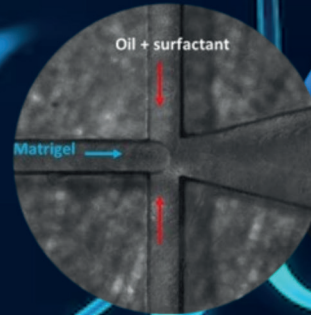
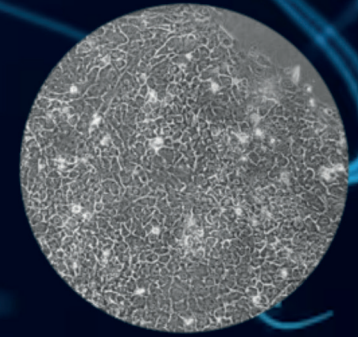


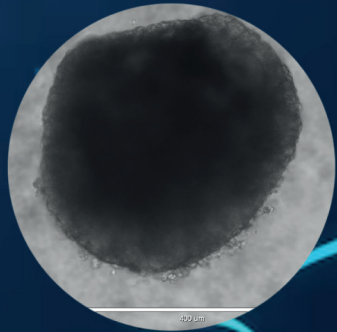
CULTURE D'ORGANOÏDES



MICROFLUIDIQUE



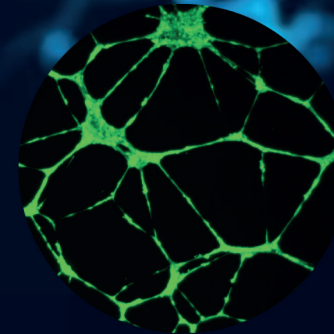
CULTURE DE CELLULES SOUCHES



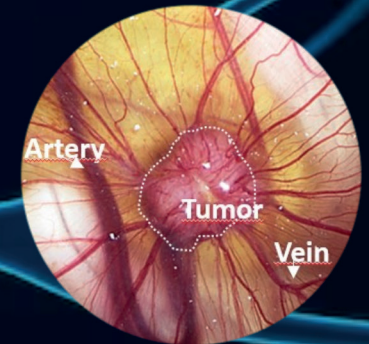
CULTURE DE SPHÉROÏDES



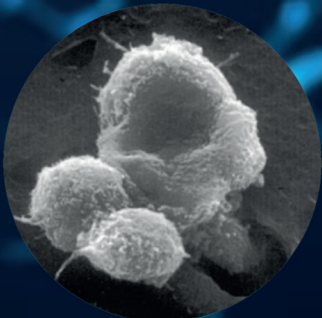
BIOIMPRESSION 3D



ANGIOGÈSE



ÉTUDE D'EFFICACITÉ ET DE TOXICITÉ



TEST D'INVASION



TEST IN VIVO



Pour toute question, notre spécialiste est à votre disposition

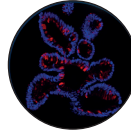
Romain GUEGAN  
Port. 07 63 62 19 98 - rguegan@dutscher.com

**Dutscher**  
ENSEMBLE, AIDONS LA SCIENCE À PROGRESSER

# Matrigel® : quelques exemples pour exploiter tout son potentiel !

## Organoïdes en 3D

- Base de travail privilégiée pour la culture des différents types d'organoïdes
- Il a maintenant sa propre référence pour s'affranchir des mauvaises surprises en 3D, on ne peut plus hésiter



Ehlen, L., Arndt, J., Treue, D. et al. Novel methods for in vitro modeling of pancreatic cancer reveal important aspects for successful primary cell culture. *BMC Cancer* 20, pp. 417 (2020). <https://doi.org/10.1186/s12885-020-06929-8>

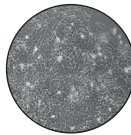
Xiuxiu Jiang, Xingmiao Li, Xiangwei Fei, Jiajie Shen, Jianhua Chen, Meijun Guo, Yangyang Li, Endometrial membrane organoids from human embryonic stem cell combined with the 3D Matrigel for endometrium regeneration in asherman syndrome, *Bioactive Materials*, Volume 6, Issue 11, 2021, pp. 3935-3946, ISSN 2452-199X, <https://doi.org/10.1016/j.bioactmat.2021.04.006>

