University Cancer Research Fund

Appendix

1. Establishing Legislation
2. Cancer Research Fund Committee
2. Economic Impact Analysis Summary
3. UCRF Outreach Map
4. FY 10-11 Expenditures
5. UCRF Strategic Plan
6. List of Active Extramural Awards

Establishing Legislation

§ 116-29.1. University Cancer Research Fund

(a) Fund. – The University Cancer Research Fund is established as a special revenue fund in the Office of the President of The University of North Carolina. Allocations from the fund shall be made in the discretion of the Cancer Research Fund Committee and shall be used only for the purpose of cancer research under UNC Hospitals, the Lineberger Comprehensive Cancer Center, or both.

(b) The General Assembly finds that it is imperative that the State provide a minimum of fifty million dollars ($50,000,000) each calendar year to the University Cancer Research Fund; therefore, effective July 1 of each calendar year:

(1) Notwithstanding G.S. 143C-9-3, of the funds credited to the Tobacco Trust Account, the sum of eight million dollars ($8,000,000) is transferred from the Tobacco Trust Account to the University Cancer Research Fund and appropriated for this purpose.

(2) The funds remitted to the University Cancer Research Fund by the Secretary of Revenue from the tax on tobacco products other than cigarettes pursuant to G.S. 105-113.40A is appropriated for this purpose.

(3) An amount equal to the difference between (i) fifty million dollars ($50,000,000) and (ii) the amounts appropriated pursuant to subdivisions (1) and (2) of this subsection is appropriated from the General Fund for this purpose.

(c) Cancer Research Fund Committee. – The Cancer Research Fund Committee shall consist of five ex officio members and two appointed members. The five ex officio members shall consist of the following: (i) one member shall be the Chancellor of the University of North Carolina at Chapel Hill, (ii) one member shall be the Director of the Lineberger Comprehensive Cancer Center, (iii) one member shall be the Dean of the School of Medicine at The University of North Carolina, (iv) one member shall be the Dean of the School of Pharmacy at The University of North Carolina, and (v) one member shall be the Dean of the School of Public Health at The University of North Carolina. The remaining two members shall be appointed by a majority vote of the standing members of the Committee and shall be selected from persons holding a leadership position in a nationally prominent cancer program.

If any of the specified positions cease to exist, then the successor position shall be deemed to be substituted in the place of the former one, and the person holding the successor position shall become an ex officio member of the Committee.

(d) Chair. – The chair shall be the Chancellor of the University of North Carolina at Chapel Hill.

(e) Quorum. – A majority of the members shall constitute a quorum for the transaction of business.

(f) Meetings. – The Committee shall meet at least once in each quarter and may hold special meetings at any time and place at the call of the chair or upon the written request of at least a majority of its members. (2007-323, s. 6.23(b); 2009-451, s. 27A.5(e); 2010-31, s. 9.12.)

University Cancer Research Fund Reporting Requirement

SECTION 9.4. G.S. 116-29.1 is amended by adding a new subsection to read:

(g) Report. – By November 1 of each year, the Cancer Research Fund Committee shall provide to the Joint Legislative Education Oversight Committee and to the Office of State Budget and Management an annual financial report which shall include the following components:

(1) Accounting of expenditures of State funds related to strategic initiatives, development of infrastructure, and ongoing administrative functions.

(2) Accounting of expenditures of extramural funds related to strategic initiatives, development of infrastructure, and ongoing administrative functions.

(3) Measures of impact to the State's economy in the creation of jobs, intellectual property, and start-up companies.

(4) Other performance measures directly related to the investment of State funds. Page 80 Session Law 2011-145 House Bill 200

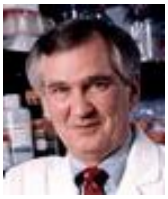
(5) Accounting of any fund balances retained by the Fund, along with information about any restrictions on the use of these funds."

Cancer Research Fund Committee

Cancer Research Fund Committee

The legislatively established Cancer Research Fund Committee, chaired by Dr. Holden Thorp, Chancellor of the University of North Carolina Chapel Hill, meets quarterly to oversee the University Cancer Research Fund. The seven-member committee includes five ex-officio members designated by the legislation who elect two at-large members. The at-large members are to be leaders at nationally prominent cancer programs. Currently, the two are Drs. Edward Benz (President and CEO, Dana Farber Cancer Institute) and John Mendelsohn (President Emeritus, MD Anderson Cancer Center).

Holden Thorp, PhD, Chairman
Chancellor
The University of North Carolina



Edward J. Benz, MD
President and Chief Executive Officer
Dana Farber Cancer Institute

Robert Blouin, PharmD
Dean
School of Pharmacy
The University of North Carolina at Chapel Hill

H. Shelton Earp, MD
Director
UNC Lineberger Comprehensive Cancer Center
The University of North Carolina at Chapel Hill

John Mendelsohn, MD
President Emeritus
The University of Texas M. D. Anderson Cancer Center

Barbara K. Rimer, DrPH
Dean
Gillings School of Global Public Health
The University of North Carolina at Chapel Hill

William L. Roper, MD, MPH
Dean, UNC School of Medicine
Vice Chancellor for Medical Affairs
CEO, UNC Health Care

Economic Impact Analysis Summary

University Cancer Research Fund Evaluation Report: Examining Economic Impact

Cancer Research Fund Committee

October 25, 2011

Joseph Lipscomb, PhD
Consultant to SRA

Cynthia Klein, PhD
Project Director

Economic Impact of UCRF – Some General Considerations

- To assess whether UCRF is achieving goal of stimulating NC economy, SRA estimated immediate and ongoing impact of UCRF investment on state income growth and employment.

- UCRF expenditures can have **Direct Impact** on income and jobs by contributing to
  - -- Employment (UCRF-supported personnel)
  - -- Capital investment and other non-personnel purchases
  - -- Extramural Research Support (by ↑ quantity & quality of applications)

- UCRF expenditures also will have **Indirect & Induced** impacts* on NC income and jobs – a "multiplier effect" as new spending creates additional spending, which creates some additional spending…….

* As operationalized in economic development models such as IMPLAN. (See references 1, 2.)

Employment Growth

From 2008 to 2011:

- UCRF directly supported 1140 FTE, including 613 faculty and senior staff at UNC-CH
- Of those, 205 were new hires or retained faculty & senior staff
- The estimated impact of UCRF expenditures on NC employment has been 5,056 new jobs

UNC Fiscal Year:	2008	2009	2010	2011	Total
JOBS CREATED ACROSS NC *	199	1019	1813	2025	**5056**

* Assumes employment multiplier of 17.25 jobs/$1 M in Direct Impact spending, consistent with U.S. Department of Commerce methodology and base-case multiplier assumption in NIH economic impact analysis (see references 2, 5).

Economic Impact: Income Growth

(All numbers in Millions)

UNC Fiscal Year:	2008	2009	2010	2011	Total
Direct Impact at UNC					
Personnel Expenditures *	3.3	16.5	25.4	26.0	**71.3**
Capital Investment and Other Non-Personnel Expenditures *	3.2	17.8	22.3	22.2	**65.4**
Extramural Research Support **	5.0	24.8	57.4	69.2	**156.4**
Total Direct Impact	11.5	59.1	105.1	117.4	**293.1**
Indirect & Induced Effects on NC Income * **	15.0	76.8	136.6	152.6	**381.0**
Total Impact on NC Income	26.5	135.9	241.7	270.0	**674.1**

* Mid-range case: assumes partial out-of-state “leakage” of fringe benefits (50%) and capital purchases (50%)
** UCRF-attributable Extramural Research Support indexed by grants received by faculty newly hired or retained (after hired or retained), plus external grants to recipients of UCRF Innovation Awards or Theme budget support.
*** Assumes Direct Impact multiplier of 1.3, consistent with recent applications. (See references 3, 4, 5.)

A Rate-of-Return Perspective

From 2008 to 2011:

- UCRF (total) Expenditures = $165.0 million

- UCRF-attributable Economic Impact
  -- Extramural Research Support = $156.4 million
  -- Indirect & Induced Effects on Income = $381.0 million
  Total = $537.4 million

- Hence, an **estimated return to NC of $3.26 per dollar spent on UCRF***, so far…..

* $537.4 million / $165.0 million = 3.26

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These estimates of UCRF economic impact are conservative, in that…..

- Current analyses encompass only the early years (including "start-up" period).
- Extramural Research Support estimates do not capture multiple indirect benefits of UCRF to grant applicants.
- In-state income generated from future UCRF-attributable technology transfer (licenses, patents, start-up companies) can and should be included.
- One factor in state economic growth is the creation of a healthier, more productive workforce. Over the long term, UCRF's impact on labor force participation, worksite productivity, and the economic burden of cancer itself can and should be evaluated.

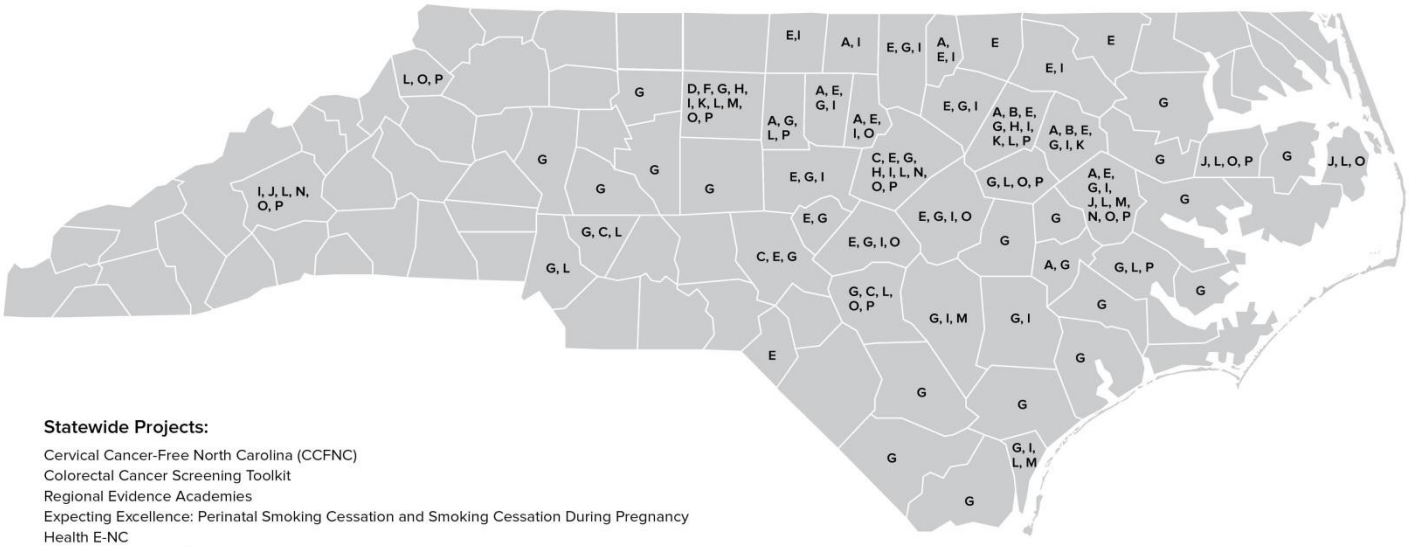
References

1. Lindall SA, Olson DC. *The IMPLAN Input-Output System.* Available at http://www.implan.com. Accessed on August 9, 2011.
2. Bureau of Economic Analysis, U.S. Department of Commerce. *Regional Input-Output Modeling System (RIM II)*. Available at: http://www.bea.gov/regional/rims/index.cfm . Accessed on August 9, 2011.
3. Association of American Medical Colleges. *The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals*. Washington D.C, September 2009.
4. Tripp Umbach. *The Impact of North Carolina Cancer Hospital on the State of North Carolina in 2010 and 2020 (Updated Analysis)*. Draft Report, Pittsburgh, PA, February 20, 2009.
5. Ehrlich, Everett. *An Economic Engine: NIH Research, Employment, and the Future of the Medical Innovation Sector.* United for Medical Research. Spring 2011.

UCRF Outreach Map

UCRF Outreach Across North Carolina

Statewide and Regional/Local Projects



Statewide Projects:

Cervical Cancer-Free North Carolina (CCFNC)
Colorectal Cancer Screening Toolkit
Regional Evidence Academies
Expecting Excellence: Perinatal Smoking Cessation and Smoking Cessation During Pregnancy
Health E-NC
UNC Health Registry/Cancer Survivorship Cohort

Regionally-focused Projects:

A – Barbershop Physical Activity Pilot
B – Breast Cancer Lay Health Advisor Training Program
C – Community Wellness & Cancer Prevention (CWCP)
D – Evaluation of the Guilford County HPV Campaign
E – Improving Breast Cancer Screening Using Evidence-Based Strategies
F – Improving Colorectal Cancer Screenings
G – Jeanne Hopkins Lucas Carolina Breast Cancer Study
H – NC TraCS & Carolina Community Network Workshop Series
I – NC SPEED Outreach Network
J – Patient Navigator Education
K – Reducing Disparities in Breast Cancer Screening
L – UNC Cancer Network — Clinical Outreach
M – UNC Lineberger Lance Armstrong Cancer Survivorship Center of Excellence
N – Research Partnerships
O – Telemedicine Sites
P – Clinical Trials Sites

FY 10-11 Expenditures

(Note: Summary only. The complete report is in an attached Excel spreadsheet)

UCRF Funding by Strategy and Expense

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Theme 1: Optimizing NC Cancer Outcomes	Budget	(2,173.13)	0.00	0.00	(2,173.13)
	Faculty Salaries	2,090,038.19	208,207.30	2,090,038.19	0.00
	EPA Student Salaries	170,506.74	16,936.35	170,506.74	0.00
	Staff Salaries	1,260,471.09	121,591.97	1,260,471.09	0.00
	Other staff	251,147.22	8,277.69	251,147.22	0.00
	Benefits	703,550.09	73,282.16	703,550.09	0.00
	Faculty/Non Faculty Benefits	173,980.14	14,060.44	173,980.14	0.00
	Phy Benefits	1,194.21	97.72	1,194.21	0.00
	Other Staff Benefits	16,693.19	1,725.04	16,693.19	0.00
	Transit Tax	305,294.26	249,597.52	305,294.26	0.00
	Consultants/Contracted Services	25,719.57	13,166.66	25,719.57	0.00
	Employee Education	1,483.41	0.00	1,483.41	0.00
	Repairs and Maint	494,643.68	416,475.70	494,643.68	0.00
	Other Current Services	342,879.25	59,956.04	278,220.42	64,658.83
	Supplies, Utilities, Other	698,285.26	241,557.23	640,538.03	57,747.23
	Travel	112,817.84	19,145.66	112,336.84	481.00
	Freight and Exp	150.28	18.71	150.28	0.00
	Maintenance Contracts	344,357.32	0.00	344,357.32	0.00
	Advertising	13,612.51	307.00	13,612.51	0.00
	Meetings & Amentites	1,052.59	342.92	1,052.59	0.00
	Printing and Binding	(13,266.68)	808.50	(13,266.68)	0.00
	Communication	61,154.47	15,409.14	53,258.92	7,895.55
	Contracted Serv	56,649.76	7,535.36	52,411.12	4,238.64
	Computer Services	3,936.67	0.00	3,936.67	0.00
	Rental/Lease Facilities	23,448.72	3,895.62	23,448.72	0.00
	Equipment	621,341.44	166,934.00	614,425.56	6,915.88
	Study Subjects & Exp	83,080.70	15,450.70	83,080.70	0.00
	Student Support	65,513.70	1,575.76	65,513.70	0.00
	#N/A	0.00	0.00	0.00	0.00
	HCS Residents	5,090.56	5,090.56	5,090.56	0.00
Theme 1: Optimizing NC Cancer Outcomes Total		**7,912,653.05**	**1,661,445.75**	**7,772,889.05**	**139,764.00**
Theme 2:Understanding Genetics in Cancer - Basic Approaches & Clinical Applications	Budget	(395,870.33)	0.00	0.00	(395,870.33)

