Vermont Lung Center
University of Vermont

PI: Charlie Irvin PhD

P01 15557 2000-2010
P30 31158 2010-2015

www.vermontlung.org

The UNIVERSITY of VERMONT
COLLEGE OF MEDICINE

- **Lowest support in US of any state University**
- **Minimal income from gifts/endowment**
- **“Ship floating on it’s own bottom”**

Pres. Dan Fogel

Question:

Is first-class biomedical research even possible in a small, rural state like Vermont?

Vermont scientist are very competitive

Table 22. Leading States—NIH Funding, FY 2009

NIH Funding			
Leading States	Total in $ Thousands	Leading States	$ Per Capita
California	$3,852,298	Massachusetts	$429.80
Massachusetts	$2,833,927	District of Columbia	$374.76
New York	$2,318,843	Maryland	$207.24
Maryland	$1,181,164	Washington	$143.11
North Carolina	$1,141,200	Pennsylvania	$131.61
Washington	$953,722	North Carolina	$121.65
Illinois	$884,277	New York	$118.66
Ohio	$768,868	Vermont	$118.55

Source: Battelle calculations based on NIH data and U.S. Census Bureau population estimates.

Vermont is 6th in success rate at NIH 2009

Battelle Technology Partnership Practice
Battelle/BIO State Biosciences Initiatives May 2010

Vermont is a hot bed of clinical investigation

Table 23. Leading States—Clinical Trials, 2009

Clinical Trials			
Leading States	**Total Clinical Trials**	**Leading States**	**Clinical Trials Per 1 M Population**
California	1,353	District of Columbia	307
Texas	1,213	Rhode Island	138
New York	1,008	Nebraska	136
Florida	895	Maryland	126
Pennsylvania	843	Vermont	122
Ohio	735	North Dakota	117
North Carolina	732	Montana	101
Maryland	717	Massachusetts	99
Illinois	661	Utah	97
Massachusetts	650	Kansas	96

Source: Battelle calculations based on NIH data and U.S. Census Bureau population estimates.

Battelle Technology Partnership Practice
Battelle/BIO State Biosciences Initiatives May 2010

Economic Impact of NIH$ on Vermont's Economy

INVESTMENT IN NIH RESEARCH BENEFITS THE VERMONT ECONOMY

- Vermont is home to over 103 biotechnology companies, institutes, and research facilities.[1] In FY 2004-09 NIH awarded $17.9 million to Vermont biological science companies,[2] and venture capital firms invested an additional $4.1 million in biomedical firms during this period.[1]
- Research at UVM led to the formation of BioTek Instruments, which has become a global leader in microplate instrumentation and software. UVM boasts at least nine other spin-offs, including BioMosaics and Green Mountain Antibodies.
- Vermont residents held 970 jobs in the biological sciences in 2008. In Vermont, the 2008 average annual wage was $50,775 for bioscience workers compared to the private sector average of $37,567.[1]

[1] Battelle and Biotechnology Industry Organization (BIO) 2010 State Reports
[2] NIH Research Portfolio Online Reporting Tools (RePORT)

Total Job funded at least in part by NIH $ = 1,400

Between 2000 and 2009, the Vermont economy lost 4,100 jobs.

FASEB accessed Sept 2012

Jobs lost = 87

F 342645 001 12/4/98 FAIRFAX, VERMONT
The last shipment of wooden Scrabble tiles leaves the Milton Bradley Wood Products Company Friday, Nov. 4, 1998, in Fairfax, the factory's last day of operation.
PHOTO: ALDEN PELLETT / GAMMA LIAISON

The State-of-the Vermont Lung Center

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The Vermont Lung Center (VLC)

Mission/Goals

- A focal point for research in lung pathophysiology
- Education
- A multidisciplinary research
- Integration of basic, clinical and population research
- Emphasis on translational research

The Past of the VLC

- 1972-1992 NIH SCOR (Specialized Center of Research) In interstitial Lung Disease
- 1975-1980 NIH Demonstration Center in Lung Disease
- 1992 VLC ceased activities

Then came IDeA

The Current VLC

- 2000 NIH NCRR COBRE Phase I

  (Center of Biomedical Research Excellence)

- 2003 Program of the College of Medicine
- 2004 ALA-ACRC renewed
- 2002 NIH T32 Training grant awarded
- 2005 COBRE renewed Phase II
- 2008 NIH T32 Training grant renewed
- 2009 CFF TDN Heavy Center
- 2009 ALA-ACRC renewed
- 2010 COBRE renewed Phase III

