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The data of establishing a three-dimensional culture system for *in vitro* recapitulation and mechanism exploration of tumor satellite formation during cancer cell transition

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ABSTRACT

Tumor satellite formation is an indicator of cancer invasiveness and correlates with recurrence, metastasis, and poorer prognosis. By analyzing pathological specimens, tumor satellites formed at the tumor-host interface reflect the phenomena of epithelial-mesenchymal transition. It is impossible to reveal the dynamic processes and the decisive factors of tumor satellite formation using clinicopathological approaches alone. Therefore, establishment of an *in vitro* system to monitor the phenomena is important to explicitly elucidate underlying mechanisms. In this study, we explored the feasibility of creating an *in vitro* three-dimensional collagen culture system to recapitulate the process of tumor satellite formation. This data presented here are referred to the research article (Chen et al., 2017) [1]. Using this model, the dynamic process of tumor satellite formation could be recapitulated in different types of human cancer cells. Induced by calcium deprivation, the treated cells increased the incidence and migratory distance of tumor satellites. E-cadherin internalization and invadopodia formation were enhanced by calcium deprivation and were associated with cellular dynamic change during tumor satellite formation. The data confirmed the utility of

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E-mail address: yangtl@ntu.edu.tw (T.-L. Yang).<http://dx.doi.org/10.1016/j.dib.2017.09.053>2352-3409/© 2017 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

this culture system to recapitulate dynamic cellular alteration and to explore the potential mechanisms of tumor satellite formation.

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Specifications Table

Subject area	<i>Biology; Biomaterials</i>
More specific subject area	<i>An inducible three-dimensional in vitro culture system for recapitulating tumor satellite formation of cancer</i>
Type of data	<i>Figures and Charts</i>
How data was acquired	<i>An in vitro three-dimensional collagen culture system was established for culturing cancer cells. Tumor satellite formation was induced by calcium deprivation. The morphology, cellular features, biological behaviors, and expression of specific markers of tumor satellites were recorded for comparison. The phenotypes and characteristics of tumor cells were analyzed.</i>
Data format	<i>Raw and analyzed data</i>
Experimental factors	<i>The three-dimensional collagen scaffold and low extracellular calcium concentration were used to induce tumor satellite formation. The results of different types of cancer cells were tested and compared.</i>
Experimental features	<i>Induction of tumor satellite formation in the in vitro culture system was determined by image recording and quantitative analyses of cellular features and behaviors.</i>
Data source location	<i>The National Taiwan University, Taipei, Taiwan</i>
Data accessibility	<i>Data is available within this article</i>

Value of the data

1. Establishment of a three-dimensional culture system serves as the standard experimental platform for efficient induction of tumor satellite formation of cancer.
2. The data allow other researchers to investigate tumor cell behaviors in the biomimetic 3D collagen system, and explore the underlying mechanism accounting for cancer cell transition.
3. The data show the feasible way to monitor dynamic process of epithelial-mesenchymal transition during tumor satellite formation.
4. The data demonstrate the methodology of changing cancer cells by regulating extracellular calcium

1. Data

1.1. Data

The dataset of this paper provides information related to the article "Application of three-dimensional collagen scaffolds to recapitulate and monitor the dynamics of epithelial mesenchymal transition during tumor satellite formation of head and neck cancer" [1].

1.2. Comparison of the parameters of tumor satellites in different HNSCC cell lines in the 3D collagen scaffolds without calcium deprivation

The background and characteristics of the cell lines of head and neck squamous cell carcinoma (HNSCC) were summarized (Table 1). When they were cultured in the 3D system with normal calcium

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