The Prostate Cancer Biorepository Network (PCBN)

Ruth Pe Benito[1], Monica Gorman[1], Helen Fedor[2], Karen Sfanos[2], Patricia Kolmer[2], Medha Darshan[2], Rachel Ruoff[1], James Morgan[2], George Netto[2], Peng Lee[1], Angelo De Marzo[2], Jonathan Melamed[1] and Bruce J. Trock[2].

New York University School of Medicine, New York, NY [1], Johns Hopkins School of Medicine, Baltimore MD [2]

PROSTATE CANCER
BIOREPOSITORY NETWORK

About us

The Prostate Cancer Biorepository Network (PCBN) is a public bioresource that provides tissue and other biospecimens to academic, non-profit and commercial prostate cancer investigators. This biorepository is a collaboration between Johns Hopkins University (JHU) and New York University (NYU) Schools of Medicine, and is funded by the Department of Defense.

Operations began in June 2011, and have since received many applications from academic, non-profit and commercial investigators. Initial DOD funding is a pilot effort, with a goal of becoming self-sustaining and expanding the Network after 3 years.

Our Mission

PCBN was developed to:

a) respond to the need for high quality, well-characterized and well-annotated biospecimens obtained in a systematic, reproducible fashion using optimized and standardized protocols

b) conduct research to evaluate the impact of pre-analytical variability on biomarker assay results.

Resources targeted for future development, evaluation:

a) whole genome amplification

b) metastatic specimens (tissue, blood)

c) case diversity (active surveillance programs, ethnicitiy)

Biospecimen Science

Drawing from the extensive experience and expertise of network members, PCBN conducts biospecimen science research to annotate critical parameters in the biospecimen "life cycle," and evaluate the impact of variation in those parameters on the molecular integrity of research tissues.

Planned studies include:

a) impact of variability on canonical biomarkers

b) impact of fixation variability (under- and over-fixation)

c) variability in processing schedules

d) time from devascularization (open and robotic surgery)

e) thermal history - effect on RNA yield, integrity, transcriptome profiles

PCBN Specimens

TISSUE MICROARRAYS	Test	IHC assay/ biomarker optimization (*8 cases tumor and normal, no clinical data*)
	New Marker Screening	Early phase comparison of tumor vs. normal (*40 cases tumor and normal, 4 cores redundancy, no clinical data*)
	Test Grade/Stage	Association with grade/stage (*80 cases tumor and normal, 4 cores, limited clinical data*)
	Grade/Stage	Association with grade/stage (*200 cases tumor and normal, 4 cores, key clinical variables*)
	Natural History of Prostate Cancer*	Association with natural history of PCa (*237 cases tumor and normal, 4 cores, key clinical variables*)
	Test PSA Progression	Testing IHC assay before PSA Progression Array is released (*10 cases with tumor and normal, 4 cores*)
	PSA Progression*	Association with PCa progression (*726 cases tumor and normal, 4 cores, key clinical variables*)
	Race Disparity	Comparison between ethnicitiy (*150 cases, grade/stage matched, key clinical/demographic data*)
	Family History	Association with hereditary risk of PCa (*343 cases positive & negative FHx, Gleason matched*)
	Hormone Sensitivity	Association with androgen biology (*56 cases, hormone resistant vs naive, 4 cores, key clinicopathological data*)
	Biochemical Recurrence	Association with known prognostic factors (*217 cases,4-5 cores, most with clinicopathological variables*)
	Benign Prostatic Hyperplasia	Association with benign prostatic hyperplasia (BPH) (*50 cases; 28 RRP, 12 Suprapubic, 10 small prostates*)
	High-Grade PIN	Association with HGPIN (*119 cases, 4 cores HGPIN, 1 core tumor, with key clinical variables*)
	Fixation	Impact fixation length (*27 cases, 5 time points (4, 8, 12, 24, 48hr), with diagnostic block, no clinical data*)
	Ischemia / Fixation Delay	Impact of fixation delay (*15 cases, 4 time points (0 1, 2, 4hr), with diagnostic block, no clinical data*)
TISSUE	Radical Prostatectomy	Fresh-frozen and FFPE samples (RRP & RALP), large subset linked to clinical, pathology and outcome data.
	TURP	FFPE samples, large subset linked to clinical, pathology and outcome data.
	Suprapubic Prostatectomy	FFPE suprapubic prostatectomy specimens, annotated with standard pathology data.
	Organ Donor Tissue	Normal prostate specimens (20-40yo) obtained from organ donor networks. All with minimal clinical information.
	Rapid-Autopsy Tissue	Prostate and metastatic specimens from men with advanced metastatic disease obtained 6hrs post-mortem.
FLUIDS	Serum, Plasma, Buffy Coat	Derived from blood collected from prostatectomy, autopsy and organ donor cases. A large subset are linked to clinical, pathology and outcome data and have matched snap-frozen and FFPE tissue.
	Prostatic / Seminal Vesicle Fluid	Prostatic / SV fluid obtained from prostatectomy cases. A large subset are linked to clinical, pathology and outcome data and have matched snap-frozen, FFPE tissue and/or blood component material.
DERIVATIVES	DNA	DNA extracted from PCBN specimens (snap-frozen and fixed tissue, body fluids). A large subset are linked to clinical, pathology and outcome data, most with matched snap-frozen, FFPE tissue and/or blood components.
	RNA	RNA extracted from PCBN specimens (snap-frozen and fixed tissue, body fluids). A large subset are linked to clinical, pathology and outcome data, most with matched snap-frozen, FFPE tissue and/or blood components.
	Protein	Protein extracted from PCBN specimens (snap-frozen and fixed tissue, body fluids). A large subset are linked to clinical, pathology and outcome dat, most with matched snap-frozen and FFPE tissue and/or blood components.

