Responses to questions we have been asked

Q How will you reach low-income persons at risk?

A See letters of support. We have expanded our already strong network of outreach to prostate support groups and community churches and they have responded enthusiastically. We would fund a position to translate clinical information to respond to community questions and concerns. Many people at risk are in the work force and have little spare time to participate in support groups, so we will focus on community communication techniques well developed by economic, political and social outreach organizations. Our research team from Shaw University is particularly experienced in this respect. We will conduct screenings in community clinics, as we do now. Cary Urology alone offers free screens to almost 1,000 men a year in rural and urban locations.

As we probe the issue, we are learning that cultural expectations, social norms and plain knowledge play a big role in men's willingness to get screened.

Health Departments in North Carolina play an active role in preventive health. We intend to share information with them, as well. Health departments have no specific funding for men's health.

Q How will you make it affordable?

A The resources provided by linear accelerator reimbursement will fund both charity care and protocol research and publication. A strong charity care policy will be mandatory.

Q This project represents a state precedent – what will prevent others from asking for a disease specific center?

A In an urban setting, where scarce specialty providers become separated from one another and have little time for essential collaboration, more disease specific centers are a good idea, one supported and endorsed by the National Institutes of Health in *Crossing the Quality Chasm.* The North Carolina CON statute and the State Medical Facilities Plan already encourage dedicated specialty gastroenterology centers.

The state's task will be to monitor appropriate distribution, to consider convenient location, a care delivery structure that supports collaborative care protocol development, to set the criteria for such centers and to assure sufficient organized volume to support a single disease focused program.

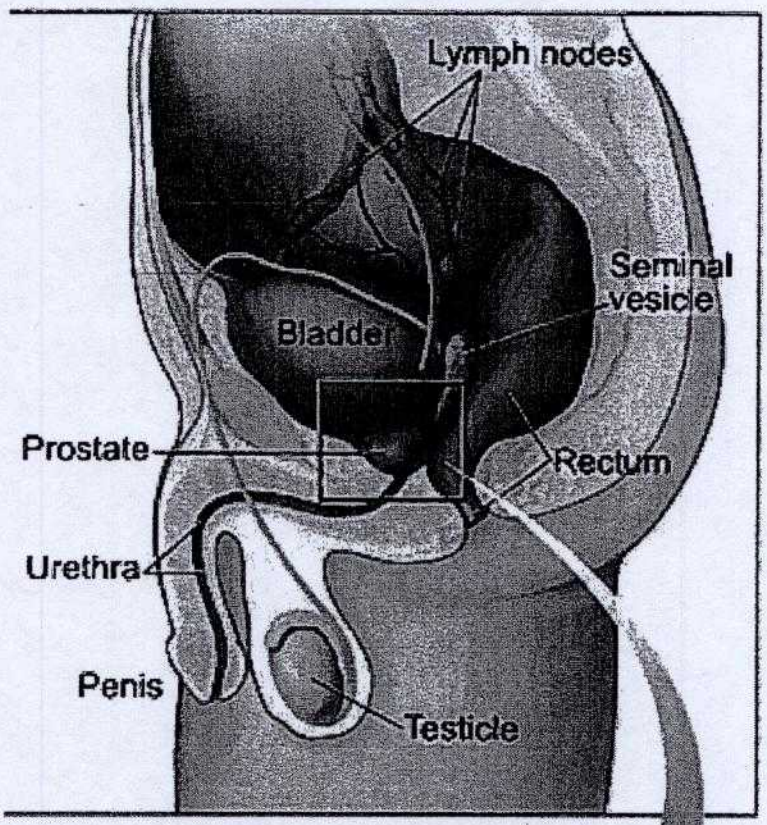
Q Can you measure the impact?

A Yes, we will be initiating a baseline database against which to measure the impact of this proposed approach. We will engage an outside evaluator and have a preliminary commitment from a team at Shaw University whose background is included in an Attachment to this Petition. (Attachment F)

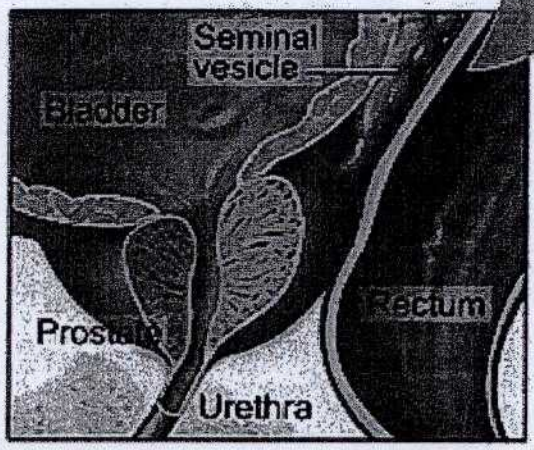
Q What this model share to benefit others statewide?

A This is a unique approach to care in North Carolina. Because we will be doing and evaluating, we will have results: clinical protocols that work or prove difficult, outreach approaches that do or do not increase contact with persons at risk, stage at which we find patients who have prostate cancer. We will learn what aspects of the multidisciplinary approach most benefit the patients we serve in terms of cost, satisfaction and clinical results. Over time, we expect to see an impact on cancer death rates. Near term we expect to see an improvement in quality of life.

Attachment A
Prostate Gland Anatomy



This shows the prostate and nearby organs.



This shows the inside of the prostate, urethra, rectum, and bladder.

