

# The Health Science Alliance (HSA) Biobank

## Ten years of supporting cancer research

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### BACKGROUND & AIM

The Health Science Alliance (HSA) Biobank was established in 2012 as a commitment of the Cancer Institute NSW-funded Translational Cancer Research Center, the Translational Cancer Research Network (TCRN). Housed in a purpose-built facility within the Low Cancer Research Centre, the HSA Biobank was a collaborative initiative between the South-East Sydney Local Health District (SESLHD), NSW Health Pathology (NSWHP, then known as South-Eastern Area Laboratory Service, SEALS) and the University of NSW (UNSW) (Fig 1). The HSA Biobank was initially introduced at the Prince of Wales Hospital, Randwick, but was expanded to other hospitals within the SESLHD.

The HSA Biobank was established to collect resected tissue and a blood sample under a universal consent, from all known or suspected cancer surgeries, and to make these specimens available to any cancer researcher with ethical approval for their project. This was viewed as a key translational research enabler to expedite research while simplifying the participation process for patients.

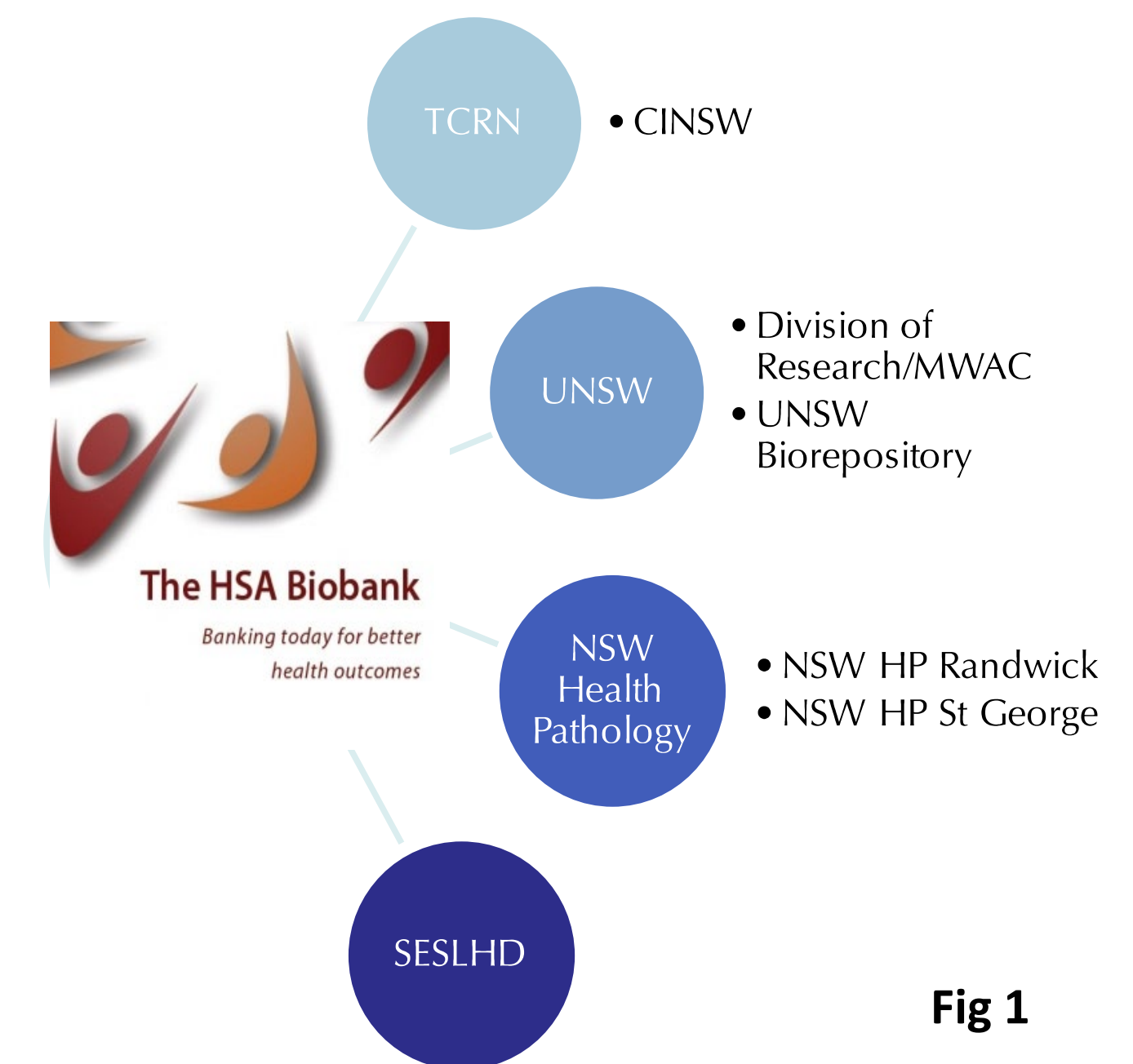


Fig 1

### METHODS

#### I. PATIENT CONSENT

Ethics approval was obtained through SESLHD (HREC 11/160). A consent form was produced by the SESLHD and a patient information brochure was developed in consultation with consumers (Fig 2)

Fig 2

#### II. PROCESS FOR ACCESS TO TISSUE

Tissue was allocated (when available) through Anatomical Pathology labs at POWH and St George Hospitals; Blood was also collected and funnelled through Central Specimen Reception (CSR) within the hospitals (Fig 3)

