coated microneedles. <i>Vaccine</i> , 2009 , 27, 6932-8	4.1	97

183	Measles vaccination using a microneedle patch. <i>Vaccine</i> , 2013 , 31, 3403-9	4.1	96
182	Enhanced memory responses to seasonal H1N1 influenza vaccination of the skin with the use of vaccine-coated microneedles. <i>Journal of Infectious Diseases</i> , 2010 , 201, 190-8	7	96
181	Stability of influenza vaccine coated onto microneedles. <i>Biomaterials</i> , 2012 , 33, 3756-69	15.6	94
180	Dose sparing enabled by skin immunization with influenza virus-like particle vaccine using microneedles. <i>Journal of Controlled Release</i> , 2010 , 147, 326-32	11.7	93
179	Polymer particle-based micromolding to fabricate novel microstructures. <i>Biomedical Microdevices</i> , 2007 , 9, 223-34	3.7	89
178	Does needle size matter?. <i>Journal of Diabetes Science and Technology</i> , 2007 , 1, 725-9	4.1	88
177	Faster pharmacokinetics and increased patient acceptance of intradermal insulin delivery using a single hollow microneedle in children and adolescents with type 1 diabetes. <i>Pediatric Diabetes</i> , 2013 , 14, 459-65	3.6	87
176	The effect of heat on skin permeability. <i>International Journal of Pharmaceutics</i> , 2008 , 359, 94-103	6.5	87
175	Microsecond thermal ablation of skin for transdermal drug delivery. <i>Journal of Controlled Release</i> , 2011 , 154, 58-68	11.7	85
174	Transdermal delivery enhanced by magainin pore-forming peptide. <i>Journal of Controlled Release</i> , 2007 , 122, 375-83	11.7	85
173	Transdermal delivery of heparin by skin electroporation. <i>Nature Biotechnology</i> , 1995 , 13, 1205-9	44.5	85
172	Delivery of subunit influenza vaccine to skin with microneedles improves immunogenicity and long-lived protection. <i>Scientific Reports</i> , 2012 , 2, 357	4.9	84
171	Analysis of enhanced transdermal transport by skin electroporation. <i>Journal of Controlled Release</i> , 1995 , 34, 211-221	11.7	84
170	Long-acting reversible contraception by effervescent microneedle patch. <i>Science Advances</i> , 2019 , 5, eaaw8145	14.5	83
169	Challenges and Future Prospects for the Delivery of Biologics: Oral Mucosal, Pulmonary, and Transdermal Routes. <i>AAPS Journal</i> , 2017 , 19, 652-668	3.7	82
168	Stability kinetics of influenza vaccine coated onto microneedles during drying and storage. <i>Pharmaceutical Research</i> , 2011 , 28, 135-44	4.5	82
167	Stabilization of influenza vaccine enhances protection by microneedle delivery in the mouse skin. <i>PLoS ONE</i> , 2009 , 4, e7152	3.7	82
166	Collection of analytes from microneedle patches. <i>Analytical Chemistry</i> , 2014 , 86, 10520-3	7.8	81

165	Infusion pressure and pain during microneedle injection into skin of human subjects. <i>Biomaterials</i> , 2011 , 32, 6823-31	15.6	80
164	An electrically active microneedle array for electroporation. <i>Biomedical Microdevices</i> , 2010 , 12, 263-73	3.7	80
163	Formulation of microneedles coated with influenza virus-like particle vaccine. <i>AAPS PharmSciTech</i> , 2010 , 11, 1193-201	3.9	78
162	Inactivated polio vaccination using a microneedle patch is immunogenic in the rhesus macaque. <i>Vaccine</i> , 2015 , 33, 4683-90	4.1	77
161	Development of a thermostable microneedle patch for influenza vaccination. <i>Journal of Pharmaceutical Sciences</i> , 2015 , 104, 740-9	3.9	75
160	Ebola Vaccination Using a DNA Vaccine Coated on PLGA-PLL/PGA Nanoparticles Administered Using a Microneedle Patch. <i>Advanced Healthcare Materials</i> , 2017 , 6, 1600750	10.1	75
159	Bacillus Calmette-Guérin vaccination using a microneedle patch. <i>Vaccine</i> , 2011 , 29, 2626-36	4.1	75
