

## Research Profile

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### SUMMARY OF MY RELEVANT RESEARCH AREAS:

**Brief summary of your research areas, in English just a short paragraph please**

*Elucidating fundamental biological insights into defective wound repair, development of biomaterials and nanotechnologies for tissue engineering/wound healing applications, with a focus on healing diabetic ulcers. Designing nano-bio interfaces for seamless biotic-abiotic integration of devices and tissues.*

**Brief summary of your research areas, in Chinese we will translate this for non-Chinese speaking UK participants**

**Primary Research interests:** A fuller description of your main research areas.

Dr Almquist completed his PhD in Materials Science (Stanford University), where he focused on bioinspired nanotechnologies for interfacing electronics with neurons. He then completed his postdoctoral research at MIT as part of the Koch Institute for Integrative Cancer Research, Institute for Soldier Nanotechnologies, and Dept. of Chemical Engineering, where Dr Almquist developed new self-assembled biomaterials for enabling localised biologic (e.g. growth factors, RNAi) delivery to diabetic ulcers.

### Main Research Interests:

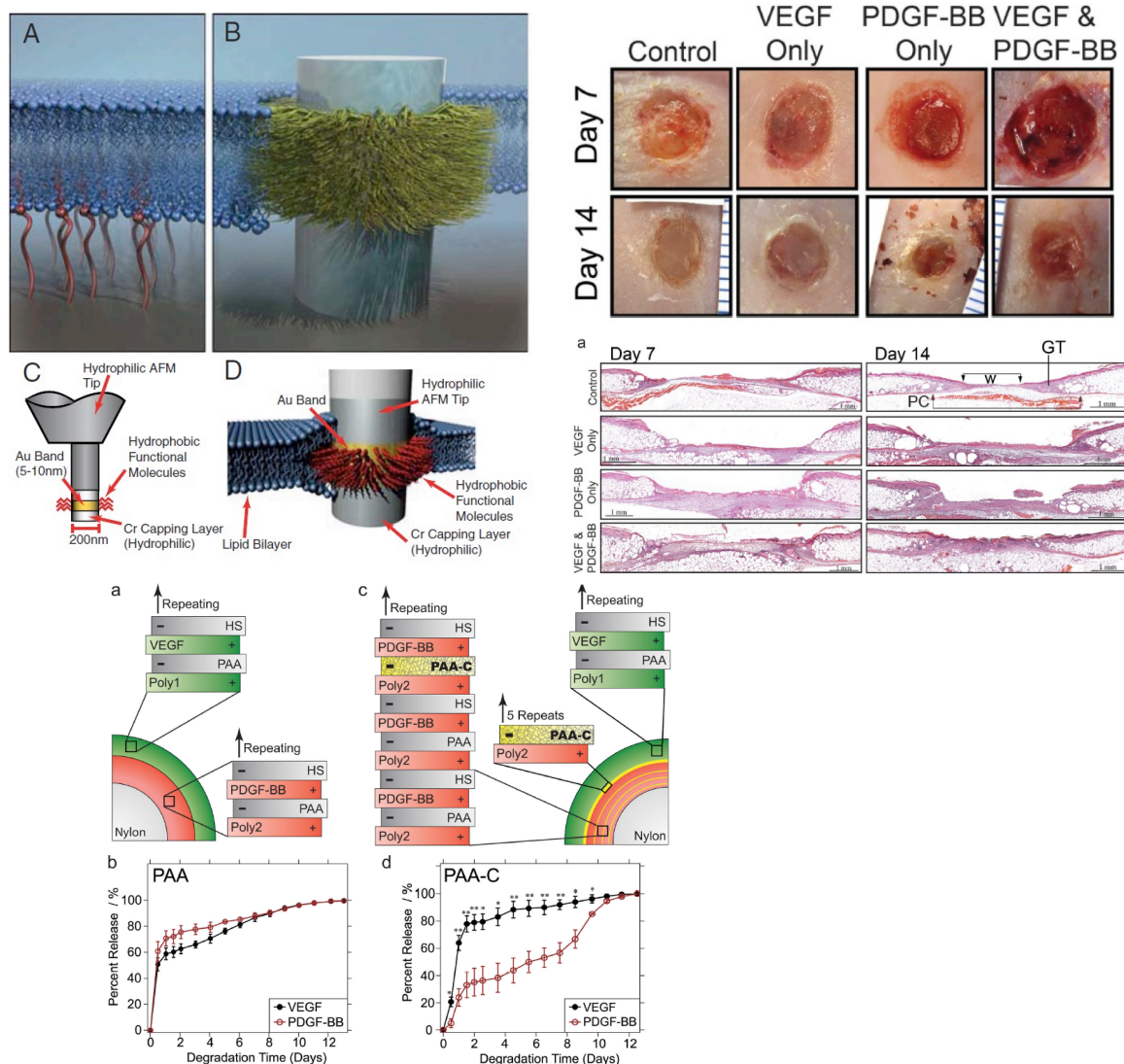
**Basic Science:** Epigenetic dysregulation in non-healing dermal wounds and hypertrophic scarring. Identification of patient stratification markers for segmenting diabetic ulcer patients.

**Healthcare:** Dynamic biomaterials for bidirectional interfaces with cells/tissues. Enabling technologies for localised, combinatorial therapeutic delivery. DNA/RNA Nanotechnology. Nanotechnology-enabled sensors for healthcare applications.

### Topics in which you would like to develop collaborative research:

*Please indicate here research areas for which you would like to find partners to undertake joint research.*

Clinical-based investigation of diabetic ulcers. Development of patient-stratification markers for DFUs. Biomaterial-based strategies for using cytokines as therapies.

**Relevant existing collaborations (academic/clinical/commercial) inside or outside China.****Academic:** ETH Zurich, University of Manchester, Imperial College London NHS Trust**Industry:** Navan Biosciences, Jellagen**Relevant graphics, figures, pictures:****Publications and other outputs relevant to your interest in this programme (up to 5)**

1. Stejskalova A, Kiani MT, **Almquist BD**, "Programmable biomaterials for dynamic and responsive drug delivery". *Experimental Biology and Medicine*, **241**, 1127-1137 (2016).
2. Castleberry SA, Golberg A, Sharkh MA, Khan S, **Almquist BD**, Austen Jr WG, Yarmush ML, Hammond PT, "Nanolayered siRNA Delivery Platforms for Local Silencing of CTGF Reduce Cutaneous Scar Contraction in Third-Degree Burns." *Biomaterials*, **95**, 22-34 (2016).
3. Castleberry SA, **Almquist BD**, Li W, Reis T, Chow J, Mayner S, Hammond PT, "Self-Assembled Wound Dressings Silence MMP-9 and Improve Diabetic Wound Healing *In Vivo*." *Advanced Materials*, **28**, 1809-1817 (2016).
4. **Almquist BD**, Castleberry SA, Sun JB, Lu AY, Hammond PT, "Combination Growth Factor Therapy via Electrostatically Assembled Wound Dressings Improves Diabetic Ulcer Healing *In Vivo*." *Advanced Healthcare Materials*, **4**, 2090-2099 (2015).
5. **Almquist BD** & Melosh NA, "Fusion of Biomimetic Stealth Probes into Lipid Bilayer Cores", *Proc. Natl. Acad. Sci. USA*, **107**(13), 5815-5820 (2010).