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Theme 2:Understanding Genetics in Cancer -	Faculty Salaries	1,482,163.33	137,704.78	1,482,163.33	0.00
	EPA Student Salaries	174,221.54	22,545.29	174,221.54	0.00
	Staff Salaries	747,519.33	101,019.14	747,519.33	0.00
	Other staff	91,520.32	14,459.37	91,520.32	0.00
	Benefits	440,040.93	49,663.09	440,040.93	0.00
	HCS Contracted Serv	5,003.84	0.00	5,003.84	0.00
	Faculty/Non Faculty Benefits	151,084.53	18,105.01	151,084.53	0.00
	Phy Benefits	12,840.11	931.11	12,840.11	0.00
	Other Staff Benefits	6,914.93	616.67	6,914.93	0.00
	Transit Tax	98,978.88	1,678.31	98,978.88	0.00
	Consultants/Contracted Services	0.00	0.00	0.00	0.00
	Employee Education	507.51	0.00	507.51	0.00
	Repairs and Maint	(140,193.32)	2,935.85	(140,193.32)	0.00
	Other Current Services	374,716.45	307,730.57	371,885.95	2,830.50
	Supplies, Utilities, Other	1,186,902.77	145,562.09	1,051,945.20	134,957.57
	Travel	90,480.50	2,666.25	89,805.50	675.00
	Freight and Exp	487.70	254.07	487.70	0.00
	Maintenance Contracts	434,190.22	207,074.00	385,502.49	48,687.73
	Advertising	1,057.50	0.00	1,057.50	0.00
	Meetings & Amentites	1,690.84	477.00	1,690.84	0.00
	Transfer Computer Science	1,300,000.00	0.00	1,300,000.00	0.00
	Printing and Binding	0.00	0.00	0.00	0.00
	Communication	49,276.79	1,512.73	49,276.79	0.00
	Contracted Serv	42,764.65	0.00	42,764.65	0.00
	Computer Services	3,051.00	0.00	3,051.00	0.00
	Rental/Lease Facilities	34,032.00	34,032.00	34,032.00	0.00
	Other Fixed Charges	0.00	0.00	0.00	0.00
	Equipment	4,619,872.68	0.00	4,434,394.32	185,478.36
	Student Support	59,313.02	0.00	59,313.02	0.00
	#N/A	0.00	0.00	0.00	0.00
	Utilities	8,566.19	207.28	1,628.39	6,937.80
Theme 2:Understanding Genetics in Cancer - Basic Approaches & Clinical Applicati		**10,881,133.91**	**1,049,174.61**	**10,897,437.28**	**(16,303.37)**
Theme 3: Developing New Cancer Treatment	Budget	181,811.27	0.00	0.00	181,811.27
	Faculty Salaries	1,106,976.57	77,504.64	1,106,976.57	0.00

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Theme 3: Developing New Cancer Treatment	EPA Student Salaries	465,767.59	37,648.14	465,767.59	0.00
	Staff Salaries	667,780.89	93,665.72	667,780.89	0.00
	Other staff	58,278.39	6,693.97	58,278.39	0.00
	Benefits	381,540.09	45,201.27	381,540.09	0.00
	Faculty/Non Faculty Benefits	117,002.26	7,779.06	117,002.26	0.00
	Phy Benefits	3,206.19	273.96	3,206.19	0.00
	Other Staff Benefits	7,349.40	607.96	7,349.40	0.00
	Transit Tax	73,191.40	19,477.53	73,191.40	0.00
	Consultants/Contracted Services	17,803.75	0.00	17,803.75	0.00
	Repairs and Maint	653,693.09	464,490.48	602,558.41	51,134.68
	Other Current Services	962,422.03	70,751.13	906,522.03	55,900.00
	Supplies, Utilities, Other	1,403,069.00	396,716.75	1,341,422.74	61,646.26
	Travel	15,460.63	2,400.15	15,062.63	398.00
	Freight and Exp	1,247.31	485.89	1,197.31	50.00
	Maintenance Contracts	317,512.02	47,889.80	249,264.62	68,247.40
	Advertising	15.50	15.50	15.50	0.00
	Meetings & Amentites	0.00	0.00	0.00	0.00
	Transfer Computer Science	500,000.00	0.00	500,000.00	0.00
	Printing and Binding	5,699.89	0.00	5,699.89	0.00
	Communication	8,010.95	1,463.88	8,010.95	0.00
	Computer Services	7,845.50	7,605.50	7,845.50	0.00
	Rental/Lease Facilities	6,001.69	6,001.69	6,001.69	0.00
	Other Fixed Charges	45.12	0.00	45.12	0.00
	Rental Equipment	37,421.00	0.00	37,421.00	0.00
	Equipment	799,863.55	104,229.58	596,836.87	203,026.68
	Study Subjects & Exp	0.00	0.00	0.00	0.00
	Insurance	114.59	0.00	114.59	0.00
	Student Support	11,798.07	0.00	11,798.07	0.00
	#N/A	0.00	0.00	0.00	0.00
Theme 3: Developing New Cancer Treatment Total		**7,810,927.74**	**1,390,902.60**	**7,188,713.45**	**622,214.29**
Oppor: Opportunity Fund	Budget	(520,629.60)	0.00	0.00	(520,629.60)
	Faculty Salaries	596,596.76	(6,975.18)	596,596.76	0.00
	EPA Student Salaries	552,865.51	(4,182.03)	552,865.51	0.00
	Staff Salaries	229,099.94	145,993.32	229,099.94	0.00
	Other staff	60,945.85	38,552.72	60,945.85	0.00

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Oppor: Opportunity Fund	Benefits	207,877.28	32,816.75	207,877.28	0.00
	Faculty/Non Faculty Benefits	67,249.80	9,991.82	67,249.80	0.00
	Phy Benefits	6,156.72	(3,189.65)	6,156.72	0.00
	Other Staff Benefits	15,600.91	1,801.87	15,600.91	0.00
	Transit Tax	130,217.92	11,096.01	130,217.92	0.00
	Consultants/Contracted Services	0.00	0.00	0.00	0.00
	Repairs and Maint	1,466,881.77	453,738.29	1,326,164.16	140,717.61
	Other Current Services	1,340,495.16	209,433.56	1,196,524.96	143,970.20
	Supplies, Utilities, Other	1,326,036.34	313,208.81	1,296,632.03	29,404.31
	Travel	29,383.03	3,521.89	27,421.23	1,961.80
	Freight and Exp	5,519.95	3,639.45	5,229.95	290.00
	Maintenance Contracts	104,981.73	13,147.34	96,026.73	8,955.00
	Advertising	0.00	0.00	0.00	0.00
	Meetings & Amentites	332.84	159.00	332.84	0.00
	Transfer Computer Science	0.00	0.00	0.00	0.00
	Printing and Binding	159.34	0.00	159.34	0.00
	Communication	6,763.52	1,082.85	6,763.52	0.00
	Computer Services	13,745.90	280.00	13,745.90	0.00
	Rental/Lease Facilities	0.00	0.00	0.00	0.00
	Other Fixed Charges	0.00	0.00	0.00	0.00
	Rental Equipment	0.00	0.00	0.00	0.00
	Equipment	2,790,618.89	1,078,131.43	1,844,284.47	946,334.42
	Study Subjects & Exp	0.00	0.00	0.00	0.00
	Student Support	39,228.54	36.53	39,228.54	0.00
	#N/A	0.00	0.00	0.00	0.00
Oppor: Opportunity Fund Total		**8,470,128.10**	**2,302,284.78**	**7,719,124.36**	**751,003.74**
Infra 1: Infrastructure - Clinical Excellence and Outreach	Budget	(581,837.49)	0.00	0.00	(581,837.49)
	Faculty Salaries	4,877,256.88	1,088,454.57	4,877,256.88	0.00
	EPA Student Salaries	172,489.00	16,009.17	172,489.00	0.00
	Staff Salaries	1,007,618.68	39,811.86	1,007,618.68	0.00
	Other staff	51,997.61	5,331.76	51,997.61	0.00
	Benefits	772,906.84	116,458.28	772,906.84	0.00
	HCS Contracted Serv	693,702.48	72,627.25	693,702.48	0.00
	Faculty/Non Faculty Benefits	472,835.60	125,487.90	472,835.60	0.00

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Infra 1: Infrastructure - Clinical Excellence and	Phy Benefits	232,450.85	61,313.91	232,450.85	0.00
	Other Staff Benefits	5,104.63	608.65	5,104.63	0.00
	Transit Tax	26,241.08	2,540.66	26,241.08	0.00
	Consultants/Contracted Services	34,970.77	1,980.00	34,370.77	600.00
	Repairs and Maint	8,425.11	16.25	8,425.11	0.00
	Other Current Services	530,009.71	59,740.23	458,895.29	71,114.42
	Supplies, Utilities, Other	453,056.94	48,125.08	452,282.90	774.04
	Travel	63,844.05	3,748.53	63,525.35	318.70
	Freight and Exp	1,138.00	1,013.95	1,118.00	20.00
	Maintenance Contracts	50,824.18	30,561.00	50,824.18	0.00
	Advertising	28,138.55	0.00	28,138.55	0.00
	Meetings & Amentites	5,334.88	(289.38)	5,334.88	0.00
	Printing and Binding	1,295.26	184.82	1,295.26	0.00
	Communication	29,511.00	2,223.15	29,082.67	428.33
	Contracted Serv	289.38	289.38	289.38	0.00
	Computer Services	16,928.40	535.00	16,928.40	0.00
	Rental/Lease Facilities	129,613.76	33,797.58	127,978.73	1,635.03
	Other Fixed Charges	68,170.72	56,990.00	68,170.72	0.00
	Rental Equipment	0.00	0.00	0.00	0.00
	Equipment	166,779.26	0.00	112,543.26	54,236.00
	Study Subjects & Exp	2,900.00	900.00	2,900.00	0.00
	Employee on Loan	13,076.80	0.00	13,076.80	0.00
	Student Support	16,717.81	0.00	16,717.81	0.00
	#N/A	0.00	0.00	0.00	0.00
	HCS Residents	45,266.88	0.00	45,266.88	0.00
Infra 1: Infrastructure - Clinical Excellence and Outreach Total		**9,397,057.62**	**1,768,459.60**	**9,849,768.59**	**(452,710.97)**
Infra 2: Infrastructure	Budget	(2,598,637.71)	0.00	0.00	(2,598,637.71)
	Faculty Salaries	1,532,546.62	117,272.76	1,532,546.62	0.00
	EPA Student Salaries	1,071,741.26	108,183.98	1,071,741.26	0.00
	Staff Salaries	3,316,450.74	194,816.27	3,316,450.74	0.00
	Other staff	260,235.13	12,773.22	260,235.13	0.00
	Benefits	1,197,816.50	81,353.20	1,197,816.50	0.00
	Faculty/Non Faculty Benefits	111,495.00	8,700.29	111,495.00	0.00
	Phy Benefits	2,251.11	213.25	2,251.11	0.00
	Other Staff Benefits	62,572.83	5,600.36	62,572.83	0.00

Stategy	Obj Name	Annual Budget	Current Month	Year to Date Actual	Cash Balance 2011
Infra 2: Infrastructure	Transit Tax	211,333.92	11,937.46	211,333.92	0.00
	Consultants/Contracted Services	21,623.90	2,725.81	16,164.49	5,459.41
	Employee Education	0.00	0.00	0.00	0.00
	Repairs and Maint	447,617.80	7,601.65	1,857.60	445,760.20
	Other Current Services	641,880.66	68,539.75	484,086.00	157,794.66
	Supplies, Utilities, Other	736,480.30	208,431.38	725,096.90	11,383.40
	Travel	121,996.36	20,383.05	119,984.16	2,012.20
	Freight and Exp	1,472.09	1,119.81	1,288.09	184.00
	Maintenance Contracts	385,846.36	119,410.75	379,526.36	6,320.00
	Advertising	23,115.48	0.00	23,115.48	0.00
	Meetings & Amentites	318.00	(30,528.26)	318.00	0.00
	Transfer Computer Science	45,285.56	0.00	45,285.56	0.00
	Printing and Binding	6,393.84	1,818.50	6,393.84	0.00
	Communication	28,282.35	1,118.26	28,282.35	0.00
	Contracted Serv	169,027.19	6,808.80	61,027.19	108,000.00
	Computer Services	11,287.06	535.00	11,287.06	0.00
	Rental/Lease Facilities	3,500.00	0.00	3,500.00	0.00
	Other Fixed Charges	90,836.24	96,184.74	90,836.24	0.00
	Rental Equipment	0.00	0.00	0.00	0.00
	Equipment	2,034,651.95	(69,000.00)	931,078.95	1,103,573.00
	Study Subjects & Exp	2,929.20	455.72	2,929.20	0.00
	Employee on Loan	7,104.90	0.00	7,104.90	0.00
	Insurance	0.00	0.00	0.00	0.00
	Student Support	296,733.17	431.39	296,733.17	0.00
	#N/A	0.00	0.00	0.00	0.00
Infra 2: Infrastructure Total		**10,244,187.81**	**976,887.14**	**11,002,338.65**	**(758,150.84)**
Grand Total		**54,716,088.23**	**9,149,154.48**	**54,430,271.38**	**285,816.85**

UCRF Strategic Plan

UCRF Strategic Plan Overview
Table of Contents

UCRF Strategic Plan Overview

Background and Context

Introduction

Cancer has overtaken heart disease as the leading cause of death in North Carolina. An estimated 40 percent of North Carolinians will develop cancer during their lifetimes. Approximately 46,416 North Carolinians are projected to receive a cancer diagnosis in 2009 with 18,277 projected cancer deaths this year. These numbers will increase as the population ages unless cancer prevention, early detection, and therapeutic research intervene. And as with other diseases, the impact of cancer falls disproportionately on disadvantaged communities. For example, African-Americans in North Carolina experience higher cancer incidence and mortality rates compared with other groups.

This growing challenge motivated the state legislature to fund the NC Cancer Hospital and, in August 2007, to create the University Cancer Research Fund (UCRF) "only for the purpose of cancer research under UNC Hospitals, the Lineberger Comprehensive Cancer Center, or both." With up to $50 million of funding per year from the Tobacco Trust Fund, an increased tax on smokeless tobacco products, and general revenue, the UCRF provides a unique opportunity to develop leading national (and international) cancer research and innovation while improving cancer outcomes for the people of North Carolina.

