



## RayBiotech, Inc.

3607 Parkway Lane suite 200  
Norcross, GA 30092  
Tel: 770-729-2992, 1-888-494-8555  
Fax: 770-206-2393  
Website: [www.raybiotech.com](http://www.raybiotech.com)  
Email: [info@raybiotech.com](mailto:info@raybiotech.com)

# Certificate of Analysis and Data Sheet Recombinant Human Proguanylin

**Catalog No.**  
228-11319

**Source:**  
*Escherichia Coli.*

### Synonyms

Guanylin Precursor, Guanylate cyclase activator 2A, Guanylate cyclase-activating protein 1, Gap-IGUCA2, STARA, GUANYLIN.

### Introduction

Heat-stable enterotoxins (STa) are small, cysteine-rich peptides secreted by *Escherichia coli* that are able to induce diarrhea through the stimulation of an intestine-specific receptor-guanylyl cyclase known as STaR. Binding of STa to STaR induces a dramatic increase in the cGMP content of the cell; the increase, in turn, inhibits salt absorption and stimulates chloride secretion. This imbalance of ions is accompanied by a massive accumulation of water in the gut that gives rise to the diarrhea and dehydration characteristic of enterotoxin activity. The identification of a receptor for STa on intestinal brush border membranes suggested the existence of an endogenous activator, described guanylin, a 15-amino acid peptide purified from rat small intestine, as a potential ligand for the STaR. This peptide shares sequence similarity with STa; see also uroguanylin. The molecular cloning of the human and mouse cDNAs encoding guanylin was reported. The sequences demonstrated that guanylin is present at the C-terminal end of a larger precursor protein. Expression in mammalian cells indicated that the 94-amino acid proguanylin is inactive. The biologically active guanylin can be released by either chemical or enzymatic treatment of proguanylin. By Northern blot analysis and in situ hybridization, showed that expression of guanylin mRNA is restricted to cells of the intestinal epithelium, specifically the Paneth cells at the base of the small intestinal crypts. These results demonstrate that guanylin is an endogenous activator of STaR isolated a cDNA encoding an apparent precursor of guanylin from a human intestinal cDNA library. The mRNA was expressed at high levels in human ileum and colon. In the mouse, interspecific backcross analysis used to map the *Guca2* gene to the distal half of mouse chromosome 4 in a region of homology with human chromosome 1p. By fluorescence in situ hybridization mapped the *GUCA2* gene to human 1p35-p34. Guanylin is thought to modulate intestinal water/electrolyte transport in a paracrine mode reported the nucleotide sequence of the gene, the characteristics of its circulating molecular form, and its localization in enterochromaffin cells of the gut. The gene, approximately 2.6 kb in size, consists of 3 exons interrupted by 2 introns. The hormonal form of guanylin is a 94-amino acid peptide with a molecular mass of 10.3 kDa. Guanylin is synthesized by gut enterochromaffin cells as a prohormone of 115 amino acids and is processed to the molecular form of 94 amino acids circulating in the blood.

### Physical Appearance

Sterile Filtered White lyophilized (freeze-dried) powder.

**The products are furnished for LABORATORY RESEARCH USE ONLY.  
Not for diagnostic or therapeutic use.**



## RayBiotech, Inc.

3607 Parkway Lane suite 200  
Norcross, GA 30092  
Tel: 770-729-2992, 1-888-494-8555  
Fax: 770-206-2393  
Website: [www.raybiotech.com](http://www.raybiotech.com)  
Email: [info@raybiotech.com](mailto:info@raybiotech.com)

---

### ***Description***

Proguanylin Human Recombinant produced in E. coli, is an 11 kDa protein containing 96 amino acid residues of the human proguanylin and 2 additional amino acid residues.

The Proguanylin is purified by proprietary chromatographic techniques.

GPVTVQDGNF SFSLESVKKL KDLQEPQEPR VGKLRNFAPI PGEPVVPILC  
SNPNFPPEELK PLCKEPNAQE ILQRLEEIAE DPGTCEICAY AACTGC.

### ***Formulation***

Sterile filtered and lyophilized from 0.5 mg/ml in deionized H<sub>2</sub>O.

### ***Specificity***

The proguanylin human recombinant is 100% homologous with the human proguanylin.

### ***Purification Method***

Three-step procedure using IMAC and size exclusion chromatography before and after refolding.

### ***Solubility***

Add 0.2 ml of deionized H<sub>2</sub>O and let the lyophilized pellet dissolve completely.

### ***Purity***

Greater than 95.0% as determined by SDS-PAGE.

### ***Stability***

Store lyophilized protein at -20°C. Aliquot the product after reconstitution to avoid repeated freezing/thawing cycles. Reconstituted protein can be stored at 4°C for a limited period of time; it does not show any change after two weeks at 4°C.

The lyophilized protein remains stable until the expiry date when stored at -20°C.

### ***Applications***

Western blotting.

**The products are furnished for LABORATORY RESEARCH USE ONLY.  
Not for diagnostic or therapeutic use.**