Opdivo-Yervoy Combo Showing Durable Benefits in Untreated Kidney Cancers in Long-term Trial

Opdivo-Yervoy combination therapy에 대한 최신 기사입니다.
전문을 확인하시려면 아래 버튼을 눌러보세요.

More information >>

3D microfluidic ex vivo culture of organotypic tumor spheroids to model immune checkpoint blockade.

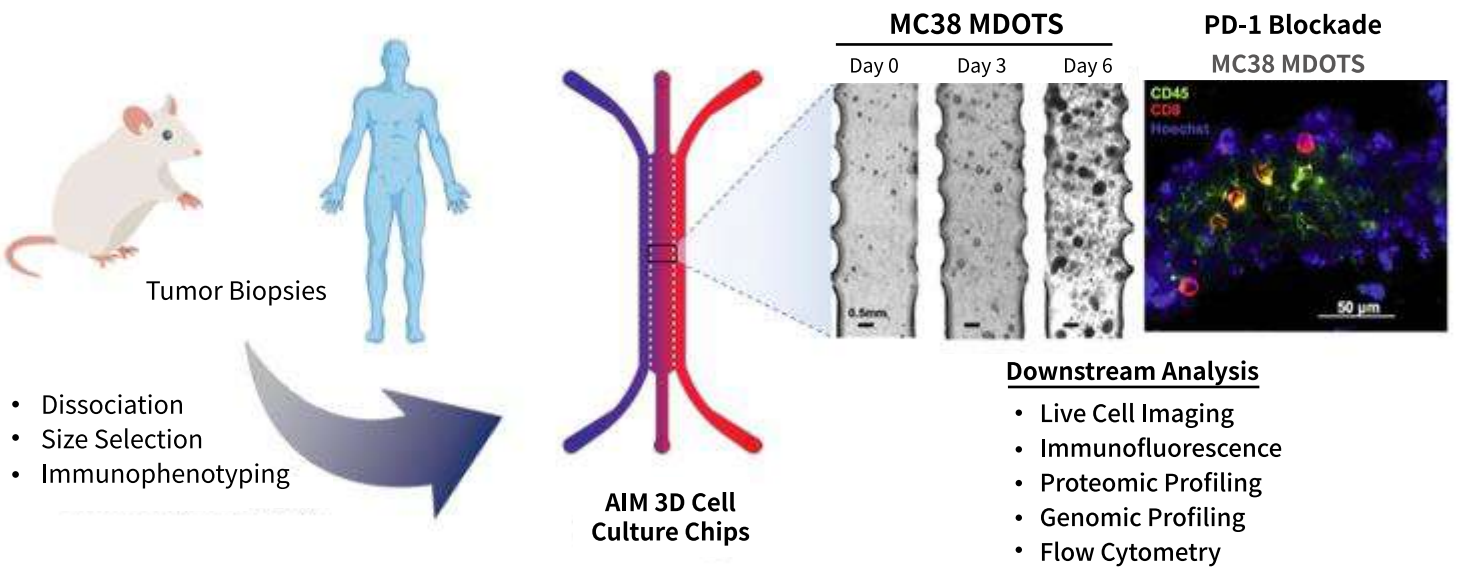
Aref AR1, Campisi M, Ivanova E, Portell A, Larios D, Piel BP, Mathur N, Zhou C, Coakley RV Bartels A, Bowden M, Herbert Z, Hill S, Gilhooley S, Carter J, Cañadas I, Thai TC, Kitajima S Chiono V, Paweletz CP, Barbie DA, Kamm RD, Jenkins RW.

