



Bolt Threads

SPIDERS?

Q: How are spiders involved in your process?

A: No spiders are harmed in the making of Bolt Threads Engineered Silk fibers! In fact, there are no spiders at all in the process. We originally studied real spiders' silk, to understand the relationship between the spiders' DNA and the characteristics of the fibers they make. Today's technology allows us to make those proteins without using spiders--which is a big relief to the arachnophobes among us.

Q: I've heard many announcements over the years from groups claiming to have "solved" the problem of producing spider silk. How are you different from those previous claims?

A: Not only are we already actually producing our Engineered Silk fibers at commercial scale, we are doing it at a cost that makes it viable for widespread use in consumer products such as apparel. No one else has done that.

Q: Is your DNA actually from spiders?

A: No, it's not. We look at the DNA of spiders and then create sequences engineered for product performance. The whole process is informed by our understanding of how spiders make silks.

OUR PRODUCTION

Q: What are your fibers made of?

A: Primarily sugar, water, salts and yeast. We are still refining our recipe, but that's the gist of it. As we scale, we commit to being completely transparent about the process we use to make our fibers.

Q: How do you turn liquid silk into a solid fiber?

A: Our yeast produce silk protein in a liquid form during fermentation--very much like the beer-making process. After some processing, the liquid silk protein can be turned into fiber through wet-spinning, which is the same way fibers like acrylic and rayon are made.

OUR MATERIALS

Q: Why does the world need a new textile material?

A: Two reasons: Performance and sustainability. We believe that it is possible to get much better performance from textiles and garments: We can imagine textiles that are both softer and longer-lasting, and offer better protection from a variety of elements. We're also motivated by the fact that the textile industry is among the dirtiest industries on the planet: According to the World Bank, 20% of water pollution globally results from textile processing. Many of our staff



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have been in this industry for a long time and we're driven to produce fabrics that can meet consumers' needs while minimizing impacts on the environment.

Q: I don't wear silk. Why would I wear your stuff?

A: Silk is a wonderful, versatile fabric. It's soft and breathable and remarkably warm. Woven silk--think pajamas and silky dresses-- is very different from a silk knit, which was the original technical base layer. Silk has fallen out of favor for everyday wear because it is not an easy care fabric. (And for guys, silky shirts went out with disco.) Our fabrics will combine the best qualities of silk, but will look and feel quite different from traditional silk, and also be easier to wash and wear.

SUSTAINABILITY

Q: How will this technology impact the environment?

A: At Bolt Threads, we believe that living in an increasingly resource-constrained world means we have a responsibility to find more sustainable ways of creating materials. So we are committed to developing products with the lowest possible environmental footprint. As soon as we complete the R&D phase and finalize our processes, we will embark on life cycle analysis - stay tuned.

Q: You say this is renewable. How?

A: The main input in our fiber-making process is sugar from plants that are grown, harvested and replanted. Compare this to polyesters which are made from petroleum. Currently, more than 60% of textiles are made of polyester and other petroleum-derived fibers.

Q: Are these natural fibers?

A: If you look under a microscope, our Engineered Silk fibers have the exact same chemistry as naturally occurring animal silks from spiders or silk worms. At the same time, our fibers are man-made, and we don't think people consider that 'natural'.

MANUFACTURING

Q: Where is your material manufactured?

A: All of our production is currently in the United States and we plan to keep it here. Making our products in the US, using domestically grown crops and manufacturing resources, enables us to create jobs and also eliminate some of the environmental impact of transportation.

Q: When will your products be available?

A: We will have some very neat stuff to offer to the world next year.



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GENETICALLY MODIFIED ORGANISMS

Q: Do you use GMOs?

A: Our Engineered Silk fibers are made of protein--they contain no DNA and no genetically modified organisms. The process by which we make our fibers involves many steps. One step utilizes genetically modified yeast. This step takes place in a closed loop process in a sterile facility, at the end of which the yeast are destroyed by heat. This is the same process that is used to make most of the cheese you eat, along with insulin and many other drugs.

Q: Are GMOs potentially harmful?

A: We understand that many people are concerned with GMO crops and GMOs in food. We believe that it's important to thoroughly examine these technologies and balance reasonable concerns with the potential for doing good. We are very comfortable that our yeast and our process pose no harm. In fact, they have the potential to do good things for people and the planet by reducing the use of other dirty processes and wasteful practices in the textile industry.

Q: Is the sugar used in your production GMO sugar?

A: Currently, all large fermentation facilities in the US use corn sugar from GM corn, so that's what we are using. We believe that in the future, large-scale fermentation like ours can be done with non-food crops known as cellulosic feedstocks. We want to be a part of developing that future.