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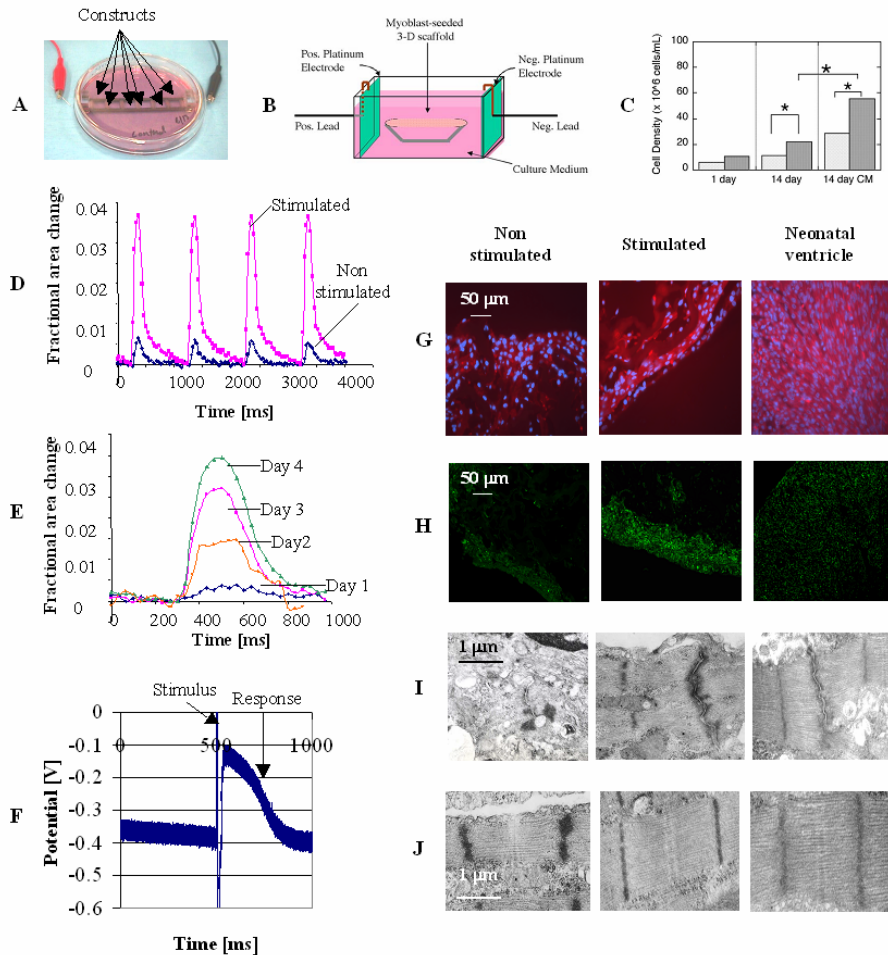


Figure 10. Electrical stimulation in situ promoted cell differentiation and functionality of engineered constructs. A. A Petri dish with two stimulating electrodes; supra-threshold amplitude; results D-J B. A chamber with two platinum electrodes; sub-threshold amplitude; result C C. Enhanced cell proliferation in stimulated (dark grey bars) as compared to non-stimulated constructs (light grey bars). * significantly different groups. D Contraction amplitude was 7 times higher in stimulated than non-stimulated constructs. E Contraction amplitude progressively increased with time of stimulation. F. Contractile response was associated with electrical activity. Expression of α -MHC (G) and gap junction protein connexin-43; immunostains (H) were markedly higher in stimulated group. Stimulated constructs exhibited well developed myofibrils with parallel sarcomeres and intercalated discs placed symmetrically between the Z lines. In contrast, non-stimulated constructs exhibited poorly developed sarcomeres and intercalated discs. I Intercalated discs, J. Sarcomeres. (from A & C-J Radisic et al. unpublished; B Niklason et al. unpublished).

For colour illustration please go to www.springeronline.com and enter ISBN: -14020-3229-3, click on the link "Figure 10 colour illustration".

As an alternative contact please see the first named author of this chapter.

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