EZSPHERE™, Publications

1. Protocol for EZSPHERE™

1-1. Sato H, Idiris A, Miwa T, Kumagai H.
Microfabric Vessels for Embryoid Body Formation and Rapid Differentiation of Pluripotent Stem Cells.
Scientific Reports, 2016, 6, Article number 31063.
DOI: 10.1038/srep31063.

2. Stem Cell & Differentiation

2-1. Sugimura R, Jha DK, Han A, Soria-Valles C, da Rocha EL, Lu YF, Goettel JA, Serrao E, Rowe RG, Malleshaiah M, Wong I, Sousa P, Zhu TN, Ditadi A, Keller G, Engelman AN, Snapper SB, Doulatov S, Daley GQ.

Haematopoietic stem and progenitor cells from human pluripotent stem cells.
Nature, 2017.
DOI: 10.1038/nature22370.

2-2. Matsuura K, Seta H, Haraguchi Y, Alsayegh K, Sekine H, Shimizu T, Hagiwara N, Yamazaki K, Okano T.

TRPV-1-mediated elimination of residual iPS cells in bioengineered cardiac cell sheet tissues.
Scientific Reports, 2016, 6, Article number 21747.
DOI: 10.1038/srep21747.

2-3. Miwa T, Idiris A, Kumagai H.
A novel cardiac differentiation method of a large number and uniformly-Sized spheroids using microfabricated culture vessels.
Regenerative Therapy, 2020, 15, Pages 18-26.

2-4. Anastasiya Sybirna, Walfred W. C. Tang, Merrick Pierson Smela, Sabine Dietmann, Wolfram H. Gruhn, Ran Brosh, M. Azim Surani.
A critical role of PRDM14 in human primordial germ cell fate revealed by inducible degrons.
Nature Communications, 2020, 11(1), Article number 1282.
DOI: 10.1038/s41467-020-15042-0.

2-5. Toshihiro Kobayashi, Aracely Castillo-Venzor, Chris A. Penfold, Michael Morgan, Naoaki Mizuno, Walfred W. C. Tang, Yasuyuki Osada, Masao Hirao, Fumika Yoshida, Hideyuki Sato, Hiromitsu Nakauchi, Masumi Hirabayashi, M. Azim Surani.
Tracing the emergence of primordial germ cells from bilaminar disc rabbit embryos and pluripotent stem cells.
Cell Reports, 2021, 37(2), Article number 109812.
DOI: 10.1016/j.celrep.2021.109812.

2-6. Aikawa N, Suzuki Y, Takaba K.
A Simple Protocol for the Myocardial Differentiation of Human iPS Cells.
Biological and Pharmaceutical Bulletin, 2015, 38(7), Pages 1070-1075.

2-7. Zhang RR, Takebe T, Miyazaki L, Takayama M, Koike H, Kimura M, Enomura M, Zheng YW, Sekine K, Taniguchi H.
Efficient Hepatic Differentiation of Human Induced Pluripotent Stem Cells in a Three-Dimensional Microscale Culture.
Stem Cells and Tissue Repair Methods in Molecular Biology, 2014, Volume 1210, Pages 131-141.

2-8. Shimada H, Hashimoto Y, Nakada A, Shigeno K, Nakamura T.
Accelerated generation of human induced pluripotent stem cells with retroviral transduction and chemical inhibitors under physiological hypoxia.
Biochemical and Biophysical Research Communications, Volume 417, Issue 2, Pages 659-664.

2-9. Rachel A. Heuer, Kevin T. Nella, Hsiang-Tsun Chang, Kyle S. Coots, Andrew M. Oleksijew, Christian B. Roque, Luisa H.A. Silva, Tammy L. McGuire, Kazuaki Homma, Akihiro J. Matsuoka.
Three-Dimensional Otic Neuronal Progenitor Spheroids Derived from Human Embryonic Stem Cells.
Tissue Engineering Part A, 2021, 27(3-4), Pages 256-269.
DOI: 10.1089/ten.tea.2020.0078.

