

Gecko Biomedical's Co-Founders demonstrate a 'bio-inspired' tissue adhesive that shows promise for minimally invasive heart surgery and vessel repair

Innovative adhesive technology published as a cover feature in the high impact journal, *Science Translational Medicine*

Gecko Biomedical, a French medical device company developing 'bio-inspired' biodegradable surgical glues and patches for wound closure, announces that the Company's co-founders have published data demonstrating the potential of its paradigm-shifting technologies for minimally invasive reconstructive heart surgery.

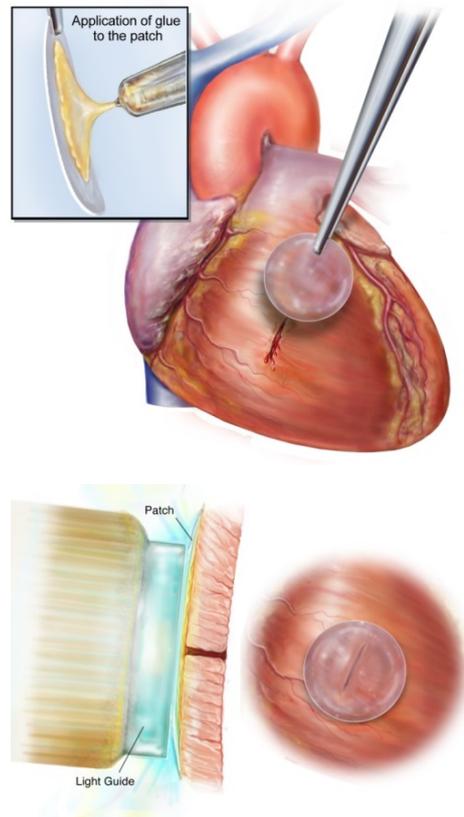
'Bio-inspired' biodegradable surgical glue repairs defects of the heart and blood vessels

In a paper entitled "A Blood-Resistant Surgical Glue for Minimally Invasive Repair of Vessels and Heart Defects", published in the January 8, 2014 issue of *Science Translational Medicine (online)* (Ref. 1), the authors, including Gecko Biomedical co-founders Robert Langer Sc.D. (Massachusetts Institute of Technology) and Jeffrey Karp Ph.D. (Brigham and Women's Hospital), describe a revolutionary biodegradable and biocompatible surgical glue that was inspired by adhesive mechanisms observed in nature that function in challenging yet comparable (wet and dynamic) environments to those found in the body.

The 'bio-inspired' glue described is non-toxic, binds strongly to tissues offering a leak-proof seal on demand, and works well in the presence of actively contracting tissues and blood flow. The authors demonstrate how the adhesive, alone or in conjunction with a biodegradable patch, can effectively be used to repair defects (ruptures) of the heart and blood vessels during minimally invasive procedures.

Precise control of the wound closure process could shift the surgical paradigm

The glue is based on the combination of safe, naturally occurring compounds to form a biocompatible pre-polymer with tunable adhesive and mechanical properties. The glue is soft and elastic when applied to the wet surfaces of the wounds where it adheres gently to the tissues, permitting fine adjustments or repositioning when used with the patch. The glue is activated (polymerized) upon exposure to ultraviolet (UV) light to form a strong, leak-proof but flexible seal, giving the surgeon full control of the process. The adhesive can be engineered with mechanical characteristics similar to arteries and the digestive system, where initial applications are targeted. The authors also describe how the composition of the pre-polymer can be adjusted for strength or rate of biodegradation to suit the wound being repaired.



The waterproof, light-activated glue developed by researchers at Brigham and Women's Hospital, Boston Children's Hospital and Massachusetts Institute of Technology can successfully secure biodegradable patches to seal holes in a beating heart. The adhesive technology (and other related platforms) is licensed for further development and commercialization by Gecko Biomedical.

Illustrations courtesy of Randal S. McKenzie, McKenzie Illustrations.



Jeffrey Karp, from the Department of Medicine at the Brigham and Women's Hospital, a co-founder of Gecko Biomedical and co-senior author of the study, said: *"The tissue adhesive that we developed satisfies a long list of design criteria including biodegradation, biocompatibility, ability to strongly adhere on-demand to tissue with a water-tight seal in the presence of flowing blood, and elastic properties to accommodate cyclical forces such as those exerted by a beating heart or blood vessel. It offers the potential to reduce the invasiveness of surgical procedures, reduce operative times, and improve outcomes for patients."*

"This platform of adhesive elastomers is truly versatile to address multiple meaningful applications in the clinic" said Maria N. Pereira, Ph.D., co-first author of the study who was previously in the Department of Medicine at the Brigham and Women's Hospital and is now Head of Adhesive Technologies at Gecko Biomedical.

Christophe Bancel, Chief Executive Officer of Gecko Biomedical, added: *"The science and research supporting the development of Gecko's liquid film adhesive and patch technologies is of the highest quality. What has been achieved so far is very exciting and we are focused on undertaking the further necessary steps to get these innovative products into the hands of surgeons within the next few years, for the benefit of patients."*

Reference: Lang, N. et al (2014) "A Blood-Resistant Surgical Glue for Minimally Invasive Repair of Vessels and Heart Defects," *Sci. Transl. Med.* **6**, 218ra6 (2014)

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Notes to Editors

About Gecko Biomedical

Gecko Biomedical is a privately owned medical device company based in Paris, France that is dedicated to the rapid development and the commercialization of revolutionary biodegradable sealants and adhesives for wound closure in the field of surgery, with a key focus on minimally invasive surgery. Gecko Biomedical is developing products that are non-toxic, bind strongly to tissues and deliver 'on-demand' wound closure within the 'wet' and dynamic environments in the body. The Company's technology and products are based on world-class research and intellectual property from the laboratories of Robert Langer (MIT) and Jeff Karp (Brigham and Women's Hospital). Gecko was founded in 2013 and is backed by leading healthcare investors Omnes Capital, CM-CIC and CapDecisif Management.

Further information: www.geckobiomedical.com or @geckobiomedical or www.linkedin.com/company/gecko-biomedical

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