Epithelial Biology and
Cell signaling

Yvonne Janssen-Heininger, Ph.D.
Professor with tenure
Department of Pathology

Overview of current areas of research:

Epithelial control of lung inflammation:

- regulation of TF, Nuclear Factor kappa B (NF-kB)
- nitrogen dioxide (NO_2), allergens

Epithelial signaling in fibrosis:

- c-Jun-N-terminal kinase (JNK)
- Fas

Redox biology in environmental lung disease:

- nitric oxide and hydrogen peroxide protein
- S-nitrosylation and protein S-glutathionylation & NF-kB

Current Funding:
NIH R01 HL079331/05-09 (PI)
NIH R01 HL074295/01-05 (Co-I)

NIH R01 HL60014/09-14 (PI) 0.2,1.0% **Score 11**
NIH R01 HL085464-01 (PI) 1.0%, **Score 10**

BA (1992) University of Vermont.

MD (1996) Tuft's Boston, MA.

Intern/Resident (1999) U Colorado, Denver, CO.

Fellow in Pulmonary Medicine (2002) Yale CT.

Cystic Fibrosis
Clinical Trials

Laurie LeClair, MD

Associate Professor with tenure
PCCM Division
Department of Medicine, Division of
Pulmonary Disease and Critical Care

Current Funding:

Cystic Fibrosis Foundation- Therapeutic Development Network
(Heavy)
Frymoyer Clinical Scholars
develop novel curriculum in simulation
Coulter Foundation Grant
novel therapeutics; collaboration with Dartmouth

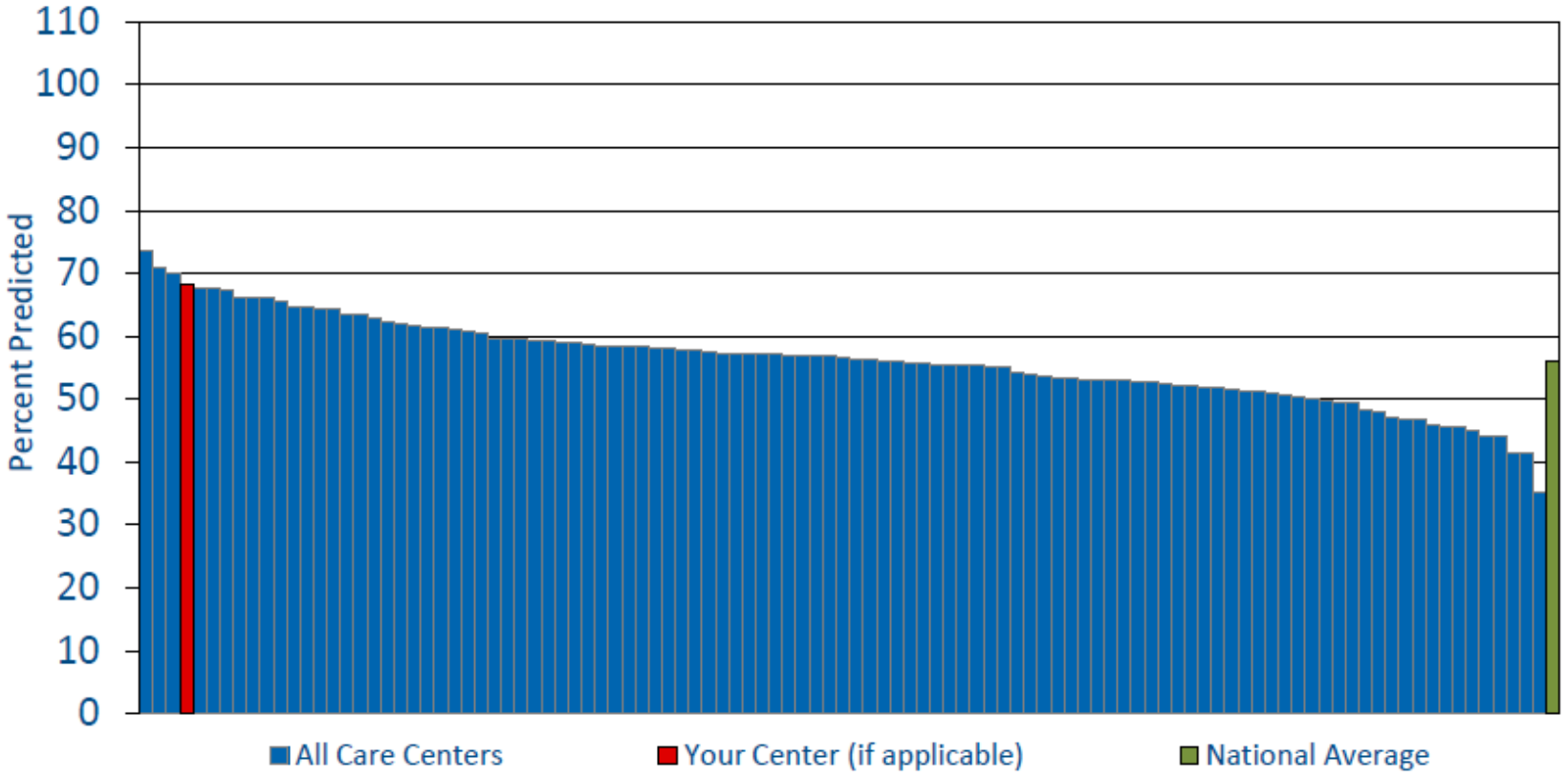
Median FEV_1 Percent Predicted for Patients 30 Years and Older, 2010

