












Web Information:

- [iHuman](#)
- [Editor-in-Chief, WJSC](#)
- [IADR](#) 
- [Publons](#) (Listed within Top 2% by Merit) 
- [LinkedIn](#) 
- [Web of Science, Clarivate](#) 
- [Scopus](#) 
- [ResearcherID](#)  
- [Scholar](#) 
- [ORCID](#) 
- [NGS Research Projects](#) 
- [NUHS & NUS](#) 
- [NGS](#)



Research Areas:

- [iHuman+](#) (new): **Agelessly** renew, **upgrade** iHuman organ-system; **iHuman-AI**: Integration of iHuman brain-organ-system with AI; iHuman data technology, intelligence and blockchain
- Developing [iHuman \(in-vitro & in-vivo Human Platform\)](#) of **vascularized, innervated**, functional, standard and live Tissue-Organ-**Organchain**-System from human pluripotent stem cell (hPSC) as ethical and unlimited source **to improve clinical service** (regenerative medicine, transplantation, precision medicine, etc.) **and as efficient platform to upgrade human evaluation in health and medical studies**
- Clinical and biological design and R&D of the highly macro-porous structure of systemic and oral implant and scaffold for tissue, organ repair and reconstruction with **additive manufacturing** or 3D printing

Patent:

- Cao T, Movahednia MM, and Kidwai F. Organotypic Skin Model. PCP filed 10 Sep 2014, PCT filed 4 Sep 2015, UK International Patent Application No 1416006.3; UK International Patent File No PCT/SG2015/050302, **awarded and published Mar 2016** [WO/2016/039687](#).
- Cao, T, Handral, HK, and Sriram, G. Vascularized Tissue, Skin or Mucosa Equivalent. PCP filed 23 June 2015, PCT filed 27 Jun 2016, UK International Patent Application No 15109135, UK International Patent File No PCT/SG2016/050282, **awarded and published Dec 2016** [WO/2016/209166](#). **National Phases:** [US20180187162](#), [US20180187162A1](#) **awarded and published Jul 2018**; [EP3310903](#), [EP3310903A1](#) **awarded and published Apr 2018**, [EP3310903A4](#); **awarded and published Feb 2019**; [JP2018518970A](#) **awarded and published Jul 2018**; [CN107849530](#), [CN107849530A](#) **awarded and published Jul 2018**; [CA2990590](#), [CA2990590A1](#) **awarded and published Dec 2016**; [GB201510913D0](#) **awarded and published Aug 2015**; [WO2016209166A1](#) **awarded and published Dec 2016**.
- Cao, T, Sriram, G, Muthusamy S and Fuh YHJ. Collagen-Based Bioink For Generation of Vascularized Tissue Constructs, filed **10202005647Q** 16 Jun, **10202011363P** 16 Nov 2020

Invited International Reviewer:

Grant Agencies and Authorities:

- **Times Higher Education**, World University Rankings, Elsevier
- **Clarivate Analytics**, Global Institutional Profiles Project
- **The Wellcome Trust**, UK
- **Medical Research Council**, UK
- **Cancer Research UK**
- **European Science Foundation**, EU
- **The Netherlands Organisation for Scientific Research**, Netherlands
- **The Austrian Science Fund**, Austria
- **Ministry of Science**, Israel
- **National Dental Research Foundation**, New Zealand
- **Czech Science Foundation**, Czech
- **Research Grant Council**, Hong Kong
- **Singapore - Massachusetts Institute of Technology Alliance for Research and Technology**, US & SG

- Ministry of Education, Singapore
- Ministry of Health, Singapore
- National Medical Research Council, Singapore
- Singapore Dental Council, Singapore
- Agency for Science, Technology and Research
- Advertising Standards Authority of Singapore
- Bioethics Advisory Committee, Singapore

International scientific Journals and books:

- Nature Protocols (5Y-IF 15.269)
 - Cell Death and Differentiation (IF 10.714)
 - Biomaterials (IF 10.314)
 - Journal of Materials Chemistry B (IF 9.038)
- Total >100** international scientific journals and books

Major Professional/Consulting Activities:

- [Editor-in-Chief \(2015-2021\), *World Journal of Stem Cells* \(JCR IF: 4.376, CS: 3.55\)](#)
- [Editorial Board, *Journal of Molecular Medicine-JMM* \(IF 5.192\), Editor of 'hPSC derived functional tissue and organ platform'](#)
- [Editorial Board, *Bio-Design and Manufacturing* \(IF 4.095\)](#)
- International Member of Academic Committee, Key Laboratory of Stomatology, Shanghai Municipality Government
- International Member of Academic Committee, Key Laboratory of Stomatology, Zhejiang Province Government
- President, International Association of Dental Research Singapore Section
- Guest Professorship, Zhejiang University
- Life Member, Stem Cell Society Singapore
- Singapore Dental Association
- American Association of Dental Research
- Senior Consultant, Bio-Scaffold International, Singapore

Selected International Peer Review Journal Publications (*Corresponding):

- Lv Q, Li M, Zou Y, Cao T*. **J Control Release**. 174:43 (5Y-IF 8.683)
 - Sriram G*, Handral H, Gan SU, Islam I, Rufaihah AJ, Cao T*. Fabrication of vascularized tissue constructs under chemically defined culture conditions. **Biofabrication**. 12:045015 (5Y-IF 8.251)
 - Xu X; Liang Y; Li X; Wang M; Cao T; Li W; Liu J; Xiong J; Li B; Xia J*; Wang D*, Duan L*. Exosome-Mediated Delivery of Kartogenin for Chondrogenesis of Synovial Fluid-Derived Mesenchymal Stem Cells and Cartilage Regeneration. **Biomaterials**. 269:120539 (IF 10.137)
 - Hazawa M, Lin D, Handral H, Xu L, Chen Y, Jiang Y, Thippeswamy A, Ding L, Meng X, Sharma A, Samuel S, Movahednia M, Wong R, Yang H, Cao T, and Koeffler PH*. **Oncogene** (IF 8.559). 36:2243
 - Truong T, Zeng G, Lin Q, Lim TK, Cao T, Wang Y, Seneviratne CJ*. **Mol Cell Proteomics**. 15:3488 (5Y-IF 6.759).
 - Kidwai FK, Liu H, Toh WS, Fu X, Jokhun.DS, Movahednia MM, Li MM, Zou Y, Squire CA, Phan TT and Cao T*. **J Invest Dermatol**. 133:618 (IF 7.216)
 - Toh WS, Lee EH, Gou X, Chan KYJ, Yeow C H, Choo AB and Cao T*. **Biomaterials**. 31:6968 (IF 10.317)
 - Xie H, Cao T, Gomes JCV, Neto AHC, Rosa V*. **Carbon**. 93:266 (5Y-IF 7.088)
 - Liu H, Lu K, MacAry PA, Wong KL, Heng A, Cao T*, Kemeny DM*. **J Cell Sci**. 125:200 (5Y-IF 6.731)
 - Chen X, Song XH, Yin Z, Zou XH, Wang LL, Hu H, Cao T, Zheng M, Ouyang HW. **Stem Cells**. 27:1276 (5Y-IF 8.632)
 - Heng BC, Cao T*. **Nature**. 443:26 (5Y-IF 44.958)
 - Ge Z, Hu Y, Heng BC, Yang Z, Ouyang HW, Lee EH, Cao T*. **Arthritis Rheum-US**. 55:493 (IF 8.955)
 - Toh WS, Yang Z, Liu H, Heng BC, Lee EH, Cao T*. **Stem Cells**. 25:950 (5Y-IF 8.632)
 - Rai B, Teoh SH, Huttmacher D, Cao T, Ho KH. **Biomaterials**. 26:3739 (IF 10.317)
 - Heng BC, Cao T*, Lee EH. **Stem Cells**. 22:1152 (5Y-IF 8.632)
 - Liu H, Kemeny MD, Heng BC, Ouyang HW, Melendez AJ, Cao T*. **J Immunol**. 176:2864 (5Y-IF 6.068)
 - Rai B, Teoh SH, Ho KH, Huttmacher D, Cao T, Chen F, Yacob K. **Biomaterials**. 25:5499 (IF 10.317)
 - Heng BC, Cao T*, Stanton LW, Robson P, Olsen B. **J Bone Miner Res**. 19:1379 (5Y-IF 7.084)
- Total >170** full papers in international peer reviewed journals and books