> "The UCRF's mission is to ensure that future generations of North Carolinians will develop cancer less often and live longer and better when they do. Research creates new knowledge, turns that knowledge into innovative treatment, screening, and prevention, and then assures delivery of innovations across the state – that research is the key unlocking the doors to a new and better future. The UCRF is helping make that research possible." (UCRF 2007-2008 Annual Report)

Strategic planning process overview

In order to most effectively realize the vision of improving cancer outcomes in North Carolina and to maximize the return on the State's investment, UNC and its Lineberger Comprehensive Cancer Center (LCCC) sought to develop a UCRF strategic plan, with a focus on clear goals with measurable outcomes and metrics of success. To that end, the strategic planning firm AltshulerGray was hired to lead the planning process and SRA International was retained to develop an evaluation plan.

AltshulerGray consultants worked with the LCCC Program Planning Committee (PPC) to establish a two-phase process that included a range of university stakeholders as well as outside experts. The initial phase included interviews with 50 internal and external stakeholders, a survey of 243 UNC faculty members, and six listening sessions conducted by UNC leaders to gather feedback from communities across the state, in addition to regular meetings of the PPC and reports to the UNC Oversight Committee, chaired by

Dean and Health System CEO Bill Roper, and the governance committee by the UCRF statute, the Cancer Research Fund Committee, chaired by President Erskine Bowles. (See Appendix A for the membership of the Cancer Research Fund Committee, the UNC Oversight Committee, and the LCCC Program Planning Committee.) This outreach and extensive faculty input built consensus around a vision, guiding principles, and a framework to help determine initial research strategies. The result was the definition of a three-tier investment strategy for UCRF funds, comprised of *Research Priorities*, an *Opportunity Fund*, and *Critical Infrastructure*, described in greater detail below.

Initial faculty feedback and subsequent discussions led to the identification of a list of potential research priorities. (See Appendix B.) These opportunities were evaluated according to three criteria:

- Will it address the needs of North Carolina, in terms of the goal of reducing the cancer burden in the state?
- Can we be world class at it? (Does it build on existing strengths, and is there an opportunity to lead?)
- Is there a strong economic model/justification for UCRF investment?

As a result of extensive analysis and faculty feedback, including a faculty-wide survey, three interconnected thematic research priorities were identified as the initial key strategic focus areas:

Understanding Genetics and its Role in Cancer Causation and Treatment, Developing New Cancer Treatments, and
***Optimizing NC Cancer Outcomes*.**

These three areas were the top priority areas identified in the faculty survey. (See Appendix C for survey results.)

In the second phase of strategic planning, three "theme teams" comprised of 5-7 faculty were charged with creating strategic and investment plans for each prioritized research area. In addition to laying out a vision of what would be possible with focused investment, the teams were asked to delineate the rationale for investment (i.e., why should this be done now, and why at UNC), current strengths and gaps at UNC, a potential funding model (e.g., how UCRF investment would be expected to generate increased funding from other sources, such as federal funding), and an implementation and launch plan. External experts from leading centers across the U.S. are being brought in to review the plans and provide constructive feedback to the proposals. (See Appendix D for list of external advisors.)

At the same time, faculty groups were convened to evaluate opportunities for disease-focused UCRF investment. 51 faculty members served on 12 disease teams. Each team produced a report outlining the opportunities and resource needs for its specific disease area and highlighting how research in these areas could best leverage investments in the three prioritized research initiatives. The theme teams used this disease team input to further refine their own plans. Critical needs identified by the disease teams to bolster clinical excellence and outreach – essential for conducting UNC and state-wide clinical cancer research – were considered as part of the planning for UCRF critical infrastructure investment.

Guiding principles and philosophy

Based on the stakeholder interviews in the first phase of strategic planning, the PPC developed guiding principles for investment:

- The UCRF should fund breakthrough innovation and excellence in cancer research, propelling UNC to national and international leadership
- UCRF research should focus on areas of great concern to the citizens of North Carolina
- UCRF research should have a real and tangible impact on the health of the state of North Carolina and beyond

Following from these guiding principles, a clear set of ground rules was established for determining how UCRF funds would be best spent. Specifically, it was agreed that UCRF funds *should*:

- Focus major resources on a limited set of opportunities in order to have the greatest impact
- Fund initiatives where UNC has the opportunity to establish a leadership position
- Be catalytic, self-sustaining, and provide leverage for additional funding from extramural sources
- Build fundamental cancer-related research capabilities that benefit UNC research programs
- Enhance North Carolina's economy by creating jobs, intellectual property, and start-up companies.

At the same time, it was agreed that UCRF funds *should not*:

- Invest diffusely in an attempt to make incremental improvements everywhere
- Provide in perpetuity funding that would limit future flexibility
- Undermine faculty innovation and competitiveness by eliminating the need for extramural grant funding
- Substitute for existing university or health system funding or new philanthropy
- Make expenditures based upon institutional or other needs outside cancer research.
- Negatively impact other research on campus, for example by appropriating shared research infrastructure or resources

Strategy Overview

The UCRF strategic plan is comprised of three tiers: Research Priorities, Opportunity Fund and Critical Infrastructure Fund.

The term *Research Priorities* refers to a limited number of initiatives, where with focused investment in major scientific programs, disease-based initiatives, or cutting-edge research platforms, UNC could have a substantial impact and achieve recognition as a world leader.

The initial UCRF research priorities are:

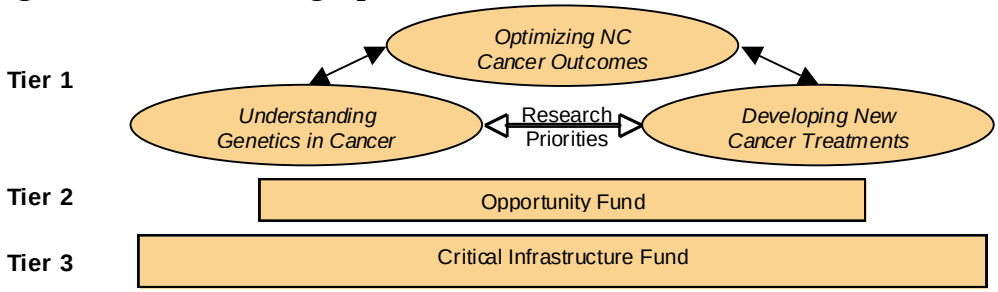
- Understanding Genetics and its Role in Cancer Causation and Treatment
- Developing New Cancer Treatments, and
- Optimizing NC Cancer Outcomes.

The first two will interrelate, making fundamental observations that will, as quickly as possible, be turned into clinical applications. The third will seek to understand North Carolina's cancer problem at a level unprecedented in the United States, and design research interventions to rectify these problems at the community, health system, and practice level.

The *Opportunity Fund* will ensure that the UCRF will remain nimble, allowing the opportunistic pursuit of programs, projects and capability development that cannot be foreseen in a strategic plan and would expand the capacity of the major initiatives.

Finally, the *Critical Infrastructure Fund* will enable these major initiatives by providing critical resources for cancer research that are not readily obtainable by extramural funding but upon which future progress relies. (See Figure A).

Figure A. UCRF strategic plan three-tier structure



Further detail on each of these strategic investment areas is provided below.

Research priorities

Supporting high-priority research is at the core of the UCRF strategic plan, as reflected in the guiding principles described above. In considering which areas to identify as initial research priorities, the PPC and UNC leadership assessed the relative merits of selecting specific cancer types or broader research themes. Understanding that basic and clinical discoveries often cut across multiple diseases, it was concluded that the UCRF would have the greatest impact if structured around addressing a set of critical research questions that could catalyze breakthroughs in all cancer types while extending the reach of UCRF investment beyond the fund itself (e.g. through resource acquisition and development available to all UNC). Nevertheless, disease-specific UCRF investment is seen as critical, and will occur within the initiatives, as well as via the Opportunity Fund and the clinical excellence infrastructure investment. Creating individual clinical/ translational research efforts led by visible clinician-scientists will be central to the national recognition to which UNC, with the help of UCRF, aspires.

A broad review of UNC strengths and key opportunities led to the selection of *Understanding Genetics and its Role in Cancer Causation and Treatment*, *Developing New Cancer Treatments*, and *Optimizing NC Cancer Outcomes* as the three initial research priorities. These three research themes span the basic, clinical, and public health research spectrum, but in a focused manner that will add critical knowledge – from improving our understanding of the underlying causes and progression of cancer, to developing novel therapies based on this new understanding, to optimizing the

dissemination and delivery of state-of-the-art care to the citizens of North Carolina. An overview of each thematic initiative is provided below.

Understanding Genetics and its Role in Cancer Causation and Treatment

Goal: To discover the genes that predispose families to cancer, and cancer patients to poor treatment outcomes. To investigate the mutant genes in specific cancer subtypes that lead to cancer therapy failure.

Why do certain cancers run in some families and not others? Why do patients respond to treatment differently? The answer to these questions lies in the genes we inherit from our parents. And cancer itself is caused by the mutation of these inherited genes. Although tremendous progress has been made in our understanding of genetics over the past two decades culminating in the sequencing of the entire human genome, these advances have not been sufficiently focused on the practical matter of human health and have yet to enter the clinical arena and tangibly improve the care of patients. Integrating basic research with clinical care will enable us to detect earlier and more curable forms of cancer and to develop more effective, highly targeted therapies. With significant expertise across the genetic spectrum enhanced by extraordinary support from UCRF, UNC is well positioned to realize the promise of the "Genetic Revolution".

The UCRF Cancer Genetics initiative will seek to track down inherited differences to determine whom to target for early detection, prevention and specific therapies, and will identify the derangements in individuals' tumors in order to individualize therapy. The initiative will pursue these goals by integrating and expanding existing strengths at UNC in genetic and molecular analysis from basic science through clinical application, and enabling integrated, high-throughput analyses. This vision will be realized through strategic recruitment of faculty in emerging fields, farsighted investment in cutting-edge technology, enhanced organizational capability for integrative analysis, and a focus on cancers that are especially amenable to this approach. This collaborative and multi-disciplinary strategy will incorporate disparate disciplines into a unified effort with the ultimate goal of improving our ability to prevent, detect, and treat cancer in North Carolina and beyond. This strategy will also provide fundamental knowledge upon which the next initiative will base its attempt to create new therapies.

Greater detail on the vision and plan for the UCRF cancer genetic/genomics effort will be provided in Appendix F.

Developing New Cancer Treatments

Goal: To devise novel therapies targeted to the specific vulnerabilities of treatment resistant cancers. To develop new ways of delivering therapeutic agents to reduce toxic side effects for all patients.

Of the 1.5 million people who will get cancer next year, fully 500,000 will die with untreatable forms of cancer. Some who receive curative treatment will have to live with debilitating side effects. Clearly, today's armamentarium is insufficient to deal with

many forms of advanced cancer. In addition, our therapies need to be based on biologic principles rendering them more effective and less toxic. Tremendous progress in our understanding of cancer has set the stage for new methods. However, it is true that many elegant basic cancer research observations never prove of value in the clinic. For example, although nearly 50,000 papers have been published on p53, a protein that is known to be involved in preventing cancer, our understanding of how to exploit this molecule for therapeutic endpoints remains virtually nil. For a novel discovery to benefit an actual human cancer patient, the new understanding must provide a "druggable" approach to therapy – the overriding challenge with regard to curing cancer.

The UCRF New Cancer Treatments initiative will seek to devise novel therapies targeted to the specific vulnerabilities of cancers, to prevent the emergence of resistant cancer cells and to eliminate the small proportion of cancer initiating cells which appear to prevent cancer cure by evading therapy and repopulating tumor sites. To reduce the toxicity of existing and novel therapies, research will also focus on new ways of delivering those drugs. In doing so, it will become the model for academic drug discovery and delivery research in cancer, providing an outlet for UNC investigators to test innovative ideas in drug development, which will improve delivery and efficacy of cancer therapies. Through a framework of collaboration and significant financial support for new therapeutic ideas, this initiative will 1) find and convincingly validate new targets for cancer therapies, 2) develop small molecule compounds to modulate identified targets, and 3) provide better delivery and formulation of promising therapeutics.

As a result of these efforts, patients at our hospital will initially benefit from a larger portfolio of novel clinical trials involving agents that underwent some portion of pre-clinical development at UNC. In the longer term, we expect to see this initiative bring new start-up companies to the region that will employ North Carolinians, attract venture and federal funding, and eventually lead to discoveries with the potential to treat, ameliorate, and possibly even cure cancer.

Appendix G will detail the vision and plan for the UCRF New Cancer Treatments initiative.

Optimizing NC Cancer Outcomes

Goal: To use the state of North Carolina as a laboratory tracking the occurrence and treatment of cancer through data systems and large population- and hospital-based studies. To use these data to initiate research aimed at improving community prevention, early detection in the population, and the quality of oncology and survivor care.

There is a strong evidence base of prevention, early detection, and quality-of-care precepts that, if applied uniformly, would improve cancer outcomes and reduce the burden of cancer in North Carolina. But while advances in medical care and treatment have had a notable impact on improving cancer outcomes in some areas, there remain enormous challenges in closing the gap between what is known to work to reduce cancer burden and what actually takes place. In addition, the application of prevention and quality care are not uniform across our state or among its constituent populations.

As an additional opportunity for this UCRF initiative, the nation is about to undergo health care reform, and many are concerned about the potential "rationing" of critical cancer care services. Thus, the time is especially ripe to answer the questions: What works in cancer prevention and early detection? How do we make it cost effective? Do cancer risk factors and outcomes vary across our state? How do we ensure that lower socioeconomic populations receive the best preventive and cancer care services? And how do we get doctors and health departments to adopt evidence-based practices?

The UCRF Optimizing Cancer Outcomes initiative will seek to optimize cancer outcomes in North Carolina by conducting innovative research to understand how best to deliver preventative and early detection services and high quality care in populations. Working in settings that range from rural communities to physician practices to local governments, researchers from UNC's nation-leading Schools of Public Health and Medicine will systematically design, test, disseminate, implement, and evaluate methods to identify and modify cancer risk factors to ensure that all North Carolinians have an opportunity to lower their cancer risk, get appropriate treatment and to improve the quality and length of life for cancer survivors. Findings and practices found to be effective will be disseminated and implemented across the state.

UCRF funds will make this work possible by enabling 1) the creation of a unique, comprehensive cancer information data system that tracks cancer patients, cancer services, and cancer treatment outcomes at a level of detail unprecedented in the United States; 2) the accrual of a 10,000 cancer patient cohort at UNC Hospitals to investigate many questions related to cancer outcomes among cancer survivors including response to therapy, 3) nation-leading research in population health disparities that lead to different cancer risk profiles and poorer outcomes among African Americans and lower socioeconomic status North Carolinians; and 4) research into cost effective methods to increase adoption of evidence-based cancer prevention, early-detection, and quality of care practices by individuals, communities, health systems, and providers. Since no such fully integrated and interactive system exists in the United States as envisioned here, North Carolina will be able to assume a true leadership position in this critical area.

Appendix H will provide greater detail.

Opportunity Fund

Goal: To promote innovation broadly by funding novel approaches and taking advantage of emerging technologies. To sponsor recruitments that bring new directions to the research initiatives and contribute to the overall UCRF mission.

