

Stanford



Carol Conrad

Associate Professor of Pediatrics (Pulmonary Medicine)

Pediatrics - Pulmonary Medicine

CLINICAL OFFICES

- **Pediatric Pulmonary and Cystic Fibrosis Clinic**

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ACADEMIC CONTACT INFORMATION

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Bio

BIO

I have worked at LPCH/Stanford for over 20 years. The Pediatric Pulmonary Division has grown substantially since I began. I am the medical director of the pediatric lung and heart-lung transplantation program here at Packard Children's Stanford. The program began in 2004, and by learning from the surgeons Dr. Norm Shumway and Dr. Bruce Reitz who pioneered this life-saving procedure in the 70's and 80's, I have directed the pediatric lung transplant program independent from the adult program since 2009.

My research interests focus on lung inflammation and transplantation and have evolved to study bronchiolitis obliterans/CLAD in lung transplant recipients. My program participates in ongoing NIH- sponsored clinical interventional trials in pediatric lung transplantation.

CLINICAL FOCUS

- Pulmonary Medicine/Cystic Fibrosis, Pediatric
- Lung Transplantation
- Heart-Lung Transplantation
- Lung Inflammation
- Interstitial Lung Disease in Children
- Pediatric Pulmonary

ACADEMIC APPOINTMENTS

- Associate Professor - University Medical Line, Pediatrics - Pulmonary Medicine
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Director, Pediatric Lung and Heart-Lung Transplant Program, (2004- present)
- Director, Pediatric Pulmonary Function Lab, (1999- present)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Vice-Chair, Pediatric Heart Failure and Thoracic Committee, ISHLT (2017 - present)

PROFESSIONAL EDUCATION

- Fellowship: Johns Hopkins Pediatric Pulmonology Fellowship (1995) MD
- Residency: Childrens Hospital Los Angeles Pediatric Residency (1992) CA
- Medical Education: UCLA David Geffen School Of Medicine Registrar (1989) CA
- Board Certification: Pediatric Pulmonary, American Board of Pediatrics (1996)
- Fellow, The Johns Hopkins University , Pediatric Pulmonary Medicine (1995)
- BA, Univ. of California, Berkeley , Anatomy and Physiology (1983)
- MD, Drew-UCLA School of Medicine , Medicine (1989)

COMMUNITY AND INTERNATIONAL WORK

- Chair, Pediatric Committee of the California Thoracic Society

LINKS

- LPCH CF Center Website: <http://cfcenter.stanford.edu/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I have participated in multiple clinical studies and have contributed to the development of therapeutic interventions designed specifically for the treatment of lung disease in children and adults with CF. Initially, my research interests concentrated on gene therapy for CF. Over time, the emphasis of my research led to investigator-initiated clinical research studies which have produced the description of novel mechanisms that drive the inflammatory milieu of the CF airway. With support from the CF Research Center resources at Stanford University, the CF Foundation, and the Food and Drug Administration, I have successfully completed Phase I and Phase IIa clinical research studies to assess the efficacy of N-acetylcysteine (NAC) in a novel approach to reduce inflammation in the lungs of CF patients. Building upon the foundation of these initial trials, and with CFF support, I completed a 3-years study, and was the Principal Investigator for a Phase II, multi-center trial for NAC in CF that began in November of 2008. The results of this study are published in the November issue of the Journal of Cystic Fibrosis.

As the pulmonary division has grown over the years, my clinical and academic interests have broadened to include pediatric lung transplantation. In 2002, I subsumed the role of program director for the pediatric pulmonary lung and heart-lung transplant program at LPCH. As a result, we are the 5th largest pediatric lung and heart-lung transplant program in the United States (the 2nd largest pediatric heart-lung transplant program) and the only pediatric lung transplant center in the Southwest, West, and Northwest region of the country (not including Texas). At least 100 infants and children have been evaluated at the center for pediatric lung and heart-lung transplantation at LPCH and 37 children have received transplants in this period of time.

My career plans are to foster further growth of the center with the goal to create a translational pediatric research center for lung and heart-lung transplantation at LPCH.