Invited and Sponsored Talks at International Conferences and Scholarly Meetings:

- Cao T. Beyond COVID-19: iHuman, a new path to the next normal dentistry, medicine, health. The 2nd International Cooperation Symposium, Wuhan University, Wuhan, 15-16 Oct 2020. Presidential Guest Speaker for the meeting
- Cao T. Symposium Invited Talk. iHuman Era for Dentistry. 4th Congress of the International Association for Dental Research APR, Brisbane, 28-30 Nov 2019.
- Cao T. Plenary Keynote Speech. iHuman Update for Dentistry and Medicine. The Academic Summit Forum, Key Laboratory of Stomatology, Shanghai Municipality Government, Shanghai, 23 May 2019, Presidential Guest Speaker for the meeting
- Cao T. Plenary Keynote Speech. Update on iHuman Development for Dentistry. The Academic Summit Forum, Key Laboratory of Stomatology, Zhejiang Province Government, Hangzhou, 19 May 2019, Presidential Guest Speaker for the meeting.
- Cao T. Keynote Speech. iHuman Organchain for future dentistry. The 2nd SNUISD International Conference for Future Dentistry. Seoul, 26-27 Oct 2018, Presidential Guest Speaker for the meeting.
- Cao T. Guest Speech. iHuman Organchain Development. Special International Seminar, Gangneung-Wonju National University. Gangneung, 29 Oct 2018.
- Cao T. Keynote Speech. iHuman: Build an unlimitedly expandable, vascularized and innervated Organchain from a gold-standard single cell. International Conference on Biomaterials, Bio-Design and Manufacturing (BDMC2018) & H2020 BAMOS Project 2018 Meeting. Hangzhou, 26-28 Aug 2018, President Guest Speaker for the meeting.
- Cao T. Plenary Speech. Development of iHuman tissues and organs integrated with blood vessels and nerves. The 17th Annual Academic Meeting of Pan Pacific Implant Society. Hangzhou, 13-14 Apr 2018, President Guest Speaker for the meeting.
- Cao T. Keynote Speech. From a single pluripotent stem cell to iHuman tissues and organs. PKU International Forum on Regenerative Medicine. Beijing, 10 Apr 2018, Guest Speaker for the meeting.
- Cao T. Keynote Speech. iHuman organchain for human health. Westlake International Forum on Stem Cells. Hangzhou, 12 Apr 2018, Guest Speaker for the meeting.
- Cao T. Keynote Speech. Organchain of iHuman. The 4th International Symposium of China Stomatological, Dental, and Oral Scientific Research Development Strategy; and the 4th Meeting of 4th Academic Committee of Shanghai Key Laboratory of Stomatology. Shanghai, 18 Jan 2018, President Guest Speaker for the meeting.
- Cao T. Keynote Speech. iHuman: Vascularized, innervated, standard and live *in-vitro* human tissues and organs. 2017 International Oral and Maxillofacial Surgery Implant Zhongshan Submit. Guangzhou, 7-9 Apr 2017, President Guest Speaker for the meeting.
- Cao T. Keynote Speech. Vascularized, innervated, standard and live 'Lab-Human'. The 35th Oral Medical Academic Conference. Hangzhou, China, 3-5 Nov 2016, President Guest Speaker for the meeting.