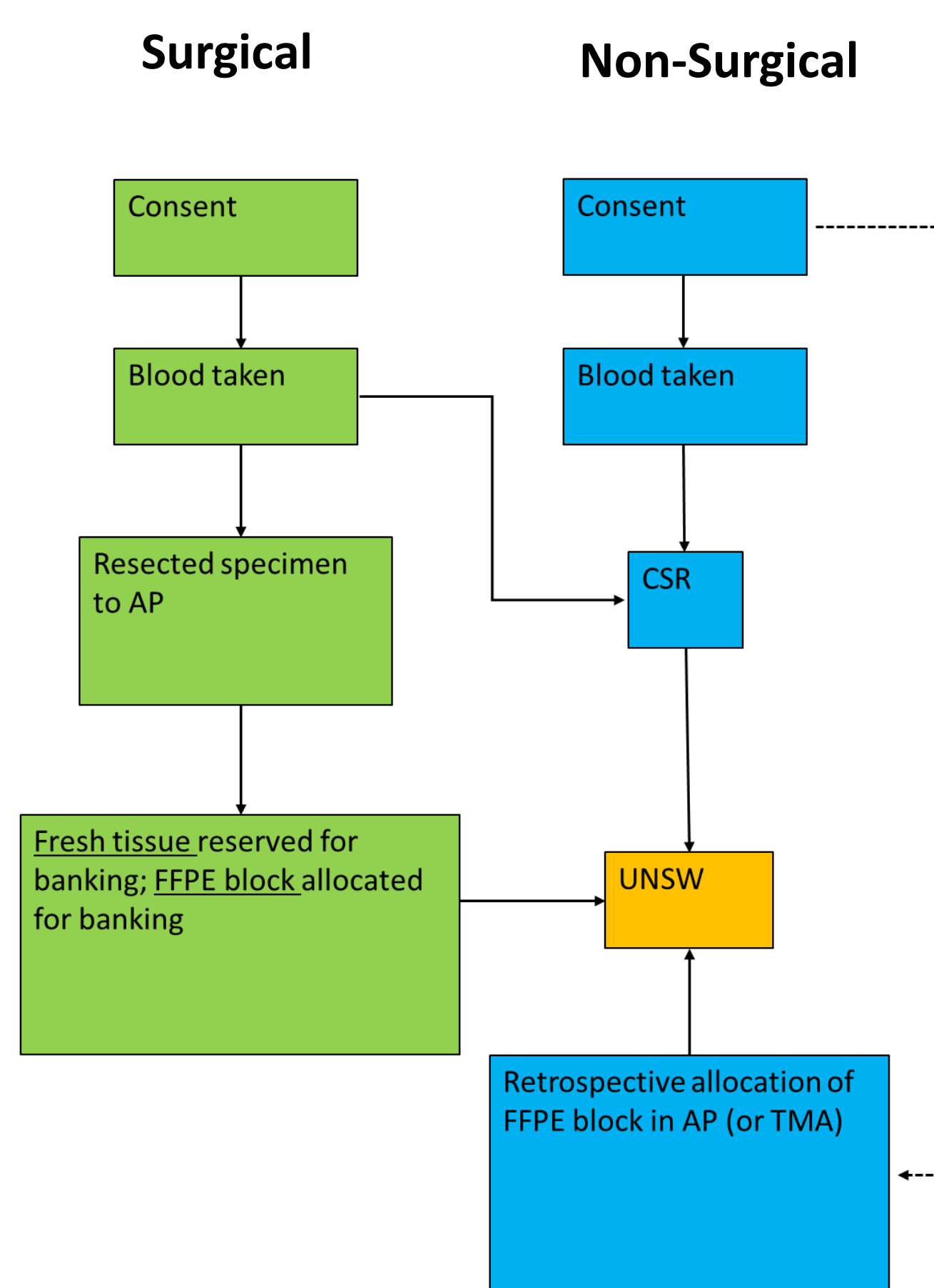


Fig 3. \*Process also applies to surgical patients when insufficient tissue is available for allocation to the biobank.

#### III. TYPES OF BIOSPECIMENS

Biospecimens banked for unspecified future research are listed in Fig 4

Biospecimens
Fixed tissue block (FFPE)
Fresh tissue (in RNALater)
Blood (plasma, cell pellet)
Bone Marrow Aspirates (BMAs) (cryopreserved cells, cell pellet)
Tissue microarrays (TMAs)
Stool samples (microbiome research)

Fig 4

#### IV. ANNOTATION WITH CLINICAL DATA

Data is extracted from different sources for annotation of specimens, including PowerChart, and hospital Oncology Information Systems. Data items are listed in Fig 5

Data
De-identified surgical/BM pathology report
Demographic data:
- Gender
- Age at diagnosis
Clinical data:
- Anatomic site
- Tumour grade
- TMN stage
- Chemotherapy/Radiotherapy
- Survival status
Medicare Benefits Scheme (MBS)
Pharmaceutical Benefits Scheme (PBS)

Fig 5

#### V. BIOSPECIMEN MANAGEMENT

An open-source biobanking software solution, 'OpenSpecimen' (OS) is employed for biospecimen management; it is used to assign codes for de-identification of specimens, to manage consent status, and it can be accessed from multiple sites, with role-based permissions. In addition, a custom-built IT solution to link university and hospital IT systems was developed, facilitating delivery of surgical pathology reports into OS upon confirmation of consent.



#### VI. BIOBANK GOVERNANCE

A robust governance structure was developed: a Management Committee to oversee strategic direction of the biobank, and a Research Access Committee (RAC), comprised of scientists and clinicians, to assess each research request submitted

### RESULTS

#### THE BIOSPECIMEN COLLECTION AND RESEARCH OUTPUTS

After 10 years, the HSA Biobank held >20,000 biospecimens from >4000 consented participants. The collection reflects areas of strength within the participating hospitals, including gynecological and upper gastrointestinal cancers, and sarcoma (Fig 6a). The age range of participants reflects the incidence of cancer in older age brackets, and the larger proportion of female participants reflects to large contribution from the Royal Hospital for Women (Fig 6b). Importantly, as the collection grew, research access increased: 40 projects were directly supported, >60 publications and presentations were generated, and 28 grants to a total of >\$9 million were influenced (Fig 6c).