158	Effect of adjuvants on responses to skin immunization by microneedles coated with influenza subunit vaccine. <i>PLoS ONE</i> , 2012 , 7, e41501	3.7	72
157	Rapid pharmacokinetics of intradermal insulin administered using microneedles in type 1 diabetes subjects. <i>Diabetes Technology and Therapeutics</i> , 2011 , 13, 451-6	8.1	72
156	Assessing the potential of skin electroporation for the delivery of protein- and gene-based drugs. <i>Trends in Biotechnology</i> , 1998 , 16, 408-12	15.1	72
155	Imaging regions of transport across human stratum corneum during high-voltage and low-voltage exposures. <i>Journal of Pharmaceutical Sciences</i> , 1996 , 85, 1363-70	3.9	71
154	Improved immunogenicity of individual influenza vaccine components delivered with a novel dissolving microneedle patch stable at room temperature. <i>Drug Delivery and Translational Research</i> , 2015 , 5, 360-71	6.2	70
153	Transdermal transport efficiency during skin electroporation and iontophoresis. <i>Journal of Controlled Release</i> , 1996 , 38, 205-217	11.7	68
152	Equilibrium loading of cells with macromolecules by ultrasound: effects of molecular size and acoustic energy. <i>Journal of Pharmaceutical Sciences</i> , 2002 , 91, 1693-701	3.9	67
151	Long-term stability of influenza vaccine in a dissolving microneedle patch. <i>Drug Delivery and Translational Research</i> , 2017 , 7, 195-205	6.2	66
150	Predicted permeability of the cornea to topical drugs. <i>Pharmaceutical Research</i> , 2001 , 18, 1497-508	4.5	66
149	Microneedle delivery of an M2e-TLR5 ligand fusion protein to skin confers broadly cross-protective influenza immunity. <i>Journal of Controlled Release</i> , 2014 , 178, 1-7	11.7	64
148	Increased immunogenicity of avian influenza DNA vaccine delivered to the skin using a microneedle patch. <i>European Journal of Pharmaceutics and Biopharmaceutics</i> , 2012 , 81, 239-47	5.7	64

147	Dose sparing and enhanced immunogenicity of inactivated rotavirus vaccine administered by skin vaccination using a microneedle patch. <i>Vaccine</i> , 2013 , 31, 3396-402	4.1	63
146	DNA vaccination in the skin using microneedles improves protection against influenza. <i>Molecular Therapy</i> , 2012 , 20, 1472-80	11.7	63
145	Microneedle delivery of H5N1 influenza virus-like particles to the skin induces long-lasting B- and T-cell responses in mice. <i>Vaccine Journal</i> , 2010 , 17, 1381-9		63
144	Self-Powered Iontophoretic Transdermal Drug Delivery System Driven and Regulated by Biomechanical Motions. <i>Advanced Functional Materials</i> , 2020 , 30, 1907378	15.6	63
143	Rabies vaccination in dogs using a dissolving microneedle patch. <i>Journal of Controlled Release</i> , 2016 , 239, 19-26	11.7	62
142	Improved protection against avian influenza H5N1 virus by a single vaccination with virus-like particles in skin using microneedles. <i>Antiviral Research</i> , 2010 , 88, 244-7	10.8	62
141	Local response to microneedle-based influenza immunization in the skin. <i>MBio</i> , 2012 , 3, e00012-12	7.8	61
140	Stability of whole inactivated influenza virus vaccine during coating onto metal microneedles. <i>Journal of Controlled Release</i> , 2013 , 166, 159-71	11.7	60
139	Enabling skin vaccination using new delivery technologies. <i>Drug Delivery and Translational Research</i> , 2011 , 1, 7-12	6.2	60
138	Heterosubtypic influenza protection elicited by double-layered polypeptide nanoparticles in mice. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2018 , 115, E7758-E7767	11.5	59
137	Shear-induced intracellular loading of cells with molecules by controlled microfluidics. <i>Biotechnology and Bioengineering</i> , 2008 , 99, 846-54	4.9	59