The UCRF is committed to ongoing innovation and renewal. Recognizing that science is dynamic and that a research-focused strategic plan must be nimble, the UCRF will designate funds to support emerging opportunities outside the initial three identified research priorities. This Opportunity Fund will consist of three main components: a competitive peer-reviewed innovative pilot projects program; a competitive peer-reviewed technology and equipment acquisition program; and support for high-profile faculty with significant potential to enhance the UCRF's mission.

Innovative Pilot Projects

This competitive peer-reviewed effort continues the successful Innovation Award program ongoing during the UCRF's first two years. Projects funded by the Innovation Awards have and will continue to produce data that allow researchers to obtain external funding to expand their research. Opportunity Fund pilot projects will complement those funded by the three research priority initiatives, diversify the UCRF's portfolio of innovative cancer research, and build research funding and excellence at UNC. Moreover, the Opportunity Fund pilot projects will provide an antidote to the current extramural peer-reviewed funding systems, which has been criticized for its conservative investment in incremental, rather than innovative, research.

Innovative Technology and Equipment

Being at the technologic-forefront increasingly distinguishes leading research universities from the rest and provides a competitive advantage in research funding. Leading-edge techniques enable leading-edge research and discovery. The Opportunity Fund technology and equipment program will support the acquisition of novel, leading-edge technology and equipment for the use by multiple faculty members and the development of shared research resources. As with the Innovation Awards, this program will be competitive and rigorously peer-reviewed.

High-Impact Faculty Recruitment

UNC has the opportunity to attract faculty with significant potential for a positive effect on the UCRF mission – but who do not fit neatly into one of the three research priorities. This third portion of the Opportunity Fund will support the opportunistic recruitment of promising or established faculty. For example, the vast majority of our patients who die do so from metastatic cancer. The mutant genes driving metastasis will be the purview of the Cancer Genetics initiative and the drugging of targets promoting metastasis will be an outstanding aim for the New Cancer Treatments initiative. The Opportunity Fund will seed the recruitment of scientists in epithelial motility, metastasis genes, cell signaling systems biology, etc. and would enable the major research initiatives as well as the disease-specific programs. Opportunity Fund recruits over the next five years will include fundamental, translational, and population scientists. Prominent academic clinicians would be a high priority. They will propel UNC to national leadership in a particular clinical care specialty while helping to anchor a research program in that specialty.

Critical Infrastructure Fund

Goal: To expand the clinical care and research excellence of our faculty and provide all UNC researchers with the core resources necessary for clinical and translational cancer research. To initiate and maintain an outreach program beyond UNC for performing clinical care and quality of care research. To develop core resources in imaging, informatics, and fundamental research that will serve all faculty members. To plan and implement the UCRF research effort including its cancer research educational mission.

Innovative cancer research builds upon and is promoted by a strong, underlying infrastructure. External funding (NIH, etc) to enhance this infrastructure is lacking, despite acknowledgement that a healthy and proactively advanced research infrastructure

is critical to innovative research and necessary to compete successfully for external research funding. To complement the three research priority initiatives and the Opportunity Fund, the UCRF will establish a Critical Infrastructure Fund. Initially, this Fund will focus on four critical underlying research infrastructure components: clinical excellence and outreach, informatics, imaging, and key existing shared research resources and services. Investing in this critical infrastructure will enable and enhance not only UNC's cancer research; it will also strengthen the infrastructure and effectiveness of the campus's entire research enterprise.

Clinical Excellence and Outreach

Maintaining a strong foundation of quality cancer care and outreach at UNC Chapel Hill is critical for enabling leading-edge clinical research and its successful translation into community practice. The new NC Cancer Hospital provides an ideal setting for pioneering clinical research. The Critical Infrastructure Fund will help UNC recruit oncologists to expand the patient base for enhanced clinical and translational research. In addition, the NC Cancer Hospital, combined with UCRF Infrastructure support, will provide the videoconferencing/telemedicine hub that links UNC with cancer centers and oncologists across the state. These links and other services will increase physician collaboration, both promoting research and patient care quality, while increasing statewide access to UNC clinical trials.

Informatics

Modern research methods, such as high-throughput sequencing and other genomics approaches, generate vast pools of data. Informatics is the alchemy transforms that base information into knowledge. Informatics takes raw output from across the research spectrum and creates well-characterized, well-managed data from across the spectrum of research that can be powerfully linked together and then mined and analyzed. Although fundamental to innovative science and the UCRF's research priorities, informatics, particularly bio-and clinical informatics, is in short supply at UNC and at most research institutions. The Critical Infrastructure Fund will support development of informatics at UNC by recruiting faculty scientists who can push the envelope of this emerging field.

Imaging

In the years ahead, imaging will drive many vital advances in cancer research, diagnosis and treatment. By providing researchers and clinicians with the ability to literally see in real-time the cancer tumor inside the patient (or animal, in the case of research), powerful new imaging technologies offer significant promise of diagnosing cancer earlier than previously possible and of more closely monitoring response to treatment (whether experimental, or in the clinic). UNC is extremely well-positioned to lead in developing and applying these new imaging capabilities via its Biomedical Research Imaging Center and the under-construction Imaging Research Building. Supported by a forward-looking investment from the State of NC, the Imaging Research Building will be the largest research facility on campus. The UCRF will leverage this investment by the state and others by supporting purchase of key equipment and the recruitment of leading faculty and staff. The Imaging Research building will also have designated space for expanding the Developing New Cancer Therapies/Initiative both for drug development and nanomedicine as well as additional wet lab cancer research space.

Other Resources and Services

UCRF Critical Infrastructure funds will also help develop and expand other key research core facilities (such as tissue procurement and proteomics), clinical trials infrastructure, trainee support for the next generation of researchers, and research administration (including clinical trial contracting, clinical research administration, and other research administration). These resources will directly benefit the three research priorities, but will also have a broader impact -- benefiting all UNC researchers as well as partners outside of the university.

***

Taken together, the three-tiered UCRF investment strategy ensures that UNC maintains a strong focus on a few key areas where it can leverage existing strengths, achieve breakthrough results in cancer research, *and* make a tangible impact on cancer outcomes in North Carolina and beyond.

Investment Plan

In the first two years of the UCRF, while a long-term strategic and investment plan was being developed, funds were directed towards building or expanding clinical excellence to prepare for the opening of the North Carolina Cancer Hospital; critical research infrastructure; basic, population and clinical science faculty; the technological base for topnotch genetic and animal models cancer research; and a state-wide outreach program for both clinical and public health research. Key faculty recruitments and retention in areas of UNC strength were accomplished in the first two years. Many of these initial investments were prescient, laying important groundwork for what have now been identified as UCRF strategic priorities. The investment plan presented in this document begins in year 3 of the UCRF, with a fully-funded budget of $50 million per year, but builds on the critical investments of the first two years.

For the next five years the Strategic Plan would, on average, allocate $8 million yearly to the three initiatives (Cancer Genetics, New Cancer Treatments and Optimizing Cancer Outcomes). These initiatives will benefit, as will all UNC cancer research, from the $16-17 million yearly Critical Infrastructure investments in clinical excellence faculty recruitment, clinical and translational research core resources, and imaging and informatics. A $9-10 million Opportunity Fund will drive innovation, technology development and translational research opportunities that initially fall outside the research themes. The interrelatedness of cancer biology and discovery, and their translation from model systems to human applicability make it highly likely that research initiatives will also benefit from these recruitments and investments in innovation.

To accomplish the aims of UCRF in each of its three-tiered components, faculty must seek extramural funding to expand the overall capacity of UNC cancer research. The objective is for the UCRF investment to produce funding replacing existing expenditures, thereby freeing up UCRF funds for re-investments. Cancer research is a dynamic process and UCRF investments, if used correctly, will be catalytic in not only expanding the size of UNC's overall cancer research effort but also its accomplishments and reputation.

Appendix E will provide the UCRF five-year investment plan.

Organization and Implementation

The Cancer Research Committee—Erskine Bowles, Chair

The legislation creating the UCRF specified that allocations be made at the discretion of a Cancer Research Committee that would consist of five ex officio members and two appointed members. The five ex officio members are the President of The University of North Carolina, the Director of the Lineberger Comprehensive Cancer Center, and the Deans of the School of Medicine, School of Pharmacy, and School of Public Health. The remaining two members shall be selected from persons holding a leadership position in a nationally prominent cancer program. This group elected Ed Benz, President of Dana

Farber Cancer Institute, and John Mendelsohn, President of MD Anderson. The Cancer Research Committee meets at least quarterly. The committee has been operating for two years and during its quarterly meetings has made decisions initiating many aspects of the research initiatives and critical infrastructure. They have received interim reports from the strategic planning process and will ultimately be responsible for approving and implementing the plan.

The Oversight Committee—William Roper, Chair

An Oversight Committee chaired by Dr. Roper, Dean of the UNC School of Medicine, CEO of the UNC Health Care System, and Vice Chancellor for Medical Affairs, provides ongoing monitoring of the UCRF. This committee includes leaders from throughout the Health Affairs Schools and the College of Arts and Sciences and is scheduled to meet quarterly to: monitor progress; provide advice on within year budget alterations; approve the award of innovation, program development, and research initiative pilot and project funding. They will also assess that expenditures and recruitments are congruent with the precepts of UCRF and the Cancer Research Committee.

UNC Lineberger Senior Leadership and Research Initiative Committees

The day-to-day management, planning, and coordination for the UCRF will be the responsibility of the LCCC senior leadership in frequent consultation with the Office of the Dean of the School of Medicine. The long-standing senior leadership team consisting of the director and associate directors for clinical research, basic science, population science, and outreach will be expanded to include the leaders of the three UCRF research initiatives. These will be considered to be at the associate director level. Each of the initiatives will be led by a committee that will consist of a rotating membership comprised of faculty members and senior scientists with specific expertise. Broad faculty input will come to the Cancer Center senior leadership through the program planning committee and the initiative leadership committees.

Other members of the senior leadership team will assume responsibility for the Opportunity Fund and Critical Infrastructure components of the UCRF. The full senior leadership will meet on a weekly basis to discuss activities and make decisions that affect the entire LCCC. Thus, UCRF leaders will be made aware of, and will participate in decision-making regarding, issues that extend beyond the UCRF. At the same time, a subcommittee of the senior leadership comprised of UCRF leaders may choose to meet to address UCRF-specific issues as they arise.

Each initiative committee will also be advised by a set of leaders in their relevant fields from top cancer centers across the United States. These advisors will meet with the committees at least yearly to review plans and observe the progress of each thematic area. These advisors will also be invited to join the LCCC Board of Scientific Advisors.

The LCCC senior leadership, in consultation with the School of Medicine Dean's Office, will develop and revise plans and propose detailed budgets for upcoming fiscal years. Those plans and budgets will be presented to the UCRF Oversight Committee, chaired by

Dean William Roper, and if approved by that committee, presented to the Cancer Research Fund Committee, chaired by UNC President Erskine Bowles.

Ensuring Success

Defining success and measuring progress

While it will be years before the full effect of North Carolina's visionary investment in cancer research will be fully evident, it will be possible, and indeed, essential, to track progress and to adjust the strategy as needed. Specifically, it will be important to assess in an ongoing way whether UCRF funds are being spent most wisely and are being clearly directed towards improving the health of North Carolinians.

Is the UCRF being invested to generate the greatest possible return?

While it is impossible to predict where research will lead and what finding will emerge, it is possible to evaluate whether funds are being invested in such a way as to maximize their return. That is the purpose of this strategic plan – to focus UCRF funds on their best use -- however, the plan may need to be modified over time.

As described above, the LCCC Board of Scientific Advisors will be asked to evaluate the scientific progress associated with UCRF investment. As part of this evaluation, they will be asked explicitly to assess whether the funds are being used most effectively.

In addition to this qualitative review, there are other, more quantitative ways of measuring whether UCRF funds are being most effectively spent. One key metric is the growth in extramural funding, and in particular, in federal research funding. If UCRF funds are spent wisely, UNC researchers will be able to compete more successfully for additional research support. An increase in federal grants will serve as an important validation of the quality and value of UCRF investments. It will also satisfy a critical goal for the UCRF articulated during the planning process – to be catalytic, self-sustaining, and provide leverage for additional funding from extramural sources.

Estimating precise increases in extramural funding levels is difficult, as the federal research budget in the last decade has been extremely variable, doubling over the first five years and remaining flat over the most recent five years. However, with substantial resources from UCRF, a good strategic plan, and continued recruitment of outstanding faculty, UNC should significantly increase its funding relative to other major public and private universities. UNC currently ranks in the top 15 nationally in funding from the National Cancer Institute with $44 million (total annual costs). Over the next seven years, we should aspire to move into the top five among cancer centers, as assessed by a combination of funding, high-impact publications, and peer assessment. Space for new recruitment is a major constraint and the BRIC building will come open in four years, thus the use of the seven year timeframe. The combination of UCRF and new space would be needed to achieve this aspiration. With respect to overall funding from federal, foundation, and private sources, which now totals ~$700 million to UNC at Chapel Hill,

it's reasonable to assume that the $50 million UCRF should at least generate a 4:1 stimulation, thus adding $200 million to the university's overall funding.

Will the UCRF directly impact the health of NC citizens?

It will take a long time before efforts can be measured as improvement in health at the state level or beyond, but important interim steps can, should, and will be tracked. In some cases, there will be clear and tangible benefits in the short term.

For example, the Optimizing NC Outcomes initiative includes activities designed to test the impact of interventions in defined communities across North Carolina, with a focus on counties that disproportionately contribute to the cancer burden in the state. If successful, these communities will see a direct benefit, and the findings will be disseminated more broadly across NC. Investments designed to bolster the level of cancer clinical care at UNC will have an immediate impact on the care of cancer patients, while providing the necessary conditions for cutting edge clinical research. The number of patients engaged in clinical trials, and thus able to benefit from important new therapies, will thus be an important metric to be tracked. Finally, the development of novel therapeutics can take years, but ultimately are expected to have widespread impact. Interim steps, as described in the New Cancer Treatments plan in Appendix G, include the development of promising drug candidates for pre-clinical and clinical testing.

An outside, independent evaluation will be conducted based on this strategic plan. A process to identify the organization that will conduct the evaluation is underway.

Contingencies that could hinder progress

Space constraints

One major potential threat to achieving UCRF goals is the current lack of adequate research space to carry out the strategic plan. This space constraint will be alleviated to some extent when two new buildings, the Imaging Research Building and the Genome Sciences Building, come on line in four years. However, the recruitment of both junior and particularly senior faculty requires more space than is currently available. This will either delay some of the major components of the plan, or interim solutions must be found. There is the potential to rent some space offsite for core facility development and expansion. In order to recruit the high-quality faculty necessary to achieve the objectives of the plan, they will need to be offered laboratory space on the Chapel Hill campus. One potential is to use some UCRF funds for renovation of campus space, for example, in the Mary Ellen Jones building, or for short-term utilization of other space being constructed on the campus, for example, the new Dental Research building. If for any reason sufficient space is not made available, this will curtail UNC's ability to recruit new faculty and to carry out the specific activities described in this strategic plan.

Ongoing evaluation and refinement of the strategic plan

While the strategic plan lays out a roadmap and expected budgetary priorities for future years, it is expected that specific opportunities and needs will require modifying these plans over time. As described above, the LCCC Executive Committee, advised by the LCCC Board of Scientific Advisors, will regularly review progress and will adjust the

plans accordingly. As well, in the fourth year of the five-year strategic plan period, UCRF leadership will undertake a thoroughgoing review of UCRF performance to date, as well as an assessment of emerging opportunities in cancer research, as part of developing a new five-year strategic plan.

