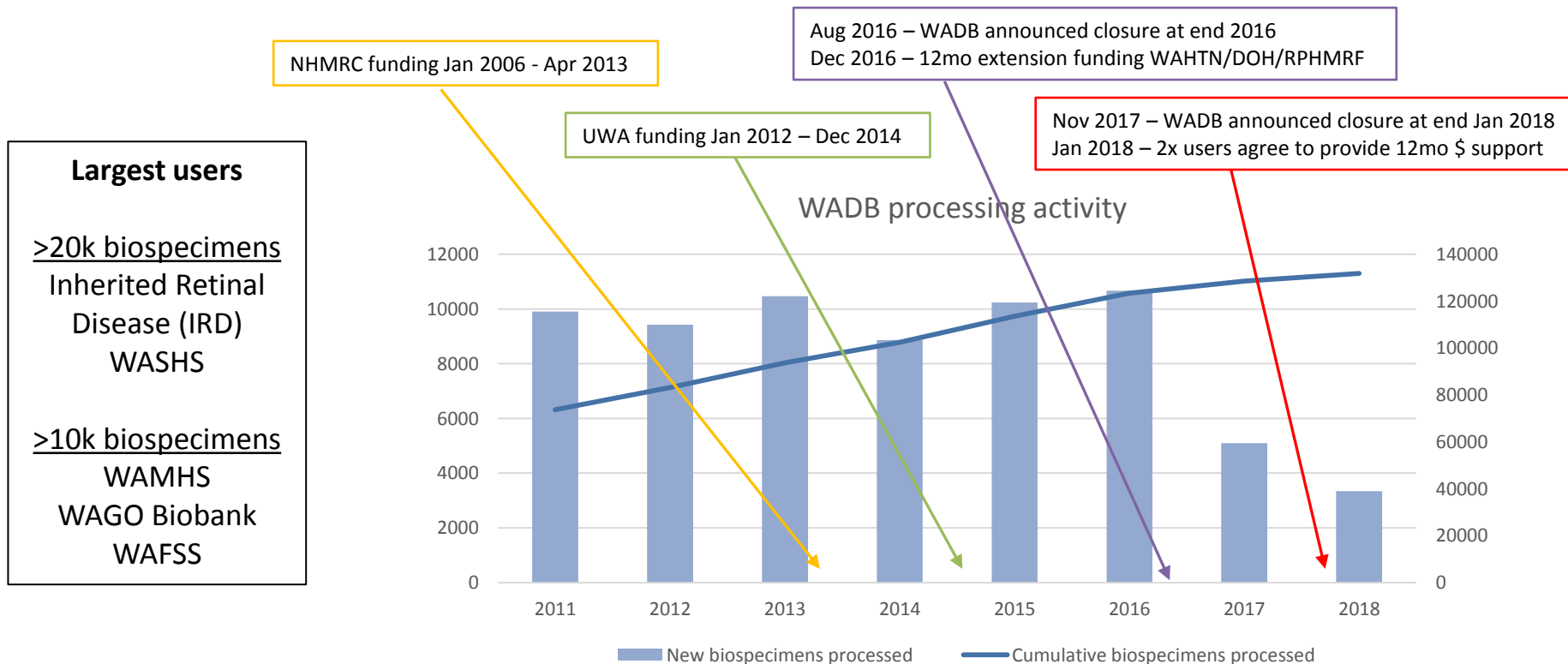



# WA DNA Bank Experience

- **38** separate studies have utilised WA DNA Bank (WADB) services over past 7 years.
- **>130,000** biospecimens obtained from **36,186** subjects
- Currently **16** studies using WADB services/storage
- Biospecimens include whole bloods, buffy coats, DNA, RNA, serum and plasma.
- All biospecimens are uniquely barcoded and data is managed in The ARK.



# A national cloud-based bioinformatics e-research tool



- Developed an open source LIMS, “The Ark” to store and organize all data for multiple studies.
- Cloud-based bioinformatics tool
  - Supported by NeCTAR : Nectar eResearch Tools provide research software for the Australian research community and address specific research needs. Focus on enhancing existing tools and applications to be more collaborative, accessible and support research workflows
  - <https://nectar.org.au/> 
- Access for each user is per module, per study.
- Secure, scalable, flexible, customizable.
- Separate instances of The Ark now implemented in Asia, Africa, Australia. Contributions from multiple organizations

Welcome arksuperuser@ark.org.au | Logout

Study: Lifepool

Subject Datasets LIMS Reporting Work Tracking Disease Admin

Inventory Biospecimen Upload Collection Custom Fields Biospecimen Custom Fields Barcode Labels Collection Custom Field Upload Biospecimen Custom Field Upload