State Cancer Profiles

Death Rates

Death Rate Report for North Carolina by County, death years through 2004

Prostate
Healthy People 2010 Objective Number: 03-07
Reduce the prostate cancer death rate.
All Races (includes Hispanic), Male, All Ages
Sorted by Rate

County	Met Healthy People Objective of 28.8? [1]	Annual Death Rate over rate period deaths per 100,000 (95% Confidence Interval)	Average Deaths per Year over rate period	Rate Period	Recent Trend [2]	Recent Annual Percent Change[2] in Death Rates (95% Confidence Interval)	Recent Trend Period[2]
North Carolina (State)	No	32.4 (31.4, 33.4)	906	2000 - 2004	falling ↓	-4.3 (-5.0, -3.7)	1994 - 2004
United States	Yes	27.9 (27.7, 28.0)	30,160	2000 - 2004	falling ↓	-4.1 (-4.2, -3.9)	1994 - 2004
Northampton County	No	63.5 (43.9, 89.0)	7	2000 - 2004	**	**	**
Hoke County	No	56.9 (32.7, 89.4)	4	2000 - 2004	**	**	**
Martin County	No	56.7 (36.1, 83.9)	5	2000 - 2004	**	**	**
Sampson County	No	54.5 (40.9, 70.7)	11	2000 - 2004	rising ↑	2.5 (0.5, 4.5)	1980 - 2004
Vance County	No	50.9 (34.3, 71.8)	7	2000 - 2004	stable →	-0.4 (-2.9, 2.2)	1980 - 2004
Warren County	No	48.5 (30.7, 72.9)	5	2000 - 2004	stable →	-0.1 (-3.5, 3.4)	1980 - 2004
Richmond County	No	48.0 (33.5, 66.3)	8	2000 - 2004	stable →	1.3 (-0.9, 3.5)	1980 - 2004
Duplin County	No	47.4 (33.5, 64.5)	8	2000 - 2004	stable →	-0.7 (-2.7, 1.3)	1980 - 2004
Granville County	No	47.0 (32.1, 65.6)	7	2000 - 2004	stable →	-0.5 (-3.6, 2.7)	1980 - 2004
Wayne County	No	46.8 (36.4, 59.0)	16	2000 - 2004	stable →	-1.1 (-2.6, 0.5)	1980 - 2004
Pasquotank County	No	46.7 (31.4, 66.3)	6	2000 - 2004	stable →	-1.2 (-3.3, 1.0)	1980 - 2004

Attachment B
North Carolina vs. National
Prostate Cancer Rates

Robeson County	No	46.6 (36.6, 58.2)	16	2000 - 2004	stable →	-1.0 (-2.8, 0.8)	1980 - 2004
Person County	No	46.5 (31.1, 66.3)	6	2000 - 2004	stable →	0.6 (-2.2, 3.5)	1980 - 2004
Hertford County	No	45.8 (27.9, 70.3)	4	2000 - 2004	falling ↓	-2.3 (-4.5, -0.1)	1980 - 2004
Pender County	No	44.7 (29.8, 63.6)	7	2000 - 2004	**	**	**
Nash County	No	43.3 (33.0, 55.5)	13	2000 - 2004	stable →	0.3 (-1.5, 2.1)	1980 - 2004
Halifax County	No	43.0 (31.5, 57.1)	10	2000 - 2004	stable →	-0.5 (-2.6, 1.8)	1980 - 2004
Lenoir County	No	42.4 (30.6, 56.8)	10	2000 - 2004	stable →	0.4 (-1.8, 2.8)	1980 - 2004
Edgecombe County	No	41.7 (28.6, 58.3)	7	2000 - 2004	stable →	-2.1 (-4.4, 0.3)	1980 - 2004
Harnett County	No	41.2 (30.0, 54.6)	10	2000 - 2004	stable →	-1.2 (-2.6, 0.2)	1980 - 2004
Scotland County	No	40.6 (24.2, 62.7)	4	2000 - 2004	stable →	0.2 (-3.1, 3.7)	1980 - 2004
Durham County	No	40.4 (33.6, 48.0)	26	2000 - 2004	stable →	-1.2 (-2.6, 0.2)	1980 - 2004
Caswell County	No	40.1 (23.5, 63.3)	4	2000 - 2004	stable →	1.4 (-2.1, 5.1)	1980 - 2004
Cumberland County	No	39.1 (32.0, 47.1)	24	2000 - 2004	stable →	-1.2 (-2.9, 0.6)	1980 - 2004
Bladen County	No	39.1 (24.3, 58.9)	4	2000 - 2004	stable →	1.3 (-1.8, 4.5)	1980 - 2004
Orange County	No	38.3 (28.4, 50.0)	11	2000 - 2004	stable →	-0.1 (-2.2, 2.1)	1980 - 2004
Pitt County	No	37.8 (28.8, 48.4)	13	2000 - 2004	falling ↓	-5.1 (-8.2, -1.8)	1989 - 2004
Chatham County	No	37.2 (27.0, 49.8)	9	2000 - 2004	stable →	-1.2 (-3.6, 1.2)	1980 - 2004
Franklin County	No	37.1 (23.8, 54.3)	5	2000 - 2004	stable →	0.9 (-2.7, 4.5)	1980 - 2004
Cleveland County	No	37.0 (28.5, 47.2)	13	2000 - 2004	stable →	-0.0 (-1.8, 1.8)	1980 - 2004
Anson County	No	36.9 (22.1, 57.3)	4	2000 - 2004	**	**	**
Wake County	No	36.3 (31.6, 41.4)	48	2000 - 2004	stable →	-1.0 (-2.0, 0.1)	1980 - 2004
Montgomery County	No	36.3 (20.9, 57.6)	4	2000 - 2004	**	**	**