This nascent field of medicine is one in which little is known of the cellular and molecular mechanisms within transplantation dynamics and where the possibilities for discovery and therapeutic advances are considerable. In this field, I have co-authored several peer-reviewed manuscripts and abstracts, and I am a PI in international studies regarding outcomes for children who have undergone lung and heart-lung transplantation. The pediatric lung and heart-lung transplant program at LPCH is one of seven sites that participated in an international prospective study funded by the Clinical Trials in Organ Transplantation in Children (CTOT-C) from the NIH that will examine the effect that viral infections may have on the mechanisms of lung allograft rejection (development of bronchiolitis obliterans, OB) in children. OB is the single most important life-limiting process affecting lung and heart-lung transplant recipients. It is a fibrosing process that obliterates the allograft airway lumen. Once the process is initiated, it is difficult to abrogate. The etiology is poorly understood, and multifactorial. Most transplant researchers agree that ischemia-

reperfusion injury (IRI) creates an abnormal cellular redox milieu that contributes to neutrophilic inflammation. Histopathologically, neutrophilic inflammation heralds the pathophysiologic consequences that result in graft failure due to OB. To date, the association of these early IRI and redox events to the occurrence of OB has not been fully investigated.

In 2014, the CTOT centers will proceed to an RDBPC study that will examine the effects of B-cell directed induction in combination with T-cell induction regimens on the effect of survival without BOS.

CLINICAL TRIALS

- Infant Study of Inhaled Saline in Cystic Fibrosis, Recruiting
- Rare Genetic Disorders of the Breathing Airways, Recruiting
- B Cell Induction in Pediatric Lung Transplantation, Not Recruiting
- NAC Phase IIB: A Multi-Center, Phase IIB, Randomized, Placebo-controlled, Double-Blind Study Of The Effects Of N-Acetylcysteine On Redox Changes and Lung Inflammation In Cystic Fibrosis Patients, Not Recruiting
- Outcome Measures in Infant/Early Childhood Lung Disease w/ Chest CT Scanning & Lung Function Testing, Not Recruiting
- The EPIC Observational Study, Not Recruiting

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Pediatric Pulmonology (Fellowship Program)

Publications

PUBLICATIONS

- **Update on pediatric lung transplantation: mir-ando into the mechanisms of chronic lung allograft dysfunction in children.** *Current opinion in organ transplantation*
Conrad, C.
2020
- **Perceived barriers to medication adherence remain stable following solid organ transplantation** *PEDIATRIC TRANSPLANTATION*
Danziger-Isakov, L., Frazier, T. W., Worley, S., Williams, N., Shellmer, D., Dharnidharka, V. R., Gupta, N. A., Ikle, D., Shemesh, E., Sweet, S. C., Harmon, W., Spaneas, L., Thakkallapalli, et al
2019; 23 (3): e13361
- **Resistin is elevated in cystic fibrosis sputum and correlates negatively with lung function** *JOURNAL OF CYSTIC FIBROSIS*
Forrest, O. A., Chopyk, D. M., Gernez, Y., Brown, M. R., Conrad, C. K., Moss, R. B., Tangpricha, V., Peng, L., Tirouvanziam, R.
2019; 18 (1): 64–70
- **A national registry for childhood interstitial and diffuse lung diseases in the United States.**
Young, L., Nevel, R., Casey, A., Fishman, M., Welsh, S., Liptzin, D., Hagood, J., Kurland, G., Craven, D., Fiorino, E., Taylor, J., Goldfarb, S., Conrad, et al
EUROPEAN RESPIRATORY SOC JOURNALS LTD.2018
- **An alternative cannulation approach for venovenous extracorporeal membrane oxygenation in children for long-term ambulatory support** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Maeda, K., Ryan, K., Conrad, C. K., Yarlagadda, V. V.
2018; 156 (1): E13–E14
- **An alternative cannulation approach for venovenous extracorporeal membrane oxygenation in children for long-term ambulatory support.** *The Journal of thoracic and cardiovascular surgery*
Maeda, K., Ryan, K., Conrad, C. K., Yarlagadda, V. V.
2018
- **Anellovirus loads are associated with outcomes in pediatric lung transplantation** *PEDIATRIC TRANSPLANTATION*
Blatter, J. A., Sweet, S. C., Conrad, C., Danziger-Isakov, L. A., Faro, A., Goldfarb, S. B., Hayes, D., Melicoff, E., Schechter, M., Storch, G., Visner, G. A., Williams, N. M., Wang, et al