136	Changes in cell morphology due to plasma membrane wounding by acoustic cavitation. <i>Ultrasound in Medicine and Biology</i> , 2010 , 36, 677-92	3.5	58
135	Pocketed Microneedles for Drug Delivery to the Skin. <i>Journal of Physics and Chemistry of Solids</i> , 2008 , 69, 1537-1541	3.9	58
134	Can ultrasound enable efficient intracellular uptake of molecules? A retrospective literature review and analysis. <i>Ultrasound in Medicine and Biology</i> , 2012 , 38, 876-88	3.5	57
133	Influenza virus-like particles coated onto microneedles can elicit stimulatory effects on Langerhans cells in human skin. <i>Vaccine</i> , 2010 , 28, 6104-13	4.1	57
132	Analysis of Mechanical Failure of Polymer Microneedles by Axial Force. <i>Journal of the Korean Physical Society</i> , 2010 , 56, 1223-1227	0.6	55
131	Macromolecules as novel transdermal transport enhancers for skin electroporation. <i>Pharmaceutical Research</i> , 1997 , 14, 638-44	4.5	53
130	Intracellular drug delivery using low-frequency ultrasound: quantification of molecular uptake and cell viability. <i>Pharmaceutical Research</i> , 2001 , 18, 1514-20	4.5	53

129	Rapid local anesthesia in humans using minimally invasive microneedles. <i>Clinical Journal of Pain</i> , 2012 , 28, 129-35	3.5	52
128	Targeted delivery of antiglaucoma drugs to the supraciliary space using microneedles 2014 , 55, 7387-97		51
127	Long-term protective immunity from an influenza virus-like particle vaccine administered with a microneedle patch. <i>Vaccine Journal</i> , 2013 , 20, 1433-9		51
126	Delivery of salmon calcitonin using a microneedle patch. <i>International Journal of Pharmaceutics</i> , 2012 , 423, 257-63	6.5	50
125	Cross-protection by co-immunization with influenza hemagglutinin DNA and inactivated virus vaccine using coated microneedles. <i>Journal of Controlled Release</i> , 2013 , 172, 579-88	11.7	50
124	Hollow microneedles for intradermal injection fabricated by sacrificial micromolding and selective electrodeposition. <i>Biomedical Microdevices</i> , 2013 , 15, 203-10	3.7	50
123	Enhanced Stability of Inactivated Influenza Vaccine Encapsulated in Dissolving Microneedle Patches. <i>Pharmaceutical Research</i> , 2016 , 33, 868-78	4.5	49
122	Sampling interstitial fluid from human skin using a microneedle patch. <i>Science Translational Medicine</i> , 2020 , 12,	17.5	49
121	Intracellular protein delivery and gene transfection by electroporation using a microneedle electrode array. <i>Small</i> , 2012 , 8, 1081-91	11	48
120	Ocular drug delivery targeted by iontophoresis in the suprachoroidal space using a microneedle. <i>Journal of Controlled Release</i> , 2018 , 277, 14-22	11.7	47
119	Serological memory and long-term protection to novel H1N1 influenza virus after skin vaccination. <i>Journal of Infectious Diseases</i> , 2011 , 204, 582-91	7	47
118	Flux across [corrected] microneedle-treated skin is increased by increasing charge of naltrexone and naltrexol in vitro. <i>Pharmaceutical Research</i> , 2008 , 25, 1677-85	4.5	47
117	Intrastromal delivery of bevacizumab using microneedles to treat corneal neovascularization 2014 , 55, 7376-86		46
116	Heparin alters transdermal transport associated with electroporation. <i>Biochemical and Biophysical Research Communications</i> , 1997 , 234, 637-40	3.4	46
115	Do high-voltage pulses cause changes in skin structure?. <i>Journal of Controlled Release</i> , 1996 , 40, 321-326	11.7	46
114	Transdermal delivery of naltrexol and skin permeability lifetime after microneedle treatment in hairless guinea pigs. <i>Journal of Pharmaceutical Sciences</i> , 2010 , 99, 3072-80	3.9	45