Lee County	No	36.1 (24.5, 50.8)	7	2000 - 2004	stable →	-0.9 (-3.4, 1.7)	1980 - 2004
Madison County	No	36.0 (21.2, 57.1)	4	2000 - 2004	**	**	**
Alexander County	No	36.0 (21.3, 55.8)	4	2000 - 2004	**	**	**
Bertie County	No	35.7 (20.1, 58.5)	3	2000 - 2004	**	**	**
Craven County	No	34.3 (25.7, 44.7)	12	2000 - 2004	stable →	-1.4 (-3.8, 1.1)	1980 - 2004
Yancey County	No	33.4 (19.4, 54.1)	3	2000 - 2004	**	**	**
Wilkes County	No	33.2 (24.0, 44.5)	9	2000 - 2004	stable →	-0.2 (-2.1, 1.8)	1980 - 2004
Ashe County	No	32.8 (20.6, 49.7)	5	2000 - 2004	**	**	**
Wilson County	No	32.6 (23.0, 44.4)	8	2000 - 2004	stable →	-1.7 (-3.6, 0.1)	1980 - 2004
Stokes County	No	32.4 (20.5, 48.2)	5	2000 - 2004	stable →	-0.3 (-3.1, 2.6)	1980 - 2004
Carteret County	No	32.0 (23.5, 42.5)	10	2000 - 2004	stable →	-0.6 (-2.3, 1.2)	1980 - 2004
Cabarrus County	No	31.6 (24.2, 40.3)	13	2000 - 2004	rising ↑	2.5 (0.1, 5.1)	1980 - 2004
Yadkin County	No	31.4 (19.7, 47.2)	5	2000 - 2004	**	**	**
Mecklenburg County	No	31.3 (27.5, 35.3)	54	2000 - 2004	falling ↓	-2.1 (-3.2, -1.1)	1980 - 2004
Alamance County	No	31.2 (24.7, 38.7)	17	2000 - 2004	stable →	-1.1 (-3.1, 0.8)	1980 - 2004
Columbus County	No	30.8 (20.7, 43.7)	6	2000 - 2004	stable →	-19.8 (-37.5, 3.0)	1999 - 2004
Gaston County	No	30.4 (24.5, 37.3)	20	2000 - 2004	stable →	-0.6 (-2.2, 0.9)	1980 - 2004
Forsyth County	No	29.9 (25.3, 35.1)	32	2000 - 2004	falling ↓	-1.9 (-3.0, -0.8)	1980 - 2004
Guilford County	No	29.9 (26.0, 34.2)	43	2000 - 2004	falling ↓	-10.8 (-19.8, -0.9)	1999 - 2004
Rockingham County	No	29.9 (22.6, 38.7)	12	2000 - 2004	stable →	-1.1 (-3.7, 1.5)	1980 - 2004
Brunswick County	No	29.7 (21.3, 40.1)	10	2000 - 2004	stable →	-0.5 (-3.3, 2.3)	1980 - 2004
Catawba County	No	29.5 (22.7, 37.5)	14	2000 - 2004	falling ↓	-7.3 (-11.4, -2.9)	1994 - 2004
Johnston County	No	29.5 (21.5, 39.2)	10	2000 - 2004	stable →	-1.7 (-3.9, 0.5)	1980 - 2004

Union County	No	29.3 (21.5, 38.8)	10	2000 - 2004	falling ↓	-7.8 (-11.8, -3.8)	1990 - 2004
Watauga County	No	28.9 (17.6, 44.4)	4	2000 - 2004	**	**	**
Stanly County	Yes	28.8 (19.8, 40.3)	7	2000 - 2004	stable →	-0.5 (-3.1, 2.1)	1980 - 2004
Caldwell County	Yes	28.3 (20.4, 38.2)	9	2000 - 2004	stable →	-1.4 (-3.7, 1.1)	1980 - 2004
Haywood County	Yes	27.3 (19.6, 37.1)	9	2000 - 2004	stable →	1.1 (-1.2, 3.4)	1980 - 2004
Onslow County	Yes	27.3 (18.3, 38.4)	8	2000 - 2004	stable →	-3.2 (-6.5, 0.2)	1980 - 2004
Davidson County	Yes	27.3 (21.2, 34.5)	15	2000 - 2004	stable →	-0.6 (-3.0, 1.8)	1980 - 2004
Randolph County	Yes	26.5 (20.0, 34.4)	11	2000 - 2004	stable →	0.2 (-1.9, 2.3)	1980 - 2004
New Hanover County	Yes	26.5 (21.0, 33.0)	17	2000 - 2004	falling ↓	-2.5 (-4.0, -1.0)	1980 - 2004
Buncombe County	Yes	26.4 (22.0, 31.5)	26	2000 - 2004	falling ↓	-5.5 (-8.6, -2.2)	1992 - 2004
Surry County	Yes	26.4 (18.8, 35.9)	8	2000 - 2004	stable →	-1.7 (-3.8, 0.5)	1980 - 2004
Rutherford County	Yes	26.2 (18.6, 35.9)	8	2000 - 2004	stable →	-0.4 (-2.8, 2.0)	1980 - 2004
Macon County	Yes	26.2 (17.5, 38.4)	6	2000 - 2004	**	**	**
Lincoln County	Yes	26.2 (17.2, 37.9)	6	2000 - 2004	stable →	-1.2 (-3.7, 1.5)	1980 - 2004
Iredell County	Yes	25.5 (19.2, 33.0)	12	2000 - 2004	stable →	-1.3 (-3.0, 0.4)	1980 - 2004
Beaufort County	Yes	25.4 (16.5, 37.4)	5	2000 - 2004	falling ↓	-4.0 (-7.1, -0.8)	1983 - 2004
Rowan County	Yes	25.2 (19.6, 31.9)	14	2000 - 2004	falling ↓	-8.0 (-12.5, -3.2)	1993 - 2004
Henderson County	Yes	24.9 (19.7, 31.2)	16	2000 - 2004	stable →	-0.9 (-2.7, 0.8)	1980 - 2004
Moore County	Yes	23.6 (18.0, 30.6)	12	2000 - 2004	falling ↓	-3.5 (-5.3, -1.6)	1980 - 2004
Davie County	Yes	23.4 (13.6, 37.2)	4	2000 - 2004	stable →	-2.6 (-5.9, 0.8)	1980 - 2004
Cherokee County	Yes	21.6 (12.4, 35.4)	3	2000 - 2004	**	**	**
Transylvania County	Yes	20.9 (12.6, 33.1)	4	2000 - 2004	**	**	**