2018; 22 (1)

- **Resistin is elevated in cystic fibrosis sputum and correlates negatively with lung function.** *Journal of cystic fibrosis : official journal of the European Cystic Fibrosis Society*
Forrest, O. A., Chopyk, D. M., Gernez, Y. n., Brown, M. R., Conrad, C. K., Moss, R. B., Tangpricha, V. n., Peng, L. n., Tirouvanziam, R. n.
2018
- **Lung clearance index is sensitive to small airway disease in pediatric lung transplant recipients** *JOURNAL OF HEART AND LUNG TRANSPLANTATION*
Kao, J. E., Zirbes, J. M., Conrad, C. K., Milla, C. E.
2017; 36 (9): 980-84
- **Current State of Pediatric Lung Transplantation** *LUNG*
Hayes, D., Benden, C., Sweet, S. C., Conrad, C. K.
2015; 193 (5): 629-637
- **Long-term treatment with oral N-acetylcysteine: Affects lung. function but not sputum inflammation in cystic fibrosis subjects. A phase II randomized placebo-controlled trial** *JOURNAL OF CYSTIC FIBROSIS*
Conrad, C., Lymp, J., Thompson, V., Dunn, C., DAVIES, Z., CHATFIELD, B., Nichols, D., Clancy, J., Vender, R., Egan, M. E., Quittell, L., Michelson, P., Antony, et al
2015; 14 (2): 219-227
- **Cutaneous squamous cell carcinoma in two pediatric lung transplant patients on prolonged voriconazole treatment** *PEDIATRIC TRANSPLANTATION*
Wong, J. Y., Kuzel, P., Mullen, J., Lien, D., Mahmood, M., Conrad, C., Fiorillo, L.
2014; 18 (6): E200-E207
- **Pediatric lung transplantation: promise being realized.** *Current opinion in pediatrics*
Conrad, C., Cornfield, D. N.
2014; 26 (3): 334-342
- **Association of lung function, chest radiographs and clinical features in infants with cystic fibrosis** *EUROPEAN RESPIRATORY JOURNAL*
Rosenfeld, M., Farrell, P. M., Kloster, M., Swanson, J. O., Thuy Vu, T., Brumback, L., Acton, J. D., Castile, R. G., Colin, A. A., Conrad, C. K., Hart, M. A., Kerby, G. S., Hiatt, et al
2013; 42 (6): 1545-1552
- **Metabolic Adaptation of Neutrophils in Cystic Fibrosis Airways Involves Distinct Shifts in Nutrient Transporter Expression** *JOURNAL OF IMMUNOLOGY*
Laval, J., Touhami, J., Herzenberg, L. A., Conrad, C., Taylor, N., Battini, J., Sitbon, M., Tirouvanziam, R.
2013; 190 (12): 6043-6050
- **Bilateral Lung Transplantation for Pediatric Idiopathic Pulmonary Arterial Hypertension: A Multi-Center Experience** *PEDIATRIC PULMONOLOGY*
Schaefflibaum, G., Lammers, A. E., Faro, A., Moreno-Galdo, A., Parakininkas, D., Schechter, M. G., Solomon, M., Boyer, D., Conrad, C., Frischer, T., Wong, J., Boehler, A., Benden, et al
2011; 46 (11): 1121-1127
- **METABOLITE PROFILING OF CF AIRWAY FLUID SUGGESTS A ROLE FOR CATECHOLAMINES IN EARLY AND CHRONIC DISEASE**
Gudiputi, L., Aronov, P., Makam, M., Zirbes, J., Conrad, C., Milla, C., Herzenberg, L., Moss, R., Tirouvanziam, R.
WILEY-BLACKWELL.2011: 240-240
- **Multicenter Evaluation of Infant Lung Function Tests as Cystic Fibrosis Clinical Trial Endpoints** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Davis, S. D., Rosenfeld, M., Kerby, G. S., Brumback, L., Kloster, M. H., Acton, J. D., Colin, A. A., Conrad, C. K., Hart, M. A., Hiatt, P. W., Mogayzel, P. J., Johnson, R. C., Wilcox, et al
2010; 182 (11): 1387-1397
- **Minimal acute rejection in pediatric lung transplantation - Does it matter?** *PEDIATRIC TRANSPLANTATION*
Benden, C., Faro, A., Worley, S., Arrigain, S., Aurora, P., Ballmann, M., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Mallory, G. B., Mogayzel, et al
2010; 14 (4): 534-539
- **Lung transplantation for pediatric pulmonary hypertension** *PROGRESS IN PEDIATRIC CARDIOLOGY*
Hanna, B. D., Conrad, C.

