

*Pediatric Specialty  
Diagnostic Laboratory*



ORLANDO  
HEALTH®



ARNOLD PALMER  
HOSPITAL  
For Children



## Healthier Kids. Stronger Families.

*Orlando Health Arnold Palmer Hospital for Children has provided compassionate care to the children, teenagers and young adults of Central Florida for nearly 30 years. Led by dedicated doctors, specialists and caregivers, Orlando Health Arnold Palmer offers a wide range of advanced pediatric services in an environment built just for kids.*

### Aspiration Marker Panel

- Sample collected from tracheal washing or bronchial lavage (BAL).
- Pepsin A presence is specifically determined. Gastric pepsin detected in the airway of patients is an indicator of pulmonary aspiration. The presence of amylase in airway fluid is indicative of microaspiration of oral fluid.

### Small Intestinal Microbial Overgrowth

The small intestine and stomach are generally sterile or may contain low numbers of bacterial cells. If the number of cultivable bacteria in the small intestine exceeds  $10^4$  CFU/ml then it manifests the small intestinal microbial overgrowth (SIMO) condition.

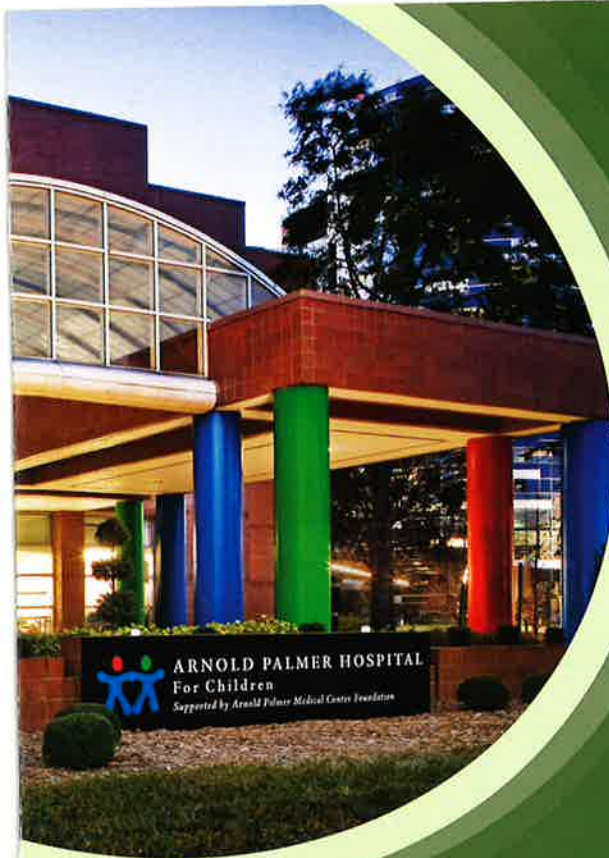
May cause:

- Malabsorption of various nutrients (like fat and vitamins)
- Destruction of the surface layer
- Protein loss
- Anemia
- Diarrhea
- Irritable bowel syndrome (IBS)

Sample is a brushing of mucosal layer from the small intestine.

### Esophageal Epithelial Eosinophilic Markers

- Eosinophil activation plays an important role in inflammatory processes in allergic diseases including eosinophilic esophagitis (EoE).
- Upon activation, eosinophils secrete several cationic proteins including eosinophil derived neurotoxin (EDN), a glycosylated single-chain protein.
- EDN is detected by ELISA in esophageal brushing samples to diagnose and monitor EoE.



## Pediatric Specialty Diagnostic Laboratory

The Orlando Health Arnold Palmer pediatric laboratory performs specialized tests not commonly performed in clinical diagnostic laboratories. Testing is performed by highly trained team members, and the lab is equipped with robotic instrumentation to ensure accuracy and precision.

## Specialized Pediatric Testing

### Lactase Activity

- Test performed on small bowel mucosal biopsy obtained at endoscopy.
- Lactase deficiency is common, with prevalence up to 90 percent depending on ethnic background.