Burke County	Yes	20.1 (13.7, 28.3)	7	2000 - 2004	stable →	-2.1 (-4.4, 0.2)	1980 - 2004
McDowell County	Yes	18.6 (10.5, 30.3)	3	2000 - 2004	**	**	**
Alleghany County	*	*	3 or fewer	2000 - 2004	**	**	**
Avery County	*	*	3 or fewer	2000 - 2004	**	**	**
Camden County	*	*	3 or fewer	2000 - 2004	**	**	**
Chowan County	*	*	3 or fewer	2000 - 2004	**	**	**
Clay County	*	*	3 or fewer	2000 - 2004	**	**	**
Currituck County	*	*	3 or fewer	2000 - 2004	**	**	**
Dare County	*	*	3 or fewer	2000 - 2004	**	**	**
Gates County	*	*	3 or fewer	2000 - 2004	**	**	**
Graham County	*	*	3 or fewer	2000 - 2004	**	**	**
Greene County	*	*	3 or fewer	2000 - 2004	**	**	**
Hyde County	*	*	3 or fewer	2000 - 2004	**	**	**
Jackson County	*	*	3 or fewer	2000 - 2004	**	**	**
Jones County	*	*	3 or fewer	2000 - 2004	**	**	**
Mitchell County	*	*	3 or fewer	2000 - 2004	**	**	**
Pamlico County	*	*	3 or fewer	2000 - 2004	**	**	**
Perquimans County	*	*	3 or fewer	2000 - 2004	**	**	**
Polk County	*	*	3 or fewer	2000 - 2004	**	**	**
Swain County	*	*	3 or fewer	2000 - 2004	**	**	**
Tyrrell County	*	*	3 or fewer	2000 - 2004	**	**	**
Washington County	*	*	3 or fewer	2000 - 2004	**	**	**

Notes:
Created by statecancerprofiles.cancer.gov on 07/25/2008 9:50 am.
State Cancer Registries may provide more current or more local data. Data presented on the State Cancer Profiles Web Site may differ from statistics reported by the State Cancer Registries (for more information).

Trend
Rising when 95% confidence interval of annual percent change is above 0.
Stable when 95% confidence interval of annual percent change includes 0.
Falling when 95% confidence interval of annual percent change is below 0.

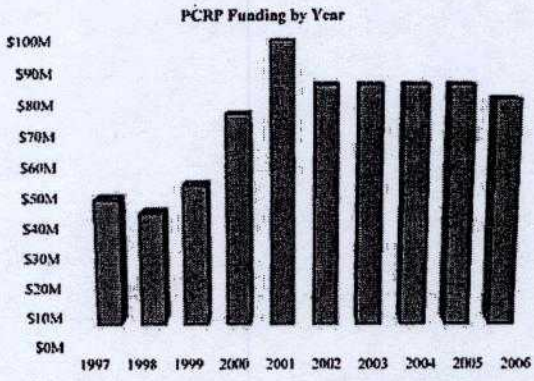
* Data has been suppressed to ensure confidentiality and stability of rate estimates.
** Data are too sparse to provide stable estimates of annual rates needed to calculate trend.
[1] Healthy People 2010 Objectives provided by the Centers for Disease Control and Prevention.
[2] Recent trend in death rates were calculated using the Joinpoint Regression Program and are expressed as the annual percent change over the recent trend period. Recent trend period is the period since last change in trend as determined by Joinpoint.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1–4, 5–9, ... 80–84, 85+). The Healthy People 2010 goals are based on rates adjusted using ...nt methods but the differences should be minimal. Population counts for denc...ors are based on Census populations as modified by NCI.