Appendices

A. UCRF Committee Membership

Cancer Research Fund Committee

Erskine Bowles, Chairman
President, the University of North Carolina

Edward J. Benz, MD
President and CEO, Dana Farber Cancer Institute

Robert Blouin, PharmD
Dean, UNC School of Pharmacy

H. Shelton Earp, MD
Director, UNC Lineberger Comprehensive Cancer Center

John Mendelsohn, MD
President, The University of Texas M.D. Anderson Cancer Center

Barbara K. Rimer, DrPH
Dean, UNC Gillings School of Global Public Health

William L. Roper, MD, MPH
Dean, UNC School of Medicine

UCRF Oversight Committee

William L. Roper, MD, MPH, Chairman
Dean, UNC School of Medicine

Robert Blouin, PharmD
Dean, UNC School of Pharmacy

H. Shelton Earp, MD
Director, UNC Lineberger Comprehensive Cancer Center

Etta D. Pisano, MD
Vice Dean, Academic Affairs, UNC School of Medicine

Barbara K. Rimer, DrPH
Dean, UNC Gillings School of Global Public Health

Holden Thorp, PhD
Chancellor, the University of North Carolina

Marschall Runge, MD, PhD
Chair, Department of Medicine, UNC School of Medicine

Kevin FitzGerald, MPA
Executive Associate Dean for Finance and Administration, UNC School of Medicine

Joseph DeSimone, PhD
Chancellor's Eminent Professor of Chemistry, UNC

Tony Waldrop, PhD
Vice Chancellor for Research and Economic Development, UNC Chapel Hill

LCCC Program Planning Committee

Albert S. Baldwin, Jr., PhD
Professor, Cancer Cell Biology
LCCC Associate Director, Basic Research

Andrew F. Olshan, PhD
Professor, Cancer Epidemiology

Charles M. Perou, PhD
Associate Professor, Department of Genetics

Joseph DeSimone, PhD
Chancellor's Eminent Professor of Chemistry

Gary L. Johnson, PhD
Professor and Chair, Department of Pharmacology

Howard McLeod, PharmD
Fred Eshelman Distinguished Professor of Pharmacogenetics and Individualized Therapy
UNC Eshelman School of Pharmacy

Joel E. Tepper, MD
Professor and Chair, Department of Radiation Oncology

Jonathan S. Serody, MD
Thomas Associate Professor of Medicine and Immunology

Lisa A. Carey, MD
Associate Professor of Medicine
Medical Director of UNC Breast Center

Marci Campbell, PhD, MPH, RD
Professor, Cancer Prevention and Control

William F. Marzluff, PhD
William Rand Kenan Professor, Department of Biology

Cathy Melvin, PhD
Associate Professor, Cancer Prevention and Control

Norman E. Sharpless, MD
Associate Professor of Medicine and Genetics

Nancy Raab-Traub, PhD
Professor, Virology

Jenny Ting, PhD
Alumni Distinguished Professor, Immunology

Richard M. Goldberg, MD
Distinguished Professor, Clinical Research

Thomas C. Shea, MD
Professor of Medicine
Associate Division Chief, Division of Hematology/Oncology

Terry Magnuson, PhD
Sarah Graham Kenan Professor
Chair, Department of Genetics

David G. Kaufman, MD, PhD
Professor and Vice Chair for Research Development, Department of Pathology

Yue Xiong, PhD
William R. Kenan, Jr. Professor, Department of Biochemistry and Biophysics

B. Potential UCRF Research Priorities Considered by Planning Committee

Potential thematic areas for investment

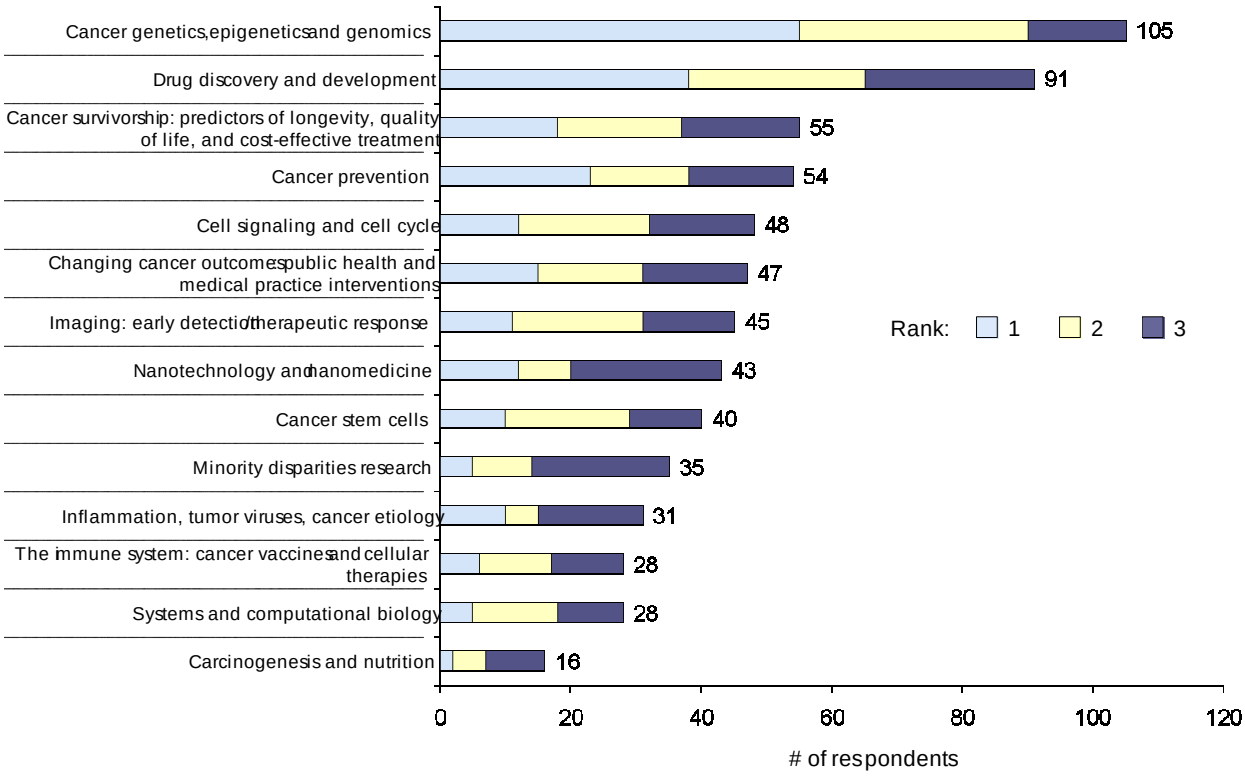
- Cancer Genetics, Epigenetics and Genomics: Basic and Applied
- Cancer Stem Cells
- Minority Disparities Research: From Biology to Health Services
- Drug Discovery and Development: New Targets, Their Structure and Novel Therapeutics
- Imaging: Early Detection and Therapeutic Response
- Inflammation, Tumor Viruses, and Cancer Etiology
- Changing Cancer Outcomes: Public Health and Medical Practice Interventions
- Cell Signaling and Cell Cycle: Pathways and Intracellular Visualization
- The Immune System: Cancer Vaccines and Cellular Therapies for Human Cancer
- Systems and Computational Biology
- Nanotechnology and Nanomedicine
- Cancer Prevention: Primary Prevention, Screening, and Early Detection Research
- Carcinogenesis and Nutrition

Potential technology/capability platforms for investment

- NC-wide collection of tissue with clinical annotation
- Upgrade and operation of genetics and genomics platforms
- Creation and assessment of animal models for drug development
- Imaging, instrumentation and analysis: from mouse to man
- Biomarkers/translational core facilities for tissue
- Improved state tumor registry and cancer surveillance
- Development and support of bioinformatics resources
- Clinical informatics: clinical database development
- Oncologist network across the state for clinical trials
- Oncology training programs
- Technology transfer and commercialization
- Microscopy: intracellular imaging and methods development

C. Faculty Survey: Top Priorities for UCRF Investment

Q. The following were suggested as potential thematic areas for major investment. Please indicate your top 3 choices. Use 1 for your top choice, 2 for your second choice, 3 for your third choice.



Source: UCRF Faculty Survey

D. UCRF Strategic Planning External Advisors

Understanding Genetics and its Role in Cancer Causation and Treatment

Peter Byers, MD
Professor, Pathology & Medicine (Medical Genetics)
University of Washington

Stacey Gabriel, PhD
Director, Genetic Analysis Platform
Broad Institute of MIT & Harvard

Allan Balmain, PhD, FRSE
Barbara Bass Bakar Distinguished Professor of Cancer Genetics
University of California, San Francisco

Developing New Cancer Treatments

R. Kiplin Guy, PhD
Chair, Chemical Biology & Therapeutics
St. Jude Children's Research Hospital

Tyler Jacks, PhD
David H. Koch Professor of Biology
Director, David H. Koch Institute for Integrative Cancer Research
Massachusetts Institute of Technology

Steven L. McKnight, PhD
Distinguished Chair in Basic Biomedical Research
Sam G. Winstead and F. Andrew Bell Distinguished Chair in Biochemistry
University of Texas Southwestern Medical Center

Karen L. Wooley, PhD
James. S. McDonnell Distinguished University Professor
Professor, School of Arts & Sciences, Department of Chemistry
Professor, School of Medicine, Department of Radiology
Washington University in St. Louis

Optimizing NC Cancer Outcomes

Graham Colditz, MD, DrPH, FAFPHM
Niess-Gain Professor of Surgery & Professor of Medicine
Department of Surgery
Associate Director Prevention and Control
Alvin J. Siteman Cancer Center
Deputy Director, Institute for Public Health
Washington University School of Medicine

Karen Emmons, PhD
Deputy Director, Center for Community Based Research
Professor, Dept of Society, Human Development & Health
Associate Dean of Research
Harvard School of Public Health

Jane Weeks, MD, MSc
Division Chief, Population Sciences
Director, Center for Outcomes and Policy Research
Professor of Medicine, Harvard Medical School

E. UCRF Investment Plan/Financial Model

University Cancer Research Fund (UCRF) - by tier and theme
All numbers $000

	2009 (Year 3)	2010	2011	2012	2013	5-year total
Resource needs						
Genetics	**$7,650**	**$10,400**	**$12,685**	**$13,240**	**$12,720**	**$56,695**
Faculty recruitment and startup	$1,400	$3,300	$4,775	$4,725	$3,975	
Research platforms / large initiatives	$4,000	$4,060	$4,440	$4,770	$5,000	
(sequencing/genotyping, survivorship cohort, bioinformatics, clinical genetics)						
Core resources	$750	$1,060	$1,165	$1,165	$1,165	
(RAM lab, collaborative cross, biostatistics)						
Innovation / project funding	$500	$1,400	$1,600	$1,800	$1,800	
(keystone projects, seed funding)						
Space, renovation, project management	$1,000	$580	$705	$780	$780	
Developing New Treatments	**$7,225**	**$10,255**	**$11,155**	**$11,855**	**$12,055**	**$52,545**
Faculty recruitment and startup	$1,150	$3,700	$4,500	$5,100	$5,300	
Research platforms / large initiatives	$2,500	$2,500	$2,500	$2,500	$2,500	
(small molecules core, mouse phase I unit, nanofabrication, tech/business devt)						
Core resources	$2,025	$2,300	$2,250	$2,150	$2,150	
(CHANL, clinical pharmacology / GLP, protein expression, animal models / imaging)						
Innovation / project funding	$1,000	$1,300	$1,400	$1,600	$1,600	
(preclinical testing, pilot projects)						
Space, renovation, project management	$550	$455	$505	$505	$505	
Optimizing NC Outcomes	**$6,375**	**$9,280**	**$10,180**	**$10,755**	**$11,155**	**$47,745**
Faculty recruitment and startup	$925	$1,900	$2,350	$2,800	$3,050	
Research platforms / large initiatives	$2,250	$3,400	$3,800	$3,900	$4,050	
(Carolina Breast Study 3, UNC survivorship, ICISS)						
Core resources	$2,000	$2,000	$2,000	$2,000	$2,000	
(community engagement, dissemination, rapid case, NC tumor registry, health communication, population biostats)						
Innovation / project funding	$500	$1,250	$1,500	$1,500	$1,500	
(NC survivorship, prevention / cancer control intervention, comparative effectiveness)						
Space, renovation, project management	$700	$730	$530	$555	$555	
Infrastructure	**$16,705**	**$17,205**	**$17,205**	**$17,205**	**$17,205**	**$85,525**
Clinical Excellence & Oncologist Recruitment	$4,630	$4,630	$4,630	$4,630	$4,630	
Clinical Research Program Development and Strategic Needs	$2,050	$2,050	$2,050	$2,050	$2,050	
Telemedicine & Outreach	$1,000	$1,500	$1,500	$1,500	$1,500	
(statewide patient navigation and survivorship, telemedicine tumor boards)						
Clinical/Translational Core Resources	$6,050	$6,050	$6,050	$6,050	$6,050	
(clinical trials network, informatics, BRIC)						
Basic Science Core Resources	$725	$725	$725	$725	$725	
Graduate Education & Training	$1,000	$1,000	$1,000	$1,000	$1,000	
Evaluation, Planning, & Research Support	$1,250	$1,250	$1,250	$1,250	$1,250	
Opportunity Fund	**$9,850**	**$10,350**	**$10,350**	**$10,350**	**$10,350**	**$51,250**
Ongoing recruitment	$2,100	$2,100	$2,100	$2,100	$2,100	
Opportunistic recruitment	$1,000	$3,000	$3,000	$3,000	$3,000	
Innovation Awards, Equipment / Technology Development, and Core Pilot Projects	$5,250	$5,250	$5,250	$5,250	$5,250	
Unassigned	$1,500	-	-	-		
Unallocated	**$2,195**	**$0**	**$0**	**$0**	**$0**	
Revenue						
Target revenue	**$0**	**$6,000**	**$10,100**	**$11,900**	**$12,000**	**$40,000**
Genetics	$0	$2,400	$4,700	$5,200	$4,700	
Treatments	$0	$2,300	$3,200	$3,900	$4,100	
Outcomes	$0	$1,300	$2,200	$2,800	$3,200	
Resource needs	**$50,000**	**$57,490**	**$61,575**	**$63,405**	**$63,485**	**$295,955**
Target revenues	**$0**	**$6,000**	**$10,100**	**$11,900**	**$12,000**	**$40,000**

