

Megan Shieh, mshieh2, meganyshieh@gmail.com , Chapman

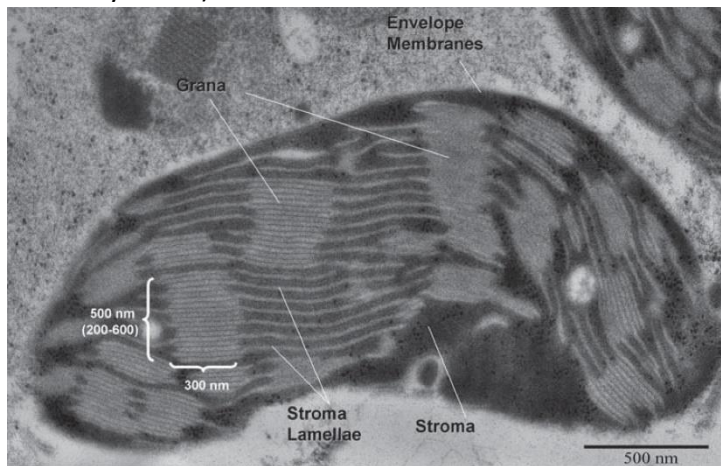
## Reflection

Efficiency is the name of the game when we think about how we could implement sustainable sources of energy. Efficiency is also a major limitation when it comes to implementing solar energy; while solar panels have an efficiency of 15 to 20%, natural gas has an efficiency of 60%. Unsurprisingly, the solution to this problem can be found in nature. Within every light-using plant or bacteria are structures called thylakoids, which produce energy via photosynthesis for the plant. Resembling a stack of coins, thylakoids are arranged in a way that maximizes light usage and surface contact. We need to think bigger than panels—what if we made the thylakoid structure into a building, with all of the surfaces covered in solar powered panels? This would generate significantly higher amounts of energy, while ushering in a new era of sustainable architecture.

Whenever I thought about biomimicry, I was thinking fairly small—backpacks, lights, a speedy train at the largest. But this would mean an impact on more people; rather than people who just commute, per se, this could affect everyone who goes to a particular location.

This system could be applied by redesigning certain structures in my school and community. I've noticed at school that some areas are extremely hot; poor ventilation and glass windows in sunny California does not a good combination make. But if a structure that optimized this sunny area for energy production was implemented, the school significantly lower its energy bill while contributing to the environment.

(The thylakoids might be a little hard to visualize, so here's the graphic; the "grana" is the coin unit of the thylakoid).



[https://www.google.com/url?sa=i&url=https%3A%2F%2Flink.springer.com%2Fchapter%2F10.1007%2F978-90-481-2863-1\\_14&psig=AOvVaw1wjjS2U6sxBpBG9zCeHLs3&ust=1602175087923000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCKiU3bv1ouwCFQAAAAAdAAAAABAD](https://www.google.com/url?sa=i&url=https%3A%2F%2Flink.springer.com%2Fchapter%2F10.1007%2F978-90-481-2863-1_14&psig=AOvVaw1wjjS2U6sxBpBG9zCeHLs3&ust=1602175087923000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCKiU3bv1ouwCFQAAAAAdAAAAABAD)