- Cao T. Guest Speech. Vascularized, standard and live 'Lab-Human' for cancer research. The 2016 International Oral Cancer Symposium, Newcastle University, University of Queensland, Northern Institute for Cancer Research, National University of Singapore, Newcastle University Malaysia, University of Malaya, CARIF - Malaysia, and Northern Institute for Cancer Research. Newcastle University Malaysia, 8-9 May 2016, President Guest Speaker for the meeting.
- Cao T. Keynote Speech. iHuman for Dentistry, Medicine and Health. The 2016 International Forum, The Meeting of Academic Committee of Shanghai Key Laboratory of Stomatology, Science and Technology Committee of Shanghai Municipality, Shanghai, China, 29-30 Jan, 2016, President Guest Speaker for the meeting.
- Cao T. Stream Keynote Address. iHuman Platform for Health Science and Application. Stem Cell Asia Congress 2015, Singapore, Oct 15-16, 2015, President Guest Speaker for the meeting.
- Cao T. Plenary Keynote Speech. iHuman for Implantology, R&D and beyond. West Lake International Forum, The 9th Chinese National Conference on Oral Implantology, Hangzhou, China, Oct 29-31, 2015, President Guest Speaker for the meeting.
- Cao T. Guest Speech. iHuman Platform and Application Potential for Health. Clinical Applications of Stem Cells Conference, Singapore, Feb 26-27, 2015, President Guest Speaker for the meeting.
- Cao T. Public Seminar. iHuman for Med-Tech and beyond. National Metrology Centre, Singapore. Feb 4, 2015
- Cao T. Keynote Speech. From iHuman to Craniofacial Tissues and Organs. The 2014 International Forum, The Meeting of Academic Committee of Shanghai Key Laboratory of Stomatology, Science and Technology Committee of Shanghai Municipality, Shanghai, China, Dec 25-28, 2014, President Guest Speaker for the meeting.
- Cao T. Guest Seminar. Major Challenge and Opportunity of Health Metrology. National Metrology Centre, Singapore. Nov 4, 2014
- Cao T. Plenary Speech. iHuman – functional, vascularized and innervated tissue and organ from hESC. The 2014 International Forum, The Chinese National Annual Conference on Oral Biomedicine, Hangzhou, China, Oct 24-27, 2014, Presidential Guest Speaker for the meeting.
- Cao T. Stream Keynote Address. iHuman – hESC derived platform; vascularized and innervated tissue and organ. The 11th Asian Congress on Oral and Maxillofacial Surgery, Xi An, China, 22-25 Aug 2014, Presidential Guest Speaker for the meeting.
- Cao T. Stream Keynote Speech. Exploring functional tissue-organ from human embryonic stem cells. The 3rd International Symposium of Medical-Dental-Pharmaceutical Education and Research in Okayama; and The 55th Annual Meeting of Japanese Association for Oral Biology, Okayama, Japan, 20-23 Sep 2013, Presidential Guest Speaker for the meetings.
- Cao T. Chair Guest Speech. Creating vascularized and innervated human tissue and organ from hESC for wide application. The 15th International Conference on Biomedical Engineering, 4-7 Dec 2013, Singapore