Sarah Emily Hocoever, Liqian Liu, Robert Keith Duncan, Matrigel is required for efficient differentiation of isolated, stem cell-derived otic vesicles into inner ear organoids, *Stem Cell Research*, Volume 53, 2021, 102295, ISSN 1873-5061, <https://doi.org/10.1016/j.scr.2021.102295>

Chang, YH., Chu, TY. & Ding, DC. Human fallopian tube epithelial cells exhibit stemness features, self-renewal capacity, and Wnt-related organoid formation. *J Biomed Sci* 27, pp. 32 (2020). <https://doi.org/10.1186/s12929-019-0602-1>

## Culture de cellules souches Feeder-Free

- Souvent le fruit d'un mariage parfait avec un milieu que les chercheurs utilisent en routine, pour les cultures si sensibles de cellules souches. Vous voyez lequel ? Teasing...



Ran Zheng, Ting Geng, Dan-Ya Wu, Tianzhe Zhang, Hai-Nan He, Hai-Ning Du, Donghui Zhang, Yi-Liang Miao, Wei Jiang, Derivation of feeder-free human extended pluripotent stem cells, *Stem Cell Reports*, Volume 16, Issue 7, 2021, pp. 1686-1696, ISSN 2213-6711, <https://doi.org/10.1016/j.stemcr.2021.06.001>

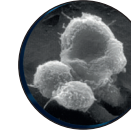
Beltran, A. A., Molina, S. G. and Beltran, A. (2020). Derivation of Induced Pluripotent Stem Cells from Human Fibroblasts Using a Non-integrative System in Feeder-free Conditions. *Bio-protocol* 10 (20): e3788. DOI: 10.21769/BioProtoc.3788.

Sylvain Perriot, Mathieu Canales, Amandine Mathias, Renaud Du Pasquier, Generation of transgene-free human induced pluripotent stem cells under defined, serum- and feeder-free conditions, *STAR Protocols*, Volume 3, Issue 3, 2022, 101620, ISSN 2666-1667, <https://doi.org/10.1016/j.xpro.2022.101620>

Kyle B. Lupo, Jung-Il Moon, Andrea M. Chambers, Sandro Matosevic, Differentiation of natural killer cells from induced pluripotent stem cells under defined, serum- and feeder-free conditions, *Cytotherapy*, Volume 23, Issue 10, 2021, pp. 939-952, ISSN 1465-3249, <https://doi.org/10.1016/j.jcyt.2021.05.001>

## Invasion cellulaire

- La parfaite modélisation de la membrane basale, il permet de qualifier et quantifier le pouvoir d'invasion cellulaire



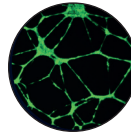
Merve Aslan, En-Chi Hsu, Shiqin Liu, Tanya Stoyanova, Quantifying the invasion and migration ability of cancer cells with a 3D Matrigel drop invasion assay, *Biology Methods and Protocols*, Volume 6, Issue 1, 2021, bpab014, <https://doi.org/10.1093/biomethods/bpab014>

Ando Y, Ohuchida K, Otsubo Y, Kibe S, Takesue S, Abe T, et al. (2020) Necroptosis in pancreatic cancer promotes cancer cell migration and invasion by release of CXCL5. *PLoS ONE* 15(1): e0228015. <https://doi.org/10.1371/journal.pone.0228015>

Anguiano M, Morales X, Castilla C, Pena AR, Ederra C, Martínez M, et al. (2020) The use of mixed collagen-Matrigel matrices of increasing complexity recapitulates the biphasic role of cell adhesion in cancer cell migration: ECM sensing, remodeling and forces at the leading edge of cancer invasion. *PLoS ONE* 15(1): e0220019. <https://doi.org/10.1371/journal.pone.0220019>

## Angiogenèse

- Outil idéal pour l'étude de la formation de tubules, l'étude de la migration, ou les études InVivo.
- L'allié pour les tests d'angiogenèse



Aref Z, Quax PHA. In Vivo Matrigel Plug Assay as a Potent Method to Investigate Specific Individual Contribution of Angiogenesis to Blood Flow Recovery in Mice. *Int J Mol Sci*. 2021 Aug 18;22(16):8909. doi: 10.3390/ijms22168909. PMID: 34445616; PMCID: PMC8396178.