The national median = 56

The ten best performing centers average = 67.5

The Children's Specialty Center Fletcher Allen Health Care (Burlington, VT) = 68.3

(For this report a higher value is better)



Asthma
Clinical Trials

Anne Dixon, MA,BM,BCh
Associate Professor with tenure
PCCM Division Chief
Department of Medicine, Division of
Pulmonary Disease and Critical Care

Overview of current areas of research:

Asthma:

- bariatric surgery
- visceral leptin
- instrument for RS

Obesity:

- Effects on asthma medications
- adaptive and innate immunity changes

Chronic Obstructive Pulmonary Disease:

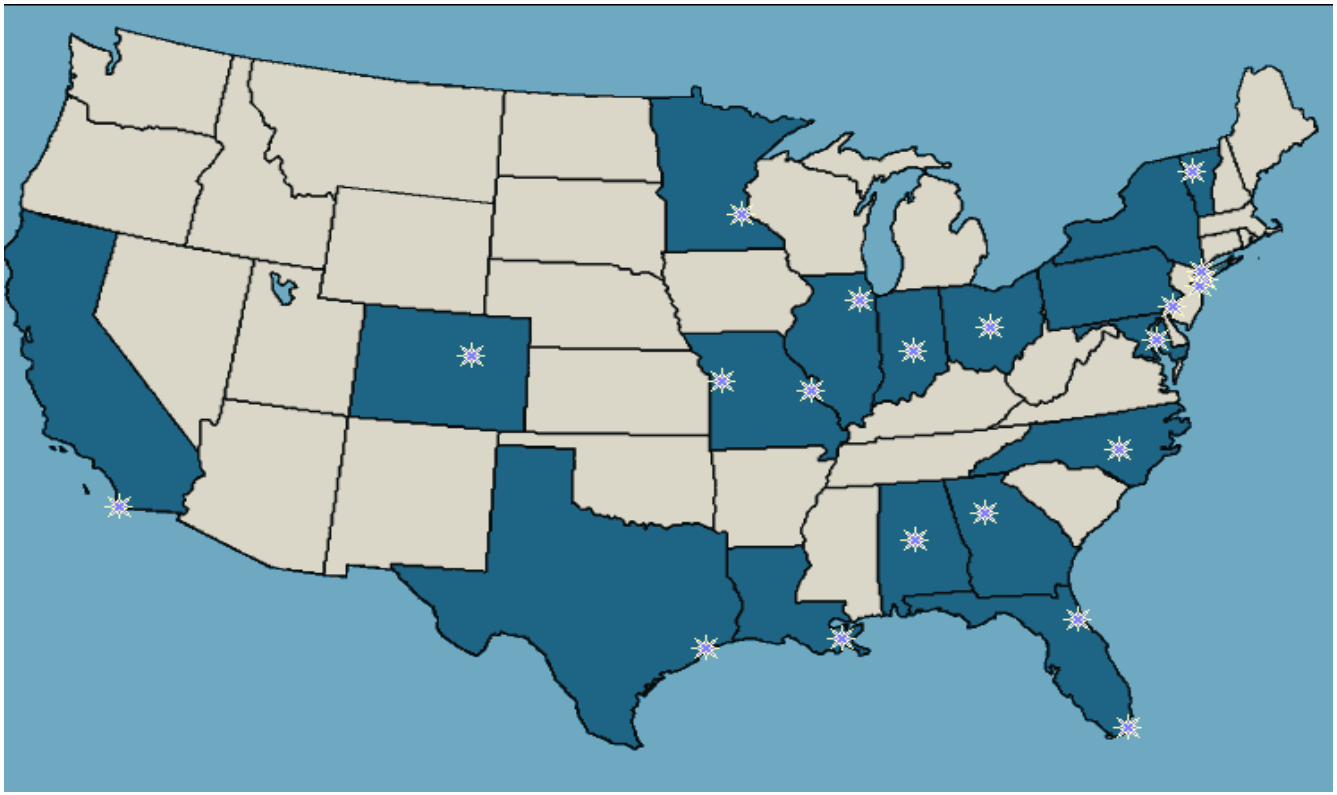
- New medications
- effects on new forms of tobacco products

