



WHAT'S NEXT??

UMASS ZOOM SUMMIT: APPLIED LIFE SCIENCES

The [University of Massachusetts](#) is pleased to extend an [invitation](#) to a “zoom summit” in Applied Life Sciences on **February 11, 2021 from 3:30-5:00 pm**. We will introduce industry leaders, their colleagues in business strategy and government relations, to some of the most important breakthroughs of recent years in **five key fields within the applied life sciences**.

In the final hour, we invite you to discuss **grand challenges** that will shape this field in the next decade. Accomplished scientists, from across the five campuses of the University of Massachusetts will be on hand to discuss the most pressing translational questions in the post-COVID period.

Major research breakthroughs (30 minutes):

RNAi and Gene Therapy

- Nobel Prize–winning work established the mechanism that underlies RNAi therapeutics
- Gene regulation networks underlying first FDA approval for an RNAi drug.
- RNA delivery technologies that bring the promise of RNA to reality in therapeutics.

Biomimetic polymers and advanced biomaterials

- Geckskin™: strong gecko-mimicking adhesive material that releases easily w/o residue.
- IntelliGels: Smart polymer particles that deploys to micro-environmental variations for tackling liver diseases such as NASH

Food safety, nutrition, and microbiome

- Technologies that impact plant-based milk and safe creation of future food.
- Discovery of the first probiotic assemblies to inhibit multidrug resistant organisms.
- Microbiome signatures of dementia status (including Alzheimer’s disease).
- Sustainable Marine Aquaculture

Disease Preparedness

- Vaccine and vaccine alternative development; structure-based drug design and antiviral drug development
- Point of Care Technologies to create fast, point-of-care COVID tests
- Adapting patented Zika test for COVID-19

Cancer Immunotherapy

- Nanosensors for pathogen detection; magnetic particle imaging; low-power, portable photodynamic therapy.
- Ray of Hope center of excellence for breast cancer that includes a large collection of breast tissues for research and innovation.

Grand Challenges (60 minutes):

Our most accomplished researchers will be on hand for a back-and-forth discussion of these five pressing problems. We will foreground where we're going in these domains, but are curious to learn, is this where you are headed? Are there other directions to consider?

Breakout group 1: Therapeutics for genetic disease and aging

- Directly address genetic and rare diseases through nucleic acids. Make "state-of-the-art" drugs for novel diseases and indications based on understanding of the molecular mechanism of the disease and novel models. The next frontier moves us into translational and IND-enabling studies.
- Aging and Alzheimer's disease targets
- Create the next generation lipid nanoparticles for delivering RNAi and gene therapy

Breakout group 2: Create self-repairing, self-correcting, and self-regulating artificial systems

- Learning from nature (e.g. human immune response) to create artificial systems that operate autonomously
- Create autonomously self-regulating systems to create medicines that would deploy because of a disease biomarker. Eliminate drug-related toxicity through precision medicine.

Breakout group 3: Managing microbiomes to optimize health, address antibiotic resistance, and combat disease

- Understanding and managing microbiomes to address obesity, diabetes, addiction, antibiotic resistance and stewardship, mental illnesses, neurodegenerative disease (Alzheimer's Parkinson's, multiple sclerosis), elder health and aging, chronic inflammatory diseases (inflammatory bowel disease), cancer
- Future food – generating plant-based "animal products" without compromising food safety

Breakout group 4: Preparing for future pandemics

- Harvest the lessons from the fight against COVID-19, especially in forecasting.
- Develop generalized approaches that will rapidly evolve strategies for pathogen testing and the production of antibodies

Breakout group 5: Program the immune system to identify and eradicate cancer

- Programming the immune system to identify and eradicate challenging cancers
- Bringing protein-based drugs to intracellular targets – "Drugging the Undruggable" and gene therapy.

Register here: <https://www.eventbrite.com/e/applied-life-sciences-registration-129939232743>