2009; 27 (1-2): 49-55

- **Cytomegalovirus Immunoglobulin Decreases the Risk of Cytomegalovirus Infection but not Disease After Pediatric Lung Transplantation** *JOURNAL OF HEART AND LUNG TRANSPLANTATION*
Ranganathan, K., Worley, S., Michaels, M. G., Arrigan, S., Aurora, P., Ballmann, M., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Mallory, G. B., Mogayzel, et al
2009; 28 (10): 1050-1056
- **Respiratory viral infections within one year after pediatric lung transplant** *TRANSPLANT INFECTIOUS DISEASE*
Liu, M., Worley, S., Arrigan, S., Aurora, P., Ballmann, M., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Mallory, G. B., Mogayzel, P. J., Parakininkas, et al
2009; 11 (4): 304-312
- **The Risk, Prevention, and Outcome of Cytomegalovirus After Pediatric Lung Transplantation** *World Transplant Congress*
Danziger-Isakov, L. A., Worley, S., Michaels, M. G., Arrigan, S., Aurora, P., Ballmann, M., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Mallory, G. B., Mogayzel, et al
LIPPINCOTT WILLIAMS & WILKINS.2009: 1541-48
- **Activation of critical, host-induced, metabolic and stress pathways marks neutrophil entry into cystic fibrosis lungs** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Makam, M., Diaz, D., Laval, J., Gernez, Y., Conrad, C. K., Dunn, C. E., Davies, Z. A., Moss, R. B., Herzenberg, L. A., Herzenberg, L. A., Tirouvanziam, R.
2009; 106 (14): 5779-5783
- **Activation of critical, host-induced, metabolic and stress pathways marks neutrophil entry into cystic fibrosis lungs** *Proc Natl Acad Sci*
Makam Megha, Diaz D, Laval J, Gernez Y, Conrad CK
2009; 106 (14): 5779
- **Increased mortality after pulmonary fungal infection within the first year after pediatric lung transplantation** *7th American Transplant Congress*
Danziger-Isakov, L. A., Worley, S., Arrigan, S., Aurora, P., Ballmann, M., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Mallory, G. B., Michaels, M. G., Michelson, et al
ELSEVIER SCIENCE INC.2008: 655-61
- **Profound functional and signaling changes in viable inflammatory neutrophils homing to cystic fibrosis airways** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Tirouvanziam, R., Gernez, Y., Conrad, C. K., Moss, R. B., Schrijver, I., Dunn, C. E., Davies, Z. A., Herzenberg, L. A., Herzenberg, L. A.
2008; 105 (11): 4335-4339
- **Variability in immunization guidelines in children before and after lung transplantation** *PEDIATRIC TRANSPLANTATION*
Benden, C., Danziger-Isakov, L. A., Astor, T., Aurora, P., Bluemchen, K., Boyer, D., Conrad, C., Eichler, I., Elidemir, O., Goldfarb, S., Michaels, M. G., Mogayzel, P. J., Mueller, et al
2007; 11 (8): 882-887
- **Novel tobramycin inhalation powder in cystic fibrosis subjects: Pharmacokinetics and safety** *PEDIATRIC PULMONOLOGY*
Geller, D. E., Konstan, M. W., Smith, J., Noonberg, S. B., Conrad, C.
2007; 42 (4): 307-313
- **Risk factors for small bowel bacterial overgrowth in cystic fibrosis** *JOURNAL OF PEDIATRIC GASTROENTEROLOGY AND NUTRITION*
Fridge, J. L., Conrad, C., Gerson, L., Castillo, R. O., Cox, K.
2007; 44 (2): 212-218
- **American society of transplantation executive summary on pediatric lung transplantation** *AMERICAN JOURNAL OF TRANSPLANTATION*
Faro, A., Mallory, G. B., Visner, G. A., Elidemir, O., Mogayzel, P. J., Danziger-Isakov, L., Michaels, M., Sweet, S., Michelson, P., Paranjape, S., Conrad, C., Waltz, D. A.
2007; 7 (2): 285-292
- **High-dose oral N-acetylcysteine, a glutathione prodrug, modulates inflammation in cystic fibrosis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Tirouvanziam, R., Conrad, C. K., Bottiglieri, T., Herzenberg, L. A., Moss, R. B., Herzenberg, L. A.
2006; 103 (12): 4628-4633
- **Mutations in the beta-subunit of the epithelial Na⁺ channel in patients with a cystic fibrosis-like syndrome** *HUMAN MOLECULAR GENETICS*
Sheridan, M. B., Fong, P. Y., Groman, J. D., Conrad, C., Flume, P., Diaz, R., Harris, C., Knowles, M., Cutting, G. R.

