

Grantmanship in Chronic Fatigue Syndrome

James N. Baraniuk, MD
Georgetown University
Washington, DC

Mission Statement:

“It’s all in your head.”

**Studies in:
Rhinitis and Sinusitis
CFS and related syndromes**

Business Model for Research

- University Mall has space to rent to retailers.
- Retailers must sell to customers.
- If customers buy my product, I survive in the mall.
- No customers = no income = no rent or profit for Mall owners.

Business Model for Research

- University Mall has space to rent to retailers.
- Retailers must sell to customers.
- If customers buy my product, I survive in the mall.
- No customers = no income = no rent or profit for Mall owners.
- University provides space to investigators in return for Indirect Costs (profit).
- Investigators package, peddle and, hopefully, sell their ideas to Federal and other funding agencies.
- If the Review Committee does not buy my idea, I do not get any money.
- No money in, I cannot rent space at University Mall.
- No mortgage payment.
- Industry, anyone?

Grants Sections A, B, and C

- Novel, innovative IDEA for research plan
- Fascinating TITLE
- Clearly written and exciting ABSTRACT
 - “Bait and hook’em hard”
 - (This is all this is read by many of the reviewers)
- Appropriate budget
- Appropriate justifications
- Brilliant and appropriate statisticians
- Brilliant and appropriate collaborators

Present your *bona fides*: **The BIOSKETCH**

Who do you think you are?

This is where I got allergic rhinitis.
How about you?



James N. Baraniuk, Raymond, Alberta, Canada

Who do you think you are?

James N. Baraniuk, MD, Associate Professor of Medicine, Georgetown University

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Manitoba, Canada	B.Sc. (Hons.)	1972-1976	Joint Honours in Chemistry and Microbiology
University of Manitoba, Canada	B.Sc. (Med.)	1977-1978	Cardiology
University of Manitoba, Canada	M.D.	1977-1981	
St. Thomas Hospital, Akron, Ohio	Intern, Res.	1981-1984	Internal Medicine
Duke University Medical Center	Resident	1984-1985	Internal Medicine
Duke University Medical Center	Fellow	1985-1987	Allergy and Clinical Immunology, pollen chemistry
LCI, NIAID, NIH, Bethesda, MD	Scientist	1987-1989	Allergy and Clinical Immunology, neuropeptides
National Heart & Lung Institute, London	Scientist	1989-1991	Molecular Biology of Airway Innervation

Lung Biology Lab., Georgetown University, Washington, D.C. (D. Massaro)	Asst. Prof.	1991-92
Rheumatology, Immunology and Allergy, Georgetown University	Asst. Prof.	1993-1998
Rheumatology, Immunology and Allergy, Georgetown University	Assoc. Prof.	1998-
Vincent Lombardi Cancer Research Center, Georgetown University	Member	1992-
Adult Asthma & Allergy Service, Georgetown University	Co-Director	1993-
Bioassay Core Laboratory, Chronic Pain and Fatigue Research Center, GU	Director	1999-
Georgetown University Proteomics Laboratory	Director	2001-

Certification: 1981: Licensate of the Medical Council of Canada (LMCC); 1984: American Board of Internal Medicine; 1985: Internal Medicine, Royal College of Physicians of Canada; 1987: Allergy & Clinical Immunology, Conjoint Boards of American Board of Internal Medicine & American Board of Pediatrics; 1988: Clinical Immunology & Allergy, Royal College of Physicians of Canada

Special Lectureships: 1993-1994: *lecturer*, Dialogues in Allergy Series, American Academy of Allergy and Immunology; **Mar., 1995:** *Distinguished Guest Lecturer*, Department of Medicine, Creighton University, Omaha, NB; **May, 2000:** *Distinguished Visitor*, Catholic University of Cordoba, Cordoba, Argentina; **May, 2000:** *Distinguished Lecturer*, XVII Argentine National Congress of Allergy, Cordoba, Argentina; **Oct. 2000:** *Inaugural Lecturer*, 1st Annual Special Head and Neck Conference, Mie University, Tsu, Japan; **Aug. 2001,** Kyiv and Yalta Ukraine and **Sept. 2002,** Sofia, Bulgaria, Instructor, Allergy Summer Course, European Academy of Allergy and Clinical Immunology; **May 2002,** Distinguished Speaker, Paraguayan Allergy Congress, Asuncion, Paraguay

Federal Panels: 1996-1999: *Food and Drug Administration Pulmonary and Allergy Drugs Advisory Board*; 1998, reviewer, Chronic Fatigue Syndrome Special Emphasis Panel, DRG; 1999, reviewer, Physical Preparedness and Combat Readiness Review Group, Veterans Administration – Department of Defense; 1999-2003: Chronic Fatigue Syndrome Interest Review Group (IRG) panel, NIH CSR; 2000: Site Reviewer, Environmental Protection Agency Human Studies Facility, University of North Carolina, Chapel Hill; 2002-present: *Data and Safety Monitoring Board, National Institute of Allergy and Infectious Diseases*; 2004: Proteomics and Aging, CSR panel member, NIA; 2006-, presenter and observer, *Gulf War Veterans' Illnesses Research Advisory Committee, Dept. of Veterans Affairs*; **Nov, 2006,** Chair, Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Temporomandibular Dysfunction Special Emphasis Panel ZRG1 CFS-E(01)S; **Other National Committees:** 1997-2002 editorial review panel, *Am J Respir Crit Care Med*; 2000- editorial review panel, *Thorax*; 2000-2003, Chairman, Research Advocacy Committee, American Academy of Allergy, Asthma and Immunology (AAAAI); 2000-2004, Chairman, Rhinitis Committee, AAAAI; 1998-present: Georgetown University General Clinical Research Center Advisory Committee; 1999-2002: Georgetown University Grievance Panel; 2002-2005: Georgetown University Dean of Research's Research Committee; 2002 Subcommittee on Core Resources; 2005- Chair, Standard Operating Procedures Committee. **Special Program:** 2003: *Redefining Sinusitis Consensus Conference*; 2003- Program Committee, Respiratory Structure and Function Interest Section, American Thoracic Society. **Awards:** 1991-1994: Edward Livingston Trudeau Scholar Award, American Lung Association, "Physiological Modulation of Respiratory Tract mRNA Transcription"

Who do you think you are?

Who do *THEY* think you are?

Multidisciplinary,
translational research oriented,
basic scientist and clinical investigator?

or

Jack of all trades, master of none?

How does your past performance
promote confidence that you can do what you are
proposing in your grant?

"Mechanisms of Rhinitis in CFS"

RO1 AI42403

- 1997-2001 Mechanisms of Rhinitis in CFS
 - Novel hypothesis that neural mechanisms regulating mucosal function were abnormal in CFS compared to healthy control and other rhinosinusitis groups
- **2001-2005 Competitive Renewal**
- 2005-2006 2nd Competitive Renewal
Unsuccessful
What went wrong?