113	Tetanus vaccination with a dissolving microneedle patch confers protective immune responses in pregnancy. <i>Journal of Controlled Release</i> , 2016 , 236, 47-56	11.7	44
112	Formulation to target delivery to the ciliary body and choroid via the suprachoroidal space of the eye using microneedles. <i>European Journal of Pharmaceutics and Biopharmaceutics</i> , 2015 , 95, 398-406	5.7	44

111	Rapid temporal control of transdermal drug delivery by electroporation. <i>Pharmaceutical Research</i> , 1994 , 11, 1834-7	4.5	44
110	Microneedle patch delivery to the skin of virus-like particles containing heterologous M2e extracellular domains of influenza virus induces broad heterosubtypic cross-protection. <i>Journal of Controlled Release</i> , 2015 , 210, 208-16	11.7	41
109	Recruitment and Collection of Dermal Interstitial Fluid Using a Microneedle Patch. <i>Advanced Healthcare Materials</i> , 2019 , 8, e1801262	10.1	41
108	Human Suction Blister Fluid Composition Determined Using High-Resolution Metabolomics. <i>Analytical Chemistry</i> , 2018 , 90, 3786-3792	7.8	39
107	A Microneedle Patch for Measles and Rubella Vaccination Is Immunogenic and Protective in Infant Rhesus Macaques. <i>Journal of Infectious Diseases</i> , 2018 , 218, 124-132	7	39
106	Efficient intracellular delivery of molecules with high cell viability using nanosecond-pulsed laser-activated carbon nanoparticles. <i>ACS Nano</i> , 2014 , 8, 2889-99	16.7	39
105	Lidocaine-ibuprofen ionic liquid for dermal anesthesia. <i>AIChE Journal</i> , 2015 , 61, 2732-2738	3.6	39
104	Synergistic enhancement of skin permeability by N-lauroylsarcosine and ethanol. <i>International Journal of Pharmaceutics</i> , 2008 , 352, 129-38	6.5	39
103	Vaccination with human papillomavirus pseudovirus-encapsidated plasmids targeted to skin using microneedles. <i>PLoS ONE</i> , 2015 , 10, e0120797	3.7	37
102	Overcoming skin's barrier: the search for effective and user-friendly drug delivery. <i>Diabetes Technology and Therapeutics</i> , 2001 , 3, 233-6	8.1	35
101	A boosting skin vaccination with dissolving microneedle patch encapsulating M2e vaccine broadens the protective efficacy of conventional influenza vaccines. <i>Journal of Controlled Release</i> , 2017 , 261, 1-9	11.7	34
100	Transdermal insulin delivery using microdermabrasion. <i>Pharmaceutical Research</i> , 2011 , 28, 2110-8	4.5	34
99	Dihydroergotamine mesylate-loaded dissolving microneedle patch made of polyvinylpyrrolidone for management of acute migraine therapy. <i>Journal of Controlled Release</i> , 2017 , 268, 159-165	11.7	33
98	An economic model assessing the value of microneedle patch delivery of the seasonal influenza vaccine. <i>Vaccine</i> , 2015 , 33, 4727-36	4.1	33
97	The suprachoroidal space as a route of administration to the posterior segment of the eye. <i>Advanced Drug Delivery Reviews</i> , 2018 , 126, 58-66	18.5	33
96	Particle-stabilized emulsion droplets for gravity-mediated targeting in the posterior segment of the eye. <i>Advanced Healthcare Materials</i> , 2014 , 3, 1272-82	10.1	33
95	Development of a thermostable microneedle patch for polio vaccination. <i>Drug Delivery and Translational Research</i> , 2019 , 9, 192-203	6.2	33
94	Stable incorporation of GM-CSF into dissolvable microneedle patch improves skin vaccination against influenza. <i>Journal of Controlled Release</i> , 2018 , 276, 1-16	11.7	31

93	Inactivated rotavirus vaccine by parenteral administration induces mucosal immunity in mice. <i>Scientific Reports</i> , 2018 , 8, 561	4.9	31
92	Hepatitis B vaccination using a dissolvable microneedle patch is immunogenic in mice and rhesus macaques. <i>Bioengineering and Translational Medicine</i> , 2018 , 3, 186-196	14.8	31