3. Cancer

3-1. Taku Nakayama, Shimpei Otsuka, Tatsuya Kobayashi, Hodaka Okajima, Kentaro Matsumoto, Yuichiro Hagiya, Keiji Inoue, Taro Shuin, Motowo Nakajima, Tohru Tanaka, Shun-ichiro Ogura.
Dormant cancer cells accumulate high protoporphyrin IX levels and are sensitive to 5-aminolevulinic acid-based photodynamic therapy.
Scientific Reports, 2016, 6, Article number 36478.
DOI: 10.1038/srep36478.

3-2. Kaoru Miyazaki, Jun Oyanagi, Daisuke Hoshino, Shinsaku Togo, Hiromichi Kumagai, Yohei Miyagi.
Cancer cell migration on elongate protrusions of fibroblasts in collagen matrix.
Scientific Reports, 2019, 9, Article number 292.
DOI: 10.1038/s41598-018-36646-z.

3-3. Masahiro Shimokawa, Tomoharu Yoshizumi, Shinji Itoh, Norifumi Iseda, Kazuhito Sakata, Kyohei Yugawa, Takeo Toshima, Noboru Harada, Toru Ikegami, Masaki Mori.
Modulation of Nqo1 activity intercepts anoikis resistance and reduces metastatic potential of hepatocellular carcinoma.
Cancer Science, 2020, 111(4), Pages 1228-1240.
DOI: 10.1111/cas.14320.

3-4. Kaoru Miyazaki, Shinsaku Togo, Reiko Okamoto, Alimjan Idiris, Hiromichi Kumagai, Yohei Miyagi.
Collective cancer cell invasion in contact with fibroblasts through integrin-α5β1/fibronectin interaction in collagen matrix.
Cancer Science, 2020, 111(12), Pages 4381-4392.
DOI: 10.1111/cas.14664.

3-5. Taku Nakayama, Tomonori Sano, Yoshiki Oshimo, Chiaki Kawada, Moe Kasai, Shinkuro Yamamoto, Hideo Fukuhara, Keiji Inoue, Shun-ichiro Ogura.
Enhanced lipid metabolism induces the sensitivity of dormant cancer cells to 5-ALA-based photodynamic therapy.
Scientific Reports, 2021, 11, Article number 7290.
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3-6. Sawa A, Chiba T, Ishii J, Yamamoto H, Hara H, Kamma H.
Effects of sorafenib and an adenylyl cyclase activator on in vitro growth of well-differentiated thyroid cancer cells.
Endocrine Journal, 2017, 64(11).
DOI: 10.1507/endocrj.EJ16-0525.

3-7. Wakana Ohashi, Naoki Yamamine, Johji Imura, Yuichi Hattori.
SKL2001 suppresses colon cancer spheroid growth through regulation of the E-cadherin/β-Catenin complex.
Biochemical and Biophysical Research Communications, 2017, 493(3), Pages 1342-1348.
DOI: 10.1016/j.bbrc.2017.09.161.

3-8. Kanako Nakamura, Masayuki Komatsu, Fumiko Chiwaki, Takashi Takeda, Yusuke Kobayashi, Kouji Banno, Daisuke Aoki, Teruhiko Yoshida, Hiroki Sasaki.
SIM2l attenuates resistance to hypoxia and tumor growth by transcriptional suppression of HIF1A in uterine cervical squamous cell carcinoma.
Scientific Reports, 2017, 7, Article number 14574.
DOI: 10.1038/s41598-017-15261-4.