- Cao T. Stream Keynote Address. Human Embryonic Stem Cells for Preclinical Human Trial of Therapy, Drug and Medical Device. The 6th National Conference for Clinical Research - *Novel to Nobel: Better Research, Better Doctors, Better Health*. Putra World Trade Centre, Kuala Lumpur, Malaysia, 23-28 Sep 2012, Presidential Guest Speaker for the meeting.
- Cao T. Guest Talk. Different Features of Human ESC, iPSC and ASC for Health Industry. The 6th National Conference for Clinical Research - *Novel to Nobel: Better Research, Better Doctors, Better Health*. Putra World Trade Centre, Kuala Lumpur, Malaysia, 23-28 Sep 2012, Presidential Guest Speaker for the meeting.
- Cao T. Plenary Speech. Is ESC still 'gold standard' for pluripotent stem cells? The First International Conference on Stem Cells. Chania, Crete, Greece, September 6-11, 2012, Presidential Guest Speaker for the meeting.
- Cao T. Plenary Speech. Application of hESC for regenerative medicine and beyond. The 5th SUT International Stem Cell Meeting - *The Current Status of Stem Cell Research: Pluripotency, Differentiation and Application*. Nakhon Ratchasima, Thailand, 22-23 Jul 2011, Presidential Guest Speaker for the meeting.
- Cao T. Keynote Speech. New Era of Dentistry, Medicine and Health Science with hESCs, Signaled by Obama and Bush. The First Global Chinese Congress of Oral Medicine; International Conference of Oral Medicine., Dec 1-4, 2010, Presidential Guest Speaker for the meeting.
- Cao T. Keynote Speech. Current status of stem cell research and prospects for study and application of human embryonic stem cells. The 2nd Meeting of International Association of Dental Research Pan-Asian Pacific Federation. Sep 22-24, 2009, Presidential Guest Speaker for the meeting.
- Cao T. Chair Guest Speech. Current status of human embryonic stem cell research and prospects for cell-based therapy. The 4th Annual Conference of Asian Reproductive Biotechnology Society, Singapore, Nov 24-28, 2007
- Cao T. Stream Keynote Address. Current status of human embryonic stem cell research and prospects for cell-based therapy. The 5th Annual Congress of Japanese Regenerative Medicine. Okayama, Japan, Mar 8-9, 2006. Presidential Guest Speaker for the congress.
- Cao T. Chair Guest Speech. Brief Introduction of Biocompatibility Evaluation of Medical Devices. A'STAR GET-Up Seminar and SIMTech AMF, Singapore, Jan 19, 2006
- Cao T. International Panel Discussion. Prospects for hESC based therapy. The 5th Annual Congress of Japanese Regenerative Medicine. Okayama, Japan, Mar 8-9, 2006. Presidential Guest Speaker for the congress.
- Cao T. Guest Talk. Bio-scaffolding in Regenerative Medicine. The 2nd Singapore - China Symposium on Reconstructive and Cosmetic Oral and Maxillofacial Surgery, Singapore, 4-Mar-06
- Cao T. Guest Seminar. Human embryonic stem cells and directed osteogenic, chondrogenic and endothelial differentiation. Advanced Cell Biology Seminar. University Medical Center Groningen, Groningen, Netherlands, Oct 12, 2005
- Heng BC, Cao T*. Guest Seminar. *In vitro* culture characteristics of human embryonic stem cells. Advanced Cell Biology Seminar. University Medical Center Groningen, Groningen, Netherlands, Oct 12, 2005
- Cao T. Guest Seminar. Directed osteogenic, chondrogenic and endothelial differentiation of human embryonic stem cells. Stem Cell Seminar, Karolinska Institute, Stockholm, Sweden, Oct 7, 2005
- Heng BC, Cao T*. Guest Seminar. Characteristics of human embryonic stem cells cultured *in vitro*. Stem Cell Seminar, Karolinska Institute, Stockholm, Sweden, Oct 7, 2005
- Cao T. Guest Talk. Tissue Engineering of Osteochondral Composite for Articular Defect Repair. Second Franco-Singapore Biomedical Engineering Symposium, Lyon, France, Jun 10-12, 2002.
- Cao T. Guest Talk. Advances in oral tissues research - its significance to the practising dentist. The 1st National Health Group Scientific Congress; The 6th NUS-NUH Annual Scientific Meeting, Singapore, 16-18 Aug 2002