OK, so you've completed:

- Double Honours in Science undergraduate program and applied physical chemistry and biochemical principles to advance your research fields;
- Performed human translational research in medical school (isometric hand grip) that has been applied to this grant;
- Three translational fellowships at Duke, NIAID and the National Heart and Lung Institute, London, studying allergy, immunology, neuropeptides, molecular biology of neuropeptide receptor expression, and determined how nerves regulate mucosal function in human airways in vivo;
- Have been independently funded for innovative, state-of-the-art research
 - BUT →

BUT,
you do not have a Ph.D.

Comments, cont'd

- OK, so you discovered that CFS subjects have an unique chronic, irritant-sensitive rhinopathy with neural dysfunction.
- BUT, your new proposal was:
 - hard to read,
 - offered no new, immediate benefits for CFS patients, and
 - did not make sense.

- AND,
you did not publish enough papers.

Peer-Reviewed Research Publications

- Baraniuk JN, Clauw DJ, MacDowell-Carneiro A-L, Bellanti J, Pandiri P, Foong S, Ali M. Serum IgE concentrations in chronic fatigue syndrome. *J CFS* 4:13-21, 1998
- Gawin A, Kaliner M, Baraniuk JN. Enhancement of histamine-induced vascular permeability in guinea pigs infected with *Bordetella bronchiseptica*. *Am J Rhinol* 12:143-147, 1998
- Fang S-Y, Druce HM, Baraniuk JN. Anticholinergic properties of brompheniramine, chlorpheniramine and atropine in human nasal mucosa *in vitro*. *Am J Rhinol* 12:131-133, 1998
- Yuta A, van Deusen M, Gaumont E, Ali M, Baraniuk JN, Doyle W, Cohen S, Skoner D. Rhinovirus infection induces mucus hypersecretion. *Am J Physiol* 274 (Lung Cell Mol Physiol 18):L1017-L1023, 1998
- Baraniuk JN, Wong G, Ali M, Sabol M, Troost T. Glucocorticoids decrease *c-fos* expression in human nasal polyps *in vivo*. *Thorax* 53:577-582, 1998
- Baraniuk JN, Clauw JD, Gaumont E. Rhinitis symptoms in chronic fatigue syndrome. *Annals Allergy Asthma Immunol* 81:359-365, 1998
- Ohkubo K, Baraniuk JN, Hohman R, Merida M, Hersh LB, Kaliner MA. Aminopeptidase activity in human nasal mucosa. *J Allergy Clin Immunol* 102:741-750, 1998
- Baraniuk JN, Clauw DJ, Yuta A, Ali M, Gaumont E, Upadhyayula N, Fujita K, Shimizu T. Nasal secretion analysis in allergic rhinitis, cystic fibrosis and fibromyalgia / chronic fatigue syndrome subjects. *Am J Rhinol* 12:435-440, 1998
- Ray NF, Baraniuk JN, Thamer M, Rinehart CS, Gergen PJ, Kaliner M, Josephs S, Pung YH. Direct expenditures for the treatment of allergic rhinoconjunctivitis in 1996 including contributions of related airway illness. *J Allergy Clin Immunol* 103:401-407, 1999
- Ray NF, Baraniuk JN, Thamer M, Rinehart CS, Gergen PJ, Kaliner M, Josephs S, Pung YH. Healthcare expenditures for sinusitis 1996: Contributions of asthma, rhinitis, and other airway disorders. *J Allergy Clin Immunol* 103:408-413, 1999
- Baraniuk JN, Ali M, Yuta A, Fang S-Y, Naranch K. Hypertonic saline nasal provocation stimulates nociceptive nerves, substance P release, and glandular mucous exocytosis in normal humans. *Am J Respir Crit Care Med* 160:655-662, 1999
- Verma M, Baraniuk JN, Blass C, Ali M, Yuta A, Biedlingmaier J, Davidson EA. *CFTR* Antisense phosphorothioate oligodeoxynucleotides (S-ODNs) induce tracheobronchial mucin (*TBM*) mRNA expression in human airway mucosa. *Glycoconjugate J* 16:7-11, 1999
- Wasserfallen JB, Gold K, Schulman KA, Baraniuk JN. Item responsiveness of a rhinitis and asthma symptoms score during a pollen season. *J Asthma* 36:459-465, 1999
- Baraniuk J, Murray JJ, Nathan RA, Berger WE, Johnson M, Edwards L, Srebro S, Rickard K. Fluticasone alone or in combination with salmeterol versus triamcinolone in asthma. *Chest* 116:625-632, 1999
- Baraniuk, JN, Naranch K, Maibach H, Clauw D. Irritant rhinitis in allergic, nonallergic, control and Chronic Fatigue Syndrome populations. *J CFS* 7:3-31, 2000
- Baraniuk, JN, Naranch K, Maibach H, Clauw D. Tobacco sensitivity in Chronic Fatigue Syndrome. *J CFS* 7:33-52, 2000
- Meltzer EO, Charous BL, Busse WW, Zinreich SJ, Lorber RR, Danzig MR, and the Nasonex Sinusitis Group*. Added relief in the treatment of acute recurrent sinusitis with adjunctive mometasone furoate nasal spray. *J Allergy Clin Immunol* 106:630-637, 2000 (* member)
- Baraniuk, JN, Murray J. The linear relationship between changes in childhood growth velocity and glucocorticoid dose. *Allergy Asthma Proceedings* 22:153-164, 2001
- Repka-Ramirez MS, Naranch K, Park Y-J, Velarde A, Clauw D, Baraniuk JN. IgE levels are the same in Chronic Fatigue Syndrome (CFS) and control subjects when stratified by allergy skin test results and rhinitis types. *Annals Allergy Asthma Immunol* 87:218-221, 2001
- Naranch K, Repka-Ramirez SM, Park Y-J, Velarde A, Finnegan R, Murray J, Pheiffer A, Hwang E, D Clauw, MD, JN Baraniuk. Differences in baseline nasal secretions between Chronic Fatigue Syndrome (CFS) and control subjects. *J CFS* 10:3-15, 2002
- Park Y-J, Repka-Ramirez SM, Naranch K, Velarde A, Clauw D, Baraniuk JN. Nasal lavage concentrations of free hemoglobin as a marker of microepistaxis during nasal provocation testing. *Allergy* 57:329-335, 2002
- Baraniuk JN, Ali M, Naranch K. Hypertonic saline nasal provocation and acoustic rhinometry. *Clin Exp Allergy* 32:543-550, 2002
- Repka-Ramirez MS, Naranch K, Park Y-J, Clauw D, Baraniuk JN. Cytokines in nasal lavage fluids from acute sinusitis, allergic rhinitis, and Chronic Fatigue Syndrome subjects. *Allergy Asthma Proceedings* 23:185-190, 2002
- Malekzadeh S, Hamburger MD, Whelan PJ, Biedlingmaier JF, Baraniuk JN. Density of middle turbinate subepithelial mucous glands in patients with chronic rhinosinusitis. *Otolaryngol Head Neck Surg.* 127:190-5, 2002
- Naranch K, Park Y-J, Repka-Ramirez SM, Velarde A, Clauw D, Baraniuk JN. A tender sinus does not always mean sinusitis. *Otolaryngol Head Neck Surg* 127:387-97, 2002
- Annovazzi L, Viglio S, Perani E, Baraniuk J, Casado B, Cetta G, Luisetti M, Iadarola P. Capillary electrophoresis with laser induced fluorescence detection as a novel sensitive approach for the analysis of desmosines in real samples. *Electrophoresis* 25:683-691, 2004.
- Casado B, Pannell LK, Viglio S, Iadarola P, Baraniuk JN. Analysis of the sinusitis nasal lavage fluid proteome using capillary liquid chromatography interfaced to electrospray ionization quadrupole-time of flight tandem mass spectrometry. *Electrophoresis* 25:1386-1393, 2004

