



## TECHNOLOGY

# Vaccine Enabling Technologies

## OVERVIEW

Bacterial live vector vaccines represent a strategy offering exceptional flexibility for vaccine development. In this approach, genes that encode foreign antigens of unrelated bacterial, viral, or parasitic pathogens are expressed in an attenuated bacterial vaccine strain that delivers these foreign antigens to the immune system, thereby eliciting relevant immune responses. Significant progress has been achieved by UMB researchers in particular with the development of live vector vaccines incorporating precise mutations in strains of *Salmonella enterica* serovar Typhi and *Shigella flexneri* 2a. Advances have been made in genetically stabilized expression plasmids, antigen export systems to improve foreign antigen-specific immunity, and the establishment of intranasal models in both mice and non-human primates for characterizing mucosal, humoral, and cellular immune responses to these live vectors. Of critical importance to further clinical trials, non-antibiotic plasmid selection systems have recently been engineered at UMB to improve the clinical utility of these vaccines. Another successful strategy is to vaccinate by heterologous mucosal priming followed by a parenteral subunit vaccine booster, which results in enhanced and broadened anamnestic responses. Several advances and strategies for the successful development of highly immunogenic live vector vaccines are detailed in the UMB technology summaries listed below.

## APPLICATIONS

Bacterial live vector vaccines with recombinant plasmid expression systems

## ADVANTAGES

-Genetic flexibility -Genetic stability -High immunogenicity -Safety

## LICENSING POTENTIAL

UMB seeks partners for development in multiple fields.

## CONTACT INFO

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## Additional Information

### INSTITUTION

University of Maryland, Baltimore

### PATENT STATUS

See individual technologies

## **LICENSE STATUS**

Contact OTT for licensing information

## **CATEGORIES**

- Bioengineering
- Vaccine

## **EXTERNAL RESOURCES**

- [Salmonella enterica serovar Typhi live vector vaccines finally come of age.](#)

Multiple Docket Numbers