

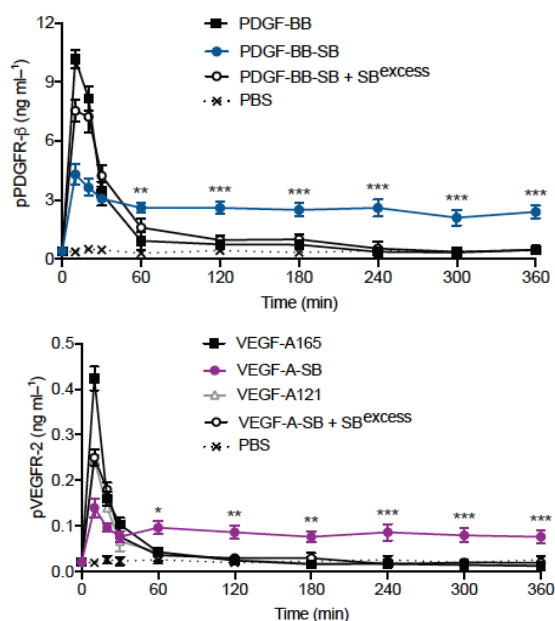
Engineered Growth Factors for enhanced and safer tissue regeneration

THERAPEUTIC: Regenerative medicine

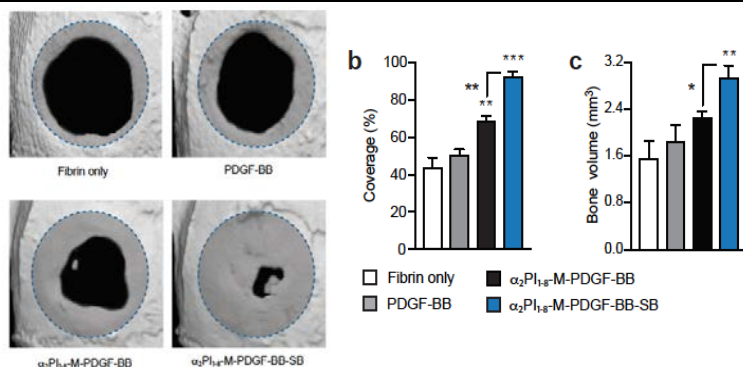
| | |
|-------------------------------------|---|
| Product Type | Therapeutic protein (engineered) |
| Indication / ROA | Bone regeneration, Wound healing |
| Target / MoA | Modified protein with increased affinity for both the extracellular matrix (ECM) and cell-surface syndecan receptors. This specific and controlled release of modified growth factors promotes tissue healing through a controlled low-intensity signaling (tonic signaling) profile, resulting in improved safety and efficacy over WT Growth Factors (GFs). |
| Development Stage | Lead Series |
| Brief Description & Differentiation | <p>GFs have great potential as regenerative therapies but have had limited clinical translation due to safety considerations and cost effectiveness. Delivery strategies with controlled release that mimic the behavior of GFs <i>in vivo</i> have been shown to be more successful and safer. Our researchers have modified vascular endothelial (VEGF-A) and platelet-derived growth factors (PDGF-BB) to include an ECM binding sequence and a unique syndecan-binding domain that controls their bioavailability and cellular signaling. Our modified GFs showed:</p> <ul style="list-style-type: none"> Sustained tonic signaling and reduced GF receptor desensitization <i>in vitro</i> Improved efficacy and safety with lower dosage: <ul style="list-style-type: none"> PDGF-BB: Improved wound healing and reduced tumour growth in diabetic mouse model VEGF-A: Superior bone regeneration (diabetic mouse) and reduced vascular permeability (mouse ear model) |
| Researchers | A/Prof Mikael Martino (Monash), Dr Mayumi Mochizuki (Monash) and Prof Jeffrey Hubbell (University of Chicago) |
| Intellectual Property | Provisional patent application filed covering new composition of matter and method of use |
| Key Publications | Martino <i>et al.</i> (2019), Nature Biomedical Engineering |
| Future | Long-term safety studies <i>in vivo</i> and further PoC studies with other modified growth factors |

Key Data

GF-receptor phosphorylation (*in vitro*)



Engineered syndecan-binding GFs enhance bone regeneration *in vivo* (2 months)



Engineered syndecan-binding GFs enhance wound healing *in vivo* (10 days)

