CANCER RESEARCH HORIZONS

BCPP Database

Data Licensing Opportunity

Clinically linked multi-omic dataset in bladder cancer

FURTHER FASTER TOGETHER
We are beating cancer

BCPP study overview

The Bladder Cancer Prognosis Program (BCPP) was a large epidemiological prospective cohort study of bladder cancer patients involving collection of clinical data, patient questionnaires & establishment of a biospecimen collection.

Diagnosis

- Patient characteristics
- Mutational status
- Tumour staging
- Treatment history

Study follow-up (5 years)

- Disease status
- Clinical treatment data
- Recurrence, progression and survival data
- Histopathology data

Continued monitoring (planned)

- Additional 15-year follow-up for patient survival planned via Public Health England

Baseline

Patient follow-up

Longitudinal follow-up

Tumour, blood & urine sample collected for sequencing

Database overview

Indication: Bladder

Stage: Early to Advanced

Treatment: Standard of care

Geography: UK

1284

Patients

>900

Samples Profiled

>10

Data types

Data Types

- Clinical
- Genomics
- Transcriptomics
- Proteomics
- Other

Key differentiators

High quality clinical data

- Detailed **5-year follow-up** clinical data*
- Includes mutation status, treatment history and event data (recurrence, progression)

Multiple data types

- **Genetic, transcriptomic & proteomic data** providing a comprehensive overview of molecular profile of tumours
- Linked to **clinical outcome** data

Large cohort

- **1284** newly diagnosed bladder patients donated pre-treatment samples for data generation
- Includes both **NMIBC and MIBC** patients (n=1009, 275 respectively)

2D Histopathology image data

- ~900 digitised **tissue microarray images** with IHC for 10 biomarkers
- Contains control (unstained) images

Note: * Follow-up data only available for NMIBC patients

Patient cohort – grade and stage

Male (~78%), Female (~22%)

pTa	pTis	pT1	pT2+	Total
657	14	330	275	1276*

Grade 1	Grade 2	Grade 3	Unknown	Total
277	379	604	25	1284

Key:
pTX: cannot be assessed
pT0: no evidence of primary tumour
pTa: noninvasive papillary carcinoma
pTis: carcinoma in situ
pT1: invades lamina propria
pT2+: muscle invasive bladder cancer

Note: *pT stage not available for 6/1284 bladder cancer patients, 2/1284 patients were assessed as pTX and pT0

Treatment received

		EAU Low / Intermediate Risk NMIBC (n)	EAU High Risk NMIBC (n)	MIBC (n)
Treatment*	TURBT	580	393	272
	Cystectomy	3	34	62
	Re-resection	34	100	11
	BCG	29	171	0
	Intravesicle Chemotherapy Single Instillation	83	60	0
	Intravesicle Chemotherapy Course	19	19	0
	Systemic Chemotherapy	2	9	0
	Radiotherapy	2	8	2

Note: BCG = Bacillus Calmette-Guérin; TURBT = transurethral resection of bladder tumour; EAU = European Association of Urology clinical risk score for NMIBC
* Some patients received more than one treatment. Not all patients have treatment data recorded.

Available data: Summary

DATA GENERATED FROM BASELINE SAMPLES*		Tumour	Urine	Blood
Genomics	Whole exome sequencing (DNAseq)	101	-	101
	Targeted DNAseq (23 commonest BC mutations)	956	346	-
	HPV 16 & 18 and BKV/JCV genomic DNA (qPCR)	685	-	-
	Genome-wide germline SNPs (Illumina Infinium OmniExpress-24 BeadChip array)	-	-	780
Transcript-omics	Whole transcriptome short-read sequencing, RNAseq (Illumina NextSeq 1000)	89	-	-
	Targeted long read transcriptome sequencing of 20 relevant cancer genes (PacBio)	64	-	-
	Paired long -read and paired short-read transcriptome sequencing (Oxford Nanopore)	12	-	-
Proteomics	MALDI-TOF-MS	-	878	-
	Midkine ELISA	-	572	-
	HAI-1/EpCAM/EGFR ELISAs		961-990	-
Other	Clinical and epidemiological data with >5 years median follow-up	Patient data, n = 1,536**		
	Genome-wide methylation (*Illumina* 450k array)	93	-	-
	Immunohistochemistry for IL-17A, PD-L1, PD-L2, B7H4	95-153	-	-
	Digitised H&E-stained tissue microarrays plus IHC for FGFR3, EGFR, pRB, TP53, Ki-67, VEGF, CK20	993	-	-

* Data also generated from serum samples: Olink Oncology, Inflammation, Neurology, CVS II & III panels, N=90
**Includes 1284 bladder cancer (BC) patients and 252 non-BC patients

Clinical data

Baseline and demographic data including:

- Patient gender
- Age at study enrolment*
- TNM stage and tumour grade
- Size of largest tumour
- Number of primary tumours
- Smoking status

Health-related lifestyle *(e.g., medical history, dietary intake)* & **family history** data also available

Treatment data** including:

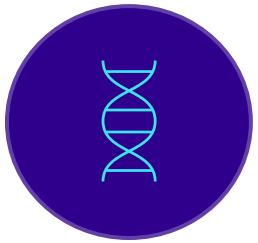
- BCG received
- Time to BCG start date
- Number of BCG doses
- Intravesical chemotherapy received and regimen (single/course)
- TURBT received

Event data including:

- Time to recurrence in bladder (as applicable)
- Mortality status
- Time to progression to MIBC (as applicable)
- Follow-up survival data (up to 2018)

* Study participants were newly diagnosed bladder cancer patients so the age at enrolment will be the same as the age at diagnosis for the majority of patients ** n=~100 patients recorded to have received cystectomy

Data generation methods



Genomics

:

- Targeted DNAseq conducted on 23 most common bladder cancer mutations generated using Illumina Novaseq (FASTQ)
- Whole exome sequencing using Illumina NextSeq 1000 (FASTQ)
- HPV 16 & 18 and BKV/JCV genomic DNA generated using qPCR (.csv)

H&E Digitised slides

- Digitised H&E-stained tissue microarrays plus IHC for FGFR3, EGFR, pRB, TP53, Ki-67, VEGF, CK20 (Aperio)

Transcriptomics

- RNAseq using Illumina Nextseq 1000 (FASTQ)
- Targeted long read transcriptome sequencing of 20 relevant cancer genes using PacBio Sequel II (.xlsx)
- Paired long -read and paired short-read transcriptome sequencing using Oxford Nanopore (FASTQ)

Other

- MALDI-TOF-MS using Bruker Ultraflextreme instrument (.csv)
- Genome-wide methylation generated using Illumina 450k BeadChip array (IDAT)

Applying for access

Data access requests

Cancer Research Horizons has **exclusive commercial rights** to the BCPP database

To access the BCPP database, companies are required to **submit a data access request** to CRH (using the template provided), which is reviewed by the **BCPP Data Access Committee**

Key information required:

- Description of the proposed study & intended use of the data (in both technical & lay terms)
- The specific data types & cohorts that you would require access to
- Description of the potential patient benefit generated from the use of the dataset

Licence agreements

Access is subject to a licence agreement with Cancer Research Horizons, which includes terms that align with CRH's Guiding Principles to Commercial Data Partnerships

Key terms:

- Data access is offered on a **non-exclusive** basis & solely for the **approved purpose**
- Any **IP** generated from use of the data will be **owned by the company***
- Licences are **time-limited** (typical term is 3-years)

Data access will be facilitated through managed data transfer using Globus

*Unless data is used in collaboration with CRH, in which case terms will be determined on a case-by-case basis

Thank you

For further information, please contact:

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