Reviews

- Baraniuk JN. Neural control of the upper respiratory tract. In: Barnes PJ, editor. Autonomic Nerves and the Respiratory System. In: *The Autonomic Nervous System Series*, Burnstock G, editor. Harwood Academic Publishers gmbh. Chur, Switzerland. pp. 291-312, 1997
- Baraniuk JN. Pathogenesis of allergic rhinitis. *J Allergy Clin Immunol* 99:S763-S772, 1997
- Baraniuk JN. Neuropeptides in the skin. In: Bos JB, editor. Skin Immune System (SIS), 2nd edition, CRC Press, Baton Rouge, 1997, pp. 311-326
- Casale T, Baraniuk JN. The Autonomic Nervous System, Neuropeptides, and Allergy. In: Kaplan A. editor. Allergy. WB Saunders. New York, New York. 1997, pp. 298-325
- Yuta A, Baraniuk JN. Therapeutic approaches to airway mucous hypersecretion. In: Rogers DF, Lethem MI, eds. Airway Mucus: Basic Mechanisms and Clinical Perspectives. Respiratory Pharmacology and Pharmacotherapy series. Birkhauser. Basel. 1997, pp. 365-383
- Baraniuk JN. Neuropeptides. *Am J Rhinol* 12:9-16, 1998
- Baraniuk JN, Druce HM., Neuroregulation of mucosal vasculature. In: Holgate ST, editor. Inflammatory Mechanisms in Asthma In: Lenfant C. *Lung Biology in Health and Disease* 17. Marcel Dekker. New York. 1998, pp 619-637
- Baraniuk JN. Mechanisms of rhinitis. *Allergy Asthma Proc* 19:343-347, 1998
- Baraniuk JN, Molet S, Mullol J, Naranch K. Endothelin and airway mucosa. *Pulm Pharmacol Therap* 11:113-123, 1998
- Mullol J, Baraniuk JN, Picado C, Shelhamer JH. Endothelin and the airway epithelium. In: Goldie RG, Hay DWP. Pulmonary Actions of the Endothelins. Birkhauser Verlag. Basel. 1999. pp 155-176
- Mullol J, Baraniuk JN. Basics of muscarinic physiology. In: Spector S, editor. Anticholinergic Agents in the Upper and Lower Airways. In: Lenfant C., executive editor. *Lung Biology in Health and Disease Series*. Vol. 134. Marcel Dekker. New York. 1999, pp 3-30
- Baraniuk JN, Fryer A, Jacoby DB, Denburg JA, Undem BJ. Relationship between neurogenic pathways and immunobiology of asthma and rhinitis. In: Casale TB. *Immunobiology of Asthma and Rhinitis: Pathogenic Factors and Therapeutic Options*. *Am J Respir Crit Care Med* 160:1780-1781, 1999
- Baraniuk JN. Mechanisms of rhinitis. In: Lasley MV, Altman LC, editors. Rhinitis Immunology and Allergy Clinics of North America, 20, W.B. Saunders, Philadelphia, May 2000, pp 245-264
- Baraniuk JN, Didier A. Amerique du Nord. Dutau G, editor. Etre Allergique Autre Part. Journees de la SFAIC 2000, pp. 101-113
- Malekzadeh S, Baraniuk JN, Druce HB. Neuroregulation of mucosal vasculature. In: Busse W, Holgate ST, eds. Asthma and Rhinitis, 2nd ed. Blackwell Scientific, Oxford, 2000, pp. 945-957
- Baraniuk JN. Mechanisms of allergic rhinitis. *Curr Allergy Asthma Rep* 1:207-217, 2001
- Baraniuk, JN. Neurogenic mechanisms in rhinosinusitis. *Curr Allergy Asthma Rep* 1:252-261, 2001
- Litvyakova L, Baraniuk JN. Nasal provocation testing: A review. *Annals Allergy, Asthma Immunol* 86:355-365, 2001
- Park Y-J, Baraniuk JN. Mechanisms of allergic rhinitis. Chapter 12. In: Zweiman B, Schwartz LB, eds. Inflammatory Mechanisms in Allergic Diseases. Marcel Dekker, New York, 2001, pp. 275-293
- Casale T, Baraniuk JN. Neural Mechanisms. In: Middleton E, Reed C, Ellis C, et al. editors. Allergy: Principles and Practice Mosby, St. Louis, 2001. 50. Repka-Ramirez MS, JN Baraniuk. Nariz e histamina. Generalidades. *Asma* 8(1):28-31, 2001
- Repka-Ramirez MS, JN Baraniuk. Nariz e histamina. Histamina en la patologia inflamatoria nasal. *Asma* 8:28-30, 2001
- Baraniuk JN. Addition of intranasal glucocorticoids to standard antibiotic therapy for sinusitis. Clinical trials report. *Current Allergy Asthma Reports*. 1:191-192, 2001
- Baraniuk JN, Tai C-F. Inhibition of phosphodiesterase 4 in allergic rhinitis. Clinical trials report. *Current Allergy Asthma Reports* 2:191-192, 2002
- Baraniuk JN, Tai C-F. Lactobacillus reduces atopic eczema. Clinical trials report. *Current Allergy Asthma Reports* 2:192-193, 2002
- Litvyakova L, Baraniuk JN. Human nasal allergen provocation for determination of true allergic rhinitis: methods for clinicians. *Curr Allergy Asthma Reports* 2:194-202, 2002
- Tai C-F, Baraniuk JN. Upper airway neurogenic mechanisms. *Curr Opin Allergy Clin Immunol* 2:11-19, 2002
- Repka-Ramirez MS, Baraniuk JN. Histamine in health and disease. In: Simons E, editor. Histamine and Histamine Receptor Antagonists, 2nd Ed. Marcel Dekker, New York, pp 1-25, 2002
- Baraniuk JN. Pathogenesis of allergic rhinitis. Chapter 4. In: Kaliner MA, ed. Current Review of Rhinitis. Current Medicine, Philadelphia. 2002, pp. 23-34
- Park S-Y, Baraniuk JN. Mechanisms of allergic rhinitis. *Allergy Clin Immunol* 16:275-293, 2002
- Tai C-F, Baraniuk JN. A tale of two neurons: pain versus itch. *Curr Allergy Asthma Rep* 3:215-220, 2003
- Baraniuk, JN. Nasal mucosal gene expression in patients with allergic rhinitis with and without nasal polyps. Clinical trials report. *Current Allergy Asthma Reports* 4:185, 2003
- Baraniuk, JN. Regulation of bone mass in mice by the lipoxigenase gene *Alox15*. Clinical trials report. *Current Allergy Asthma Reports* 4:186, 2003
- Baraniuk, JN. Modulation of allergic response in nasal mucosa by antisense oligodeoxynucleotides for IL-4. Clinical trials report. *Current Allergy Asthma Reports* 4:186, 2003
- Staevska M, Baraniuk JN. Perennial nonallergic rhinitis. In: Lichtenstein LM, Busse WW, Geha RS, editors. Current Therapy in Allergy Immunology and Rheumatology, 6th Ed. Mosby, Philadelphia, 2004, pp. 17-24
- Baraniuk JN. Allergic rhinitis caused by inhalant factors. In: Rakel RE, Bope ET, editors. Conn's Current Therapy 2004 Saunders. Elsevier. Philadelphia 2004, pp. 806-815
- Baraniuk JN. Neurogenic inflammation. In: Leppert PC, Turned ML, eds. Vulvodynia: Toward Understanding a Pain Syndrome. Proceedings from the workshop April 14-15, 2003, supported by the National Institute of Child Health and Human Development (NICHD), the Office of Research on Women's Health, and the Office of Rare Diseases. pp. 16-18, 2004. http://www.nichd.nih.gov/publications/pubs/final_vulvodynia_report.pdf

