

## Description of Additional Supplementary Files

File name: Supplementary Movie 1

Description: Activin treated micropatterned Nodal<sup>Cit/Cit</sup> cells with CFP-H2B nuclear marker were imaged for 43h with 30-minute interval. Scale bar, 100  $\mu\text{m}$ . Maximum intensity projection is shown.

File name: Supplementary Movie 2

Description: Wnt3A treated micropatterned Nodal<sup>Cit/Cit</sup> cells with CFP-H2B nuclear marker were imaged for 43h with 30-minute interval. Scale bar, 100  $\mu\text{m}$ . Maximum intensity projection is shown.

File name: Supplementary Movie 3

Description: BMP4 treated micropatterned Nodal<sup>Cit/Cit</sup> cells with CFP-H2B nuclear marker were imaged for 43h with 30-minute interval. Scale bar, 100  $\mu\text{m}$ . Maximum intensity projection is shown.