4. Organoid

4-1. Yuan-Ta Lin, Jinsoo Seo, Fan Gao, Heather M. Feldman, Hsin-Lan Wen, Jay Penney, Hugh P. Cam, Elizabeta Gjoneska, Waseem K. Raja, Jemmie Cheng, Richard Rueda, Oleg Kritskiy, Fatema Abdurrob, Zhuyu Peng, Blerta Milo, Chung Jong Yu, Sara Elmsaouri, Dilip Dey, Tak Ko, Bruce A. Yankner, Li-Huei Tsai.
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Neuron, 2018, 98(6), Pages 1141-1154.e7.
DOI: 10.1016/j.neuron.2018.05.008.

4-2. Waseem K. Raja, Alison E. Mungenast, Yuan-Ta Lin, Tak Ko, Fatema Abdurrob, Jinsoo Seo, Li-Huei Tsai.
Self-Organizing 3D Human Neural Tissue Derived from Induced Pluripotent Stem Cells Recapitulate Alzheimer's Disease Phenotypes.
PLOS ONE, 2016, 11(9), Article number e0161969.
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4-3. Hideya Sakaguchi, Yuki Ozaki, Tomoka Ashida, Takayoshi Matsubara, Naotaka Oishi, Shunsuke Kihara, Jun Takahashi.
Self-organized synchronous calcium transients in a cultured human neural network derived from cerebral organoids.
Stem Cell Reports, 2019, 13(3), Pages 458-473.
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4-4. Junichi Takahashi, Tomohiro Mizutani, Hady Yuki Sugihara, Sayaka Nagata, Shu Kato, Yui Hiraguri, Sayaka Takeoka, Mao Tsuchiya, Reiko Kuno, Sei Kakinuma, Mamoru Watanabe, Ryuichi Okamoto.
Suspension culture in a rotating bioreactor for efficient generation of human intestinal organoids.
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4-5. Hiroyuki Koike, Ran-Ran Zhang, Yasuharu Ueno, Keisuke Sekine, Yun-wen Zheng, Takanori Takebe, Hideki Taniguchi.
Nutritional modulation of mouse and human liver bud growth through a branched-chain amino acid metabolism.
Development, 2017, 144(6), Pages 1018-1024.
DOI: 10.1242/dev.143032.

4-6. Takatoshi Kasai, Hidetaka Suga, Mayu Sakakibara, Chikafumi Ozone, Ryusaku Matsumoto, Mayuko Kano, Kazuki Mitsumoto, Koichiro Ogawa, Yu Kodani, Hiroshi Nagasaki, Naoko Inoshita, Mariko Sugiyama, Takeshi Onoue, Taku Tsunekawa, Yoshihiro Ito, Hiroshi Takagi, Daisuke Hagiwara, Shintaro Iwama, Motomitsu Goto, Ryoichi Banno, Jun Takahashi, Hiroshi Arima.
Hypothalamic contribution to pituitary functions is recapitulated in vitro using 3D-cultured human iPS cells.
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4-7. Erica Carolina, Yoshiki Kuse, Ayumu Okumura, Kenji Aoshima, Tomomi Tadokoro, Shinya Matsumoto, Eriko Kanai, Takashi Okumura, Toshiharu Kasai, Souichiro Yamabe, Yuji Nishikawa, Kiyoshi Yamaguchi, Yoichi Furukawa, Naoki Tanimizu, Hideki Taniguchi.
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DOI: 10.1038/s41467-024-51487-3.

4-8. Daichi Onozato, Isamu Ogawa, Yuriko Kida, Shota Mizuno, Tadahiro Hashita, Takahiro Iwao, Tamihide Matsunaga.
Generation of Budding-Like Intestinal Organoids from Human Induced Pluripotent Stem Cells.
Journal of Pharmaceutical Sciences, 2021, 110(7), Pages 2637-2650.
DOI: 10.1016/j.xphs.2021.03.014.

4-9. Hirosato Ideno, Kent Imaizumi, Hiroko Shimada, Tsukasa Sanosaka, Akisa Nemoto, Jun Kohyama, Hideyuki Okano.
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4-10. Kano M, Suga H, Kasai T, Ozone C, Arima H.
Functional Pituitary Tissue Generation from Human Embryonic Stem Cells.
Current Protocols in Neuroscience, 2018, 83(1), e48.
DOI: 10.1002/cpns.48.