Active Extramural Awards

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Allbritton, N.	NCI	1-R01-CA139599-02	4/1/2009	3/31/2014	Multiplexed Measurement of Kinase Activity in Single Cancer Cells	584,016	2007 Innovation Award
Bae-Jump, V.	NCI	K23-CA143154-02	9/1/2010	8/31/2015	Metformin as a Novel Chemotheraeutic Strategy for the Treatment of Endometrial C	170,873	2008 Innovation Award
Baron, J.	NCI	R01-CA059005-16	9/30/1993	7/31/2014	Aspirin/Folate Prevention of Large Bowel Polyps	1,193,416	Recruited Faculty
Baron, J.	U Chicago	None Assigned	5/1/2011	4/30/2016	Chemoprevention of arsenic induced skin cancer	49,636	Recruited Faculty
Baron, J.	NCI	R01-CA098286-08S1	12/1/2002	7/31/2013	Colorectal Chemoprevention with Calcium and Vitamin D	531,773	Recruited Faculty
Baron, J.	NCI	R01-CA098286-09	12/1/2002	7/31/2013	Colorectal Chemoprevention with Calcium and Vitamin D	3,480,268	Recruited Faculty
Baron, J.	NCI	None Assigned	07/01/10	06/30/15	Early Detection Research Network (EDRN) - Subcontract with University of Michigan	122,777	Recruited Faculty
Baron, J.	U Southern California	None Assigned	8/16/2010	3/31/2011	Methods of Pathway Modeling with Application to Folate	29,118	Recruited Faculty
Baron, J.	Dartmouth College	None Assigned	12/1/2010	5/31/2011	Variations in Colonsocopy Screening: A Population Based Study	9,064	Recruited Faculty
Beck, M.	NIH	R01-AI082298-01-02	4/1/2010	3/31/2013	Viral Adaptation to Host Selenium Status	366,300	Theme Investment
Blancafort, P.	DoD	W81XWH-10-1-0265	5/1/2010	4/30/2012	Re-writing the Histone Code of Breast Cancer Stem Cells 2009 - 2011, 381,390	203,000	2007 Innovation Award
Brookhart, M.	NIH	K25AG027400-05	8/1/2010	7/31/2011	Hierarchical Models of Prescription Drug Use in the Elderly	139,957	Recruited Faculty
Brookhart, MA.	Amgen	142969	12/1/2010	12/31/2012	Denosumab adherence study	50,051	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Brookhart, MA.	Amgen	138938/3100064828	11/19/2010	11/12/2011	Patterns of Anemia Management in United States Hemodialysis Population	301,379	Recruited Faculty
Brookhart, MA.	Brigham & Women's	106073/HHSA290200500161	7/19/2011	7/18/2012	Validation of inverse probability of missing data approach for the inclusion of laboratory data in healthcare database research - Contract	120,000	Recruited Faculty
Burridge, K.	NIH	R01-GM29860-30	12/1/2005	6/30/2015	Cell Adhesion and the Regulation of Rho GTPases	423,592	2007 Innovation Award
Chang SX (dual PI, Zhou O)	NCI	1RC2CA148487-01	9/30/2009	8/31/2012	Nanotechnology Enabled Desktop Image Guided Microbean Radiation Therapy System	930,295	Opportunity Fund Invesment
Chavala, S.	Hope for Vision	None Assigned	1/1/2010	12/31/2012	Hope for Vision Grant	75,000	Recruited Faculty
Chavala, S.	NIH	K08-EY021171-01	3/1/2011	2/28/2016	Regulation of adult ciliary body progenitor cells for cell replacement therapy	236,392	Recruited Faculty
Chiang, D.	Alfred P Sloan Fndn	BR-5103	9/16/2010	9/15/2012	Mechanisms of Tumor Genome Evolution	50,000	Recruited Faculty
Copenhaver, G.	NSF	MCB-1121563	8/1/2011	7/31/2014	Identifying and Characterizing Genetic Interactors of DMC1	200,000	Theme Investment
Damania, B.	NCI	1-RC2-CA149024-01	9/30/2009	8/31/2011	Development of Novel Vaccine Approach against Gammaherpesvirus Infection	497,807	Retained Faculty
Damania, B.	NIH	1-R01-DE018281-03	6/1/2007	5/31/2012	Innate Immunity and KSHV	335,090	Retained Faculty
Damania, B.	NCI	2-R01-CA096500-08	7/1/2007	5/31/2012	Role of KSHV K1 in Viral Pathogenesis	279,757	Retained Faculty
Damania, B. (Earp, HS)	NCI	P30-CA16086-35S1	12/1/2004	11/30/2015	Supplemental Funding for HIV-Associated Malignancy Research at UNC - 1	250,000	Retained Faculty
Damania, B. (Raab-Traub, N)	NCI	2-P01-CA19014-32A1	4/1/2005	9/30/2015	Herpesviral Oncogenesis, Latency and Reactivation - Project 3	369,796	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Dangl, J.	NSF	IOS-0958245	4/15/2010	3/31/2014	MSB: Defining Plant-Associated Metagenomics	2,161,592	Theme Investment
DeMore, N	NCI	5R01CA142657-02	7/1/2010	5/31/2015	SFRP2 and NFAT are Therapeutic Targets in Angiosarcoma	297,877	2007 Innovation Award
Der, C.	NCI	R21CA161494-01	7/6/2011	6/30/2013	Genetic dissection and inhibitor targeting of Rac signaling in pancreatic cancer.	193,140	2007 Innovation Award
Der, C. (Pedone)	ACS	PF-09-118-01-CSM	1/1/2010	12/31/2012	Targeting aberrant Rac signaling for melanoma treatment	44,000	2007 Innovation Award
Deshmukh, M.	NIH	1-R01-GM078366-S1	9/1/2006	8/31/2014	Apoptosis in Postmitotic Cells: Increased Regulation and Novel Checkpoints	77,591	**2007 Innovation Award**
DeSimone, J.	NIH	1R21HL092814-02	7/1/2009	6/30/2012	Biomimetic Approach to the Fabrication of Red Blood Cell Mimics for Therapeutic Applications Development of Long Circulating Particles to be Used as Drug Delivery Carriers	361,926	Retained Faculty
DeSimone, J.	NCI	5U54CA151652-02	9/20/2010	7/31/2015	Carolina Center of Nanotechnology Excellence	2,508,693	Retained Faculty
DeSimone, J.	NIH	R01EB009565-01	4/14/2009	4/15/2013	Engineered Organic Particles of Controlled Size, Shape and Surface Chemistry for the Programmed in vitro and in vivo Delivery of siRNA	329,670	Retained Faculty
DeSimone, J.	NIH	1DP1OD006432-01	9/30/2009	7/31/2014	Pioneer Award -- Delivery of Biological Therapeutics Using Engineered Particles and Novel Delivery	740,000	Retained Faculty
DeSimone, J.	Prostate Cancer Fndn	NA	6/1/2011	5/31/2013	Prostate Cancer Foundation-Honorable A. David Mazzone Special Challenge Award Research Program 2011	154,902	Retained Faculty
DeSimone, J.	NIH	R21HL096011-02	3/11/2010	2/29/2012	Red Blood Cell Mimics	179,895	Retained Faculty
Dittmer, D.	EMMES Corp	NA	8/1/2010	7/31/2015	AMC Biomarker Core	37,961	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Dittmer, D.	NIH	R01-DE018304-03	5/15/2007	4/30/2012	ART Modulation of Viral Pathogenesis in Oral Epithelia	305,055	Retained Faculty
Dittmer, D.	Leukemia & Lymphoma Soc	R6169-10	10/1/2005	9/30/2012	Pharmacogenomics of Viral Lymphomas	199,961	Retained Faculty
Dittmer, D.	NCI	R01 CA109232-07	8/14/2004	5/31/2015	Regulation of the KSHV latent promoter	234,401	Retained Faculty
Dittmer, D. (dual, Damania, B)	NCI	R01CA163217-01	9/1/2011	8/31/2016	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	305,754	Retained Faculty
Dittmer, D. (Harrington, W.)	NCI / U Miami	66249P, 66242L / R01-CA112217	9/22/2006	8/31/2011	Targeting of EBV Latency in Burkitt's Lymphoma-Subcontract with U. Miami	207,681	Retained Faculty
Dittmer, D. (Raab Traub, N.)	NCI	P01-CA19014-32A1	4/1/2005	9/30/2015	Herpesviral Oncogenesis, Latency and Reactivation - Project 4	291,273	Retained Faculty
Dittmer, D. (Raab Traub, N.)	NCI	P01-CA19014-32A1	4/1/2005	9/30/2015	Herpesviral Oncogenesis, Latency and Reactivation - Virogenomics Core	270,710	Retained Faculty
Doerschuk, C.	NIH	R37HL048160-22	4/10/1992	3/31/2012	Neutrophil Sequestration and Emigration in the Lung	370,000	Recruited Faculty
Dudley, A.	NIH	R00CA140708-04	9/1/2009	8/31/2014	Tumor endothelial cell abnormalities	249,000	Recruited Faculty
Earp, HS. (Major Recruitment)	NCI	P30CA147893-01	9/30/2009	8/31/2012	Early Stage Investigator Recruitment in Cancer Research (Major)	615,426	Recruited Faculty
Evans, J.	Mass General Hospital	PO#3415583/205723	5/1/2007	4/30/2012	Cancer Genetics Network	54,100	Retained Faculty
Foshee, V	NIH	R01 HD057222 - 02	9/30/2009	8/31/2012	Genetic by Context Influence on Trajectories of Adolescent Health Risk Behaviors	722,964	2007 Innovation Award

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Foster, M.	Genzyme Corp	None Assigned	3/24/2010	3/23/2013	LCCC 0909 A Pharmacokinetic Study Of Oral And Intravenous Clofarabine In Patients With High Grade Myelodysplasia And Acute Leukemias-Determination Of Oral Bioavailability And The Effect Of Cimetidine On Clofarabine Clearance	13,250	Recruited Faculty
Fry, R.	NIH	5R01ES019 315-02	7/1/2010	6/30/2015	In Utero Exposure to Arsenic, Links to Epigenetic Alterations and Disease	523,110	Recruited Faculty
Frye, S.	NIH	1RC1GM09 0732-01	9/30/2009	8/31/2011	Discovery of Small Molecule MBT Domain Antagonists-ARRA	435,195	Recruited Faculty
Frye, S.	NCI	N0 CO 12400	4/20/2009	4/19/2014	NC Comprehensive Chemical Biology Screening Center- Subcontract with SAIC Frederick	47,183	Recruited Faculty
Frye, S.	NCI / SAIC	A56768/29X S126	7/1/2010	6/30/2014	Task Order #7-Basic Ordering Agreement as a Comprehensive Chemical Biology Screening Center	1,614,000	Recruited Faculty
Frye, S.	NCI / SAIC	29XS126/A5 9101	12/1/2010	1/31/2012	Task Order #8- Basic Ordering Agreement as a Comprehensive Chemical Biology Screening Center- (Master (BOA) Agreement IPF#09-5399)	269,579	Recruited Faculty
Frye, S.	NCI / SAIC	29XS126/A5 9101	12/1/2010	1/31/2012	Task Order #8- Basic Ordering Agreement as a Comprehensive Chemical Biology Screening Center- (Master (BOA) Agreement IPF#09-5399)- Amendment	54,383	Recruited Faculty
Furey, T.	UC San Francisco	6648SC	10/1/2010	9/30/2011	Characterizing and Targeting Androgen Receptor Pathway-Independent Prostate Cancer	45,000	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Furey, T.	Duke University	2031069	10/1/2010	6/30/2012	Comprehensive Identification of Active Functional Elements in Human Chromatin - Subcontract with Duke	147,365	Recruited Faculty
Furey, T.	Fred Hutch Cancer Res Cntr	712036	9/1/2010	8/31/2011	Mechanism-Based Classification and Targeting of Castration-Resistant Prostate Cancer	72,968	Recruited Faculty
Gershon, T.	St. Baldrick's Foundation	None Assigned	7/1/2011	6/30/2014	Jak-Stat signaling: a driving force and novel target for medulloblastoma	110,000	Recruited Faculty
Goldstein, R.	NSF	IOS-0917726	7/1/2009	6/30/2013	Cell Polarization in Response to Wnt Signaling in C. elegans	150,000	2007 Innovation Award
Grilley-Olson, J.	Bayer HealthCare LLC	None Assigned	3/8/2011	3/7/2014	14458 An Open-label, multi-center, non-randomized Phase Ib study to Investigate the Safety, Efficacy, and Pharmacokinetics of BAY 73-4506 "Regorafenib", administered in combination with Pemetrexed and Cisplatin in patients with Advanced Nonsquamous Non-Small Cell Lung Cancer	13,800	Recruited Faculty
Grilley-Olson, J.	Bayer HealthCare LLC	None Assigned	12/2/2010	12/1/2013	14856 An open-label, Phase I, dose-escalation study to characterize the safety, tolerability, pharmacokinetics, and maximum tolerated dose of BAY 1000394 given in a 4-week on / 2-week off schedule in subjects with advanced malignancies	13,400	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Grilley-Olson, J.	Ziopharm Oncology, Inc.	None Assigned	3/8/2011	3/7/2014	IPM 3001 A Phase III multicenter, international, randomized, double-blind, placebo-controlled study of doxorubicin plus palifosfamide-tris vs. doxorubicin plus placebo in patients with front-line metastatic soft tissue sarcoma	13,800	Recruited Faculty
Grilley-Olson, J.	Peregrine Pharmaceuticals, Inc.	None Assigned	2/18/2011	2/17/2014	LCCC 1030 A phase Ib study of bavituximab plus carboplatin and pemetrexed in Chemotherapy-Naive Stage IV non-squamous non-small cell lung cancer	14,000	Recruited Faculty
Grilley-Olson, J.	GlaxoSmithKline, Inc	None Assigned	12/22/2010	12/21/2013	P3K113794 A Phase I Open-Label, Dose Escalation Study to Investigate the Safety, Pharmacokinetics, Pharmacodynamics, and Clinical Activity of GSK2126458 and GSK1120212 Combination Therapy in Subjects with Advanced Solid Tumors	11,008	Recruited Faculty
Hahn, K.	Angelman Syndrome Foundation	PD201104	12/1/2011	6/30/2013	Designing therapeutic strategies for Angelman syndrome by identifying upstream regulators of Ube3a	55,000	Retained Faculty
Hahn, K.	NIH	2-R01-GM57464-12	6/1/1999	8/31/2012	Dye-based Biosensors: Simultaneous Imaging of Multiple Protein Activities	362,637	Retained Faculty
Hahn, K.	NIH	3-R01GM057464-11S1	5/1/2009	8/31/2012	Dye-based Biosensors: Simultaneous Imaging of Multiple Protein Activities - Supplement	55,946	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Hahn, K.	American Cancer Society	PF-10-183-01-TBE	7/1/2010	8/31/2014	Small Molecule Based Biosensors for p38 Mitogen-Activated Protein Kinase	48,000	Retained Faculty
Hahn, K.	Arthritis Foundation	5536	1/1/2011	12/31/2012	Spatio-temporal dynamics of Rho family signaling in leukocyte TEM	50,000	Retained Faculty
Hahn, K. (Danuser P, dual PI)	Harvard / NIH	R01GM090317	9/1/2009	08/31/14	Quantitative Imaging of Signaling Networks	339,015	Retained Faculty
Hayes, DN.	GlaxoSmithKline, Inc	None Assigned	8/3/2009	8/2/2012	EGF102988 A Randomised, Double-Blind, Placebo-Controlled, Multi-centre, Phase III Study of Post-Operative Adjuvant Lapatinib or Placebo and Concurrent Chemoradiotherapy Followed by Maintenance Lapatinib or Placebo Monotherapy in High-Risk Subjects with Resected Squamous Cell Carcinoma of the Head and Neck (SCCHN)	9,000	Retained Faculty
Hayes, DN.	Lilly Research Laboratories	None Assigned	5/21/2010	5/20/2013	I4E-MC-JXBA Phase 2 Study to Evaluate the Pharmacokinetics and Drug-Drug Interaction of Cetuximab and Cisplatin in Patients with Recurrent or Metastatic Carcinoma of the Head and Neck	31,413	Retained Faculty
Hayes, DN.	H. Lee Moffitt / NCI	None Assigned	9/21/2009	9/20/2012	NCI 8070 Phase II Randomized Trial of the Combination of Cetuximab and Sorafenib or Cetuximab and Placebo in Patients with Refractory, Recurrent and/or Metastatic Squamous Cell Carcinoma of the Head and Neck (SCCHN)	18,712	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Hayes, DN.	H. Lee Moffitt / NCI	None Assigned	11/16/2009	11/15/2012	NCI 8271 Phase II Trial of Dasatinib (BMS 354825) for Recurrent or Metastatic c-KIT Expressing Adenoid Cystic Carcinoma and for Non-Adenoid Cystic Malignant Salivary Tumors	32,746	Retained Faculty
Hayes, DN.	Genentech	None Assigned	7/16/2007	7/15/2013	OSI3602s Multicenter Randomized Phase II study of Erlotinib, Cisplatin and Radiotherapy versus Cisplatin and Radiotherapy in Patients with Stage III and IV Squamous Cell Carcinoma of the Head and Neck	28,437	Retained Faculty
Hayes, DN.	ImClone	None Assigned	7/6/2006	7/5/2012	Prospective, Longitudinal, MultiCenter, Descriptive Registry of Patients Receiving Therapy Other Than Surgical Resection	90,900	Retained Faculty
Huang, L.	NCI	5-R01-CA129421-02	3/5/2008	2/28/2013	Interaction of Cationic Lipids with Dendritic Cells	302,950	2007 Innovation Award
Ibrahim, J.	Novartis	None Assigned	1/1/2011	12/31/2011	AMENDMENT #2 to Research Agreement with Novartis Pharmaceuticals Corporation	30,000	Retained Faculty
Ibrahim, J.	Merck	None Assigned	7/1/2009	8/31/2011	Amendment No. 2: Statistical Analysis of Clinical Data	188,616	Retained Faculty
Ibrahim, J.	NIH	5-R01-GM070335-13	6/1/2006	8/31/2015	Bayesian Approaches to Model Selection for Survival Data	303,739	Retained Faculty
Ibrahim, J.	NCI	T32CA106209-06A2	5/1/2004	6/30/2016	Biostatistics for Research in Genomics and Cancer	145,321	Retained Faculty
Ibrahim, J.	Lilly	None Assigned	9/19/2011	3/31/2012	Eli Lilly Master Agreement	147,242	Retained Faculty
Ibrahim, J.	NCI	5-R01-CA74015-12	9/1/1997	6/30/2012	Inference in Regression Models with Missing Covariates	205,494	Retained Faculty
Ibrahim, J.	Amgen	None Assigned	1/1/2011	12/31/2011	Supported Research Agreement-Amgen	105,000	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Ibrahim, J. (Kaufmann, W.)	NIH	1-P01-ES014635-03	5/1/2007	4/30/2012	The System of Response to DNA Damage Suppresses Environmental Melanomagenesis - Core C: Biostatistics and Data Management Core	195,759	Retained Faculty
Ibrahim, J. (Kosorok, M)	NCI	P01CA142538-02	4/1/2010	3/31/2015	Subproject: Methods for Post Marketing Surveillance and Comparative Effectiveness Research	120,354	Retained Faculty
Innocenti, F.	NCI	R21CA139280-03	3/1/2009	1/31/2012	A Comprehensive Pharmacogenetic Study of Sorafenib in Renal Cell Carcinoma Patients	161,021	Recruited Faculty
Innocenti, F.	NCI	K07CA140390-04	9/23/2009	8/31/2014	Genome-wide Moleuclar Epidemiology of Treatment Outcome and Cancer Risk	131,129	Recruited Faculty
Irvin, W.	Komen	KG100355	2/1/2010	1/31/2013	Validating CYP2D6 Genotype-guided Tamoxifen Therapy for a Multiracial U.S. Population	149,889	2007 Innovation Award / Recruited Faculty
Johnson, G. (Duncan)	Canadian Inst Health Research	NA	7/1/2009	6/30/2013	Defining the role of MEKK2/3 in tumor progression, vascularization and metastasis	43,103	2007 Innovation Award
Johnson, G. (Earp HS)	NCI	U54CA156733-02	9/28/2010	8/31/2015	Targeting the MEKK2-ERK5 Signaling Mode in Triple Negative Breast Cance: NCCU-LCCC Partnership in Cancer Research subproject	58,858	2007 Innovation Award
Jones, C.	NSF	920196	9/1/2009	8/31/2012	Collaborative Proposal: De Novo Genes in Drosophila: functions, origins, and po	146,892	Theme Investment
Jones, C.	U. Iowa	1000831828/W000235272	9/30/2009	8/31/2011	Fine-scale recombination rate variation analyses within and between Drosophila… Subcontract	299,532	Theme Investment