Reviews cont'd

- Baraniuk JN. CFS and overlapping conditions. The CFS Research Review 2004, pp. 6-9
- Baraniuk JN. Neural mechanisms. Chapter 17. In: Cutaneous Immunology and Clinical Immunodermatology. Bos JD, editor. CRC Press. Boca Raton, FL 2005, pp. 393-412
- Meltzer EO, Hamilos DL, Hadley JA, Lanza DC, Marple BF, Nicklas RA, Bachert C, Baraniuk J, Baroody FM, Benninger MS, Brook I, Chowdhury BA, Druce HM, Durham S, Ferguson B, Gwaltney JM, Kaliner M, Kennedy DW, Lund V, Naclerio R, Pawankar R, Piccirillo JF, Rohane P, Simon R, Slavin RG, Togias A, Wald ER, Zinreich SJ. Rhinosinusitis: Establishing definitions for clinical research and patient care. *J Allergy Clin Immunol* 114:S156-S212, 2004
- Meltzer EO, Hamilos DL, Hadley JA, Lanza DC, Marple BF, Nicklas RA. Rhinosinusitis: Establishing definitions for clinical research and patient care. *Otolaryngology – Head Neck Surgery* 131:S1-S62, 2004 (contributing author)
- Staevska M, Baraniuk JN. Perennial nonallergic rhinitis. *Current Allergy Asthma Reports* 5:233-242, 2005
- Yuta A, Baraniuk JN. Therapeutic approaches to mucous hypersecretion. *Current Allergy Asthma Reports* 2005
- Baraniuk JN, Mulla J. Neural mechanisms in the nose. Nasal reflexes and neurogenic inflammation. In: Montserrat JM, Mulla J, editors. Rhinosinusitis: rhinitis, sinusitis and nasal polyposis. Spanish Society of Otorhinolaryngology Head and Neck Surgery Ponencia. Madrid. 2005
- Iadarola P, Cetta G, Luisetti M, Annovazzi L, Casado B, Baraniuk J, Zanone C, Viglio S. Micellar electrokinetic chromatographic and capillary zone electrophoretic methods for screening urinary biomarkers of human disorders: A critical review of the state-of-the-art. *Electrophoresis* 26:752-766, 2005
- Baraniuk JN, Malekzadeh S, Casado B. Chronic rhinosinusitis with glandular hypertrophy. In: Hamilos DL, Baroody F, Editors. Chronic Rhinosinusitis: Patterns of Illness: Pathophysiology and Management. Informa Press. New York. 2006
- Casado B, Viglio S, Baraniuk JN. Proteomics of sinusitis nasal lavage fluid. In: Thongboonkerd V, editor. Proteomics of Human Body Fluids: principles, methods, and applications. Humana Press. New York. 2006.

Journal Editor, Book Editor and Contributor

- Baraniuk JN, section editor. Rhinitis. Kaliner MA, Ring J, editors, *Current Allergy and Asthma Reports* 2001 - present
- Baraniuk JN, Shusterman D, editors. Nonallergic Rhinitis. In: Kaliner, M, series editor. *Clinical Allergy and Immunology*. Marcel Dekker, Inc. New York. 2006
- Baraniuk JN. Pathogenesis of allergic and nonallergic rhinitis. In: Kaliner M, editor. Current Review of Rhinitis. 2nd edition. Current Medicine, Philadelphia 2006
- Staevska M, Baraniuk JN. Differential diagnosis of persistent nonallergic rhinitis and rhinosinusitis syndromes. In: Baraniuk JN, Shusterman D, editors. Nonallergic Rhinitis. In: Kaliner, M, series editor. *Clinical Allergy and Immunology*. Informa Press. New York. 2006
- Baraniuk JN, Malekzadeh S, Casado B. Nonallergic rhinitis versus osteomeatal complex disease and chronic rhinosinusitis. In: Baraniuk JN, Shusterman D, editors. Nonallergic Rhinitis. In: Kaliner, M, series editor. *Clinical Allergy and Immunology*. Informa Press. New York. 2006
- Le U, Baraniuk JN. The nonallergic rhinitis of Chronic Fatigue Syndrome. In: Baraniuk JN, Shusterman D, editors. Nonallergic Rhinitis. In: Kaliner, M, series editor. *Clinical Allergy and Immunology*. Informa Press. New York. 2006
- Staevska M, Baraniuk JN. Rhinitis and sleep apnea. In: Baraniuk JN, Shusterman D, editors. Nonallergic Rhinitis. In: Kaliner, M, series editor. *Clinical Allergy and Immunology*. Informa Press. New York. 2006

Abstracts

- Clauw D, Gaumont E, Radulovic D, Pandiri P, Ali M, Foong S, Baraniuk JN. The role of true IgE-mediated allergic mechanisms in the "allergic" symptoms of fibromyalgia (FM). *Arthritis Rheum* 39:6s, 1996
- Clauw DJ, Radulovic D, Antonetti D, Bagati R, Baraniuk JN. Tilt table testing in fibromyalgia (FM). *Arthritis Rheum*, 1996
- Ali M, Gaumont E, Yuta A, Clauw D, Baraniuk JN. Nonallergic rhinitis (NAR) of chronic fatigue syndrome (CFS). *J Allergy Clin Immunol* 99:S420, 1997
- Yuta A, Fujita K, Shimizu T, Ali A, Clauw D, Baraniuk JN. Elastase in nasal lavage of cystic fibrosis and chronic fatigue syndrome (CFS) subjects with nonallergic rhinitis (NAR). *J Allergy Clin Immunol* 99:S420, 1997
- Clauw DJ, Radulovic D, Groner K, Gony G, Katz P, Baraniuk J, Singer A. Symptoms of fibromyalgia (FM) in females seen in a general internal medicine clinic. *Arthritis Rheum*, 1997
- Ali M, Yuta A, Baraniuk JN. A comparison of nasal symptoms in normal and atopy subjects using a hypertonic saline (HTS) provocation. *J Respir Crit Care Med* 155:A978, 1997
- Yuta A, Ali M, Baraniuk JN. Hypertonic saline (HTS): comparison of nasal secretion in normal and atopy subjects. *J Respir Crit Care Med* 155:A978, 1997
- Yuta A, Ali M, Sabol M, Baraniuk JN. Characterization of the human high molecular weight bronchial mucoglycoprotein (7F10-irm) that is identified by the 7F10 monoclonal antibody. *J Respir Crit Care Med* 155:A780, 1997
- Yuta A, Tamarkin L, Ali M, Baraniuk JN, van Deusen M, Doyle W, Cohen S, Skoner D. IL-8 release after rhinovirus infection. *Am J Respir Crit Care Med* 155:A978, 1997