91	Distribution of particles, small molecules and polymeric formulation excipients in the suprachoroidal space after microneedle injection. <i>Experimental Eye Research</i> , 2016 , 153, 101-109	3.7	31
90	Enhanced immune responses by skin vaccination with influenza subunit vaccine in young hosts. <i>Vaccine</i> , 2015 , 33, 4675-82	4.1	30
89	Local transdermal delivery of phenylephrine to the anal sphincter muscle using microneedles. <i>Journal of Controlled Release</i> , 2011 , 154, 138-47	11.7	30
88	Fluid dynamics in conically tapered microneedles. <i>AIChE Journal</i> , 2005 , 51, 1599-1607	3.6	29
87	Self-healing encapsulation and controlled release of vaccine antigens from PLGA microparticles delivered by microneedle patches. <i>Bioengineering and Translational Medicine</i> , 2019 , 4, 116-128	14.8	29
86	Plasmonic Paper Microneedle Patch for On-Patch Detection of Molecules in Dermal Interstitial Fluid. <i>ACS Sensors</i> , 2019 , 4, 1569-1576	9.2	28
85	Trends of microneedle technology in the scientific literature, patents, clinical trials and internet activity. <i>Biomaterials</i> , 2021 , 267, 120491	15.6	27
84	Recovery of skin barrier properties after sonication in human subjects. <i>Ultrasound in Medicine and Biology</i> , 2009 , 35, 1405-8	3.5	26
83	Optimization of microdermabrasion for controlled removal of stratum corneum. <i>International Journal of Pharmaceutics</i> , 2011 , 407, 95-104	6.5	25
82	Circumferential flow of particles in the suprachoroidal space is impeded by the posterior ciliary arteries. <i>Experimental Eye Research</i> , 2016 , 145, 424-431	3.7	25
81	Targeted Drug Delivery in the Suprachoroidal Space by Swollen Hydrogel Pushing 2018 , 59, 2069-2079		23
80	Monitoring drug pharmacokinetics and immunologic biomarkers in dermal interstitial fluid using a microneedle patch. <i>Biomedical Microdevices</i> , 2019 , 21, 14	3.7	22
79	Effect of Osmotic Pressure on the Stability of Whole Inactivated Influenza Vaccine for Coating on Microneedles. <i>PLoS ONE</i> , 2015 , 10, e0134431	3.7	22
78	A microneedle patch for measles and rubella vaccination: a game changer for achieving elimination. <i>Current Opinion in Virology</i> , 2020 , 41, 68-76	7.5	21
77	Clearance Kinetics and Clearance Routes of Molecules From the Suprachoroidal Space After Microneedle Injection 2017 , 58, 545-554		21
76	Acceptability of an inactivated influenza vaccine delivered by microneedle patch: Results from a phase I clinical trial of safety, reactogenicity, and immunogenicity. <i>Vaccine</i> , 2020 , 38, 7175-7181	4.1	21

75	Individually coated microneedles for co-delivery of multiple compounds with different properties. <i>Drug Delivery and Translational Research</i> , 2018 , 8, 1043-1052	6.2	20
74	Visualization of plasmid delivery to keratinocytes in mouse and human epidermis. <i>Scientific Reports</i> , 2011 , 1, 158	4.9	20
73	Recovery of skin barrier after stratum corneum removal by microdermabrasion. <i>AAPS PharmSciTech</i> , 2011 , 12, 1393-400	3.9	20
72	DNA uptake, intracellular trafficking and gene transfection after ultrasound exposure. <i>Journal of Controlled Release</i> , 2016 , 234, 1-9	11.7	19
71	A protective role of murine langerin+ cells in immune responses to cutaneous vaccination with microneedle patches. <i>Scientific Reports</i> , 2014 , 4, 6094	4.9	18
70	Thickness and Closure Kinetics of the Suprachoroidal Space Following Microneedle Injection of Liquid Formulations 2017 , 58, 555-564		18
