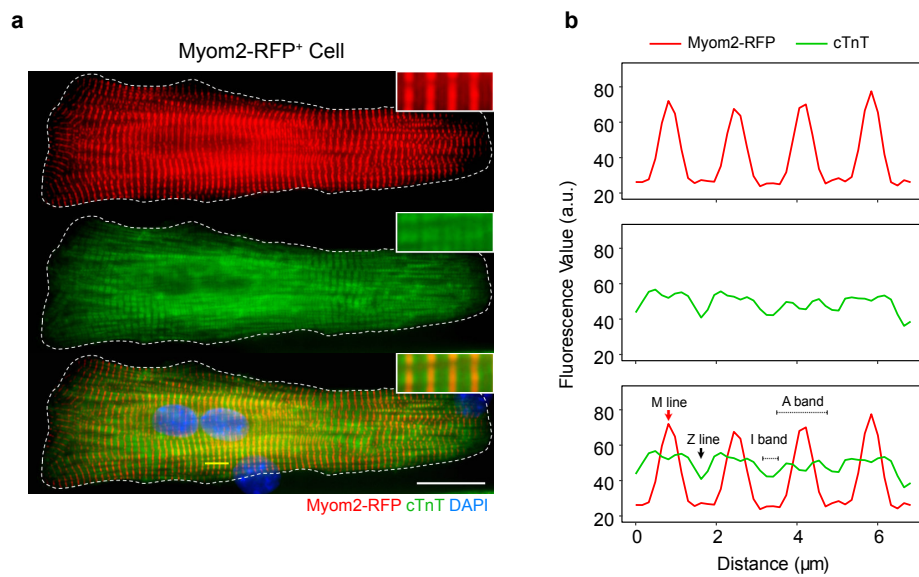
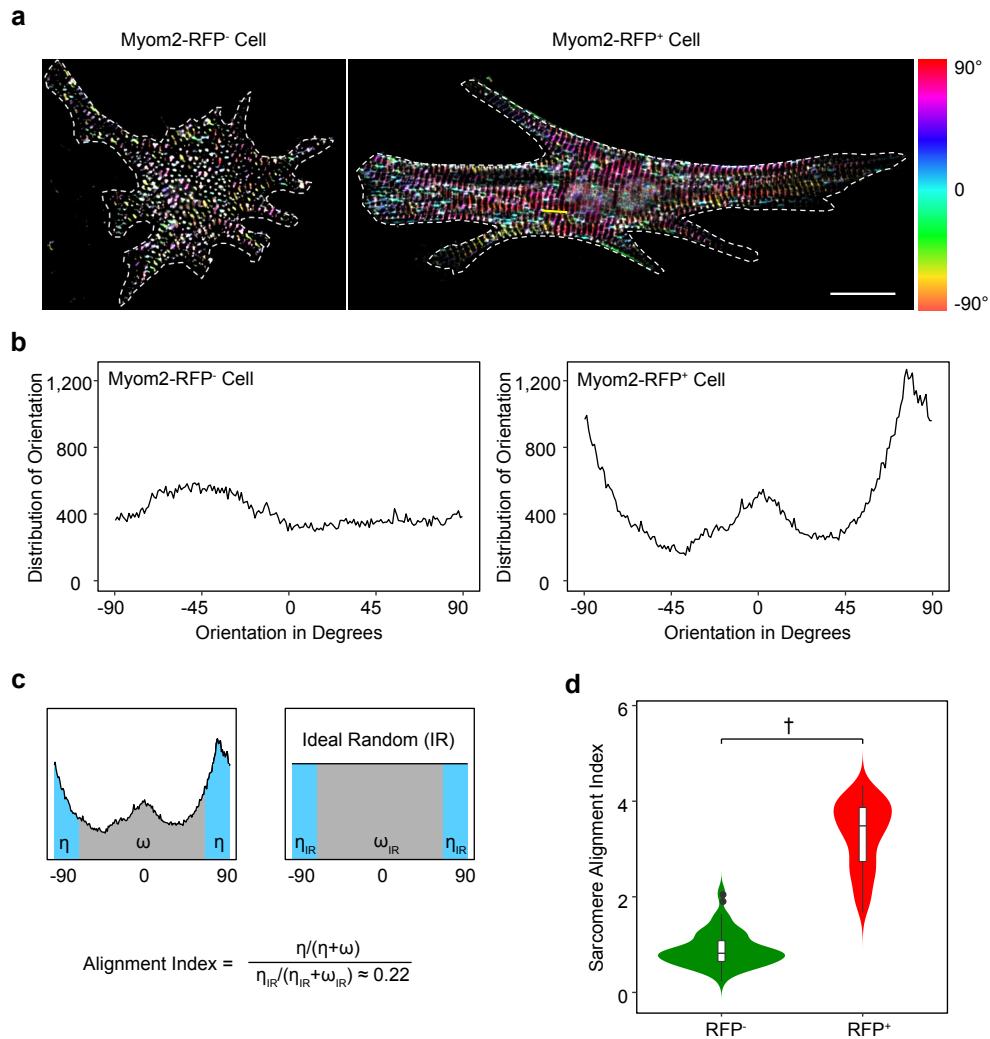


