



# SYNAPSE

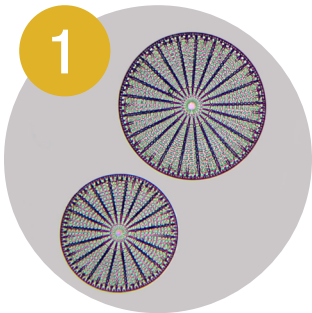
by Biomimicry 3.8

**LIGHTWEIGHT  
& SUPER STRONG**  
What if we designed  
like nature?

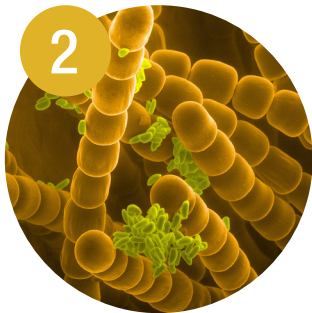
In her Synapse webinar series, *Lightweighting Inspired by Nature*, Biomimicry 3.8 co-founder and author Janine Benyus outlined deep patterns that can be observed in the natural world when it comes to optimizing structure with minimal materials.

**GET FULL ACCESS**

Go deeper into these design principles with the *Lightweighting Inspired by Nature* webinar series available at [synapse.bio](http://synapse.bio)



**1**  
SHAPE IS CHEAPER  
THAN MATERIAL



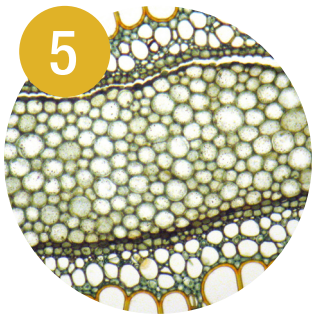
**2**  
FORM FOLLOWS FLOW



**3**  
HIERARCHY: DESIGN FOR  
RESILIENCE AT EVERY SCALE



**4**  
COMPOSITES:  
STRENGTH IN SYNERGY



**5**  
FUNCTIONAL GRADIENTS



**6**  
HONEYCOMB, SANDWICH,  
AND STRUT STRUCTURES



**7**  
COMPLIANT STRUCTURES:  
BEND, DON'T BREAK



**8**  
CYLINDRICAL STRENGTH



**9**  
CREATE STRUCTURE WITH  
PRESSURIZED FLUID



**10**  
AVOID COLLISION TO  
BEGIN WITH!



**11**  
TENSEGRITY: COMPRESSION  
& TENSION TOGETHER



**12**  
SELF-HEALING: MINIMIZE  
NEED FOR REPLACEMENT