

**Wednesday, September 26, 2018**

**2:00-2:30 p.m.**

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**Tackling the global protein and nutrition gaps by specialization of food production**

Over the last 25 years, global efforts have made substantial progress in reducing the rate of hunger and malnutrition. However, with the planet's population continued growth, 4.6 billion people will face malnutrition and hunger in the coming decades. At the same time, we have several billion people facing obesity and lack of access to nutritious fruits and vegetables. Both of these problems stem from inefficiencies built into our production systems that now date back 10,000 years. A new style of specialization of food production is needed to address the inefficiencies in protein production and improve access to nutritious fruits and vegetables. A three-pronged approach is presented to address this: 1) Use fermentation to efficiently produce protein for livestock and humans; 2) Reduce protein content and fertilizer inputs for field row crops; 3) Use controlled environments and photosynthetic batteries to shift efficient photosynthesis to the greenhouses co-located with urban populations. A new integration of chemistry, physics, and biology provides sustainable and healthy routes to feeding our planet through production specialization.