**A Novel Fluorescent Reporter System Identifies Laminin-511/521 as Potent
Regulators of Cardiomyocyte Maturation**

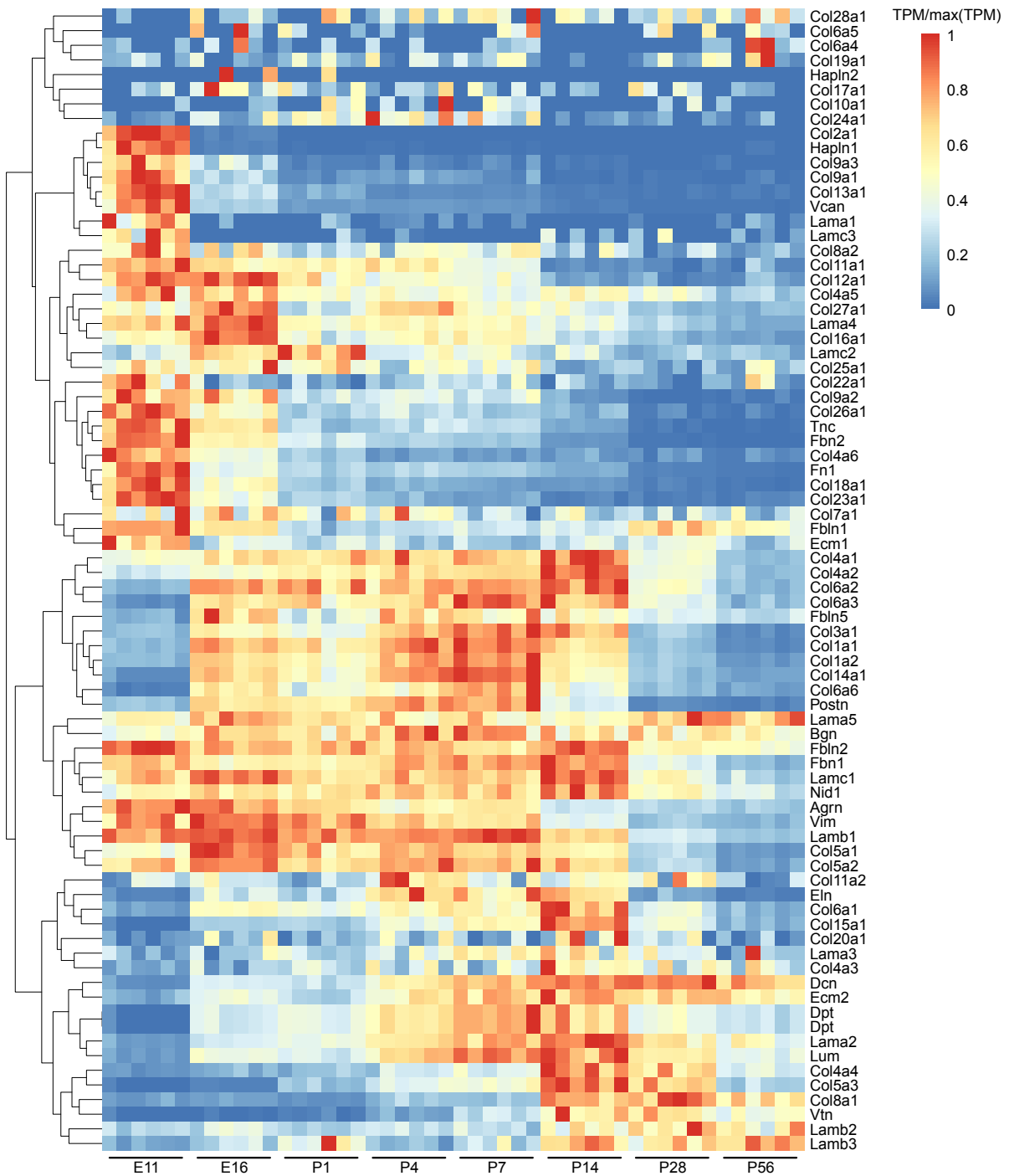
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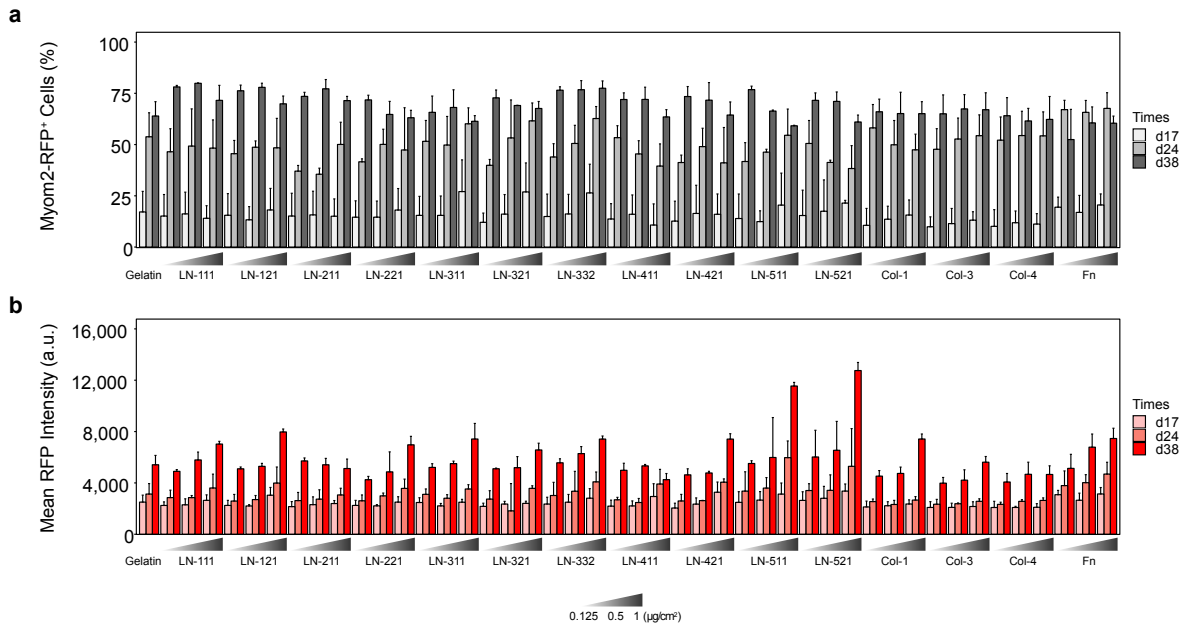
- 1 **Supplementary Figure S1.** Localizations of Myom2 and cTnT in sarcomere
- 2 structure. (a) Representative fluorescence images of RFP⁺ cardiomyocyte. Yellow
- 3 lines indicate line-scan regions shown in (b). The regions around the lines are shown
- 4 in inset. Myom2-RFP (red); cTnT (green); Nuclei (blue). Scale bar, 20 μm . (b)
- 5 Corresponding line scans for Myom2-RFP and cTnT localizations.