Abstracts cont'd

- Bascom R, Pardo JM, Fitzgerald TK, Baraniuk JN. Antigen challenge blocks the nasal mucous response to environmental tobacco smoke (ETS). *Am J Respir Crit Care Med* 155:A551, 1997
- Stafford-Smith M, Baraniuk JN, Wilson K, Schwinn DA. α 2-Adrenergic receptor subtypes in human nasal turbinate: expression of mRNA encoding specific α 2-adrenergic receptor subtypes in nasal epithelium, duct, gland, and vascular cells. *Assoc. of Univ. Anesthesiol.*, 1997
- Malekzadeh S, Hamburger M, Biedlingmaier JF, Baraniuk JN. Density of middle turbinate subepithelial mucous glands in patients with chronic sinusitis and polyposis. *Otolaryngology Society, Southern meeting*, 1997
- Ali M, Yuta A, Fang S, Baraniuk J. Neurogenic inflammation redefined. *J Allergy Clin Immunol* 101:S113, 1998
- Fang S-Y, Druce HM, Baraniuk JN. Anticholinergic properties of brompheniramine, chlorpheniramine and atropine in human nasal mucosa *in vitro*. *J Allergy Clin Immunol* 101:S248, 1998
- Malekzadeh S, Hamburger M, Biedlingmaier JF, Trifillis A, Baraniuk JN. Epithelial and glandular metaplasia in the middle turbinates of chronic sinusitis patients correlate with CT scan severity (May classification). *J Allergy Clin Immunol* 101:S250, 1998
- Ray N, Rinehart C, Thamer M, Kaliner M, Josephs S, Y-H Pung, Gergen P, Baraniuk JN. Cost of allergic rhinoconjunctivitis (AR/AC): estimation by the *Delphi* method. *J Allergy Clin Immunol* 101:S44, 1998
- Ray N, Rinehart C, Thamer M, Kaliner M, Josephs S, Y-H Pung, Gergen P, Baraniuk JN. The cost of sinusitis: an estimation by the *Delphi* consensus panel method. *J Allergy Clin Immunol* 101:S177, 1998
- Tamarkin L, Ali M, Yuta A, Saraf K, Baraniuk JN. INF- α and IL-8 in throat swabs from children with tonsillitis. *J Allergy Clin Immunol* 101:S39, 1998
- Ali M, Yuta A, Baraniuk J. Effect of oxymetazoline on hypertonic saline-induced neurogenic inflammation in the human nose. *Am J Respir Crit Care Med* 157:A720, 1998
- Fang, S-Y, Ali M, Yuta A, Baraniuk J. Hypertonic saline nasal provocation induces substance P release: airway neurogenic inflammation redefined. *Am J Respir Crit Care Med* 157:A487, 1998
- Mullol J, Yao X, Gladwin M, Logun C, Cowan M, Baraniuk J, Picado C, Shelhamer J. Tumor necrosis factor-alpha induces the expression of cyclooxygenase-2 in human lung epithelial cells. *Am J Respir Crit Care Med* 157:A718, 1998
- Velarde A, Naranch K, Clauw DJ, Baraniuk JN. Rhinitis in chronic fatigue syndrome (CFS). *J Allergy Clin Immunol* 103:S196, 1999
- Naranch K, Velarde A, Clauw DJ, Baraniuk JN. A chronic fatigue syndrome (CFS) questionnaire. *J Allergy Clin Immunol* 103:S196, 1999
- Baraniuk JN. Childhood growth velocity and topical glucocorticoids. *Am J Respir Crit Care Med* 159:A909, 1999
- Naranch K, Velarde A, Clauw D, Baraniuk JN. Development of a tobacco sensitivity questionnaire (TSQ). *Am J Respir Crit Care Med* 103:A488, 1999
- Naranch K, Singer A, Gaumont E, Khine A, Velarde A, Clauw D, Baraniuk JN. Dyspnea in fibromyalgia (FM) and chronic fatigue syndrome (CFS). *Am J Respir Crit Care Med* 103:A763, 1999
- Park Y-J, Repka-Ramirez SM, Naranch K, Velarde A, Clauw D, Baraniuk JN. Hemoglobin as a measure of nasal bleeding during provocation testing. *J Allergy Clin Immunol* 104:S197, 2000
- Repka-Ramirez S, Naranch K, Park Y-J, Velarde A, Baraniuk JN. IgE levels in chronic fatigue and control subjects. *J Allergy Clin Immunol* 104:S359, 2000
- Naranch K, Park Y-J, Repka-Ramirez SM, Velarde A, Clauw D, Baraniuk JN, Moncada S. A tender sinus does not always mean sinusitis. *J Allergy Clin Immunol* 104:S211, 2000
- Baraniuk JN, Naranch K, Park Y-J, Repka-Ramirez S, Velarde A, Clauw D. Fluticasone propionate reduces sinusitis symptoms. *J Allergy Clin Immunol* 104:S212, 2000
- Repka-Ramirez SM, Baraniuk JN. Histamine in Health and Disease, Proceedings of the XVII Argentine National Congress of Allergy, Cordoba, Argentina, 2000
- Baraniuk JN. Mechanisms of Steroid Actions, Proceedings of the European Rhinologic Society / XIX International Symposium of Infection and Allergy in the Nose, Barcelona, Spain, 2000
- Baraniuk JN. Neurogenic Inflammation, Proceedings of the European Rhinologic Society / XIX International Symposium of Infection and Allergy in the Nose, Barcelona, Spain, 2000
- Baraniuk JN. Mechanisms of rhinitis. Proceedings. 1st Otolaryngology Congress, Mie University, Tsu, Japan, Oct. 2000.
- Park Y-J, Naranch K, Repka-Ramirez SM, Clauw D, Baraniuk JN. Sympathetic dysfunction demonstrated by isometric handgrip responses in CFS. American Association for Chronic Fatigue Syndrome. Seattle, WA (oral presentation), Jan. 2001
- Maibach H, Naranch K, Repka-Ramirez SM, Clauw D, Baraniuk JN. Multiple chemical sensitivity in CFS. American Association for Chronic Fatigue Syndrome. Seattle, WA. (poster presentation), Jan. 2001
- Baraniuk JN. Nonallergic rhinitis. Proceedings. 4th SERIN, London, UK, Feb. 2001
- Baraniuk JN, Ali M, Naranch K, Repka-Ramirez, Park Y-J, Clauw D. Nociceptive nerve dysfunction in Chronic Fatigue Syndrome (CFS) nasal responses to hypertonic saline provocation. *J Allergy Clin Immunol* 107:S240, 2001
- Maibach H, Naranch K, Repka-Ramirez SM, Pfeiffer A, Hwang E, Clauw D, Baraniuk JN. Multiple chemical sensitivity in Chronic Fatigue Syndrome (CFS). *J Allergy Clin Immunol* 107:S27, 2001
- Repka-Ramirez SM, Naranch K, Park Y-J, Clauw D, Baraniuk JN. Cytokines in nasal lavage fluid from Chronic Fatigue Syndrome (CFS), sinusitis and allergic rhinitis subjects. *J Allergy Clin Immunol* 107:S150, 2001
- Sgarlat C, Park Y-J, Naranch K, Repka-Ramirez SM, Clauw D, Baraniuk JN. Nasal sympathetic dysfunction demonstrated by acoustic rhinometry and isometric handgrip responses in Chronic Fatigue Syndrome (CFS). *J Allergy Clin Immunol* 107:S239, 2001