2005; 14 (22): 3493-3498

- **Does bacterial colonization play a role in acute respiratory failure in chronic obstructive pulmonary disease?** *CRITICAL CARE MEDICINE*
Conrad, C.
2005; 33 (9): 2130-2131
- **Evaluation of exposure and health care worker response to nebulized administration of tgAAVCF to patients with cystic fibrosis** *ANNALS OF OCCUPATIONAL HYGIENE*
Croteau, G. A., Martin, D. B., Camp, J., Yost, M., Conrad, C., Zeitlin, P. L., Heald, A. E.
2004; 48 (8): 673-681
- **Phase I trial of intranasal and endobronchial administration of a recombinant adeno-associated virus serotype 2 (rAAV2)-CFTR vector in adult cystic fibrosis patients: A two-part clinical study** *HUMAN GENE THERAPY*
Flotte, T. R., Zeitlin, P. L., Reynolds, T. C., Heald, A. E., Pedersen, P., Beck, S., Conrad, C. K., Brass-Ernst, L., Humphries, M., Sullivan, K., Wetzel, R., Taylor, G., Carter, et al
2003; 14 (11): 1079-1088
- **A phase II, double-blind, randomized, placebo-controlled clinical trial of tgAAVCF using maxillary sinus delivery in patients with cystic fibrosis with antrostomies** *HUMAN GENE THERAPY*
Wagner, J. A., Nepomuceno, I. B., Messner, A. H., Moran, M. L., Batson, E. P., DiMiceli, S., Brown, B. W., Desch, J. K., Norbash, A. M., Conrad, C. K., Guggino, W. B., Flotte, T. R., Wine, et al
2002; 13 (11): 1349-1359
- **Paradoxical vocal cord motion in a child presenting with cyanosis and respiratory failure.** *Pediatric critical care medicine*
Falco, D. A., Hammer, G. B., Conrad, C., Messner, A. H.
2002; 3 (2): 185-186
- **Clinical infection control in gene therapy: A multidisciplinary conference** *INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY*
Evans, M. E., Jordan, C. T., Chang, S. M., Conrad, C., Gerberding, J. L., Kaufman, H. L., Mayhall, C. G., Nolte, J. A., Pilaro, A. M., Sullivan, S., Weber, D. J., Wivel, N. A.
2000; 21 (10): 659-673
- **Apnea and gastroesophageal reflux in preterm and term infants: A retrospective study**
Kikkert, M. A., Conrad, C. K., Mirmiran, M., Baldwin, R. B., Ariagno, R. L.
INT PEDIATRIC RESEARCH FOUNDATION, INC.2000: 407A
- **Cisapride decreases gastroesophageal reflux in 'symptomatic' preterm infants**
Kikkert, M. A., Mirmiran, M., Conrad, C. K., Baldwin, R. B., Ariagno, R. L.
INT PEDIATRIC RESEARCH FOUNDATION, INC.2000: 407A
- **Safety and biological efficacy of an adeno-associated virus vector cystic fibrosis transmembrane regulator (AAV-CFTR) in the cystic fibrosis maxillary sinus** *11th Annual North American Cystic Fibrosis Conference*
Wagner, J. A., Messner, A. H., Moran, M. L., DAIFUKU, R., Kouyama, K., Desch, J. K., Manley, S., Norbash, A. M., Conrad, C. K., Friborg, S., Reynolds, T., Guggino, W. B., Moss, et al
JOHN WILEY & SONS INC.1999: 266-74
- **A phase I/II study of tgAAV-CF for the treatment of chronic sinusitis in patients with cystic fibrosis** *HUMAN GENE THERAPY*
Wagner, J. A., Moran, M. L., Messner, A. H., DAIFUKU, R., Conrad, C. K., Reynolds, T., Guggino, W. B., Moss, R. B., Carter, B. J., Wine, J. J., Flotte, T. R., Gardner, P.
1998; 9 (6): 889-909
- **Safety of single-dose administration of an adenoassociated virus (AAV)-CFTR vector in the primate lung** *GENE THERAPY*
Conrad, C. K., Allen, S. S., Afione, S. A., Reynolds, T. C., Beck, S. E., FeeMaki, M., BarrazaOrtiz, X., Adams, R., Askin, F. B., Carter, B. J., Guggino, W. B., Flotte, T. R.
1996; 3 (8): 658-668
- **A phase I study of an adeno-associated virus-CFTR gene vector in adult CF patients with mild lung disease** *HUMAN GENE THERAPY*
Flotte, T., Carter, B., Conrad, C., Guggino, W., Reynolds, T., Rosenstein, B., Taylor, G., Walden, S., Wetzel, R.
1996; 7 (9): 1145-1159
- **In vivo model of adeno-associated virus vector persistence and rescue** *JOURNAL OF VIROLOGY*
Afione, S. A., Conrad, C. K., Kearns, W. G., Chunduru, S., Adams, R., Reynolds, T. C., Guggino, W. B., Cutting, G. R., Carter, B. J., Flotte, T. R.