Current Funding:

American Lung Association ACRC(CO-PI)
Pharma trials
***P30 RR031158-01* (Core PI)**

NIH/NHLBI U01HL089464 (PI)
STAN multicenter trial

Asthma Clinical Research Centers of the ALA



AMERICAN LUNG ASSOCIATION.
ACRC
Asthma Clinical Research Center
NETWORK

Vermont Lung Center is only Center in Northeast
Only Center in a rural location
Funded by ALA of Vermont and Congressional earmark (Sen. Jeffords)
Lead center for two of 8 protocols (STAN and LODO)

SAFETY OF INACTIVATED INFLUENZA VACCINE IN ADULTS AND CHILDREN WITH ASTHMA

New England J Med. 345:1529-1536, 2001

THE SAFETY OF INACTIVATED INFLUENZA VACCINE IN ADULTS AND CHILDREN WITH ASTHMA

FROM THE AMERICAN LUNG ASSOCIATION ASTHMA CLINICAL RESEARCH CENTERS*

Clinical Trial of Low-Dose Theophylline and Montelukast in Patients with Poorly Controlled Asthma

The American Lung Association Asthma Clinical Research Centers*

Am J Resp Crit Care Med 175:235-242 2007

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 17, 2007

New Engl J Med 356:2027 20

Randomized Com

for Reducing Treatment

The American Lung Association

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 9, 2009 VOL. 360 NO. 15

ALA-ACRC N Engl J Med 360:147 2009

Efficacy of Esomeprazole for Treatment of Poorly Controlled Asthma

The American Lung Association Asthma Clinical Research Centers*

Fletcher Allen Health Care

Level 1 Trauma Unit

1.5 million catchment

1998

5 Pulmonary and Critical Care MDs
Staff 22 bed ICU & Consult with 40 bed CC

2012

16 Pulmonary and Critical Care MD's

Dan Fogel
President, UVM

Highlights of Progress/Accomplishments

Number Faculty:	**6** (2000) - **22** (2012)
Number of personnel:	**9** (2000) - **67** (2012)
Number of grants:	**1** (1998) - **51** (2012)

During the last 5 years of funding:

Number of research grants submitted:	**378**
Number of grants awarded:	**140** (37% success rate)
Number of peer reviewed publications:	**287**
Number of total publications:	**412**
Number of research presentations:	**296**


IDeA
Institutional
Development
Award™

CONCLUSIONS: INBRE

The INBRE program has impacted thousands of students in IDeA states

Dramatically impacted both large and small institutions
- faculty and students

Science educational pipeline now reaches all Americans

CONCLUSIONS: COBRE

Built outstanding, competitive research centers

Attracted first class students, and faculty

Profoundly impacted healthcare, science and technology

A scientifically literate populous is critical to economic health

CONCLUSIONS: The IDeA Program

•Science in the IDeA STATES is first class

•The IDEA program has transformed our states'
- science
- economics
- health care

•Dramatically impacted those underrepresented in science
- Those in rural areas, native-Americans and Hispanics

•Vested our states in the mission of the NIH

CONCLUSIONS: The IDeA Program

The NIH IDeA program is the best investment Congress has ever made both scientifically and economically.

QUESTIONS?