*Due to level of effort and source of funding, access to these materials require collaboration.

Application Process

PCBN materials are categorized into three levels of priority, according to rarity and/or research value. Access to rare or specimens with high research value require preliminary data demonstrating biomarker performance and/or correlation with outcome.

PRIORITY 1 SPECIMENS: readily available, with little or no linked clinical data, mainly used for early stage research.

PRIORITY 2 SPECIMENS: greater research value due to abundance or richness of linked data or other specimen types.

PRIORITY 3 SPECIMENS: rare and/or data-rich specimens

The Application Process has multiple steps, but has been optimized (processes running concurrently) to decrease time-frame between application submission and release of PCBN material.
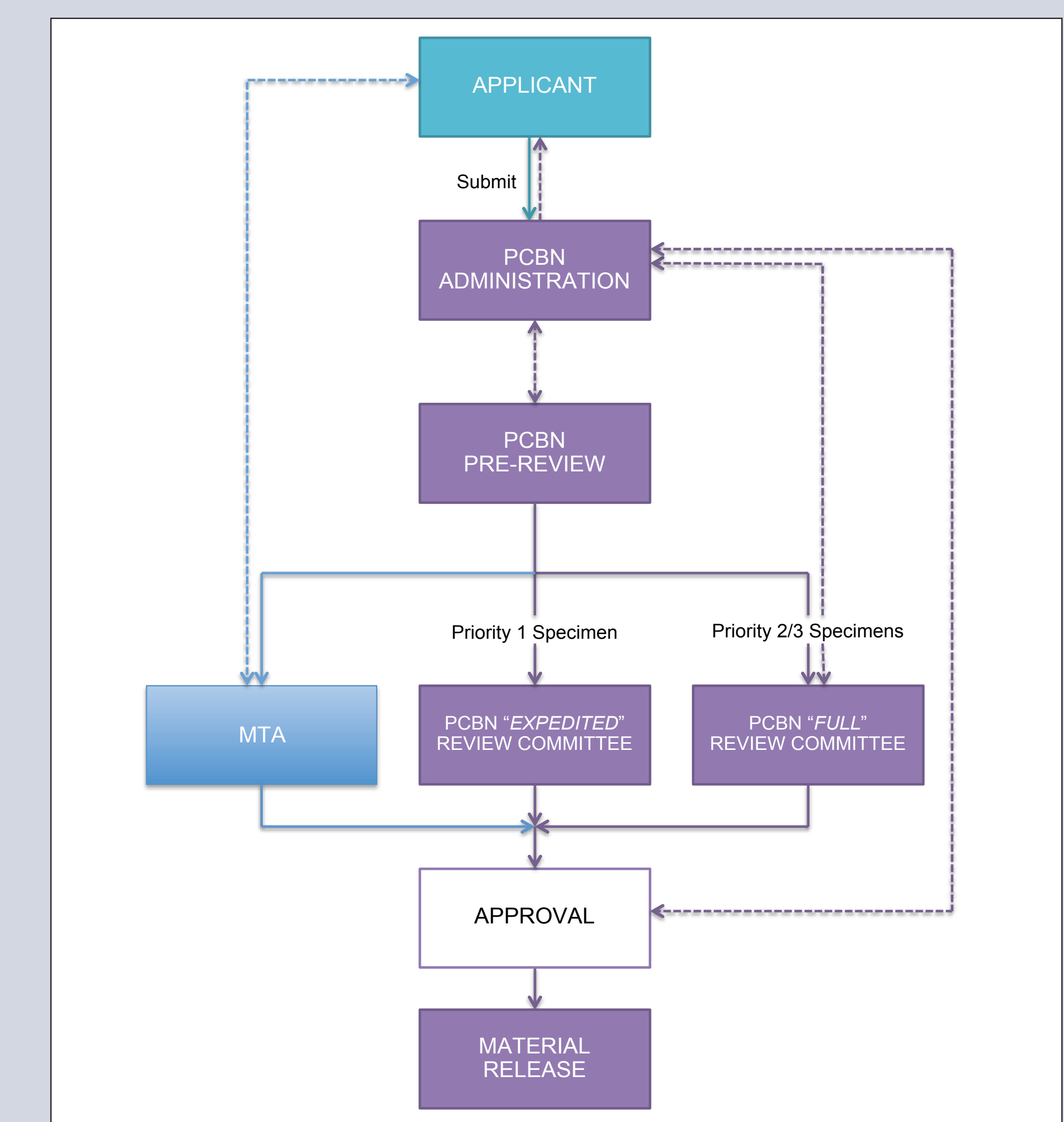
To apply for PCBN material, download our application form from our website www.prostatebiorepository.org

NYU Langone
MEDICAL CENTER

JOHNS HOPKINS
MEDICINE