6 **Supplementary Figure S2.** Comparison of sarcomere alignment between RFP⁻ and
7 RFP⁺ cardiomyocytes. **(a)** The color-coded representations of the α -actinin
8 orientation in both RFP⁻ and RFP⁺ cardiomyocytes. Scale bar, 20 μ m. **(b)** The
9 corresponding distributions of orientation shown in **(a)**. **(c)** From the orientation
10 distribution, sarcomere alignment index was calculated by sum of frequencies within
11 20° from peak angles at -90° and 90° (η , blue area) against total distribution
12 frequency ($\eta+\omega$). Then, this ratio was normalized to that of an ideally random
13 frequency distribution ($\eta_{IR}/(\eta_{IR}+\omega_{IR})$), ~ 0.22 . **(d)** RFP⁺ cardiomyocytes showed
14 higher sarcomere alignment index than RFP⁻ cardiomyocytes ($n > 65$, from three
15 different cardiac differentiation runs). Violin plots are explained in Fig. 2. Student's t
16 test; † $P < 0.0001$.



17 **Supplementary Figure S3.** A heatmap of ECM expressions during heart
 18 development (E11 to P56). Colors are coded on the red-to-blue scale of normalized
 19 transcripts per million reads (TPM) divided by the highest expression level
 20 (TPM/max: high expression, red; low expression, blue).



21 **Supplementary Figure S4.** ECMs increased RFP intensity as a dose-dependent
 22 manner. **(a)** Percentages of Myom2-RFP⁺ cardiomyocyte and **(b)** RFP intensity at day
 23 17, 24, and 38. ECM concentration are shown at 0.125, 0.5, and 1.0 µg/cm². Data are
 24 presented as means ± SD (*n* = 3). Fluorescence intensities are presented as arbitrary
 25 units (a.u.).