Congressionally Directed Medical Research Programs
Prostate Cancer Research Program (PCRP)

Introduction to the PCRP

Grassroots efforts by the prostate cancer advocacy community led to congressional appropriations to the Department of Defense (DOD) of $45 million (M) in Fiscal Year 1997 (FY97) for prostate cancer research. Since then, a total of $730M has been appropriated, including $80M for FY06. This funding energized the development of a unique partnership among the public, Congress, and the military. The Congressionally Directed Medical Research Programs (CDMRP), within the U.S. Army Medical Research and Materiel Command (USAMRMC), manages the PCRP. The PCRP review of proposals is conducted according to the two-tier review model recommended by the National Academy of Sciences Institute of Medicine; this model has received high praise from scientists, advocates, and Congress. Enthusiasm for the program has skyrocketed among researchers; the number of proposal submissions for FY06 is expected to double that of the inaugural year. Today, the PCRP is the second leading source of extramural prostate cancer research funding in the United States.



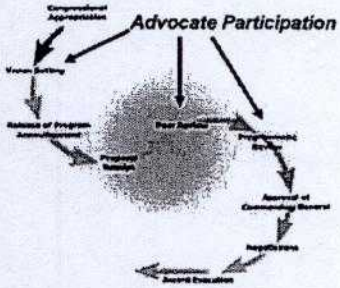
The goal of the PCRP is to fill important gaps in support of prostate cancer research not addressed by other funding agencies. The program focus is adapted yearly to facilitate rapid change and to better target funding to the most critical research areas.

Vision of the PCRP

The overall goal of the PCRP is to conquer prostate cancer. To accomplish this goal, the PCRP mission is to support innovative and multidisciplinary research. The PCRP is particularly interested in finding and funding innovative, high-impact research that seeks to (1) prevent prostate cancer, (2) detect prostate cancer, (3) cure prostate cancer, and (4) improve the quality of life for individuals living with prostate cancer and for their families.

Unique Features of the PCRP

Consumer Advocate Participation



Consumer advocates actively participate in setting program priorities and making funding decisions. More than 150 consumer advocates have served on peer and programmatic review panels for the PCRP. Their firsthand experience with prostate cancer provides a unique perspective that helps the scientists understand the human side of the disease and allows for funding decisions that reflect the concerns and needs of patients, their families, and clinicians. Consumer advocates also share what they have learned with their communities, resulting in increased awareness of the importance of research and a stronger relationship between the scientific community and the consumer advocate community. The overwhelming success of the PCRP inclusion of consumer advocates in the review process has influenced other funding agencies to follow this precedent.

"The U.S. Army's CDMRP is one of the best examples of direct action that is specifically dedicated to targeting prostate cancer and eliminating its tragic consequences ... the CDMRP is highly respected and is the example that other research programs should be modeled after. It was an honor to serve on the Integration Panel and to have the final review of, and vote for, the very best therapies specifically targeted against prostate cancer."
John Willey, Consumer Programmatic Reviewer, PCRP

Program Focuses

To fill important research gaps, the PCRP has focused on four broad areas:

- **Impacting Patients' Lives:** bringing new discoveries to patients through clinical research and trials
- **Eliminating Health Disparity:** eliminating the disparate burden of prostate cancer on the African-American community and other affected populations
- **Exploring Innovative, Groundbreaking Ideas and Technology:** funding high-risk and high-gain research of exciting new ideas
- **Training the Next Generation of Researchers:** inspiring and training prostate cancer researchers during their early career stages

Research Funding Strategy of the PCRP

The PCRP has implemented research and training award mechanisms that are specifically aimed at filling critical gaps and moving the field of prostate cancer research closer to finding a cure.

AWARD MECHANISM	FOCUS
• **Clinical Consortium Award:** provides resources to facilitate the rapid execution of *collaborative* Phase II or Phase II-linked Phase I clinical studies	**Impact**
• **Clinical Trial Award:** funds the rapid execution of novel Phase I, Phase I/II, or Phase II clinical trials	**Impact**
• **Collaborative Undergraduate HBCU Student Summer Training Program Award:** provides educational and training opportunities in prostate cancer research for undergraduate students at Historically Black Colleges and Universities (HBCU)	**Training**
• **Consortium Award:** funds major, coordinated goal- or product-driven research effort that is multi-institutional and national in scope and addresses overarching themes	**Disparity & Impact**
• **Exploration—Hypothesis Development Award:** supports initial exploration of untested, potentially groundbreaking concepts in prostate cancer	**Innovation**
• **HBCU Collaborative Partnership Award:** fosters collaborations between an HBCU and another institution that establish sustained HBCU prostate cancer research and training programs focused on disparity	**Disparity & Training**
• **Health Disparity Research Award:** supports research on the disparate burden of prostate cancer within affected populations and communities	**Disparity**
• **Health Disparity Training Award:** provides training opportunities to researchers early in their careers to study the disparate burden of prostate cancer within affected populations and communities	**Disparity & Training**
• **Idea Development Award:** supports innovative ideas and technology across all areas of laboratory, clinical, behavioral, and epidemiological research, including clinical trials	**Innovation**
• **New Investigator Award:** funds innovative research from newly independent investigators working in collaboration with experienced prostate cancer researchers	**Innovation & Training**
• **Physician Research Training Award:** prepares physicians for careers in prostate cancer research through a mentored training experience in a laboratory or clinical setting	**Impact & Training**
• **Prostate Cancer Training Award:** provides prostate cancer research training opportunities to individuals early in their careers	**Training**

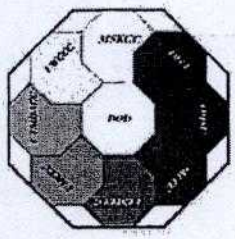
Success Stories

Impacting Patients' Lives

Consortium Award. Dr. Jonathan Simons of Emory University leads a multi-institutional effort to define the lethal phenotype of prostate cancer. Since prostate cancer becomes incurable when it metastasizes to bone, Dr. Simons' group is focusing on the biology of bone metastasis, an innovative molecular classification system for diagnosis, and new therapeutics. Dr. Simons' group is working with industry to place three new therapeutics in clinical trials.