69	Intradermal immunization by Ebola virus GP subunit vaccines using microneedle patches protects mice against lethal EBOV challenge. <i>Scientific Reports</i> , 2018 , 8, 11193	4.9	18
68	Methods for in Vivo Tissue Electroporation Using Surface Electrodes. <i>Drug Delivery</i> , 1993 , 1, 125-131	7	18
67	Microneedle patch drug delivery in the gut. <i>Nature Medicine</i> , 2019 , 25, 1471-1472	50.5	17
66	Reliability and accuracy of intradermal injection by Mantoux technique, hypodermic needle adapter, and hollow microneedle in pigs. <i>Drug Delivery and Translational Research</i> , 2014 , 4, 126-30	6.2	17
65	Delivery of siRNA to ovarian cancer cells using laser-activated carbon nanoparticles. <i>Nanomedicine</i> , 2015 , 10, 1775-84	5.6	16
64	Poloxamer surfactant preserves cell viability during photoacoustic delivery of molecules into cells. <i>Biotechnology and Bioengineering</i> , 2015 , 112, 405-15	4.9	16
63	STAR particles for enhanced topical drug and vaccine delivery. <i>Nature Medicine</i> , 2020 , 26, 341-347	50.5	16
62	Dissolvable Microneedle Patches to Enable Increased Access to Vaccines against SARS-CoV-2 and Future Pandemic Outbreaks. <i>Vaccines</i> , 2021 , 9,	5.3	16
61	Microneedle patch delivery of influenza vaccine during pregnancy enhances maternal immune responses promoting survival and long-lasting passive immunity to offspring. <i>Scientific Reports</i> , 2017 , 7, 5705	4.9	15
60	Electrospun Transdermal Patch for Contraceptive Hormone Delivery. <i>Current Drug Delivery</i> , 2019 , 16, 577-583	3.2	15
59	Feasibility of Hepatitis B Vaccination by Microneedle Patch: Cellular and Humoral Immunity Studies in Rhesus Macaques. <i>Journal of Infectious Diseases</i> , 2019 , 220, 1926-1934	7	14
58	Assessment of trueness of a glucose monitor using interstitial fluid and whole blood as specimen matrix. <i>Diabetes Technology and Therapeutics</i> , 2006 , 8, 76-80	8.1	14

57	Co-Delivery of M2e Virus-Like Particles with Influenza Split Vaccine to the Skin Using Microneedles Enhances the Efficacy of Cross Protection. <i>Pharmaceutics</i> , 2019 , 11,	6.4	13
56	Sustained scleral stiffening in rats after a single genipin treatment. <i>Journal of the Royal Society Interface</i> , 2019 , 16, 20190427	4.1	12
55	Pharmaceutical jewelry: Earring patch for transdermal delivery of contraceptive hormone. <i>Journal of Controlled Release</i> , 2019 , 301, 140-145	11.7	12
54	Targeting drug delivery within the suprachoroidal space. <i>Drug Discovery Today</i> , 2019 , 24, 1654-1659	8.8	12
53	Intradermal Vaccination With Adjuvanted Ebola Virus Soluble Glycoprotein Subunit Vaccine by Microneedle Patches Protects Mice Against Lethal Ebola Virus Challenge. <i>Journal of Infectious Diseases</i> , 2018 , 218, S545-S552	7	12
52	Skin immunization by microneedle patch overcomes statin-induced suppression of immune responses to influenza vaccine. <i>Scientific Reports</i> , 2017 , 7, 17855	4.9	12
51	Skin pretreatment with microneedles prior to pilocarpine iontophoresis increases sweat production. <i>Clinical Physiology and Functional Imaging</i> , 2013 , 33, 436-40	2.4	12
50	Electrical impedance spectroscopy for rapid and noninvasive analysis of skin electroporation. <i>Methods in Molecular Medicine</i> , 2000 , 37, 377-406		12
49	Energy Transfer Mechanisms during Molecular Delivery to Cells by Laser-Activated Carbon Nanoparticles. <i>Biophysical Journal</i> , 2017 , 112, 1258-1269	2.9	11
48	Intracellular delivery of molecules using microfabricated nanoneedle arrays. <i>Biomedical Microdevices</i> , 2016 , 18, 10	3.7	10
47	Improving patient acceptance of insulin therapy by improving needle design. <i>Journal of Diabetes Science and Technology</i> , 2012 , 6, 336-8	4.1	10
