Bioprinting technologies for disease modeling - DTU Orbit (03/01/2019)

Bioprinting technologies for disease modeling

There is a great need for the development of biomimetic human tissue models that allow elucidation of the pathophysiological conditions involved in disease initiation and progression. Conventional two-dimensional (2D) in vitro assays and animal models have been unable to fully recapitulate the critical characteristics of human physiology. Alternatively, three-dimensional (3D) tissue models are often developed in a low-throughput manner and lack crucial native-like architecture. The recent emergence of bioprinting technologies has enabled creating 3D tissue models that address the critical challenges of conventional in vitro assays through the development of custom bioinks and patient derived cells coupled with well-defined arrangements of biomaterials. Here, we provide an overview on the technological aspects of 3D bioprinting technique and discuss how the development of bioprinted tissue models have propelled our understanding of diseases’ characteristics (i.e. initiation and progression). The future perspectives on the use of bioprinted 3D tissue models for drug discovery application are also highlighted.

General information
State: Published
Organisations: Department of Micro- and Nanotechnology, Colloids and Biological Interfaces, King Abdulaziz University, Arizona State University, University of Victoria BC
Number of pages: 12
Pages: 1279-1290
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Biotechnology Letters
Volume: 39
Issue number: 9
ISSN (Print): 0141-5492
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.88 SJR 0.621 SNIP 0.695
Web of Science (2017): Impact factor 1.846
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.89 SJR 0.628 SNIP 0.725
Web of Science (2016): Impact factor 1.73
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.66 SJR 0.598 SNIP 0.664
Web of Science (2015): Impact factor 1.639
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.75 SJR 0.636 SNIP 0.811
Web of Science (2014): Impact factor 1.591
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.03 SJR 0.723 SNIP 0.94
Web of Science (2013): Impact factor 1.736
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.03 SJR 0.748 SNIP 0.949
Web of Science (2012): Impact factor 1.853
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.97 SJR 0.725 SNIP 0.913
Web of Science (2011): Impact factor 1.683
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.703 SNIP 0.895
Web of Science (2010): Impact factor 1.768
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.704 SNIP 0.811
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.635 SNIP 0.781
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.536 SNIP 0.723
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.546 SNIP 0.719
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.468 SNIP 0.679
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.456 SNIP 0.616
Scopus rating (2003): SJR 0.441 SNIP 0.631
Scopus rating (2002): SJR 0.505 SNIP 0.651
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.526 SNIP 0.85
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.663 SNIP 0.788
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.599 SNIP 0.838
Original language: English
Keywords: 3D bioprinting, Disease microenvironment, Disease modeling, In vitro tissue models
DOIs:
10.1007/s10529-017-2360-z
Source: FindIt
Source-ID: 2370701891
Research output: Research - peer-review › Journal article – Annual report year: 2017