Clinical Consortium Award. The Clinical Consortium Award supports the creation of a major multi-

institutional clinical trial resource to facilitate rapid execution of novel clinical trials. The goal is to speed development of novel therapeutics that will ultimately decrease the impact of the disease. Dr. Howard Scher, Chief Genitourinary Oncology Service, Memorial Sloan-Kettering Cancer Center, leads this multi-institutional consortium.



Participating clinical sites and lead investigators are: Dr. Tomasz Beer, Oregon Health and Science University; Dr. Michael Carducci, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University; Dr. Maha Hussain, University of Michigan Comprehensive Cancer Center; Dr. Philip Kantoff, Dana-Farber Cancer Institute; Dr. Christopher Logothetis, The University of Texas M. D. Anderson Cancer Center; Dr. Eric Small, University of California, San Francisco Comprehensive Cancer Center; and Dr. George Wilding, University of Wisconsin, Comprehensive Cancer Center.

Clinical Trial Award. The Clinical Trial Award funds novel Phase I and Phase II clinical trials expected to

impact prostate cancer significantly. One promising clinical trial is being conducted by Dr. Robert DiPaola of the University of Medicine and Dentistry of New Jersey. Dr. DiPaola's research team found that combining two factors, 13-cis retinoic acid and alpha-interferon, decreased levels of the survival factor BCL-2 in cell lines, and then hypothesized that these two factors would enhance the effectiveness of conventional chemotherapy. Dr. DiPaola and colleagues combined retinoic acid and interferon with taxotere and estramustine (R.I.T.E.) in a successful Phase I study with patients with hormone-refractory prostate cancer. Phase II trials of R.I.T.E are under way.

Eliminating Health Disparity

Consortium Award. Dr. James Mohler of the Roswell Park Cancer Institute leads a multi-institutional

effort (including the University of North Carolina and Louisiana State University) to determine why African-American men have more than twice the mortality rate from prostate cancer than Caucasian-American men. Interestingly, there is also a geographic disparity within the African-American population; African Americans in North Carolina have one of the highest, and African Americans in Louisiana have one of the lowest, mortality rates from prostate cancer in the United States. This large comprehensive study will provide evidence on whether health disparities in prostate cancer are due to (1) interaction with the health care system, (2) diet and biology, and/or (3) characteristics of the tumor.

Health Disparity Training Award.

Genetic Risk Factors. Dr. Matthew Freedman, while working at Massachusetts General Hospital, identified risk factors for prostate cancer in African Americans using large-scale genomic approaches. In the largest study of this type to date, his research team found no association between genetic variants of the androgen receptor gene and prostate cancer risk among African Americans, Native Hawaiians, Japanese, Latinos, and Caucasians. However, they did find

two gene variants of IGF-1 that were strongly associated with prostate cancer risk across all ethnic groups. Dr. Freedman, now at the Dana-Farber Cancer Institute, is testing over 1,000 gene markers in an African-American population to identify gene variants that contribute to increased risk of prostate cancer, thereby leading to more effective screening, prevention, and treatment strategies.

HBCU Collaborative Partnership Award.
The goal of this partnership between Florida A&M University (FAMU) and the Moffitt Cancer Center (MCC) is for FAMU to create "The FAMU Minority Prostate Cancer Training and Research (FAMU MPC) Center." After FAMU researchers, led by Dr. Folakemi Odedina, received mentoring and training from MCC scientists led by Dr. Nagalakshmi Kumar, the FAMU and MCC scientists collaborated on studies focused on health disparity and prostate cancer. Studies to develop community outreach and education programs have been highly successful. Products include kiosks in drug stores, consumer forums, online training modules, and television programs.

Exploring Innovative, Groundbreaking Ideas and Technology

Idea Development Award.

Discovery of Gene Fusions. Dr. Arul Chinnaiyan of the University of Michigan discovered that gene

fusions play a widespread role in the development of prostate cancer. Gene fusions, the accidental joining of the DNA in two genes, are commonly found in blood cancers but only rarely in solid tumors. Dr. Chinnaiyan's team found recurrent gene fusions between the prostate-specific androgen-regulated gene *TMPRSS2* and *ERG* or *ETV1* (two genes linked to leukemias) in approximately 80% of the prostate cancer tissue samples analyzed. These findings have broad implications for prostate cancer diagnosis and treatment, as the fused genes may provide both a novel biomarker and a therapeutic target in the majority of prostate cancers. Furthermore, these findings suggest a new model for cancer research: chromosomal rearrangements can occur in epithelial cancers.

New Investigator Awards.

Finding NEMO: A New Type of Cancer Therapy. Dr. Paula Bates and her colleagues at the University of Louisville discovered a class of synthetic molecules, called guanine-rich oligonucleotides (GROs), with a natural affinity for a protein (nucleolin) on the surface of cancer cells. After attaching to a tumor cell, GROs are drawn inside and trigger its death. This mechanism is different from any cancer therapy discovered thus far. Inside the cell, GROs target several proteins, including NEMO, a survival factor that helps cells become resistant to chemotherapy. A specific GRO (AGRO100/AS1411) showed promising antitumor activity with few adverse side effects in a recently conducted Phase I clinical trial.