### Disaccharidase Assay

- Testing for other related disaccharidase deficiencies, such as:
  - Sucrase-isomaltase deficiency
  - Glucoamylase deficiency (may present as irritable bowel syndrome)
- Multiple deficiencies are seen in conditions leading to mucosal injury:
  - Viral, bacterial or protozoal infections
  - Post infectious enteritis
  - Small intestinal bacterial overgrowth (SIBO)
  - Allergic enteropathy
  - Celiac disease
  - Crohn's disease
  - NSAID enteropathy

### Pancreatic Enzyme Analysis

- Test performed on pancreatic fluid obtained at endoscopy after pancreatic stimulation with CCK or secretin.
- Only 0.5 ml of fluid is required for analysis of amylase, lipase, trypsin, chymotrypsin and elastase using single or multiple fluids.
- Low pancreatic enzyme activity can be the consequence of:
  - Pancreatic damage
    - Chronic pancreatitis
    - Cystic fibrosis
    - An isolated enzyme deficiency

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- Low pancreatic enzyme activity can be the consequence of:
  - Pancreatic damage
    - Chronic pancreatitis
    - Cystic fibrosis
  - An isolated enzyme deficiency
    - Transient (in the first 5-6 months of life)
    - Permanent (congenital enzyme deficiency)

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## Lactulose-Mannitol Assay: Leaky Gut and Transit

- Assessment of small intestinal absorption and barrier function in the bowel.
- Intestinal permeability or leaky gut has been observed in inflammatory bowel disease (IBD) and food allergy.
- Lactulose-Mannitol assay measures the ability of these two non-metabolized sugar molecules to permeate the intestinal mucosa.

## Translational Research

The pediatric specialty diagnostic lab is engaged in translational research to deliver better treatments for various ailments. Current research pursuits include:

- Efficient and accurate method of quantification of microbial load in the small intestine by characterization of the microbiome using cutting-edge next-generation sequencing (NGS) methodologies and bioinformatics
- Studies on the clinical outcome of SIBO/SIMO diagnosis by a new method of using duodenal brushing samples
- Retrospective analysis of digestive enzyme activities in comparison to the histological changes and clinical characteristics of children
- Use of biomarkers to identify preventive measures for the occurrence of microaspiration in intubated patients
- A novel method to diagnose eosinophilic esophagitis in children by measuring eosinophilic biomarkers in esophageal brushing samples
- Small intestinal permeability testing in children with various gastrointestinal disorders
- Clinical impact of disaccharidase testing in the adult population

- Genetic test development for the diagnosis of congenital sucrase isomaltase deficiency (CSID) by using the next-generation sequencing method (QOL Medical, LLC sponsored project)
- Clinical association of LIPA gene mutations detected by next-generation sequencing of DNA from archived tissues of patients with liver disease symptoms indicative of undiagnosed LALD (Alexion Pharma, Inc. sponsored project)
- Development of alternative clinical interventions using complementary and integrative medicine to address chronic diseases such as IBS.

## Collaboration

### University of Central Florida

Nursing Oral Suction Protocol Intervention to Reduce Aspiration and Ventilator Events (NO-ASPIRATE)

### Florida State University

Association of seasonal fecal microbiome profile change in children with functional or recurring abdominal pain (FAP/RAP) in children

### Industry Sponsored Projects

- Conducting research to explore the prevalence of congenital sucrase-isomaltase deficiency (CSID) in selected group of pediatric patients with known sucrase activity levels for the development of genetic test to diagnose CSID.
- Conducting research to elucidate clinical association of Lipase A gene mutations in patients with liver disease symptoms by using next-generation sequencing techniques.

***Are there tests that you would like us to consider?  
Contact us at (321) 841-7820.***

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*Healthier Kids, Stronger Families.*

The most advanced technology, coupled with compassion and dedication, has made Orlando Health Arnold Palmer Hospital for Children one of the most trusted names in children's healthcare worldwide since 1989.

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For more information about the Orlando Health Arnold Palmer Hospital Pediatric Specialty Diagnostic Laboratory, or to make an appointment, please call **(321) 841-2245** or visit us at:  
**[ArnoldPalmerHospital.com/KidsGILab](http://ArnoldPalmerHospital.com/KidsGILab)**

#### **Our Team**

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