

### Exit Seminar



### “White Box” Approaches to Cell Culture Media Optimization for Cultivated Meat

**Ted O'Neill**

June 14, 2023 1:30-2:30pm  
1207 RMI South

Or: <https://ucdavis.zoom.us/j/98328731011>

#### **ABSTRACT:**

Cultivated meat (CM) is gaining notable traction in recent years as a potential way to help sustainably and responsibly satisfy the growing global population's demand for quality dietary protein. Cell culture media is currently the leading cost driver and challenge facing CM commercialization since it typically requires complex and expensive formulations to promote muscle cell proliferation and differentiation. This research explores underutilized approaches to designing and optimizing media, and provides foundational proofs-of-concept to help steer media development efforts in the industry. First, spent media analysis was performed to compare the specific nutrient utilization patterns of three CM-relevant cell types: murine C2C12s, and primary chicken muscle precursors and fibroblasts. Next, serum-based and serum-free spent media were analyzed to assess the influence of serum on cellular nutrient utilization patterns. Lastly, crude plant and fungal hydrolysates are being chemically characterized and tested in media formulations to inexpensively satisfy the observed cellular nutrient requirements. The overall findings demonstrate the need for CM media optimization specific to each cell type and bioprocess of interest, and that the cost and complexity of media could potentially be reduced with the use of crude hydrolysate ingredients.

#### **BIO:**

Ted received dual B.S. degrees in Molecular and Cell Biology & Physiology and Neurobiology from the University of Connecticut in 2017. After this, he worked for a year in a bone regeneration lab in the Institute for Regenerative Engineering at UConn Health. He began his Ph.D. program in Food Science and Technology at UC Davis in 2018. Working in the labs of Dr. David Block and Dr. Keith Baar, his research has focused on cell culture media optimization for cultivated meat as a New Harvest Fellow. His passion for the alternative protein sector motivated him to co-found the Davis Alt Protein Project student organization and to aim for a career in this industry.