Laser Technology to Improve Quality of Life. Urethral and bladder neck strictures (narrowing) occur as a consequence of prostate cancer surgery and result in urinary incontinence. In an effort to reduce scarring and recurrence of strictures, Professor Nathaniel Fried of Johns Hopkins University recently used a new laser technology (used in cosmetic wrinkle removal) to precisely incise the urethra and bladder neck during preclinical studies. Dr. Fried's laboratory showed that the Erbium:YAG laser is up to 30 times more precise than other lasers used in urology. These findings hold great promise for increasing the quality of life of thousands of men after prostate cancer surgery.

A New Genetic Link to Prostate Cancer in African Americans. Dr. Alex Lentsch of the University of Cincinnati College of Medicine suspected that there may be a link between the lack of a protein called DARC on red blood cells and the greater incidence and mortality of prostate cancer in the African-American

population. The absence of DARC on red blood cells is a genetic mechanism of protection against malaria. Approximately 70% of African Americans are missing DARC on their red blood cells. Dr. Lentsch's team found that red blood cells from DARC-deficient mice were unable to inhibit prostate tumor growth. Thus, the absence of DARC protein, which occurs in the majority of African Americans, may be a contributing factor to the increased mortality from prostate cancer in this population.

Exploration Hypothesis Development Awards.

Citrus Flavonoids and Prevention of Prostate Cancer. Dr. Susanne Henning of University of California, Los Angeles (UCLA) tested her hypothesis that nutrients in grapefruit and oranges called flavonoids have important biological functions besides their known effects as antioxidants. Dr. Henning and colleagues discovered that a particular citrus flavonoid called naringenin could stimulate DNA repair in prostate cancer cells. These data suggest that citrus fruits may have cancer-preventive effects that result from the prevention of gene mutations caused by environmental factors.

Training the Next Generation of Researchers

Prostate Cancer Training Awards.

Imaging. Dr. Baowei Fei of Case Western Reserve University envisions using imaging to create "before and after" treatment snapshots of the prostate to improve prostate cancer diagnosis and therapy. Dr. Fei's approach is to integrate structural and anatomical details with real-time, functional data from two or more different imaging techniques. Dr. Fei created novel image registration techniques that combine multiple imaging modalities for early detection and image-guided therapies for prostate cancer. These novel techniques could improve dosage planning for both external beam and brachytherapy treatments of prostate cancer.

New Blood Test. Dr. Xiaoju Wang and Dr. Arun Sreekumar of the University of Michigan developed a new blood test that is more accurate than the PSA test. This test is based on a panel of 22 biomarkers that together are more accurate than a single marker like PSA. These biomarkers generated false alarms only 12% of the time (compared to 80% for PSA). Importantly, the test was able to accurately identify prostate cancer in samples with intermediate PSA scores (2.5 to 10 ng/mL). This new prostate cancer test could potentially be used in combination with PSA screening and offers the hope of earlier and more accurate diagnosis.

Selenium-Induced Biomarkers. Dr. Yan Dong of the Roswell Park Cancer Institute identified a panel of biomarkers that respond to selenium. Selenium is a trace mineral found in seafood, grains, and vegetables that helps prevent cancer by protecting against the damaging effects of free radicals, boosting the immune system, and inhibiting tumor angiogenesis. Clinical trials testing selenium chemoprevention of prostate cancer are under way, and selenium-responsive biomarkers are needed to measure the effectiveness of selenium in these trials. Dr. Dong's team identified several candidate selenium-responsive biomarkers that provide exciting clues about selenium action and are potential diagnostic markers and therapeutic targets.

Physician Research Training Award.

Discovery of New Pathways in Hormone-Refractory Prostate Cancer. Dr. Ingo Mellinghoff of UCLA dissected signaling pathways that modulate function of the androgen receptor. He found the surprising results that a signaling pathway called the HER2/ERBB3 kinase pathway (and not the expected EGFR pathway) modulates androgen receptor function. These findings have clinical implication as they suggest that in hormone-refractory tumors the HER2/ERBB3 kinase pathway is a critical target for kinase inhibitor therapy.

Collaborative Undergraduate HBCU Student Summer Training Program Award.
Dr. Timothy McDonnell of The University of Texas M. D. Anderson Cancer Center and Dr. Debabrata Ghosh of Texas Southern University (TSU) lead a unique scientific training program with the ambitious goals of increasing the number of individuals with comprehensive training in prostate cancer and increasing the number of individuals from underrepresented populations in the scientific workforce. Undergraduate science majors from TSU attend courses and presentations at TSU and M. D. Anderson, perform intensive summer laboratory research at M. D. Anderson, present their work at local and national meetings, and receive follow-up training, mentoring, and career guidance.

Summary of PCRP Research Highlights

Basic Research. Basic research discoveries are critical in the fight against prostate cancer because they provide the foundation for the development of new diagnostic and therapeutic tools.

- Determining causes of health disparity and prostate cancer in African Americans (Dr. James Mohler)
- Discovery of the first gene fusions in prostate cancer (Dr. Arul Chinnaiyan)
- Discovery of biological functions in cancer of DARC (a protein implicated in health disparity of prostate cancer) (Dr. Alex Lentsch)
- Discovery of a signaling pathway that modulates androgen function (Dr. Ingo Mellinghoff)

Prevention. One approach to fighting prostate cancer is to prevent the disease from occurring and decrease incidence rates.