Abstracts cont'd

- Le U, Baraniuk JN, Ali M, Naranch K, Clauw C, Yuta A, Fang S-Y, Park Y-J, Velarde A, Pheiffer A, Hwang E, Finnegan R. Effects of ipratropium bromide on hypertonic saline provocation in human nasal mucosa. *J Allergy Clin Immunol* 109:S97, 2002
- Casado B, Le P, Clauw DJ, Pannell L, Baraniuk J. Proteomic analysis of nasal lavage proteins. *Am J Respir Crit Care Med* 165:B47, 2002
- Tai CF, Le P, Naranch K, Nelson B, Vandenbussche C, Murray J, Pheiffer A, Hwang E, Velarde A, Clauw D, Baraniuk JN. Inhibition of nitric oxide synthases by L-NMMA in human nasal mucosa has no effect in controls, but causes decreased leak and increased gland secretion in allergic rhinitis. *Am J Respir Crit Care Med* 165:B48, 2002
- Tai C-F, Baraniuk JN. Upper airway neurogenic mechanisms. Airway Hyperresponsiveness. Vth International Symposium on Basic Approach to Allergic Rhinitis (ISBAAR), March 30 and 31, 2002, Seoul, Korea, pp. 41-51
- Casado B, Pannell L, Whalen G, Iadarola P, Baraniuk J. Proteomics of major proteins in human nasal secretions. Proceedings. 13th Annual Frederick Conference on Capillary Electrophoresis, Oct. 21-23, 2002. Ft. Detrick, MD
- Casado B, Pannell L, Whalen G, Clauw DJ, Baraniuk JN. Neuroglobin in human cerebrospinal fluid. Proceedings. 13th Annual Frederick Conference on Capillary Electrophoresis. Oct. 21-23, 2002. Ft. Detrick, MD.
- Casado B, Pannell L, Whalen G, Clauw DJ, Baraniuk JN. The first report of DICKKOPF-3 in cerebrospinal fluid. Proceedings. 13th Annual Frederick Conference on Capillary Electrophoresis. Oct. 21-23, 2002. Ft. Detrick, MD.
- Baraniuk, JN, Maibach H, Le U, Naranch K. Excessive medication adverse events in women with Chronic Fatigue Syndrome (CFS). *Allergy Clin Immunol Intl: World Allergy Org Suppl* 1:35, 2003
- Baraniuk, JN, Maibach H, Le U, Nelson, B, VandenBussche. Dysfunctional nociceptive axon responses to hypertonic saline (HTS). *Am J Respir Crit Care Med* 167:A147, 2003
- Baraniuk JN, Yazicioglu M, Kaufmann L. Delayed cutaneous reactions to heparins. *J Allergy Clin Immunol* 111:S166-S167, 2003
- Casado B, Pannell L, Iadarola P, Baraniuk J. Identification of lipocalin family proteins in nasal secretions. *Exp Lung Res* 29 Suppl:93-121, 2003
- Casado B, Pannell L, Iadarola P, Baraniuk JN. Chronic sinusitis nasal lavage proteome. Proceedings. 14th Annual Frederick Conference on Capillary Electrophoresis. Oct. 3-4, 2003. Ft. Detrick, MD.
- Casado C, Pannell L, Murray J, Iadarola P, Baraniuk JN. Analysis of the human sputum proteome. *Am Soc Mass Spect* 14(suppl 1), 2003.
- Tosi S, Annovazzi L, Casado B, Lupi A, Viglio S, Cetta G, Iadarola P, Luisetti M, Baraniuk JN. Urinary desmosine and isodesmosine as diagnostic markers of elastin degradation. *Exp Lung Research* 29(Suppl):93-121, 2003.
- Yazicioglu M, Cresswell K, Whalen G, Baraniuk JN. CD69 for *in vitro* diagnosis of delayed drug reactions. *J Allergy Clin Immunol* 111:S170, 2003
- Baraniuk, JN, White K. Immunodeficiency in subtypes of chronic sinusitis. *J Allergy Clin Immunol* 113:S203, 2004
- White K, Baraniuk JN. Chronic sinusitis subtypes and airway function. *J Allergy Clin Immunol* 113:S203, 2004
- Baraniuk JN, Naranch K, Ali M, Le U. Pathophysiology of rhinosinusitis: Baseline symptoms and secretions in acute sinusitis (S), allergic rhinitis (AR), the nonallergic rhinitis of Chronic Fatigue Syndrome (CFS) and normal subjects. *Am J Respir Crit Care Med*, 169:A820, 2004
- Baraniuk JN, Yuta A, Tai C-F, Park Y-J. Neurogenic responses in rhinosinusitis. *Am J Respir Crit Care Med* 169:A820, 2004
- Casado-Fernandez B, Baraniuk JN, Pannell KL, Iadarola P. Proteomics of chronic sinusitis. *Am J Respir Crit Care Med*, 169:A15, 2004
- Casado B, Yang X, Hess S, Whalen G, Pannell LK, Clauw D, Baraniuk JN. Comparison of fibromyalgia/Chronic Fatigue Syndrome, Persian Gulf Illness and control groups. *Am Soc Mass Spect*, Nashville, Tennessee, May, 2004
- Kuo, Angera H., Oncology /Lombardi Cancer Center, Postdoctoral Division Oral Abstract Finalist. "Identification of Anaplastic Lymphoma Kinase-Interacting Proteins by Mass Spectrometry-Based Proteomic Approach" (work performed in Georgetown University Proteomics Laboratory by Begona Casado, Laurea)
- Casado B, Baraniuk, JN, Luisetti M, Annovazzi L, Viglio S, Zanone C, Iadarola P. Use of LC/MS-MS for proteome profiling of sputum from smoking subjects with acute and chronic bronchitis. Pavia, Italy, June, 2004
- Stoica GE, Casado B, Kuo AH, Baraniuk JN, Wellstein A. Uncovering the ALK-ome. New partners for anaplastic lymphoma kinase. *AACR* 2004
- Baraniuk JN, Maibach H. Women with Chronic Fatigue Syndrome (CFS) report an excessive number of medication - related adverse events. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Baraniuk JN, Maibach H, Clauw DJ, Whalen G. Prediction of depression in Chronic Fatigue Syndrome from cerebrospinal fluid corticotropin-releasing hormone (CRHCSF) and urine norepinephrine levels. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Baraniuk JN, Naranch K, Ali M, Le U. Pathophysiology of rhinosinusitis: contrasts between the baseline symptoms and secretions for the nonallergic rhinitis of Chronic Fatigue Syndrome (CFS), acute sinusitis (S), allergic rhinitis (AR), and normal control (NC) subjects. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Baraniuk JN, Whalen G, Cunningham J, Clauw DJ. Cerebrospinal fluid levels of opioid peptides in fibromyalgia and chronic low back pain. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Baraniuk JN, Yuta A, Tai C-F, Park Y-J. Neurogenic responses in rhinosinusitis including the nonallergic rhinitis of CFS. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Casado B, Iadarola P, Whalen G, Baraniuk JN. Differences in urine components between Chronic Fatigue Syndrome / fibromyalgia (CFS/FM), CFS, and normal control (NC) subjects. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Casado B, Yang X, Hess S, Whalen G, Pannell LK, Clauw DJ, Baraniuk JN. Cerebrospinal fluid proteomics in fibromyalgia / Chronic Fatigue Syndrome, Persian Gulf War Illness and control groups. 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004