Total >61 invited and sponsored talks at academic and scientific conferences and scholarly meetings

Global Impact:

Achievement	Record Date	To	Major Impact
Since 2003 • Establishing hPSC group for the first time in dentistry throughout records and databases	• International patents published • Spinoff		• Organotypic Skin Model, Published 17 Mar 2016 WO/2016/039687 • Vascularized Tissue, Skin or Mucosa Equivalent, Awarded and Published 29 Dec 2016 WO/2016/209166 . National phases: US20180187162A1 , EP3310903A1 , JP2018518970A , CN107849530A , CA2990590A1 , GB201510913D0 , WO2016209166A1 • Collagen-Based Bioink For Generation of Vascularized Tissue Constructs, filed 10202005647Q 16 Jun, SP102524SGA 20 Oct 2020 • Industrial collaboration with global corporate Evonik Industry to develop technology, product and international partnership in other countries in the area of iHuman • LabSkinPro Pte Ltd, through NUS Enterprise and Industry Liaison Office

<ul style="list-style-type: none"> • Developing in-vitro & in-vivo Human Platform of vascularized, innervated, functional standard and live Tissue-Organ-System 	<ul style="list-style-type: none"> • IADR Keynote Speech • >100 international peer-reviewed full papers in Scopus and Web of Science, Clarivate databases on 6 Mar 2021. 	<ul style="list-style-type: none"> • Keynote Speech on <i>i</i>Human/hESC research area for the first time in the record of International Association of Dental Research: Plenary Keynote Speech on <i>i</i>Human/hESC at International Association of Dental Research, as Presidential Guest Speaker at the 2nd Meeting of IADR Pan-Asian Pacific Federation, 2009 • Pioneering report on <i>i</i>Human/hPSC research area for the first time in dentistry throughout databases • Pioneering report on successful hPSC osteogenic differentiation for the first time in dentistry throughout databases • Pioneering report on successful hPSC chondrogenic differentiation for the first time in dentistry throughout databases • International Plenary Keynote Speech on <i>i</i>Human/hPSC research area for the first time by a dentist throughout databases, as Presidential Guest Speaker at the 5th Annual Congress of Japanese Regenerative Medicine, 2005 • Invited Reviewer for 12 renowned international, 6 regional authorities and funding agencies, and >100 International Scientific Journals since 2003 • >61 invited and sponsored <i>i</i>Human/hPSC speeches/talks since 2002. • Serve as Editor-in-Chief for World Journal of Stem Cells (IF: 4.376, CS: 3.55) • Advisory Editorial Board, Editorial Advisory Board, Editorial Board for 10 international peer review journals, including Journal of Molecular Medicine-JMM (IF 5.192) as Editor of ‘ <i>i</i>Human: Stem cells and hPSC derived functional tissue and organ platform’ • From hPSC to <i>i</i>Human Neurons: Pubmed 26956435, Pubmed 28762648 • From hPSC to <i>i</i>Human Blood Vessels: Pubmed 26718617 • From hPSC to <i>i</i>Human Dopaminergic Neurons: Pubmed 26956435 • From hPSC to <i>i</i>Human Arteries and Veins: Pubmed 26718617 • From hPSC to <i>i</i>Human Neural Crest Stem Cells, Peripheral Neurons, and Corneal Keratocytes: Pubmed 28762648, Pubmed 28090209
<p>Clinical, biological Design and R&D of implant / scaffold for tissue, organ repair and reconstruction with Additive Manufacturing or 3D Printing since 2001</p>	<ul style="list-style-type: none"> • 1 R&D commercialization • 1 TEC, PMO grant • 1 TEC, PMO award • >9 international peer-reviewed full papers 	<ul style="list-style-type: none"> • Pioneering dental 3D-PRINTING implant/scaffold commercialization • <i>In-Vitro and In Vivo Testing of Bio-scaffold for Bone Re-construction and Implants</i>. 15/07/05 – 30/11/06, \$700,000, The Enterprise Challenge, Prime Minister Office, 2005 • Enterprising Agency Award, Prime Minister Office, 2005 • Fabrication and evaluation of electrohydrodynamic jet 3D printed polycaprolactone/chitosan cell carriers using hPSC-derived fibroblasts • Scaffold design and in vitro study of osteochondral coculture in a 3D porous polycaprolactone scaffold fabricated by fused deposition modeling • Printing of titanium implant prototype • Proliferation and Differentiation of Human Osteoblasts within 3D printed PLGA Scaffolds • Comparison of Osteogenesis of hPSCs within 2D and 3D culture systems • Histological Evaluation of osteogenesis of 3D-Printed PLGA Scaffolds in Rabbit • Manufacture of degradable polymeric scaffolds for bone regeneration • Effect of rhBMP-2 on canine osteoblasts seeded onto 3D bioactive PCL scaffolds • Novel PCL-based honeycomb scaffolds as drug delivery systems for rhBMP-2
<p>Developing iHuman platform for evaluation of CANCER, AGEING, Angiogenesis, Drug discovery, immune, biosafety, toxicity, disease, bio-stress, manufacturing since 2004</p>	<ul style="list-style-type: none"> • International patents published • Spinoff • Industrial collaboration • >29 international peer-reviewed full papers 	<ul style="list-style-type: none"> • Organotypic Skin Model, Published 17 Mar 2016 WO/2016/039687 • Vascularized Tissue, Skin or Mucosa Equivalent, Published 29 Dec 2016 WO/2016/209166 • LabSkinPro Pte Ltd, through NUS Enterprise and Industry Liaison Office • Global corporate Evonik Industry to develop technology, product and international partnership in other countries in the area of iHuman • ZNF750 is a lineage-specific TUMOR suppressor in squamous cell CARCINOMA • hPSCs-derived keratinocytes as a novel epidermal cellular model in AGING studies • Telomere length is regulated by FGF-2 in hPSCs and affects the life span of its differentiated progenies • Investigation of telomere and telomerase in hPSCs and its progenies • Differential effects of the extracellular microenvironment on hPSCs differentiation into keratinocytes and their subsequent replicative lifespan • Potential applications of keratinocytes derived from hPSCs