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Kasow, K (Wichlan, K.)	National Childhood Cancer Foundation	None Assigned	3/1/2010	2/28/2013	CTN 0601 Unrelated Donor Hematopoietic Cell Transplantation for children with Severe Sickle Cell Disease Using a Reduced Intensity Conditioning Regime.	5,910	Recruited Faculty
Kasow, K (Wichlan, K.)	National Childhood Cancer Foundation	None Assigned	3/1/2010	2/28/2013	CTN 0802 A Multi-Center, Randomized, Double Blind, Phase III Trial Evaluating Corticosteroids with Mycophenolate Mofetil vs. Corticosteroids with Placebo as Initial Systemic Treatment of Acute GVHD	13,676	Recruited Faculty
Kasow, K (Wichlan, K.)	National Childhood Cancer Foundation	None Assigned	6/1/2010	6/30/2012	Through Their Eyes: Understanding the Young Matched Sibling Hematopoietic Stem C	12,032	Recruited Faculty
Keku, T.(dual PI, Sandler R)	NCI	1-R01-CA136887-01A2	5/1/2009	2/28/2014	Intestinal Microbiota, Diet and Risk of Colorectal Adenomas	306,927	Opportunity Fund Invesment
Kim, HJ.	Society of Surgical Oncology		4/1/2010	3/31/2012	Role of Palladin in Breast Cancer Metastasis	50,000	Retained Faculty
Laederach, A.	NIH	R00-GM079953-05S1	7/15/2007	6/30/2012	Multi-Scale Dynamic Modeling of RNA folding and Assembly: Supplement	81,876	Recruited Faculty / Theme Investment
Laederach, A.	NIH	R00-GM079953-05	7/15/2007	6/30/2012	Multi-Scale Dynamic Modeling of RNA folding and Assembly	226,660	Recruited Faculty / Theme Investment
Lai, S.	NIH	R21AI090507-01A1	7/1/2011	6/30/2013	Diffusion of Viruses Across Human Airway Mucus and Trapping by Antibodies	183,473	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Lai, S.	Am Assoc Colleges Pharmacy	None Assigned	12/15/2010	12/14/2011	Engineering lymphocyte- and macrophage-inert nanoparticles for lymphatic drug delivery	10,000	Recruited Faculty
Lai, S.	Northwestern U	60029638 UNCCH	7/25/2011	5/31/2012	Harnassing antibody-mucus interactions to prevent HIV transmission: subcontract	137,500	Recruited Faculty
Lai, S.	Bill and Melinda Gates Fndn	OPP1024615	11/1/2010	4/30/2012	Mucosal vaccines based on trapping pathogens in mucus	100,000	Recruited Faculty
Lai, S.	NIH	R21AI093242-01	1/1/2011	12/31/2012	Trapping HIV in Mucus with IgG Antibodies	183,473	Recruited Faculty
Lawrence, D.	NCI	1-RO1-CA140173-02	5/1/2009	2/28/2014	Signaling Network Dynamics in Metastatic Prostate Cancer	427,079	2007 Innovation Award
Lemon, S.	Merck	None Assigned	2/1/2011	1/31/2012	Deep Sequencing for the NS3-Coding Region in Co-Infected Patients	242,192	Recruited Faculty
Lemon, S.	University of Texas-Galveston	10-070/0000000519	9/23/2010	9/22/2011	Drug Development for Opportunistic Infections - Cell and Animal Model Development of Hepatitis C	142,172	Recruited Faculty
Lemon, S.	Tibotec-Virco Virology BVBA	P20784122R	1/1/2011	12/31/2012	Innate Immune Signaling and Direct Acting Antivirals Targeting HCV Tibotec Research Collaboration	131,837	Recruited Faculty
Lemon, S.	Johns Hopkins University	2001169668	8/1/2010	7/31/2011	Mechanisms of Hepatitis C Virus Evolution	131,586	Recruited Faculty
Lemon, S.	NIH	R01AI095690-01	4/15/2011	3/31/2016	Micro RNA 122 and Chronic Hepatitis C	368,369	Recruited Faculty
Lemon, S. (Evers BM)	NCI	P20CA150343-01	9/29/2009	8/31/2012	Hepatitis C and Tumor Suppressors in Hepatocelluar Cancer - Project 2	276,791	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Lieb, J.	NIH	5-U01-HG004270-04	5/1/2007	3/31/2012	Identification of DNA Elements Governing Chromatin Function in C. elegans	1,783,660	Retained Faculty
Lieb, J.	Progeria Research Foundation	None Assigned	1/1/2010	12/31/2011	Interactions between genes and lamin A/progerin: a window to understanding progeria pathology and treatment	75,000	Retained Faculty
Lieb, J.	NIH	R01-GM072518-06	12/1/2010	11/30/2015	Uniting Disparate Fields to Explore Transcription Factor Binding Dynamics	301,269	Retained Faculty
Lieb, J.	Damon Runyon	2083-11	1/1/2011	12/31/2013	When paths diverge: Patterns and mechanisms of asymmetric cell division.	156,000	Retained Faculty
Linnan, L.	NIH	5-R01-HL080656-05	6/1/2006	5/31/2012	Interventions to Control Obesity in Community Colleges	588,410	Retained Faculty
Linnan, L.	Virginia Tech	CR-19467-431526	4/1/2007	3/31/2012	Tailored Worksite Weight Control Programs - Subcontract with Kaiser Permanente	46,610	Retained Faculty
Linnan, L. (Earp, HS)	NCI	U54CA156733-02	6/1/2006	5/31/2012	Promoting Physical Activity in Black Barbershops	175,939	Retained Faculty
Lund, PK	NIH	R01-DK040247-19	7/1/2011	6/30/2016	Intestinal Adaptation - Role of Hormones & Growth Factors	385,556	2008 Innovation Award
Mackman, N (dual, Key)	NIH	5-R01-HL095096-02	9/1/2009	8/31/2013	Mechanisms of Venous Thromboembolism in Cancer	505,760	2007 Innovation Award
Major, MB	NIH	DP20-OD007149-1	9/30/2010	7/31/2015	Exploitation of Near-Haploid Human Cells for Functional Gene Discovery	444,000	Recruited Faculty
Major, MB	Sidney Kimmel Fndn for Cancer Research		7/1/2010	6/30/2012	New Functional Components of the KEAP1Tumor Suppressor Protein Complex	100,000	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Makowski Hayes, L.	NIH	R00AA017376-04	1/1/2010	12/31/2012	Macrophage Mitochondrial Stress in Inflammation, Insulin Resistance & Obesity	239,338	Recruited Faculty
Marks, L.	CDC	U58DP003414-01	9/30/2011	9/29/2014	Improving Access and Utilization of Support Services in Young Breast Cancer Survivors	260,242	Recruited Faculty
Marks, L.	NCI	5-R01-CA069579-12	6/23/1996	5/31/2012	Radiation-Induced Cardiopulmonary Injury in Humans	228,893	Recruited Faculty
Matera, G.	NIH	R01-GM053034-15A1	7/1/2011	6/30/2016	Biogenesis of Small Ribonucleoproteins	311,661	Theme Investment
Miller, CR.	Damon Runyon	None Assigned	7/1/2009	6/30/2012	Genomics-driven drug development for glioblastoma	150,000	Retained Faculty
Millikan R (Ambersone, C.)	NCI	P01 - Project	7/01/011	6/30/2016	The Molecular Epidemiology of Breast Cancer Subtypes in Black Women: A Consortium	928,034	Theme Investment
Millikan, R. (Earp, H.)	NCI	5-P50-CA58223-17S1	8/1/2009	9/30/2012	Large Scale Haplotyping for Breast Cancer Susceptibility in African Americans and Whites - Supplement	651,559	Theme Investment
Mohlke, K.	NIH	R01-DK093757-01	9/5/2011	7/31/2016	Genetic epidemiology of rare and regulatory variants for metabolic traits	650,630	Theme Investment
Moody, C	NCI	5R00CA137160-04	9/20/2008	8/31/2013	The Role of Caspase Activation in the Differentiation-Dependent Life Cycle of HPV	241,530	Recruited Faculty
Muss H	Breast Ca Res Fnd	None Assigned	10/1/2009	9/31/11	The Effect of Chemotherapy on Aging in Older Woman with Breast Cancer	200,000	Recruited Faculty
Nicholson, W.	American Diabetes Assoc	7-08-CR-44	3/1/2010	2/29/2012	Upstream maternal lifestyle factors, interleukin-6 and childhood growth from birth to age 2	119,497	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
O'Neil, B.	Aptium Oncology	None Assigned	4/6/2010	4/5/2013	09PAN01 A Phase 1b Study of Erlotinib in Combination with Gemcitabine and nab-Paclitaxel in Patients with Previously Untreated Advanced Pancreatic Cancer	70,414	Retained Faculty
O'Neil, B.	HGS	HGS1012-C1077	10/24/2008	10/23/2011	A Two-Stage, Multi-center, Open-label Study of Mapatumumab [(HGS1012), a Fully-human Monoclonal Antibody to Trail-RI] in Combination with Sorafenib as a First...	60,356	Retained Faculty
O'Neil, B.	Aptium Oncology	None Assigned	9/27/2010	9/26/2013	AG?ICC 09CRC02 A Dose Finding and Phase II Study of AZD6244 (Hyd-Sulfate) in Combination with Irinotecan in 2nd Line Patients with K-ras or B-raf Mutation Positive Advanced or Metastatic Colorectal Cancer	50,274	Retained Faculty
O'Neil, B.	Aptium Oncology	None Assigned	7/13/2009	7/12/2012	AGICC-09CRC01 A Phase II, Open-Label, Multicenter Trial to Assess the Efficacy and Safety of the PARP inhibitor, olaparib, Alone in Previously-Treated Patients with Stage IV, Measurable Colorectal Cancer, Stratified by MSI Status	1,800	Retained Faculty
O'Neil, B.	Aptium Oncology	None Assigned	9/1/2010	8/31/2011	Aptium Oncology Gastrointestinal Cancer Consortium	62,500	Retained Faculty
O'Neil, B.	Novartis	None Assigned	2/1/2008	12/31/2012	CRAD001C2493 A Sequential Phase I Study of the Combination of EverO1ImUs (RAD001) with 5-FU/LV (de Gramont), FOLFOX6, and	50,000	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
O'Neil, B.	Averion International Corp	None Assigned	11/6/2009	11/5/2012	GC-002US A Phase I, Open-Label, Multi-center, Dose-escalation Study of the Safety, Tolerability, and Pharmacokinetics of GC33 in combination with Sorafenib (Nexavar) in Patients with Advanced or Metastatic Hepatocellular Carcinoma (HCC).	46,275	Retained Faculty
O'Neil, B.	H. Lee Moffitt / NCI	None Assigned	5/11/2010	5/10/2013	NCI 8233 A Phase II Trial of Temsirolimus and Bevacizumab in Patients with Endometrial, Ovarian, Hepatocellular Carcinoma, Carcinoid or Islet Cell Cancer	18,712	Retained Faculty
Pardo Manuel de Villena, F.	NIH	P50HG006582-03	9/30/2009	8/31/2014	An Interdisciplinary Program for System Genomics of Complex Behaviors	866,952	Theme Investment * 2
Pardo Manuel De Villena, F.	NIH	P50-MH090338-01-02	9/1/2009	8/31/2011	ARRA: An interdisciplinary program for systems genomics of complex behaviors	1,493,000	Theme Investment
Pardo Manuel de Villena, F.	NIH	R01HD065024-02	5/1/2010	4/30/2015	Collaborative Cross: A System Genetics Approach to the Study of Male Infertility	312,479	Theme Investment
Park, S.	Cephalon	None Assigned	10/8/2010	10/7/2013	LCCC 1011 A Phase II Trial of Bendamustine in Combination with Rituximab in Older Patients with Previously Untreated Diffuse Large B-cell Lymphoma	58,004	Recruited Faculty
Park, S.	Glaxo Smith Kline	None Assigned	8/16/2010	8/15/2013	LCCC 1018 A Phase II Trial of Ofatumumab in Elderly Patients with Previously Untreated Low or Intermediate Risk Indolent B-cell Lymphomas	23,000	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Park, S.	Glaxo Smith Kline	None Assigned	5/6/2010	5/5/2013	OMB112517 A phase III, open label, randomized, multicenter trial of ofatumumab maintenance treatment versus no further treatment in subjects with relapsed chronic lymphocytic leukemia (CLL) who have responded to induction therapy	19,915	Recruited Faculty
Park, S.	Seattle Genetics, Inc.	None Assigned	8/19/2010	8/18/2013	SGN35-009 A phase 1 dose-escalation safety study of brentuximab vedotin in combination with ABVD as frontline therapy in patients with Hodgkin lymphoma	21,081	Recruited Faculty
Perou, C. (Dual PI Hayes, DN)	NCI	1-U24-CA143848-02S1	9/1/2010	8/31/2012	Integrated Analysis of Gene Expression Patterns and Chromatin Organization in Human Tumors Supplement	834,674	Theme Investment
Perou, C. (Dual with Hayes DN)	NCI	1-U24-CA143848-03	9/1/2009	8/31/2014	Integrated Analysis of Gene Expression Patterns and Chromatin Organization in Human Tumors	3,916,513	Theme Investment
Pomp, D. / Lund, PK (Threadgill, D.)	NCI / NC State	U01-CA105417-08 / 2009-0850-01	7/1/2009	6/30/2014	Modeling Heterogeneity for Safe Cancer Prevention and Detection	273,450	2008 Innovation Award
Pruthi, R.	Adolor	None Assigned	1/7/2010	1/6/2013	14CL403 A Phase 4, Multicenter, Double-Blind, Placebo-Controlled, Parallel Study of Alvimopan for the Management of Postoperative Ileus in Subjects Undergoing Radical Cystectomy	24,914	Retained Faculty
Ramsey, JM	Pfizer, Inc.		11/17/2010	11/16/2011	LC/CE-MS for Analysis of Post-Translational Modifications, Epitope Density, and	100,000	Retained Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Ramsey, JM	Waters Technologies Corporation		11/1/2006	12/31/2011	Micro Chip HPLC	166,938	Retained Faculty
Ramsey, JM	US Army Research Office	W911NF-10-1-0447	10/1/2010	3/31/2012	Micro Ion Trap Mass Spectrometer Development	947,723	Retained Faculty
Ramsey, JM	UT-Battelle	4000089381	2/23/2010	9/30/2011	Micro Mass Spectrometer	945,512	Retained Faculty
Ramsey, JM	Tufts University	HS2356	7/1/2007	2/29/2012	Microsensor Arrays for Saliva Diagnostics	344,353	Retained Faculty
Ramsey, JM	NIH	5R01HG002647-06	9/30/2004	8/31/2012	Nanoscale Fluidic Technologies for Rapidly Sequencing Single DNA Molecules	928,135	Retained Faculty
Ramsey, JM	NIH	5R01HG002647-06S1	9/30/2004	8/31/2012	Nanoscale Fluidic Technologies for Rapidly Sequencing Single DNA Molecules - Supplement	700,000	Retained Faculty
Reeve, B.	National Cancer Institute	HHSN261201000642P	9/1/2010	8/31/2011	Expert Consultation for Research on the HEAL Fatigue Scale and SEER-MHOS Survival Study and the Development of a Research Agenda for the Patient-Reported Outcomes Version of the Common Terminology Criteria for Adverse Events	24,888	Recruited Faculty
Rini, C.	NIH	R01AR057346-02	9/20/2010	6/30/2013	Internet-based osteoarthritis pain coping skills intervention	649,626	Recruited Faculty
Rini, C.	ACS	RSGPB-07-285-01-CPPB	7/1/2010	6/30/2012	Reciprocal Benefits of Helping: Peer Support Intervention for SCT Survivors	266,703	Recruited Faculty
Rogers, A.	NCI	R21CA158661-01	3/1/2011	2/28/2013	Epigenetic Regulation of Sex-Dependent Liver Cancer	193,140	Recruited Faculty
Runge, M.	NIH	UL1-RR025747-03S1	8/5/2010	8/4/2011	CTSA Core Consolidation Supplement	730,861	Theme Investment