46	Optimization of transdermal delivery using magainin pore-forming peptide. <i>Journal of Physics and Chemistry of Solids</i> , 2008 , 69, 1560-1563	3.9	10
45	Vaccination by microneedle patch with inactivated respiratory syncytial virus and monophosphoryl lipid A enhances the protective efficacy and diminishes inflammatory disease after challenge. <i>PLoS ONE</i> , 2018 , 13, e0205071	3.7	10
44	Sensitive sensing of biomarkers in interstitial fluid. <i>Nature Biomedical Engineering</i> , 2021 , 5, 3-5	19	10
43	Collagenase injection into the suprachoroidal space of the eye to expand drug delivery coverage and increase posterior drug targeting. <i>Experimental Eye Research</i> , 2019 , 189, 107824	3.7	9
42	Parameters affecting intracellular delivery of molecules using laser-activated carbon nanoparticles. <i>Nanomedicine: Nanotechnology, Biology, and Medicine</i> , 2016 , 12, 1003-1011	6	9
41	Enhanced Immune Responses Conferring Cross-Protection by Skin Vaccination With a Tri-Component Influenza Vaccine Using a Microneedle Patch. <i>Frontiers in Immunology</i> , 2018 , 9, 1705	8.4	9
40	Microneedles for Drug Delivery 2008 , 295-309		9

39	Clinical translation of long-acting drug delivery formulations. <i>Nature Reviews Materials</i> ,	73.3	9
38	Targeted Drug Delivery Within the Eye Through the Suprachoroidal Space. <i>Journal of Ocular Pharmacology and Therapeutics</i> , 2016 , 32, 640-641	2.6	9
37	Magainin-mediated disruption of stratum corneum lipid vesicles. <i>Pharmaceutical Research</i> , 2001 , 18, 894-6	4.5	8
36	Effect of laser fluence, nanoparticle concentration and total energy input per cell on photoporation of cells. <i>Nanomedicine: Nanotechnology, Biology, and Medicine</i> , 2018 , 14, 1667-1677	6	7
35	Drug-Free, Nonsurgical Reduction of Intraocular Pressure for Four Months after Suprachoroidal Injection of Hyaluronic Acid Hydrogel. <i>Advanced Science</i> , 2021 , 8, 2001908	13.6	7
34	Fabrication of microneedle patches with lyophilized influenza vaccine suspended in organic solvent. <i>Drug Delivery and Translational Research</i> , 2021 , 11, 692-701	6.2	7
33	Evaluation of Microneedles in Human Subjects 2017 , 325-340		6
32	Polymeric tube-shaped devices with controlled geometry for programmed drug delivery. <i>Macromolecular Research</i> , 2012 , 20, 960-967	1.9	5
31	Gene transfection enhanced by ultrasound exposure combined with drug treatment guided by gene chip analysis. <i>International Journal of Hyperthermia</i> , 2012 , 28, 349-61	3.7	5
30	Transdermal Delivery of Macromolecules: Recent Advances by Modification of Skin's Barrier Properties. <i>ACS Symposium Series</i> , 1997 , 124-153	0.4	5
29	Using retinal function to define ischemic exclusion criteria for animal models of glaucoma. <i>Experimental Eye Research</i> , 2021 , 202, 108354	3.7	5
28	Effects of General Anesthesia on Intraocular Pressure in Rabbits. <i>Journal of the American Association for Laboratory Animal Science</i> , 2021 , 60, 91-95	1.3	5
27	An ultra-low-cost electroporator with microneedle electrodes (ePatch) for SARS-CoV-2 vaccination. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021 , 118,	11.5	4
26	Relationship between bio-effects and energy transduction during nanoparticle-mediated photoporation. <i>Journal of Applied Physics</i> , 2020 , 128, 173101	2.5	4
25	Skin vaccination with dissolvable microneedle patches incorporating influenza neuraminidase and flagellin protein nanoparticles induces broad immune protection against multiple influenza viruses. <i>ACS Applied Bio Materials</i> , 2021 , 4, 4953-4961	4.1	4