- Discovery of mechanisms by which citrus flavonoids prevent prostate cancer (Dr. Susanne Henning)
- Identification of a panel of biomarkers that are responsive to selenium (Dr. Yan Dong)

Detection and Diagnosis. Men with early-stage prostate cancers have an excellent prognosis. Therefore, early detection and diagnosis of prostate cancer could greatly improve survival.

- Discovery of IGF-1 gene variants related to increased risk of prostate cancer (Dr. Matthew Freedman)
- Development of a new 22-biomarker blood test that is more accurate than the PSA test (Dr. Xiaoju Wang and Dr. Arun Sreekumar)

Treatment and Quality of Life. Once patients are diagnosed with prostate cancer, it is critical to provide effective treatments against the cancer and maintain a high quality of life.

- Creating an infrastructure to expedite multi-institutional clinical trials (Dr. Howard Scher)
- Developing new clinical therapeutics for late-stage prostate cancer (Dr. Jonathan Simons)
- Performing Phase I and II clinical trials of R.I.T.E. (Dr. Robert DiPaola)
- Discovery of a new class of cancer therapies called GROs (Dr. Paula Bates)
- Using laser therapy to reduce urinary incontinence (Dr. Nathaniel Fried)
- Development of new imaging techniques to guide therapies (Dr. Baowei Fei)

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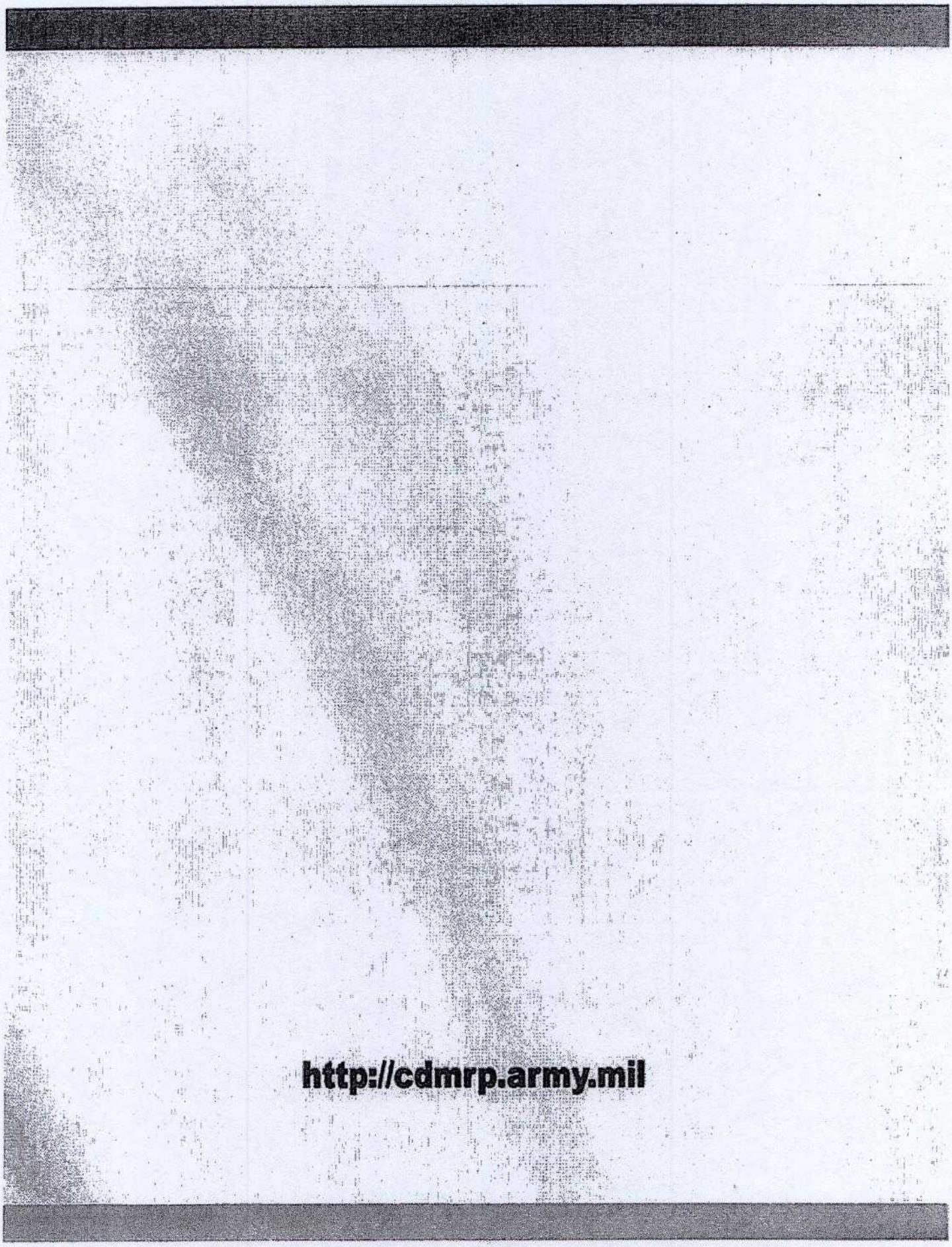
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