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Sarantopoulos, S,	NIH	K08HL107756-01	7/12/2011	6/30/2015	BAFF Pathology: Novel Therapeutic Targets in Chronic Graft versus Host Disease	132,493	Recruited Faculty
Sarantopoulos, S.	DoD	W81XWH-11-1-0537	8/1/2011	7/31/2014	BAFF-driven Targeted Immunotherapy for Patients with Leukemia	145,369	Recruited Faculty
Schoenfisch, M.	Novan		8/15/2010	8/14/2011	Longer nitric oxide-releasing silica vehicles	74,158	Retained Faculty
Schoenfisch, M.	NIH	5-R01-EB000708-06-09	9/25/2002	1/31/2012	Nitric Oxide-Releasing Glucose Biosensors	315,443	Retained Faculty
Schoenfisch, M.	NSF	DMR-1104892	8/1/2011	7/31/2014	Silica-derived nitric oxide delivery vehicles as anti-plaque agents	145,587	Retained Faculty
Shen, D.	NIH	1-R01-EB008374-03	9/15/2009	8/31/2013	Continued Development of 4-Dimensional Image Warping and Registration Software	320,080	Recruited Faculty
Shen, D.	NIH	5-R01EB006733-03	9/17/2008	8/31/2012	Development and Dissemination of Robust Brain MRI Measurement Tools	384,868	Recruited Faculty
Shen, D.	NCI	R21-CA140841-02	7/1/2009	4/30/2012	Improving the Specificity of Dynamic MRI in Breast Cancer Diagnosis	195,360	Recruited Faculty
Shen, D.	NIH	RC1MH088520-02	9/24/2009	8/31/2012	Neonatal Brain Segmentation	499,953	Recruited Faculty
Shen, D.	NCI	R01CA140413-02	7/6/2010	12/31/2014	Onlline Collection of Patient-Specific Information for Daily Prostate Segmentation	335,124	Recruited Faculty
Shen, D.	Centocor, Inc.	PO 992612341	10/15/2010	12/31/2011	Services for Medical Image Sets	185,000	Recruited Faculty
Siderovski, D. (Oestreich)	NIH	F32 AR057644	12/1/2009	11/30/2012	RGS12 as a MAPK Scaffold in Muscle Development and Disease. 2009 – 2012, $158,130 (total cost, all years)	54,354	2007 Innovation Award
Su, L.	NIH	1R21AA018372-02	9/1/2009	8/31/2011	Ethanol and HBV Infection on HCC Development in A Novel Humanized Mouse Model	222,000	2007 Innovation Award
Su, L.	NIH	1R21AI076142-01A1	5/22/2009	4/30/2011	Pathogenesis of HCV in Novel Mouse Model	216,218	2007 Innovation Award

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Thomas, N.	NCI	5-R01-CA112243-06	5/13/2010	1/31/2015	Melanoma RAS/BRAF Mutation: Heterogeneity-Risk Prognosis	586,658	2007 Innovation Award
Thomas, N.	NCI	3-R01-CA112243-05S1	9/1/2009	8/31/2011	Melanoma RAS/BRAF Mutation: Heterogeneity-Risk Prognosis - Supplement	287,571	2007 Innovation Award
Threadgill, D.	NCI	U01-CA105417-08	7/1/2009	6/30/2014	Modeling Heterogeneity for Safe Cancer Prevention and Detection	747,178	Theme Investment UNC
Threadgill, D.	NCI	U01-CA134240-05	9/18/2007	8/31/2012	Systems Genetics Resource Consortium - NCI Funding	742,323	Theme Investment UNC
Threadgill, D.	NIH	U01-CA134240-05	9/18/2007	8/31/2012	Systems Genetics Resource Consortium - NIH Funding	282,524	Theme Investment UNC
Troester M (Dual PI with Perou C)	NCI	1-RO1-CA138255-02	8/1/2009	7/31/2013	Conserved Biology of Tumor and Microenvironment in Breast Cancer Progression	464,025	Recruited Faculty
Troester, M.	Avon	None Assigned	6/1/2009	5/31/2012	Biomarkers of High Risk Atypical Hyperplasis: ER beta and Expression Signatures - Subcontract with Univ. of Mass.	11,000	Recruited Faculty
Troester, M.	Avon	None Assigned	11/1/2009	10/31/2011	Characterizing Variation in Breast Cancer Microenvironment	150,000	Recruited Faculty
Troester, M.	NIH	U01ES019472-02	7/1/2010	6/30/2015	Pregnancy, Obesogenic Environments, and Basal-like Breast Cancer	430,559	Recruited Faculty
Troester, M. (You M)	NCI	1U01CA141541-01	7/1/2009	2/28/2012	Gene Expression Profiles of Histologically Normal Breast Tissue - Subcontract with Wash U.	264,430	Recruited Faculty
Valdar, W.	Medical College of Wisconsin	None Assigned	7/1/2010	6/30/2015	Genome-wide fine-mapping of metabolic traits in heterogeneous stock rats: Subcontract	26,000	Recruited Faculty
Vaziri, C	NIH	R01ES009558-15	6/1/2009	4/30/2012	A Novel Carcinogen-Induced Cell Cycle Checkpoint	282,104	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Vaziri, C	NIH	R01ES016280-04	8/1/2008	5/31/2013	A Novel Role for the Franconi Anemia Pathway in Replication of BaP Adducted DNA	293,736	Recruited Faculty
Vaziri, C (Durando)	NIH	F30ES019449-02	7/1/2010	6/30/2015	Regulatory Signaling in Repair of Environmentally Induced DNA Damage	30,097	Recruited Faculty
Wallen, E.	EDAP Technomed	None Assigned	10/16/2008	10/15/2011	G050103 EDAP Ablatherm® Integrated Imaging High Intensity Focused Ultrasound	46,652	Retained Faculty
Wallen, E.	American Medical Systems	None Assigned	2/5/2010	2/4/2013	PE0814 Performance Evaluation of the AMS CONTINUUMTM Device in Facilitating Vesico-urethral Anastomosis Following a Radical Prostatectomy	1,013	Retained Faculty
Wan, Y.	Lupus Research Institute	None Assigned	1/1/2011	12/31/2012	Functional Instability Of Treg Cells in SLE	100,000	Recruited Faculty
Wang, A.	National Academies Keck Futures Initiative	NAKFI IS12	7/1/2011	6/30/2013	Development of nanoparticle-based multiplex multimodality imaging agents	50,000	Recruited Faculty
Weiss, J.	U. Penn	None Assigned	3/10/2011	3/9/2014	UPCC#15309 A Phase II Study of Capecitabine and Lapatinib in Squamous Cell and Undifferentiated Carcinoma of the Head and Neck	8,500	Recruited Faculty
Whitehurst, A.	Mary Kay Ash	100-10	7/1/2010	6/30/2012	Defining a Functional Signature of Chemosensitivity in Ovarian Cancer Subtypes	50,000	Recruited Faculty
Whitehurst, A.	AACR - SU2C	SU2C-AACR-IRG1211	5/1/2011	4/30/2014	Framing Therapeutic Opportunities in Tumor-Activated Gametogenic Programs	203,126	Recruited Faculty

Principal Investigator	Agency	Grant Number	Project Start	Project End	Title	Annual Total $	Attribution
Whitehurst, A.	Uniting Against Lung Cancer	None Assigned	11/1/2009	10/31/2011	Functional characterization of novel mechanisms supporting tumor cell mitosis	100,000	Recruited Faculty
Whitehurst, A.	NCI	R00-CA128926-03	2/1/2009	12/31/2011	Harnessing Functional Genomics to Reveal Cancer Secific Determinants of Mitosis	241,530	Recruited Faculty
Whitehurst, A.	NCI	R01CA154699-01	12/13/2010	11/30/2015	Mechanistic Elaboration of Fragility in the Cancer Cell Mitotic Spindle	304,879	Recruited Faculty
Wilhelmsen, K.	NIH	R01DA030976-02	9/30/2010	9/29/2015	Deep Sequencing Studies for Cannabis and Stimulant Dependence	3,493,753	Theme Investment
Xiong, Y.	NCI / SAIC	A56711/29XS126	7/2/2010	1/31/2012	Task Order#4- Basic Ordering Agreement as a Comprehensive Chemical Biology Screening Center- (Master (BOA) Agreement IPF#09-5399)	799,421	Theme Investment
Yang, Y.	NIH	K01AG036745-02	8/1/2010	7/31/2015	Sex Differences in Health and Longevity: An Integrative Social and Demographic Framework	120,339	Recruited Faculty
Zamboni, W.	U Pitt	0000017/113312-2	5/1/2008	7/31/2012	A New Dimension in Renal Clearance Design Criteria for Dendrimer Nanostructures	71,214	Recruited Faculty
Zamboni, W.	Mallinckrodt, Inc.	None Assigned	6/29/2010	9/31/11	Efficacy and Pharmacology Studies of Folr1 Ab-SPI-077 compared with SPI-077	196,970	Recruited Faculty
Zamboni, W.	SciDose, LLC	None Assigned	9/15/2010	9/14/2013	Pharmacology Studies of Curcumin-Succinate-PEG400 Conjugate compared with Curcum	196,017	Recruited Faculty
Zhou, O.	NCI	1-R01-CA134598-03	5/1/2009	4/30/2013	Next Generation Digital Breast Tomosynthesis Scanner	335,138	Opportunity Fund Invesment
Total	**213**					**69,237,770**	