Multidisciplinary approach to biological research most valuable to health

Mitochondria are, basically, kind of weird, and that is because they contain puzzles and inconsistencies left over after billions of years of evolutionary history. Given their importance to cells and our everyday lives, it makes sense that biologists would *need* to study them, but why would a chemist *want* to do so?

I've interviewed various people and it becomes obvious that, in the past, when fields were less sharply segregated, it was probably necessary to cross fields – Professor Fred Crane, who discovered Coenzyme Q, the body's natural antioxidant, in 1957, simply needed a job and, as he put it, the climate for unfunded academic plant physiologists was difficult, so enzymes using beef hearts was going to pay the bills. It turned out that his perspective as a chemist and his knowledge of plants allowed him to see what people specialized in the field had not been able to see.

The academic climate is different today. Science is not only well-funded, it is a high-paying career with a great deal of prestige. As a result it has become rather specific, you won't get R01 funding being a jack-of-all-trades. So in the modern era it is an outlier when biological breakthroughs are instead made my chemists.

It seems obvious that if an antioxidant is going to preserve mitochondrial function – keep them going at optimal performance by mitigating decades of misfires and damage – it has to get inside mitochondria. Since there could be a hundred of these inside a cytoplasm inside each of a trillion cells, and mitochondria has protective lipid bilayers to keep the outside environment from making random changes, it was not a trivial task. Eating 70 bags of spinach a day is not practical and taking Vitamin E supplements did not work – it never got inside mitochondria. Yet the idea to make an antioxidant bioavailable had been around for as long as it had been known that protons cause the mitochondrial motors to turn.

Read full, original article: Mitochondria – The Chemists' Organelle