Add Site Add Freezer  
Add Rack Add Box

Enable All Empty Cells

Peter MacCallum

80C

Rack 01

Box 01

Box 02

Box 03

Box 04

Box 05

Box 06

Box 07

Box 08

Box 09

Box 10

Box 11

Box 12

Box 13

Box 14

Box 15

Box 16

Box 17

Box 18

Box 19

Box 20

Box 21

Box 22

Box 23

Box 24

Box 25

Rack 02

Rack 03

Rack 04

Rack 05

Rack 06

4deg

Rack 01

Box 01

Box 02

Box 03

Box 04

Box 05

Box 06

Box 07

Box 08

Box 09

Box 10

Box 11

Box 12

Box 13

Box 14

Box 15

Box 16

Box 17

Box 18

Box 19

Box 20

Box 21

Box 22

Box 23

Box 24

Box 25

Box: ID: 3344

Name: Box 01 \*

Rack: Peter MacCallum > 80C > Rack 01 \*

Rows: 10 \* Columns: 10 \*

Row Type: Alphabet \* Column Type: Numeric \*

Capacity: 100 Available: 87

Save Cancel Delete

Batch Allocate Empty Box

Peter MacCallum > 80C > Rack 01 > Box 01

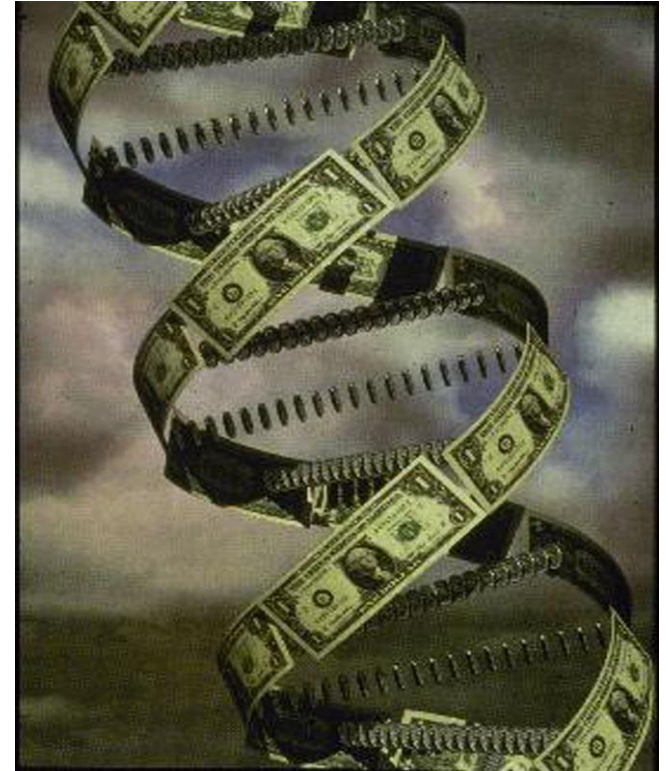
	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										
H										
I										
J										

KEY: An empty cell A used cell An inaccessible used cell A barcoded cell [Download as XLS](#)

# Centralised biobanking challenges

## Long-term guaranteed funding

- Full cost recovery model has not been feasible.
  - WADB operating with a part-cost recovery model since 2010, but insufficient income to cover core staff, infrastructure maintenance and operational costs.
  - *2016 communication with users indicated that increasing charges to enable full cost recovery were (overall) not supported; consequently WADB announced intention to close at end 2016 due to lack of sufficient funding to continue operations*



# Centralised biobanking benefits

- Improved efficiency of activities and funding
  - High quality and cost effective processing and long term storage of samples
  - Individual studies not having to establish new processing and storage infrastructure
  - Staff time/funding freed up for research
  - Funds obtained from grants not diverted to purchasing storage infrastructure/processing samples, instead can budget for biobank service fees
  - Consolidation of storage reduces wasted empty space
- Data management using a standardised Laboratory Information Management System (LIMS; eg The ARK) enables data linkage to phenotypic data.
  - Cross referencing to other sample collections is facilitated to allow greater collaboration.
- Specimens processed in a standardised manner across projects and can be joined (with approval) to increase power of the research study
- Specimens are more secure – eg dual site banking
  - Researchers rarely have the capacity to implement this strategy due to cost and space constraints.
- DNA collections remain readily accessible and securely managed when researchers are no longer associated with their collection (succession planning).

# Laboratory Equipment and capabilities

- 2 x labs at MRF.
- 4 x -40 freezers at RPH. 2 x -80 freezers at MRF. 1 x -80 freezer at SCGH. 1 x walk in 4 degree at MRF.
- QiaSymphony Extraction system from Qiagen (Buffy Coats and PAX Gene RNA tubes)
- Promega Reliaprep Magnetic bead System (Whole Bloods)
- Qiagility Liquid handling System from Qiagen (all dilution events)
- Oragene saliva DNA extraction system (saliva)
- Qiacube from Qiagen (small volume nucleic acid extraction capacities – column based)
- Qubit from ThermoFisher (high accuracy fluorescent quantitation of DNA, RNA and Protein from extracted samples)
- DNA concentrator system from Zymo Research (upscaling concentration of DNA samples)
- The ARK