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Diagnostics and Treatment of Sinusitis (Rhinosinusitis)

Tech ID: 22703 / UC Case 2011-047-0

BACKGROUND

Sinusitis is one of the most common health care challenges in the United States affecting an estimated 15% of the population resulting in direct health care costs of approximately \$6 billion per year. According to the American Academy of Otolaryngology, chronic sinusitis alone results in 18-22 million US physician office visits annually. Decongestants, antibiotics and anti-inflammatory medication are the initial line of treatment before opting for surgery in chronic rhinosinusitis (CRS) patients who do not improve. Approximately 200,000 U.S. adults undergo CRS surgery per year. The diagnosis on the basis of symptoms is common but can be unreliable since bacterial pathogens isolated from CRS patients are also found in healthy sinuses. Accurate diagnosis based on the local microbiota is greatly needed for effective treatment.

TECHNOLOGY DESCRIPTION

Investigators at UCSF have used a culture independent approach to diagnose sinusitis risk and have developed a novel regimen for patient specific treatment. The approach utilized mucosal samples of healthy and diseased individuals which were analyzed with respect to disease state and severity, gross bacterial community characteristics and the presence of microbial diversity of specific protective bacterial species and increase of pathogenic species in CRS patients. Also identified are certain species associated with healthy individuals, which can provide mucosal protection. Based on this comparative study, it has been demonstrated that the bacterial imbalance can be corrected by administering a specific beneficial bacterial species to prevent pathogenic activity and protect the sinus mucosal surface. The technology comprises analyzing a mucosal sample from the patient to diagnose relative levels of bacterial species and administering the appropriate beneficial bacterial composition which will colonize the sinus mucosal surface and treat the sinusitis. This microbial supplementation treatment has specific advantages over antibiotics, anti fungal and anti microbial drugs which may aggravate sinusitis by depleting useful bacteria while conferring resistance to pathogens that exist in the bacterial communities that inhabit the sinuses.

APPLICATIONS

- Diagnosis of Sinusitis (Rhinosinusitis)
- Treatment of Sinusitis (Rhinosinusitis) and Chronic Rhinosinusitis

CONTACT

Lindsay N. Sanford
Lindsay.Sanford@ucsf.edu
tel: .



OTHER INFORMATION

KEYWORDS

Sinus, Microbiome

CATEGORIZED AS

- Medical
 - Diagnostics
 - Research Tools
 - Screening

RELATED CASES

2011-047-0

ADVANTAGES

- ▶ Diagnosis based on comparison with healthy individuals
- ▶ Treatment with beneficial bacteria
- ▶ Re-establish protective microbiome
- ▶ Treatment mimics bacterial composition associated with healthy individuals
- ▶ No side effects associated with antibiotics, anti-inflammatory and anti-microbial drugs

INVENTOR INFORMATION

Susan Lynch, PhD

Dr. Lynch is a Microbiologist specializing in human microbiome studies with a specific interest in the role of the microbial communities in chronic inflammatory diseases. She is a NIH and private foundation-funded scientist with an interest in identifying novel pathogenic and therapeutic microbial species and mechanisms underlying chronic pulmonary and gastrointestinal diseases. Dr. Lynch has developed sample collection protocols and microbiome analyses pipelines for translational studies of asthma, cystic fibrosis and inflammatory bowel disease amongst other diseases and has a particular interst in rehabilitation microbial ecology as a means to modulate aberrant inflammatory responses in the human host.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,660,923	05/26/2020	2011-047

ADDRESS

UCSF

Innovation Ventures

600 16th St, Genentech Hall, S-272,
San Francisco,CA 94158

CONTACT

Tel:

innovation@ucsf.edu

https://innovation.ucsf.edu

Fax:

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