Abstracts cont'd

- Naranch K, Singer A, Gaumont E, Khine A, Velarde A, Clauw DJ, Baraniuk JN. Dyspnea in Chronic Fatigue Syndrome (CFS) and fibromyalgia (FM). 7th International Conference on Chronic Fatigue Syndrome, Fibromyalgia and other Related Illnesses, Madison, WI, October 8-10, 2004
- Harris RE, Baraniuk JN, Geisser ME, Whalen G, Cuninghame J, Clauw DJ. Differing cerebrospinal fluid levels of opioid peptides in fibromyalgia, chronic low back pain, and healthy controls. American College of Rheumatology, 2004 Annual Meeting. Arthritis Rheumatol; oral presentation, October, 2004
- Baraniuk JN, Ali M, Petrie K. A sinusitis questionnaire to assess longitudinal changes during acute sinusitis. J Allergy Clin Immunol 115:S267, 2005
- Ali M, Baraniuk JN, Petrie K. "Baseline" nasal symptoms and secretions do not change following acute sinusitis despite standard treatment and a nasal steroid. J Allergy Clin Immunol 115:S200, 2005
- Casado B, Pannell LK, Iadarola P, Baraniuk JN. Proteomic analysis of normal human nasal mucus. J Allergy Clin Immunol 115:S58, 2005
- Casado B, Luisetti M, Pannell LK, Iadarola P, Baraniuk JN. Proteome of induced sputum in chronic bronchitis. Proc ATS 2:A655, 2005 (Winner: ATS Minority Award)
- Casado B, Luisetti M, Pannell LK, Iadarola P, Baraniuk JN. Proteome of induced sputum in chronic bronchitis. Department of Medicine Research Day, May 14, 2005. (Winner: Graduate and Postgraduate Competition)
- Chen A, Casado B, Kitlinska J, Baraniuk JN. Carnosine dipeptidase 1: A novel protein identified in cerebrospinal fluid of Chronic Fatigue Syndrome subjects. Department of Medicine Research Day, May 10, 2006.
- Luisetti M, Casado B, Cerveri I, Boschetto P, Mapp CE, Corsico A, Pozzi E, Ansaldo E, Fabbri LM, Iadarola P, Baraniuk JN. Proteomic analysis of induced sputum from patients with COPD. Proc ATS 3:A731, 2006 (oral presentation, top 5%)
- Luisetti M, Casado B, Boschetto P, Corsico A, Baraniuk J. Proteomics of induced sputum samples from patients with COPD. Proteomics and Genomics in Lung Disease. Am Physiol Soc. Ft. Lauderdale, FL, Nov 2-5, 2006 (withdrawn)
- Casado B, Maibach H, Clauw D, Baraniuk JN. Proteomic biosignature of Chronic Fatigue Syndrome in cerebrospinal fluid. IACFS. Ft. Lauderdale, FL. Jan 15-18, 2007
- Repka-Ramirez S, Naranch-Petrie K, Gleich G, Baraniuk JN. Absence of TH2 – biased mucosal immunity as measured by eosinophil peroxidase. IACFS. Ft. Lauderdale, FL. Jan 15-18, 2007

**Past performance is not evidence of
future productivity.**

Commentary cont'd

- Yes, BUT,
You did not have enough publications limited solely to CFS.
- **Response: As natural outcomes of our laboratory's work on Rhinitis in CFS, we helped:**
 - Redefine Chronic Sinusitis;
 - Redefine Nonallergic Rhinitis;
 - Gained acceptance of the Rhinitis of CFS within the larger scientific community
 - Introduced and developed state-of-the-art methods such as capillary electrophoresis and tandem mass spectrometry for the study of CFS.
 - Value added or contrary to spirit of a "CFS" award?
- I failed.

CAVEAT

- The reviewer is in bed after a hard day at work.
- The reviewer is lying next to their spouse whose has ideas.
- Jay Leno is hilarious tonight.
- Your grant is the 6th of the night so far.

- Can your grant overcome these challenges so that the reviewer reads it like the newest edition of Harry Potter and is so excited that they jump up in bed and sing “*America The Beautiful*” because yours is a true work of art?

What are you going to do?

Diversify Your Portfolio

- 1991-1995 **Foundation Funding**
- 1993-1998 **Industry Drug Studies**
- 1996 "Collection of Nasal Secretions for Measurement of α -Interferon", contractor to CytImmune Sciences Inc., College Park, MD, funded by **Office of Naval Research**
- 1996-2001 "Nasal Irritant Sensitivity and Allergic Rhinitis", co-investigator with D. Shusterman, MD, MPH, UCSF Division of Occupational and Environmental Medicine, **NIDCD 1 K08 DC00121-01**
- 1998-2001 "Nociceptive Dysfunction and Environmental Exposures", **Environmental Protection Agency** award R825814-01-0, P.I.
- 1994-1997 "Central Nervous System Dysfunction in **Interstitial Cystitis**", PHS, collaborator with D. Clauw, M.D., Principal Investigator
- 1996-1999 "Dysregulation of the Stress Response in Persian Gulf Syndrome", co-investigator with D. Clauw, M.D., principal investigator, **Department of Defense**
- 1999-2005 "Chronic Multisymptom Illness", Director, Bioassay Core, D. Clauw, M.D., principal investigator, **Department of Defense DAMD 170020018**

Modify Business Plan: Proteomics in CFS

- Introduced Proteomics for the study of CFS and related illnesses (1998)
- Expanded the study of cerebrospinal fluid in CFS (1999)
Introduced Proteomics to my institution with 1st tandem mass spectrometer (2000)
- Introduced advanced analytical tools for the investigation of biomarkers and pathophysiology of CFS (2001)
- Identified differences in patterns of urine peptides between FM, CFS/FM, and healthy control subjects by capillary electrophoresis (2002)
- Identified an unique set of cerebrospinal fluid proteins in CFS by liquid chromatography tandem mass spectrometry (2003)
- Proposed a novel hypothesis for pathophysiology of CFS based on cerebrospinal fluid and brain protein alterations (2005)

Proteomics Publications (prove track record)

Annovazzi L, Viglio S, Perani E, Baraniuk J, Casado B, Cetta G, Luisetti M, Iadarola P. Capillary electrophoresis with laser induced fluorescence detection as a novel sensitive approach for the analysis of desmosines in real samples. *Electrophoresis* 25:683-691, 2004.

