



## TECHNOLOGY

# Tight junction permeation enhancer peptides

## OVERVIEW

Human zonulin or pre-haptoglobin 2 (HP2) is known to reversibly regulate intestinal permeability by modulating intercellular tight junctions. It activates protease-activated receptor (PAR) 2, and induces signaling cascades that lead to tight junction disassembly. Zonulin expression is increased in the intestinal mucosa of patients with celiac disease and type I diabetes. Elevated levels of zonulin are also associated with Crohn's disease, inflammatory bowel disease, asthma, and glioma. The prokaryote analog of zonulin, zonula occludens toxin (Zot) expressed by *Vibrio cholera* is also known to increase the permeability of small intestine mucosa by opening tight cell junctions in the intestinal epithelial lining. Furthermore, the receptors for zot and zonulin are expressed in the intestine, blood brain barrier, skin epithelium and the nasal mucosa.

The inventors propose that an **agonist polypeptide** of a human receptor of **zonulin** or **zot** will be an excellent "carrier" for paracellular transport of a protein (or a chemical entity) across the epithelial membranes. Such an agonist peptide can potentially facilitate absorption of therapeutic drugs or immunogenic agents across the blood brain barrier or the intestinal mucosa. The potential therapeutic applications include gastrointestinal infections, autoimmune diseases (inflammatory bowel disease or IBD, celiac disease). The university IP covers peptide composition(s) and methods of treatment.

## CONTACT INFO

Office of Technology Transfer  
620 W Lexington St., 4th Floor  
Baltimore, MD 21201  
Email: [ott@umaryland.edu](mailto:ott@umaryland.edu)  
Phone: (410) 706-2380

## Additional Information

### INSTITUTION

University of Maryland, Baltimore

### PATENT STATUS

US 7,294,689 - Issued; US 7,777,001 - US DIV, Issued

### LICENSE STATUS

Available for licensing

### CATEGORIES

- Research Tools, Antibodies, & Reagents
- Therapeutics

- Small molecules
- Biologics
- Methods of Treatment

## **INVESTIGATOR(S)**

Alessio Fasano  
Stefanie N. Vogel

AF-2004-004