Microfluidic culture has the potential to revolutionize cancer diagnosis and therapy. Indeed, several microdevices are being developed specifically for clinical use to test novel cancer therapeutics. To be effective, these platforms need to replicate the continuous interactions that exist between tumor cells and non-tumor cell elements of the tumor microenvironment through direct cell-cell or cell-matrix contact or by the secretion of signaling factors such as cytokines, chemokines and growth factors. Given the challenges of personalized or precision cancer therapy, especially with the advent of novel immunotherapies, a critical need exists for more sophisticated ex vivo diagnostic systems that recapitulate patient-specific tumor biology with the potential to predict response to immune-based therapies in real-time. Here, we present details of a method to screen for the response of patient tumors to immune checkpoint blockade therapy, first reported in Jenkins et al. Cancer Discovery, 2018, 8, 196-215, with updated evaluation of murine- and patient-derived organotypic tumor spheroids (MDOTS/PDOTS), including evaluation of the requirement for 3D microfluidic culture in MDOTS, demonstration of immune-checkpoint sensitivity of PDOTS, and expanded evaluation of tumor-immune interactions using RNA-sequencing to infer changes in the tumor-immune microenvironment. We also examine some potential improvements to current systems and discuss the challenges in translating such diagnostic assays to the clinic.

In vitro model을 이용한 immune checkpoint blockade assay에 관한 논문입니다. 아래 버튼을 클릭하시면 전문을 확인해 보실 수 있습니다

More information >>

Microfluidic chip을 이용한 in vitro 3D model



최근 몇 년간 immune checkpoint blockade(ICB) 요법이 성공했음에도 불구하고 선천적인 내성으로 인해 성공 case는 소수의 환자에 국한됩니다. Dual ICB, Anti-PD-1, Anti-CTLA4를 사용하는 combination therapy는 단일 요법보다 advanced melanoma에서 유의미한 결과를 보여주었습니다. Combination therapy의 조합 수가 계속 증가하고 있기 때문에, 이러한 요법의 효능을 적시에 전임상 및 임상적 환경에서 정확하게 예측할 수 있는 ICB의 분석이 필요합니다.
AIM biotech의 microfludic chip을 이용하여 연구중인 약물의 combination therapy를 in vitro model에서 분석해보시기 바랍니다.

AIM chip – Ready-to-use microfluidic chip

Microfluidic devices for cell culture

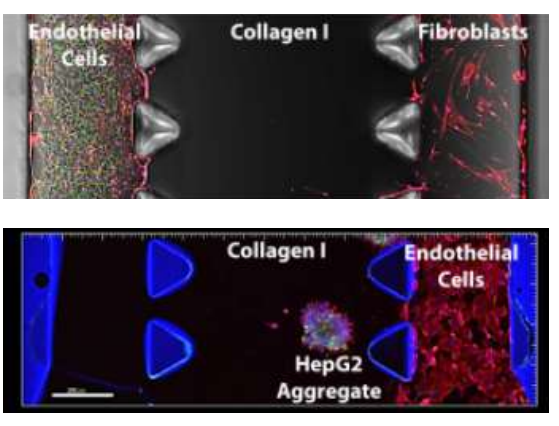
Using microfluidic technologies for 3D cell culture brings additional benefits:

- Microfluidic devices require small volumes of culture media and small quantities of cells, leading to reduced running costs. Studies can be conducted in cases where the cell source is limited (e.g. clinical samples)
- Microfluidic devices have Low space requirements given their small footprints, making it possible to scale up experimental throughput
- Compartmentalisation of cells into different channels/zones & live cell imaging analysis enable experimental designs with spatiotemporal elements

The underside of a microfluidic chip showing the size of its channels (250 microns deep). The chip is 25mm wide, measured from the edges shown above.

Multicellular culture made possible, with meaningful organization into models of biological systmes

The multi-channel design of AIM 3D Cell Culture Chips enables the co-culture of different cell types in distinct compartments in the device, yet allowing paracrine signalling between cell types to take place. the movement of cells between different channels (or within an individual channel) can be easily observed & tracked.
The growth and/or migration of cells within gel can often cause gel shrinkage or degradation. This problem is mitigated by the use of posts in AIM chips. The posts help to stabilize the gel and increase cell culture duration before the matrix collapses.



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