Fig 6a. Research outputs: Tumour type

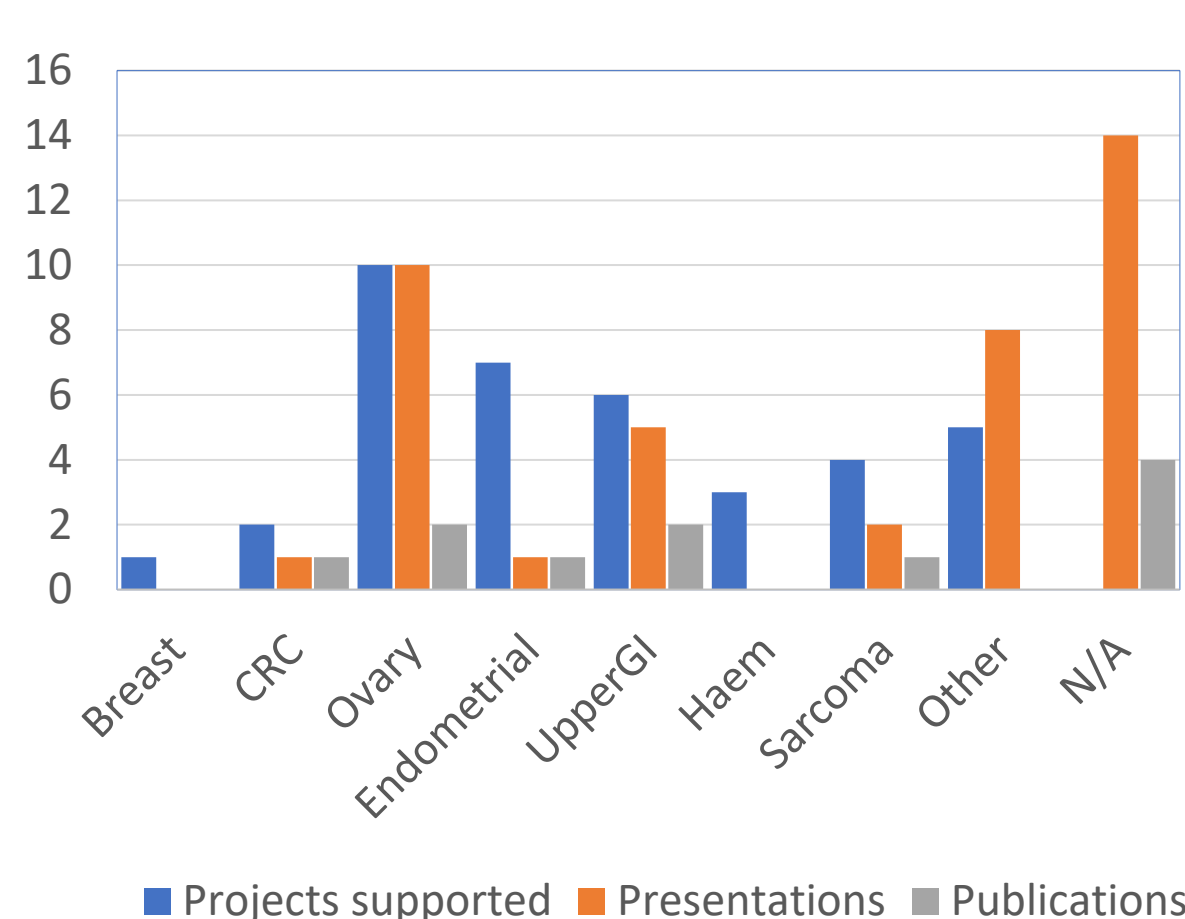
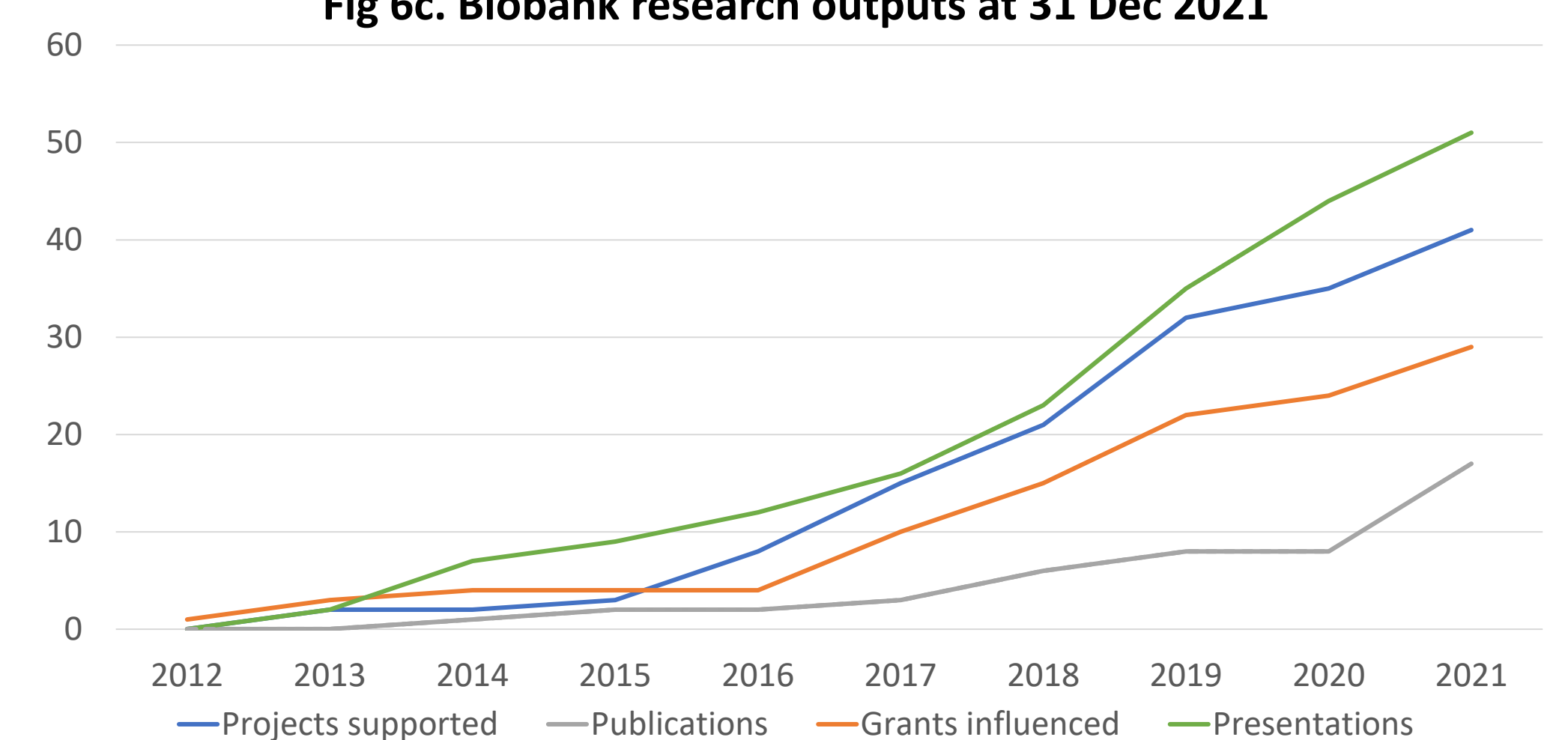


Fig 6b. Biobank collection: Patient demographics

Age range (years)	Male (%)	Female (%)
18-30	13 (1.2)	38 (1.4)
31-50	151 (14.5)	466 (16.7)
51-70	381 (36.6)	1189 (42.6)
>70	496 (47.6)	1046 (37.5)
Total	1041*	2793*

Fig 6c. Biobank research outputs at 31 Dec 2021



### CONCLUSIONS

The HSA Biobank as a translational resource for cancer research has led to the generation of significant research outcomes; it continues to provide biospecimens and data under a new name, the Health Precincts Biobank.