24	Efficient Drug Delivery into Skin Using a Biphasic Dissolvable Microneedle Patch with Water-Insoluble Backing. <i>Advanced Functional Materials</i> , 2021 , 31, 2103359	15.6	4
23	Immunologic mechanisms of seasonal influenza vaccination administered by microneedle patch from a randomized phase I trial. <i>Npj Vaccines</i> , 2021 , 6, 89	9.5	4
22	Immediate detachment of microneedles by interfacial fracture for sustained delivery of a contraceptive hormone in the skin. <i>Journal of Controlled Release</i> , 2021 , 337, 676-685	11.7	4

21	Role of cytoskeletal mechanics and cell membrane fluidity in the intracellular delivery of molecules mediated by laser-activated carbon nanoparticles. <i>Biotechnology and Bioengineering</i> , 2017 , 114, 2390-2399	4.9	3
20	Microneedles 2005 , 239-255		3
19	cGAMP/Saponin Adjuvant Combination Improves Protective Response to Influenza Vaccination by Microneedle Patch in an Aged Mouse Model. <i>Frontiers in Immunology</i> , 2020 , 11, 583251	8.4	3
18	Photoporation Using Carbon Nanotubes for Intracellular Delivery of Molecules and Its Relationship to Photoacoustic Pressure. <i>Advanced Healthcare Materials</i> , 2018 , 7, 1701007	10.1	3
17	Targeted Drug Delivery to the Eye Enabled by Microneedles. <i>AAPS Advances in the Pharmaceutical Sciences Series</i> , 2011 , 331-360	0.5	2
16	Coaxial electrospray of uniform polylactide core-shell microparticles for long-acting contraceptive.. <i>Journal of Controlled Release</i> , 2021 , 341, 634-645	11.7	2
15	Cutaneous vaccination ameliorates Zika virus-induced neuro-ocular pathology via reduction of anti-ganglioside antibodies. <i>Human Vaccines and Immunotherapeutics</i> , 2020 , 16, 2072-2091	4.4	2
14	Administration of pilocarpine by microneedle patch as a novel method for cystic fibrosis sweat testing. <i>Bioengineering and Translational Medicine</i> , 2021 , 6, e10222	14.8	2
13	Microneedle patch designs to increase dose administered to human subjects. <i>Journal of Controlled Release</i> , 2021 , 339, 350-360	11.7	2
12	Evaluation of Spatially Targeted Scleral Stiffening on Neuroprotection in a Rat Model of Glaucoma.. <i>Translational Vision Science and Technology</i> , 2022 , 11, 7	3.3	2
11	Drug delivery: Puncturing cells en masse. <i>Nature Materials</i> , 2015 , 14, 470-1	27	1
10	Mechanistic studies of skin electroporation using biophysical methods. <i>Methods in Molecular Medicine</i> , 2000 , 37, 213-45		1
9	Development of a thermostable oxytocin microneedle patch. <i>Journal of Controlled Release</i> , 2021 , 337, 81-89	11.7	1
8	Fabrication of pure-drug microneedles for delivery of montelukast sodium. <i>Drug Delivery and Translational Research</i> , 2021 , 1	6.2	1
7	Optimization of intracellular macromolecule delivery by nanoparticle-mediated photoporation. <i>Nanomedicine: Nanotechnology, Biology, and Medicine</i> , 2021 , 37, 102431	6	1
6	Continuous Ketone Monitoring Consensus Report 2021. <i>Journal of Diabetes Science and Technology</i> , 2021 , 19322968211042656	4.1	0
5	Serum Protects Cells and Increases Intracellular Delivery of Molecules by Nanoparticle-Mediated Photoporation. <i>International Journal of Nanomedicine</i> , 2021 , 16, 3707-3724	7.3	0
4	Role of drug delivery technologies in the success of COVID-19 vaccines: a perspective.. <i>Drug Delivery and Translational Research</i> , 2022 , 1	6.2	0

- 3 The Effects of Pulsed Electrical Protocols on Skin Damage, Sensation, and Pain **1999**, 915-918
- 2 Macromolecules as Novel Transdermal Transport Enhancers for Skin Electroporation **1999**, 903-906
- 1 Thermostability of Measles and Rubella Vaccines in a Microneedle Patch.. *Advanced Therapeutics*, **2021**, 4, 2100095 4-9