	<ul style="list-style-type: none"> • HPSC derived vascular cells – in vitro model for ANGIOGENESIS and DRUG DISCOVERY • Innate IMMUNE response of hPSC derived-fibroblasts and mesenchymal stem cells to periodontopathogens • hPSCs derived keratinocyte as an <i>in vitro</i> research model for the study of immune response • Stem cells: A potential source for high throughput screening in TOXICOLOGY • Development of hPSC platforms for human HEALTH-SAFETY evaluation • Pioneering report on hPSC progenies for toxicity study and test • Development of hPSC model for toxicity evaluation • Evaluating biotoxicity with fibroblasts derived from hPSCs • Pluripotent stem cells: an in vitro model for nanotoxicity assessments • Pioneering report of dentistry research on hPSCs for genotoxicity study and test • Role of hPSCs and Derived Progenies in Genotoxicity Testing • hPSCs for genotoxicity testing • Evaluation of hPSCs and their Differentiated Fibroblastic Progenies as Cellular Models for <i>In Vitro</i> Genotoxicity • Differential resistance of hPSCs and somatic cell types to oxidative stress and genotoxicity may be dependent on innate basal intracellular ROS levels • Assessment of mitomycin C-induced cytotoxicity and genotoxicity utilizing somatic progenies of hPSCs • Cytotoxicity of Silver Nanoparticles in hPSCs-Derived Fibroblasts and an L-929 Cell Line • Cytotoxicity of two dental materials on fibroblasts derived from hPSCs • Pioneering report on hPSCs and progenies to oxidative stress • Hydrogen Peroxide-Induced Cytotoxicity and Oxidative DNA Damage on hPSCs and their Differentiated Fibroblast-like Progenies • Short periods of cyclic MECHANICAL strain enhance triple-supplement directed osteogenesis and bone nodule formation by hPSCs <i>in vitro</i> • Investigation of hPSCs-Derived Keratinocytes as an <i>In Vitro</i> Research Model for Mechanical Stress Dynamic Response • Fabrication and evaluation of electrohydrodynamic jet 3D PRINT-ed polycaprolactone / chitosan cell carriers using hPSC-derived fibroblasts • Comparison of Osteogenesis of hPSCs within 2D and 3D culture systems • To provide novel and cost-effective cell-tissue-organ models for (1) biosafety screenings and tests adopted by ISO, OECD, FDA; (2) disease-therapy and ageing study; (3) functional and safety screening and tests of the candidates of biomaterial and drug; (4) reduce and replace animal models and human subjects in above areas.
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International Peer Review Publications:

Database Update 6 Mar 2021	Full Papers	Citations	h-Index
Scholar	170 (2001-)	6503 (2004-)	44 (2004-) i10-index 103
Scopus	156 (2001-) ID: 35247785500	4325 (2004-)	37
Web of Science, Clarivate	154 (2001-) ID: B-1008-2008	4027 (2004-)	35



