



Environments For Science™

BAKER SCIENTIFIC APPLICATION NOTE

Protecting cell environment: Keeping It Stable with CondoCell®

Key words: Cell culture,
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Cultivating cells has become a routine procedure in labs around the world, but despite all the experience gained in growing cells a lot of time, money and material is lost because of contamination and suboptimal growth conditions.

The aim of doing more robust, quick, productive and standardized cell culture experiments often enhances the need to protect the cells from continuous changes in their environment.

Baker Ruskinn has a solution for protecting cells during their journey, beginning from their cultivation in a standard CO₂ incubator and biosafety cabinet. To ensure maximum protection and minimum disturbance to the cells during expansion and observation, we have developed CondoCell®, a cell containment system that safeguards cell cultures.

CondoCell® can be used in any existing incubator, it works by sustaining the incubator's ideal environment even when the door has been opened, therefore allowing continuous, uninterrupted conditions for your precious cell cultures.

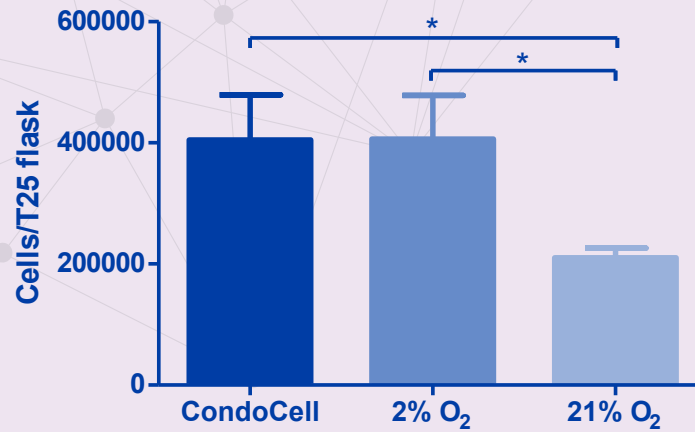
All disruptions caused by repetitive door openings, trips to the microscope and external contamination are curtailed when cells are kept in the protective environment of a CondoCell®. CondoCell® can also be used inside a low oxygen workstation with continuous, physiological growth conditions. You can load and unload CondoCell® with cell cultures when the CondoCell® is inside the workstation or an incubator and it will allow you to transport the cells out of the incubated environment for 20 minutes all the while maintaining the

appropriate gas and humidity control for your cultures as if they were still inside the workstation.

To show the benefit of keeping cells in a protected environment of a CondoCell® we have grown cells from human bone marrow aspirates (hBMA26) in either 2% O₂ or atmospheric 21% O₂ and kept the culture flasks inside an incubator with and without a protective CondoCell® (data courtesy of Dr. Tina Dale, Keele University, UK). The data shows significant increase in cells/colony and colony formation when cells are grown in 2% O₂ in CondoCells® compared to growing cells in 21% O₂ (Figure 1). Moreover, the data shows that cell number/colony has been initially shown to be reduced when cultured at lower oxygen levels, but is much greater when cells are grown inside a CondoCell® with media pre-gassed to 2% O₂ as well as when the CondoCell® is purged with Nitrogen to reduce the initial culture environment using the RPU (Figure 2, Rapid Purge Unit available from Baker Ruskinn). By purging the CondoCell® at the start of the experiment, the time the cells are exposed to a higher, inappropriate concentration of O₂ is dramatically reduced as the incubator can take up to 30 minutes to recover back to setpoint.

Low oxygen workstations support better cell growth and yield if an additional protective environment like CondoCell® is used (Figure 2). This indicates that cellular responses to environmental fluctuations is very sensitive and therefore highlights the need for ultimate care in maintaining stable cell culture conditions.

Figure 1.



*P < 0.05

CONDOCELL® USER EXPERIENCES

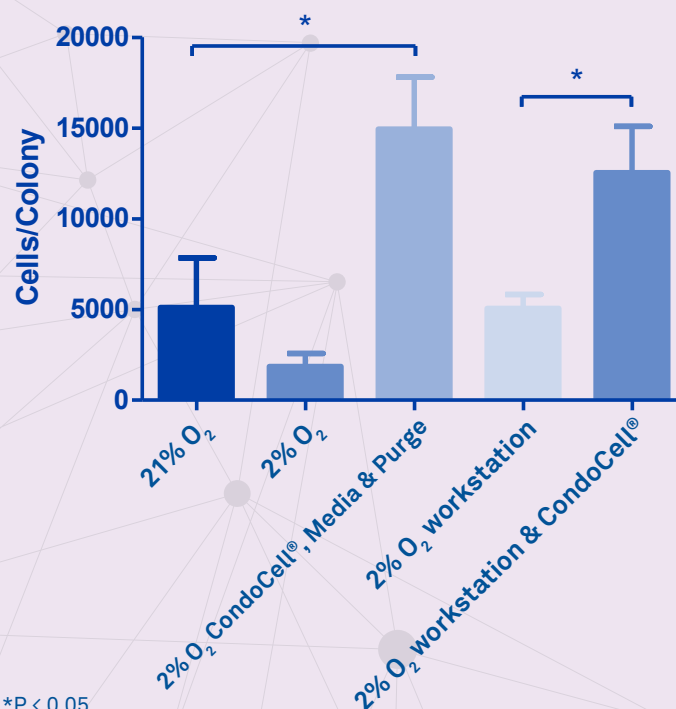
In CRUK, Manchester, UK, the group of Dr. Debayan Mukherjee does in vitro research investigating the effects of radiation and hypoxia on the immune contexture. They use CondoCell® to transport their material (human cell cancer cell lines) to their laboratory to the irradiation facility in another location.

The cells are in different kinds of flasks and culture dishes, this varies depending on the experiment. Dr. Mukherjee's team puts the

CondoCell® inside the irradiator and treats the cells with doses up to 10Gy. Taking the cells out of their hypoxia workstation, transporting them to the irradiator and taking them back to the workstation takes altogether about 20 minutes.

They do find CondoCell® very useful and feel they could not perform the experiments with suitable accuracy without a CondoCell®!

Figure 2.



*P < 0.05

| NEW: CONDOCELL®

The new portable solution - ideal for short term hypoxia studies or increased, long term storage when coupled with a workstation or incubator.



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