Adair TH, Montani JP. Angiogenesis. San Rafael (CA): Morgan & Claypool Life Sciences; 2010. Chapter 2, *Angiogenesis Assays*. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK53241/>

## Implantation InVivo

- Plébisité en sous-cutané pour aider au développement de nombreuses tumeurs implantées chez les souris



Aref, Z.; Quax, P.H.A. In Vivo Matrigel Plug Assay as a Potent Method to Investigate Specific Individual Contribution of Angiogenesis to Blood Flow Recovery in Mice. *Int. J. Mol. Sci.* 2021, 22, 8909. <https://doi.org/10.3390/ijms22168909>

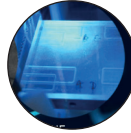
Tsai, CH., Chen, CJ., Gong, CL. et al. CXCL13/CXCR5 axis facilitates endothelial progenitor cell homing and angiogenesis during rheumatoid arthritis progression. *Cell Death Dis* 12, pp. 846 (2021). <https://doi.org/10.1038/s41419-021-04136-2>

Mu, H.Q., He, Y.H., Wang, S.B. et al. MiR-130b/TNF- /NF- B/VEGFA loop inhibits prostate cancer angiogenesis. *Clin Transl Oncol* 22, pp. 111-121 (2020). <https://doi.org/10.1007/s12094-019-02217-5>

Cao, J., Liu, X., Yang, Y. et al. Decylubiquinone suppresses breast cancer growth and metastasis by inhibiting angiogenesis via the ROS/p53/ BAI1 signaling pathway. *Angiogenesis* 23, pp. 325-338 (2020). <https://doi.org/10.1007/s10456-020-09707-z>

## Microfluidiques

- Puces et organ-on-a-chip le croissent souvent sur leurs parcours ! Pour la science du futur

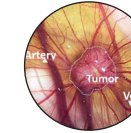


Dolega ME, Abeille F, Piccollet-D'hahan N, Gidrol X. Controlled 3D culture in Matrigel microbeads to analyze clonal acinar development. *Biomaterials*. 2015 Jun;52:347-57. doi: 10.1016/j.biomaterials.2015.02.042. Epub 2015 Mar 3. PMID: 25818441.

Laperrousaz B, Porte S, Gerbaud S, Härmä V, Kermarrec F, Hourtane V, Bottausci F, Gidrol X, Piccollet-D'hahan N. Direct transfection of clonal organoids in Matrigel microbeads: a promising approach toward organoid-based genetic screens. *Nucleic Acids Res*. 2018 Jul 6;46(12):e70. doi: 10.1093/nar/gky030. PMID: 29394376; PMCID: PMC6158603.

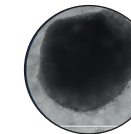
## Etude de l'efficacité et de la toxicité

- L'oncologie InVivo prend une nouvelle dimension avec par exemple l'étude sur Embryon de poulets.
- Il suffit de contacter Inovotion car ils sont bien meilleurs que moi sur cette thématique !



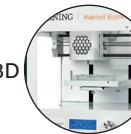
## Sphéroïdes en 3D

- En l'ajoutant au milieu de culture, il permet à certaines cellules de plus facilement former des sphères



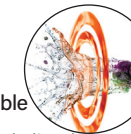
## BioImpression 3D

- Le matrigel® peut être maintenant Bioimprimé en 3D avec le meilleur outil pour le faire, le Matribot de Corning®



## Coating d'adhésion

- Certaines cellules ont même besoin de l'avoir sur leurs supports préférés, pour adhérer du mieux possible



Kaiser, A., Kalle, A., Novozhilova, E. and Olivius, P. (2020), The Effects of Matrigel® on the Survival and Differentiation of a Human Neural Progenitor Dissociated Sphere Culture. *Anat. Rec.*, 303: 441-450. <https://doi.org/10.1002/ar.24131>

Huang, K., Castiaux, A. D., Podicheti, R., Rusch, D. B., Martin, R. S., Baker, L. A., A Hybrid Nanofiber/Paper Cell Culture Platform for Building a 3D Blood-Brain Barrier Model. *Small Methods* 2021, 5, 2100592. <https://doi.org/10.1002/smt.202100592>

Ehlen, L., Arndt, J., Treue, D. et al. Novel methods for in vitro modeling of pancreatic cancer reveal important aspects for successful primary cell culture. *BMC Cancer* 20, pp. 417 (2020). <https://doi.org/10.1186/s12885-020-06929-8>

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