Casado B, Pannell LK, Viglio S, Iadarola P, Baraniuk JN. Analysis of the sinusitis nasal lavage fluid proteome using capillary liquid chromatography interfaced to electrospray ionization quadrupole-time of flight tandem mass spectrometry. *Electrophoresis* 25:1386-1393, 2004

Casado B, Pannell KL, Iadarola P, Baraniuk J. Identification of human nasal mucus proteins using proteomics. *Proteomics* 5:2949-2959, 2005

Casado B, Iadarola P, Whalen G, Baraniuk JN. Urinary electrophoretic profiles from chronic fatigue syndrome and chronic fatigue syndrome/fibromyalgia patients: a pilot study for achieving their normalization. *J Chromatogr B Analyt Technol Biomed Life Sci* 814:43-51, 2005

Casado B, Pannell LK, Whalen G, Clauw DJ, Baraniuk JN. Human neuroglobin protein in cerebrospinal fluid. *BMC Proteome Science* 2005, 3:2, 2005

Baraniuk JN, Casado B, Maibach H, Clauw DJ, Pannell LK, Hess S. A chronic fatigue syndrome related proteome in cerebrospinal fluid. *BMC Neurology* 5:22, 2005. <http://www.biomedcentral.com/1471-2377/5/22>

12,500 “hits” on BMC website in December, 2005

Most hits for all papers in BMC Neurology until April 2006

10 proteins were unique to CFS subject cerebrospinal fluid and had potential for understanding the pathogenesis of CFS.

New R01 Application in 2003: “Cerebrospinal Fluid in CFS”

<u>Date of Report</u>	<u>Priority Score</u>	<u>Percentile</u>
Dec. 10, 2004	188	26.8
Aug. 16, 2005	277	56.7

What happened after I addressed the issues?

- New set of 5 reviewers.
- Reviewers 1, 2, 3, and 4 were in favor and found strong clinical importance for CFS.
- Reviewer 5 disliked the bioinformatics and statistics.

Reviewer 5:

“(T)his is an interesting application with considerable potential. The applicant has a strong background in CFS. Nevertheless, there is significant concern that there is insufficient expertise on the research team in the area of Bioinformatics / Computational Biology. . . mass spectrometry and physical chemistry.”

Collaborators:

Dr. Cathy Wu, Director, Protein Information Resource (pir.georgetown.edu)

Dr. Lewis Pannell, Director, Laboratory of Mass Spectrometry, Univ. S. Alabama

Dr. Habtom Resson, Electrical Engineer with Ph.D. in Biostatistics, expert in microarray and proteomic analysis including support vector machine learning

My Paranoid Concerns:

Were the clinical reviewers swayed by the suggestion of technical shortcomings? The reviewer’s points were easy to overcome.

Was the Reviewer 5 the mail-in Chemical Engineer?

Was the mail-in chemical engineer better than my electrical engineer?

Did the reviewers throw out the baby with the bathwater?

NEURO-IMMUNE MECHANISMS AND CHRONIC FATIGUE SYNDROME:

*Will understanding central mechanisms enhance
the search for the causes, consequences, and
treatment of CFS?*

A Scientific Workshop Sponsored by the
NIH Office of Research on Women's Health and
the Trans-NIH Working Group for Research on
Chronic Fatigue Syndrome

June 12-13, 2003
Bethesda, Maryland

Proteomics in CFS – The Second “Focused” Chance

- CFS Meeting, CFS specialists, CFS needs
- Need for understanding of pathophysiology of disease (my aim)
- Journalist: “I haven’t been to one of these CFS or FM meetings in 10 years, but the same people are saying the same things. Hasn’t anything changed?”

Request For Applications:

- **Title:**
Neuroimmune Mechanisms and Chronic Fatigue Syndrome
- **Announcement Type**
New
- **Request for Applications (RFA) Number:**
RFA-OD-06-002
- The RFA had specific defined goals regarding CFS.
- The goals of the RFA became the Specific Aims for my grant, in large part because my work was directed at addressing these issues.
- The RFA criteria also constrained and guided the reviewers in their review and selection process.

My Choice:

- Continue a losing battle with the “chemical engineer grant”

OR

- **Address the aims of the RFA and go for broke!**

Specific Aims

- SPECIFIC AIM 1:
- Identify patterns of proteins (“biosignatures”) that distinguish CFS from HC.

- SPECIFIC AIM 2c:
- . . . identify blood brain barrier dysfunction in CFS.

- SPECIFIC AIM 3c:
- Determine if there are multivariate relationships between the severities of specific symptoms and CFS – related proteomes.

Key Dates

- Release Date:
 - July 14, 2005
- Application Receipt Dates(s):
 - Sept. 19, 2005
- Peer Review Date(s):
 - Jan. / Feb., 2006
- Council Review Date(s):
 - May, 2006
- Earliest Anticipated Start Date:
 - July, 2006

Current Status

- **Proteomics is not genomics.** We are looking for the suite of altered proteins that are dysregulated in cerebrospinal fluid in CFS. This is the best we can do short of brain biopsies.
- Selected proteins have been identified for further investigation of their pathogenic roles in CFS and related syndromes.

Current Status

- New experimental methods are in place to increase the number of CFS – related biomarkers identified.
- A pilot treatment study has been funded based on the CFS – related proteome we discovered.
- A future grant will propose a similar treatment study and will utilize these potential CFS biomarkers to stratify subject responses to therapy.

Grantsmanship in CFS

- No. VA CFS/FM group Sat. Sept. 15, 2007:
- Much money has been expended on areas that have had little return based on patient satisfaction, the understanding of disease pathogenesis, and introduction of novel treatment concepts.
- Focus, define, refine, and clarify your text and aims.

Grantsmanship in CFS

- Make sure you chose your parents carefully.
 - Is there a consistent study section composition and even review process?
 - What other noteworthy innovations have been advanced by your competitors?
- Place your own “*Knight in Shining Armor*” on the study section.
 - Who are your research advocates?
 - Paranoia: Was there a clinical advocate who understood the innovation and potential for understanding of disease pathophysiology who could balance the nonclinical statistical objector?
- Are there ways to reduce the time grantees spend on administrative duties so more work time can be devoted to the funded research?

Grantsmanship in CFS

- Thank you very much for the:
 - **2003 CFS Workshop.**
 - Careful considerations of the needs for understanding CFS pathophysiology, and need for new treatments.
 - **2005 CFS RFA.**
 - This invitation to address “City Hall”.