Scientific Book

1. Sriram G*, Cao T*. Human pluripotent stem cell derived vascular cells – *in vitro* model for angiogenesis and drug discovery. Stem Cells – from Drug to Drug Discovery, First Edition (Khawaja H Haider), **Verlag Walter de Gruyter GmbH**. Berlin, Germany. March 2017
2. Handral HK, Sriram G, Cao T*. Stem cells: A potential source for high throughput screening in toxicology. Stem Cells in Toxicology and Medicine, First Edition (Saura C Sahu), **John Wiley & Sons**, Chichester, UK. 18 Oct 2016
3. Kidwai FK*, Cao T, Lu K*. Differentiation of epidermal keratinocytes from human embryonic stem cells. Epidermis Stem Cells: Methods and Protocols, Third Edition (Ed. Kursad Turksen), **Humana**, Totowa, NJ, US. 31 Jul 2014
4. Toh WS*, Cao T*. Derivation of Chondrogenic cells from Human Embryonic Stem Cells for Cartilage Tissue Engineering. Human Embryonic Stem Cell Protocols, Third Edition (Ed. Kursad Turksen), **Humana**, Totowa, NJ, US. 12 Jul 2014
5. Yip GW*, Zou XH, Foong KWC, Ouyang HW, Bay BH, Cao T. Effects of Bovine Kidney Heparan Sulfate and Shark Cartilage Chondroitin-6-Sulfate on Palatal Fibroblast Activities. *Natural Products - Essential Resource for Human Survival*, 1st edition [Ed Zhu YZ, Tan KHB, Bay BH, Chang HL], **World Scientific** Publishing, Singapore, Feb 2007
6. Toh WS, Lee EH, Richard M, Cao T*. *In Vitro* Derivation of Chondrogenic cells from Human Embryonic Stem Cells. *Human Embryonic Stem Cell Protocol*, 2nd edition [Ed. Kursad Turksen], **Humana**, Totowa, NJ, US. 2010
7. Heng BC, Toh WS, Liu H, Rufaihah AJ, Cao T*. Differentiation and lineage-commitment of stem cells for therapeutic applications. *Stem Cell Research Trends*, 1st edition (Ed. Josse R. Braggina), **Nova Science Publishers**, Hauppauge, NY, US. 2007
8. Toh WS, Yang Z, Heng BC, Cao T*. Differentiation of Human Embryonic Stem Cells towards the Chondrogenic Lineage. *Stem Cell Assays*, 1st edition (Ed. Mohan C. Vemuri), **Humana**, Totowa, NJ, US. 2 Aug 2007

Scientific Journal

- Xu X; Liang Y; Li X; Wang M; Cao T; Li W; Liu J; Xiong J; Li B; Xia J*; Wang D*, Duan L*. Exosome-Mediated Delivery of Kartogenin for Chondrogenesis of Synovial Fluid-Derived Mesenchymal Stem Cells and Cartilage Regeneration. **Biomaterials**. 2021 Feb;269:120539, Epub 18 Nov 2020
- Sriram G*, Handral H, Gan SU, Islam I, Rufaihah AJ, Cao T*. Fabrication of vascularized tissue constructs under chemically defined culture conditions. **Biofabrication**. 12(4):045015, Epub Jun 29; 2020
- Kannan S, Lee M, Muthusamy S, Blasiak A, Sriram G*, Cao T*. Peripheral sensory neurons promote angiogenesis in neurovascular models derived from hESCs. *Stem Cell Res*. 52(2021):102231, Epub 10 Feb 2021

- Madanagopal TT, Lim SH, Tai YK, Fong CHH, Cao T, Rosa V*, Franco-Obregón A*. Pulsed electromagnetic fields synergize with graphene to enhance dental pulp stem cell-derived neurogenesis. *Eur Cell Mater.* 2021 Mar 1;41:216-232.
- Harish KH, Ashajyothi C, Sriram G, Kelmani C, Dubey N*, Cao T*. Cytotoxicity and Genotoxicity of Metal Oxide Nanoparticles in Human Pluripotent Stem Cell-Derived Fibroblasts. *Coatings.* 11(1):107:1-14, Epub 19 Jan 2021
- Kathuria H, Nguyen DTP, Handral HK, Cai J, Cao T, Kang L*. Proposome for Transdermal Delivery of Tofacitinib. **International Journal of Pharmaceutics.** 2020 July 30;585(119558):1-9, Epub 18 June 2020
- Hazawa M, Lin D, Handral H, Xu L, Chen Y, Jiang Y, Thippeswamy A, Ding L, Meng X, Sharma A, Samuel S, Movahednia M, Wong R, Yang H, Cao T, and Koeffler PH*. ZNF750 is a lineage-specific tumor suppressor in squamous cell carcinoma. **Oncogene.** 2017 Apr;36(16):2243-54, Epub 25 Aug 2016
- Zhu Q, Li M, Yan C, Lu Q, Wei S, Gao R, Yu M, Zou Y, Sriram G, Tong HJ, Hunziker W, Seneviratne CJ, Gong Z, Olsen BR, Cao T*. Directed differentiation of Human Embryonic Stem Cells to Neural Crest Stem Cells, Functional Peripheral Neurons, and Corneal Keratocytes. **Biotechnol J.** 2017 Dec;12(12), Epub 2017 Aug 1
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