5. Transplantation

5-1. Dong Hyun Lee, Kwang-Sook Park, Hae Eun Shin, Sung Bum Kim, Hyejeong Choi, Seong Bae An, Hyemin Choi, Joo Pyung Kim, Inbo Han.
Safety and Feasibility of Intradiscal Administration of Matrilin-3-Primed Adipose-Derived Mesenchymal Stromal Cell Spheroids for Chronic Discogenic Low Back Pain: Phase 1 Clinical Trial.
International Journal of Molecular Sciences, 2023, 24(23), Article number 16827.
DOI: 10.3390/ijms242316827.

5-2. Eun Hee Kim, Jeong Pyo Son, Gyun Seong Oh, Suji Park, Eunchong Hong, Kyoung-Sun Lee, Michael Chopp, Oh Young Bang.
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5-3. Jeong Pyo Son, Eun Hee Kim, Eun Kyoung Shin, Dong Hee Kim, Ji Hee Sung, Mi Jeong Oh, Jae Min Cha, Michael Chopp, Oh Young Bang.

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5-4. Jieun Kim, Eun Hee Kim, Hanbee Lee, Ji Hee Sung, Oh Young Bang.
Clinical-Scale Mesenchymal Stem Cell-Derived Extracellular Vesicle Therapy for Wound Healing.
International Journal of Molecular Sciences, 2023, 24(5), Article number 4273.
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5-5. Manjunatha S. Muttigi, Byoung Ju Kim, Hemant Kumar, Sunghyun Park, Un Yong Choi, Inbo Han, Hansoo Park, Soo-Hong Lee.
Efficacy of matrilin-3-primed adipose-derived mesenchymal stem cell spheroids in a rabbit model of disc degeneration.
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5-6. Okumura H, Nanizawa E, Nakanishi A, Yukawa H, Hashita T, Iwao T, Baba Y, Ishikawa T, Matsunaga T.
Effective Transplantation of 2D and 3D Cultured Hepatocyte Spheroids Confirmed by Quantum Dot Imaging.
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5-7. Anna Nakanishi, Satoshi Toyama, Daichi Onozato, Chihiro Watanabe, Tadahiro Hashita, Takahiro Iwao, Tamihide Matsunaga.
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5-8. Yojiro Koda, Tatsuya Watanabe, Keigo Kawaji, Fei Mo, Andrew D. Beaser, Marcella Vaicik, Narutoshi Hibino, Takeyoshi Ota.
In Situ Myocardial Regeneration With Tissue Engineered Cardiac Patch Using Spheroid-Based 3-Dimensional Tissue.
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5-9. Kosuke Sako, Daisuke Sakai, Yoshihiko Nakamura, Erika Matsushita, Jordy Schol, Takayuki Warita, Natsumi Horikita, Masato Sato, Masahiko Watanabe.
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6. Drug screening & Toxicology

6-1. Tracy Tran, Cheng Jack Song, Trang Nguyen, Shun-Yang Cheng, Jill A. McMahon, Rui Yang, Qiuyu Guo, Balint Der, Nils O. Lindström, Daniel C.-H. Lin, Andrew P. McMahon.
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Cell Stem Cell, 2022, 29(7), Pages 1083-1101.e7.
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6-2. Emiko Ito, Shigeru Miyagawa, Maki Takeda, Ai Kawamura, Akima Harada, Hiroko Iseoka, Shin Yajima, Nagako Sougawa, Noriko Mochizuki-Oda, Satoshi Yasuda, Yoji Sato, Yoshiki Sawa.
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6-3. Daichi Onozato, Masaki Yamashita, Anna Nakanishi, Takumi Akagawa, Yuriko Kida, Isamu Ogawa, Tadahiro Hashita, Takahiro Iwao, Tamihide Matsunaga.
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