1996; 70 (5): 3235-3241

- **ALVEOLAR STEM-CELL TRANSDUCTION BY AN ADENOASSOCIATED VIRAL VECTOR** *GENE THERAPY*
Zeitlin, P. L., Chu, S., Conrad, C., MCVEIGH, U., Ferguson, K., Flotte, T. R., Guggino, W. B.
1995; 2 (9): 623-631
- **GENE-THERAPY VECTORS AS DRUG-DELIVERY SYSTEMS** *CLINICAL PHARMACOKINETICS*
Afione, S. A., Conrad, C. K., Flotte, T. R.
1995; 28 (3): 181-189
- **HEMOTHORAX IN A CHILD AS A RESULT OF COSTAL EXOSTOSIS** *PEDIATRICS*
TOMARES, S. M., Jabra, A. A., Conrad, C. K., Beauchamp, N., Phoon, C. K., Carroll, J. L.
1994; 93 (3): 523-525
- **STABLE IN-VIVO EXPRESSION OF THE CYSTIC-FIBROSIS TRANSMEMBRANE CONDUCTANCE REGULATOR WITH AN ADENOASSOCIATED VIRUS VECTOR** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Flotte, T. R., Afione, S. A., Conrad, C., McGrath, S. A., Solow, R., Oka, H., Zeitlin, P. L., Guggino, W. B., Carter, B. J.
1993; 90 (22): 10613-10617
- **PROTEINS BUT NOT AMINO-ACIDS, CARBOHYDRATES, OR FATS STIMULATE CHOLECYSTOKININ SECRETION IN THE RAT** *AMERICAN JOURNAL OF PHYSIOLOGY*
Liddle, R. A., Green, G. M., Conrad, C. K., Williams, J. A.
1986; 251 (2): G243-G248
- **REGULATION OF GASTRIC-EMPTYING IN HUMANS BY CHOLECYSTOKININ** *JOURNAL OF CLINICAL INVESTIGATION*
Liddle, R. A., Morita, E. T., Conrad, C. K., Williams, J. A.
1986; 77 (3): 992-996